

TASK ORDER 065  
PROVIDER PAYMENT CASE STUDIES

**Health Care Reform  
in Kaluga Oblast, Russia:  
Provider Payment Reform in Six Sites**

**March 1997**

# **Health Care Reform in Kaluga Oblast, Russian Federation: Provider Payment Reform in Six Sites**

## **A Case Study**

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## EXECUTIVE SUMMARY

Kaluga has been one of the most advanced of the 89 oblasts in Russia in terms of implementing the 1993 national reform legislation and pushing ahead for health care financing and service delivery reforms. In 1993, Kaluga policymakers began implementation of a Territorial Health Insurance Fund (THIF) which enters into contracts with medical care facilities and makes payments directly to these facilities. The Fund has been hampered by underfunding stemming from the lack of compliance with and collection of the payroll tax and other local government contributions.

Since late 1994, Kaluga oblast leadership has worked with the World Bank and the USAID *ZdravReform* Program to design and implement the next steps of health care reform. Under the World Bank loan, the main thrust of these reforms included (1) shifting patients from inpatient to outpatient services when appropriate, (2) restructuring health care delivery to rationalize unnecessary facilities, strengthen primary health care and introduce a quality assurance program, and (3) revamp provider payment systems to provide the necessary incentives for the above. The Oblast Health Authority and the THIF selected six pilot facilities for these efforts: one hospital, one hospital network, two polyclinics in Kaluga City, and two central rayon hospitals and associated polyclinics.

The restructured delivery system was to include: (1) feldsher stations at the village level, with preventive services and limited curative services; (2) new general practitioners to replace and supplement therapists; (3) new multi-disciplinary group practices; (4) enhanced outpatient diagnostic capabilities, (5) hospital closures or conversions to nursing homes; (6) new outpatient surgery centers; and (7) better use of high level referral centers.

The payment models ultimately chosen by the sites have been per capita-based models for rayons, and a partial fundholding/global budget for urban polyclinics and hospital sites. To support these payment reforms, pilot sites have each reported tracking inpatient and outpatient costs and analyzing patient flows. Some relatively minor steps remain, including making final global budget calculations, cost and volume contracts with payers of services and contracts within pilot facilities. Each pilot site has introduced utilization management, with a focus on identifying inappropriate admissions, pre-admission duplication, opportunities for shortening length of stay, and substituting outpatient for inpatient care.

As part of the technical assistance program, *ZdravReform* offered technical assistance in policy development, quality improvement, finance and resource management, information systems and organizational management, and dissemination of information. An important part of the reform effort included eight intensive workshops on the following topics: payment methods, financial modeling, hospital case-mix, global budgets, contracting, utilization management quality improvement and infection control.

## 1.0 INTRODUCTION AND FORWARD

In 1991, Kaluga oblast began an initiative in health sector reform that incorporated new and exciting concepts related to financing and payment systems reform, as well as changes related to quality of care. But budget issues related to the breakup of the Soviet Union caused Kaluga leaders to stop many of their most important reforms before full implementation.

In the last few years, oblast leaders, joined by Russian experts and international teams excited by Kaluga's interest in reforms, have re-started the reform process. This paper, produced by the U.S. Agency for International Development (USAID) *ZdravReform* Program, is a case study of the reform activities taking place in Kaluga oblast. It focuses on payment reform activities but also includes discussion of needed complementary activities in management and organizational change, information systems, and quality assurance and continuous quality improvement initiatives.

The purpose of the case study is threefold:

- 1) to provide an overview of the reforms;
- 2) to distill or summarize some of the basic steps and methods used in the reform process; and,
- 3) to document lessons for other oblasts and other countries considering similar initiatives.

As with any country, models and experience will vary across Russia and other New Independent States (NIS), and each region will have to adapt its health reform program to local situations. At the same time, certain principles and lessons transcend geographic boundaries and local conditions, and facility managers and leaders can use these principles to accelerate change for the improved care and health of all citizens.

This case study highlights and refers to an enormous amount of new health reform material now available in the Russian language. This material takes the form of manuals; clinical protocols; software programs and accompanying documentation; analytic files; literature on methods and experience in other countries, especially OECD countries; workshop materials; site reports; and research on specific topics related to many different aspects health sector reform. This material is available through either:

1. **the Avanta Advance Studies Institute for Health Care and Social Insurance Managers, a non-profit, non-governmental institute in Moscow, telephone/fax 7-095-976-4096; or**
2. **Abt Associates, Inc., through its *Zdrav Reform* program offices in Moscow, Russia; Kiev, Ukraine; Almaty, Kazakstan; or Bethesda, Maryland (USA).**

Materials are generally available in hard copy and in electronic format.

## **2.0 BACKGROUND**

### **2.1 Kaluga Oblast and its Health Care System**

Kaluga oblast is located approximately 200 kilometers southwest of Moscow. The oblast covers 29,900 square kilometers and has a long history that dates back to the 13th century. Today it has a population of approximately 1.1 million residents, about 75 percent of whom live in urban areas; the capital city, Kaluga, had approximately 360,400 residents in 1994.

Prior to the breakup of the former Soviet Union, the economy of Kaluga oblast, was dominated by the military-industrial complex. Kaluga was one of the centers of rocket technology as well as a center for the production of engines for military use. Although many of the industrial and military enterprises have either slowed or stopped production in recent years (World Bank, 1996), the dominant sector is industry, which employs 34 percent of the working population. The major industrial products now are engines, turbines, electronics, and railway machinery. The social sector places second, employing 20 percent of the working population; the agricultural sector employs 13 percent.

Regarding health status and health care, Kaluga oblast faces many issues summarized in Table 1. It has an aging population (20 percent of the population is older than 60 years of age) and mortality has risen due to increased numbers of accidents, alcoholic abuse, and cancers. The birth rate has dropped from 10.6 per 1,000 in 1992 to 8.0 in 1993 and 8.2 in 1994. The infant mortality rate is 17.4 per 1,000 live births (vs. 9 per 1,000 in the United States).

From a health resources standpoint, the oblast suffers from too little funding— only \$127 per person per year in 1993— and poor use of available funds that focus on inputs relative to health outcomes. Specialization has been favored over general and primary care. As a result, there are too many physicians (3.3 per 1,000 population in 1994) and too few primary care physicians (only 15 percent of physicians are generalists). It has too many hospital beds (11.7 per 1,000 population) and an inordinately high number of admissions per capita (19.3 per 1,000 population).<sup>1</sup>

Revenues for health care come from either i) local or "attached" taxes (e.g., water and land) or ii) "regulated" revenues of the federal government such as profits' tax, the VAT tax, and so on. The law typically determines some percentage of these latter taxes which are to go to the federal government and to the oblast government. Districts can generate some additional revenues and typically keep revenues derived from these taxes. In addition, a new 3.6 percent payroll tax for

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<sup>1</sup> Kaluga statistics are similar to Russia as a whole as Table 1 points out, where problems exist related to both (i) total funding for health care and (ii) the efficiency or relative value of the way funds are spent for health care services. Traditionally, the health sector was viewed as a "non-productive" service sector, and funded only with residual funds available after other programs are funded. Chronic underfunding was matched with poor and often perverse incentives in the use of funds for services. For greater detail on Russia generally, see, for example, Russia Country Action Plan, Abt Associates, November 1994.

compulsory health insurance was introduced in 1993. The payroll tax is collected by the Territorial Health Insurance Fund (THIF) at the oblast level, which remits 0.2 percent to the Federal Health Insurance Fund (FHIF). The



**Table 1**

**Data on Kaluga Oblast and the Russia Federation  
(1991-1994)**

	1991	1992	1993	1994	Russia (1994)
<u>Category</u>					
<b>Demographic</b>					
Population (thousands)	1077.4	1078.5	1083.2	1085.0	148,200.0
% 0-18	N/A	N/A	25.7	25.4	N/A
% 19-64	N/A	N/A	61.7	61.5	N/A
% 65+	N/A	N/A	12.6	13.1	N/A
% Female	53.8	53.7	53.7	53.7	N/A
% Rural	29.9	26.5	26.6	26.7	26.9
<b>Infrastructure</b>					
Physicians (per 1,000 pop)	3.1	3.2	3.2	3.3	3.9 (1993)
Ratio GPs/physicians	16.0	16.0	16.0	15.0	15.0
Hospital beds (per 1,000 pop)	12.3	12.0	11.8	11.7	12.2 (1993)
<b>Resource Use</b>					
Hospital Admissions (as % of pop)	18.6	18.3	19.1	19.3	21.0
Bed Days per Capita	3.5	3.5	3.6	3.6	N/A
Occupancy rates (as %)	77.9	78.8	83.5	85.2	N/A
Avg. length of stay (days)	19.0	19.3	19.0	18.8	17.0
Contacts (per person per year)	6.2	5.6	5.9	5.9	8.9

**Table 1****Kaluga Oblast and the Russia Federation  
(continued)**

	1991	1992	1993	1994	Russia (1994)
<b>Category</b>					
<b>Patterns of Spending</b>					
Public Spending					
Per Capita	178	1981	23745	115657	N/A
Real Per Capita (CPI)	178	155	188	212	N/A
Per Capita (\$US PPPs)	137	94	114	N/A	N/A
Hospital (%)	45.0	N/A	59.0	N/A	69.0
Ambulatory (%)	N/A	N/A	N/A	N/A	N/A
Pharmaceuticals (%)	N/A	N/A	N/A	N/A	N/A
<b>Outcomes</b>					
Crude Birth Rate (per 000)	10.6	9.2	8.0	8.2	9.5
Crude Death Rate (per 000)	12.3	13.1	15.7	17.4	15.5
Infant Mortality (per 000)	16.6	17.8	16.6	17.4	19.0
Low Weight Births (% <2500 grams)	5.2	5.3	6.0	5.9	N/A
Abortions (per live birth)	N/A	1.86	1.87	2.0	N/A
Death by Cause (per 000,000)					
Infectious & Parasitic	N/A	N/A	18.6	23.5	N/A
Malignant Neoplasms	N/A	N/A	232.7	228.7	206.6
Circulatory System	N/A	N/A	920.3	1003.8	837.3
Respiratory System	N/A	N/A	89.5	94.8	N/A
Injury and Poisoning	N/A	N/A	246.4	298.1	250.7
Life Expectancy (at birth)					
Males	N/A	63.4	62.4	60.1	58.2
Females	N/A	74.8	74.3	72.5	71.6

Sources: Kaluga Health Administration, 1995; World Bank, 1995, 1996

FHIF is responsible for oversight and for providing equalization payments to economically disadvantaged oblasts. The new payroll tax was legislated in Russia as an attempt to increase funding for health care as well as move funding off the budget and out of the oversight of the central and oblast-level finance authorities (see, for example, Sheiman, 1996; Rowland and Telyukov, 1991).

In fact, decentralization and the introduction of the payroll tax radically changed the pattern of financing for health. For example, most sources of funds for health in Russia in 1994 were generated by the local (oblast and rayon) budgets— about 71 percent—and 18 percent came from THIF revenues (World Bank, 1996). Only about 10 percent of health expenditures came from the federal budget, which funded expensive equipment and public health programs such as AIDS initiatives, Chernobyl victims aid, and epidemiological surveillance.

Very importantly, general health budgets and other social sector budgets from the oblast-level authorities (e.g., education, agriculture) can be re-allocated across sectors at the rayon level. For example, the local rayon administrator has discretion to move more funds into health care from the budget for agriculture. Discussions with both oblast and rayons leaders indicate this is typically not done, however, unless there are unexpected problems that arise during the course of a budget year. What is more likely is for local administrators to exercise discretion with rayon-generated revenues.

Health budgets are still to some extent developed and allocated based on the traditional 18 line item categories for facilities and on general "inputs," such as beds and staff, rather than "outcomes," such as population enrolled, services provided, or health status changes. It is primarily a revenue-driven budgeting system, meaning that managers simply spend all of the monies appropriated during the fiscal period with little opportunity for flexibility or strategic financial management of funds. Health budgets cover only about one-third of health care "needs" (as defined by former Soviet normatives) according to local leadership. Federal standards and mandates often exacerbate the inadequacy of budgets. For example, in late 1994 the President decreed a 40 percent increase in salaries for health workers, without attendant appropriations.

## **2.2 Kaluga Oblast and Health Sector Reform**

Kaluga has clearly been one of the most advanced of the 89 oblasts in Russia in terms of implementing the 1993 national reform legislation and pushing ahead for health care financing and service delivery reforms. They have implemented the THIF, and it has been functioning since the latter part of 1993. A new 3.6 percent payroll tax for the working population is pooled or commingled with a per capita allocation for each individual in the oblast who is not employed (children, non-working adults, pensioners, etc.). The oblast authority makes the per capita payment from general revenues, which means that annual per capita payments vary on an annual basis.

Except for two small insurance companies covering about 20,000 individuals, the THIF enters into contracts with medical care facilities and makes payments directly to these facilities. This system appears to have been adopted in part because the Oblast Health Authority leader, Dr. Vladimir Omelchenko, moved to head the THIF and filled his former position with a hand-picked successor.

There are "wrinkles" to the financing scheme. For example, the THIF is responsible for pooling of funds, norms, payment policies, and direct payment for operating costs to oblast-level facilities. At the same time, it is the municipal authorities that receive budgets and pay municipal-level (which includes rayons) facilities for operating costs. Local authorities also raise some limited revenues as well which can be allocated for local health services. There is some funding from the FHIF for equipment and pharmaceuticals. The Oblast Health Authority funds capital purchases, such as equipment and renovation, and provides budgets for some limited number of special types of facilities, such as those treating cancer and sexually-transmitted diseases. There are federal funds for special public health initiatives such as surveillance, AIDS, and Chernobyl victims. A simple schematic of the current financing model is presented as Figure 1 (below).

### *2.2.1 Payment Systems*

Prior to reforms under the pilot program initiated in 1995 (discussed below), payment to inpatient facilities under the THIF system was on the basis of the finished case, but pricing was developed on the basis of the several thousand ICD categories and the Medical Economic Standards which specify diagnostic and treatment protocols. Costs were tracked on the basis of the traditional 18 cost/budget categories. In addition, hospitals and facilities could appeal to authorities for more funding beyond the finished case payment— and often did so. Thus, facilities did not, in effect, operate in a "at-risk"<sup>2</sup> environment that would provide incentives for efficiency. Admissions have increased in the last few years, influencing leadership to consider refinement and implementation of improved inpatient payment system.

Outpatient facilities have operated using the traditional 18 budget category approach, based on capacity inputs and population normatives. In 1991 the oblast experimented with a full capitation approach for primary care but discontinued it when funds flows from the federal government became erratic due to legislative disagreements at the time.<sup>3</sup>

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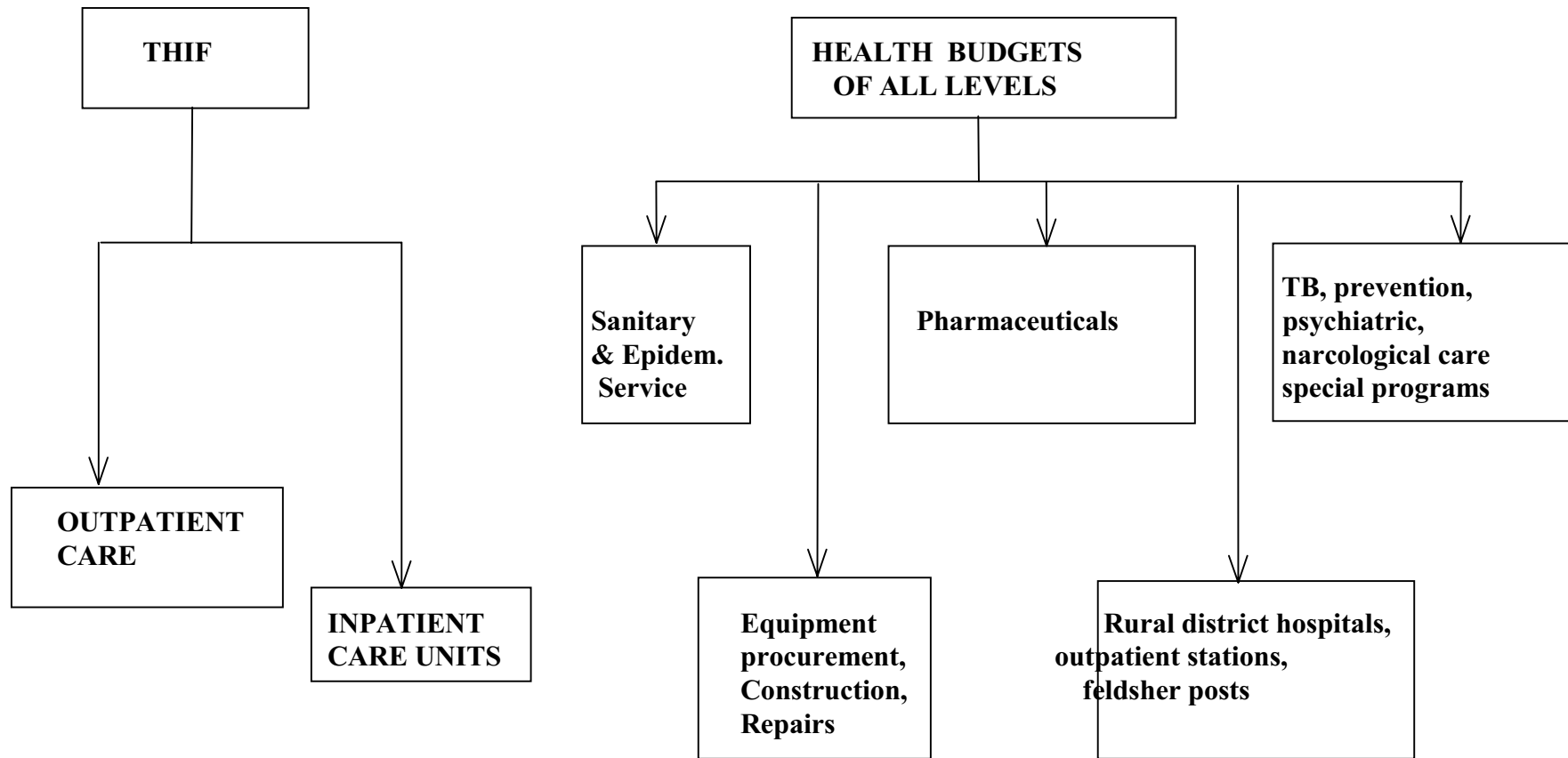
<sup>2</sup> The term "at-risk" in this case study refers to liability or acceptance of responsibility for the uncertainty of the costs of care to a patient or population group within some limited budget or defined flow of funds for needed services. Liability can be assumed by individual or groups of providers, facilities or insurance funds. The term is used to connote that both deficits and surplus funds received for care remain with the individual or organization assuming liability. Most often, the term is used in connection with providers or insurers receiving a pre-determined or defined level of payment or funding for some defined group of patients and for some defined list of services over a fixed period of time. Implicit in the notion of risk, too, is that providers have maximum flexibility and autonomy in the way monies are spent for inputs for care delivered, subject to some expected level of outcomes and quality of services delivered.

<sup>3</sup> It should be noted that physician choice exists within the polyclinic, and individuals can switch at any time. An individual is forbidden to refer him(her)self, though it often happens. Some areas, such as Maloyaroslavets rayon in Kaluga oblast, have instituted cost sharing provisions for self-



Figure 1

**THE CURRENT FINANCING MODEL**



Source: Adapted from Sheiman, 1996

Overall, the changes in incentives in the early 1990s away from outpatient services and to greater numbers of admissions to hospitals pushed the share of spending for inpatient care from 45 percent of total in 1991 to 59 percent in 1993.

### 2.2.2 *Management and Information Systems*

Kaluga presents a mixed picture; while far advanced relative to other oblasts such as Tver,<sup>4</sup> it still needs to modify and streamline its information systems. For example, some early modeling exercises in Kaluga were hampered by poor information that was both incomplete and too aggregate for precise analytic work. More recently, a state-of-the-art information center has been established. It is shared by the THIF and the Oblast Health Authority (Sherman and Goldin, April 1995). Person-level data or experience, previously unavailable, is now being developed. A standardized procedure coding system was introduced only in spring 1996.

Much of the equipment observed in individual health facilities and in the THIF offices in 1994-1995 was 386 series equipment. Leadership reported that there has been one personal computer (PC) per combined hospital/polyclinic facility in each rayon except one where there is no hardware available. Each facility in Kaluga city has been given one PC. In 1996, a number of facilities were upgraded to 486 series equipment.

## 3.0 NEXT STEPS FOR HEALTH SECTOR REFORM

### 3.1 Collaboration with Russian Experts and International Organizations

In the environment of economic downturn and chronic underfunding of the health care sector, there was a need for analytic and decisionmaking tools for piloting and then fully implementing reforms as well as ensuring longer-term sustainability of these changes. For nearly 18 months, from late 1994 to mid-1996, Kaluga oblast leadership has worked with the *ZdravReform* Program and the World Bank to design and implement needed “next steps” in oblast health sector reform. The collaboration was perceived as an opportunity to build on the strong leadership and experience of experts in Kaluga and the complementary strengths of the two donor programs.

The six-year World Bank loan program for Kaluga is designed to address several areas of health status, organization and financing of care, and delivery of services. Loan monies will provide new facilities, equipment, supplies, and pharmaceuticals. However, the broader thrust of the Kaluga health care reform initiative under the loan program is the shift of patients from hospital services, which emphasize curative care and medical specialization, towards outpatient services, which emphasize preventive care and health promotion. The primary areas of reform include delivery system restructuring (facility rationalization), restructuring provider incentives, including a quality assurance program, and a maternal and child health and family planning component.<sup>5</sup> The

<sup>4</sup> See, for example, the profiles of pilot sites in Tver oblast by Langenbrunner (1997).

<sup>5</sup> The components of the World Bank loan program are:

1) **Restructuring Health Services Delivery**, discussed in more detail in the text; 2) **Restructuring Provider Incentives** to provide support for development and implementation of improved provider payment, quality assurance and management information systems; and 3) **Maternal and**

ZdravReform Program, a three-year program funded by the U.S. Agency for International Development, assembled teams of Russian and American experts to help re-organize the financing of care and delivery of services in the Russia Federation.<sup>6</sup>

The collaboration focused on two components of the loan program— restructuring of delivery systems and provider incentives, and developing an integrated quality assurance program. As a way to manageably launch the reforms and to have initial markers for the new approaches over the span of the loan program, the donor programs and local authorities selected six pilot sites for design, development and implementation of new payment and management approaches, information systems, and quality processes. The World Bank loan program began only as detailed plans for the new payment system and regulations for its implementation were developed.

### *3.1.1 Delivery System Restructuring*

The delivery system restructuring component of the Bank loan program is particularly ambitious and broad-based: An objective of the oblast is a comprehensive system of ambulatory care, with consultative, diagnostic, and treatment centers, and the introduction of general practitioners in solo and group practice as a "front line" primary health system.

The revised system of delivery will include:

- feldsher stations at the village level, with promotive and preventive services and with some limited curative treatment resources;
- new general practitioners (using the Moscow Medical Academy training approach) to replace and supplement therapists. Bank funds will be used for offices and equipment;
- new multi-disciplinary and (possibly) single discipline group practices. Bank funds will be used for offices and equipment;

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**Child Health and Family Planning** will introduce changes in clinical practice standards, building on recommendations of the federal level work groups. It also will create the physical environment to support these changes including improved antenatal protocols and services, 12 women's consultations centers, limited equipment/supplies and drugs for 10 maternity homes, equipment/supplies/training for family planning and reproductive counseling, and a new health promotion center. In addition, Kaluga oblast will have access to a National Training Program in Family Medicine— designing models of family practice for Russia; curriculum and faculty development, including establishment of teaching clinics; and establishing standards for quality improvement and certification. Finally, a Monitoring, Evaluation, and Dissemination component will assess the oblast's progress under the loan program, including an independent development of tracking indicators, evaluation activity, training of evaluation methods staff, and workshops and publications related to duplication and replication of best practices.

<sup>6</sup> The ZdravReform Program in Russia was a three-year program funded by the U.S. Government to improve the health of the Russian population in support of economic and democratic development. The Program grew out of the 1993 Clinton-Yeltsin Vancouver Summit where the two leaders pledged support and mutual cooperation across a number of sectors, including health. Initiated in January 1994, the program is a unique public-private partnership between USAID and a consortium of private U.S.-based firms headed by Abt Associates designed to support and accelerate health care reforms in Russia. The program nurtured and accelerated the opportunities for public and private sector institutions to test and implement new organizational, management, and financing structures (pilot projects referred to as "Working Models") for health services delivery systems as Russia moves toward a greater reliance on a market-oriented economy. ZdravReform activity spanned across multiple sites throughout Russia. The Program concentrated resources to develop working models in a focused number of geographic (oblast) sites: four in Western Siberia and two in Central Russia. In addition, there were 38 grantee sites in 19 other cities.



- new consultative, diagnostic, and treatment centers including day care facilities with full diagnostic and treatment capability at the outpatient level, to replace existing polyclinics attached to the central rayon hospitals. These will operate as (specialty) group practices. Bank funds can help with equipment, supplies, pharmaceuticals, and so on;
- the closing and converting of district hospitals into nursing homes. These facilities could also be made available to other social organizations to be mainly used for the admission of "social" cases for which these other organizations would bear the cost;
- a new outpatient surgical center in Kaluga city; and,
- use of central rayon hospitals and the oblast hospital for referrals with established diagnosis and emergency cases.

A new management structure and cadre of expertise is envisioned for implementation and administration. New, separate, rayon-based health management teams of management and financing experts will replace the rayon hospital head doctors who now are in charge of the overall administration within the larger oblast framework and policies. Chief doctors will be freed from rayon administrative duties to concentrate on the clinical and management aspects of their facilities and patients. The Kaluga Municipality Health Management Team will replace the existing municipal chief doctor administration in a parallel way. The Oblast Health Authority will create an Oblast Health Management Team to manage the overall delivery structure within the oblast, to better target capital equipment purchases, new facilities, and so on.

The project will reduce beds by up to 30 percent of the current 12,325 through the closure of individual wards and, where feasible, entire facilities. The current proposed loan program budget will include construction and renovation, as well as equipment, supplies, and pharmaceuticals.

### *3.1.2 Provider Payment and Quality Assurance*

The health system restructuring component will be supported and sustained through a new system of provider payments, which will include the following elements:

- primary care capitation (or “fundholding”<sup>7</sup>), whereby physicians in group or solo practices would receive a defined or pre-determined level of payment for each patient enrolled under their care. The payment would be based on i) an agreed upon set of services or benefits, and ii) a defined period of time. The payments would be adjusted for expected variations in costs or appropriate utilization of services across different population groups.

Several models or types of arrangements have been considered since the beginning of the collaborative discussions, including

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<sup>7</sup> Referred to as "fundholding" because physicians or facilities receive in advance and "hold" funds for all necessary care.

- Partial fundholding: physicians receive payments for outpatient services only;
  - Mixed fundholding: physicians are at risk for all specialist and some hospital services; or
  - Full Fundholding: physicians are at risk for all services;<sup>8</sup>
- other per capita "at-risk" models have been considered as well, to include full integrated delivery systems and geographic capitation<sup>9</sup> "at-risk" arrangements;
  - development of a separate fund to provide incentive-based payments for primary care physicians, at least in the Bank program's first two years, both to increase primary care provider incomes and to attract high quality providers to ambulatory care. The Bank program would initially fund physician incentive payments. In following years, offsetting savings from closed facilities and clinical efficiencies will be used to sustain incentive payments;
  - outpatient specialists (currently salaried) will likely be paid on some "performance" or output basis (per episode or per service provided);
  - inpatient payment systems, which now rely on clinical-statistical groups,<sup>10</sup> may need to be refined. Global budgets or refined case-based payments were discussed from the beginning of collaborative activity as likely candidates;
  - other prerequisites of these new payment systems such as the development of:
    - management and information systems;
    - contracting arrangements between the THIF and providers; and,
    - performance-based complementary quality assurance approaches (discussed below).

Kaluga appears to have embarked on an ambitious quality assurance program under the proposed Bank loan project. Quality assurance will be introduced to all targeted inpatient and outpatient facilities, managed by both the Oblast Health Authority and the THIF.

The Kaluga quality assurance proposal includes facility-level programs, monitoring of care through the THIF, and oblast-level accreditation standards for facilities, equipment, and personnel.

### *3.1.3 Timing of Collaboration Activity*

Table 2 provides an overview of the collaborative activities and timing that the participating parties developed and agreed upon in mid to late-1994. In brief, *ZdravReform* agreed to collaborate with the World Bank program by furnishing "up-front" technical assistance and training to provide the tools and techniques for implementing and for sustaining these reforms.

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<sup>8</sup> This full fundholding model contains the strongest incentives but also places physicians at greatest risk for financial liability. Some have noted (see Sheiman, 1996) that such models have discouraged needed referrals to more expensive specialist and hospital care and hurt the quality of patient care.

<sup>9</sup> Per capita payments for some population within a defined geographic area, in this case a rayon.

<sup>10</sup> Clinical-statistical groups match services provided with expected resource use for a hospital admission. Services are typically grouped by diagnosis and use the Medical Economic Standards to price some defined mix of services.

In the initial phase, from late 1994 to mid-1995, teams of experts from both programs worked together to design the program and identify pilot sites. From early 1995 to mid-1996, *ZdravReform* supported development and implementation of the new systems at pilot sites in cooperation with key oblast health leaders.

Current plans call for finalizing the Bank loan approval process in early 1997 when the loan financing program can actually begin. Kaluga oblast has already begun drawing on project preparation funds for training, computer hardware, software, and so on. Follow-up *ZdravReform* work in 1997-98, however, will not occur due to congressional cutbacks and termination of program funding at the end of calendar year (CY) 1996.

#### **4.0 PILOT SITE PROGRAM: COLLABORATION WITH ZDRAVREFORM**

The *ZdravReform* Program provided support to the health sector of Kaluga oblast from early 1995 through late 1996. The program focused on five areas of outputs:

- 1) **Policy Development**—establishing a legal/regulatory framework for health care reform;
- 2) **Quality Improvement**—providing new approaches to enhance the quality of care in hospitals and polyclinics;
- 3) **Finance and Resource Management**—developing new approaches to manage the flow of funds and create new incentives that will increase productivity and quality of services;
- 4) **Information Systems and Organizational Management**—establishing modern, computerized information systems and management systems to support the reforms in quality of care and financing; and
- 5) **Dissemination**—sharing lessons on successful working models and systems in other Russian sites, to promote replication in Kaluga, elsewhere in Russia, and in the NIS; and to develop a new generation of health sector leadership.

**Table 2**

**World Bank/ZdravReform Collaboration  
in Kaluga Oblast**

	<b>CY 1995</b>	<b>CY 1996</b>	<b>1997 - 1998 <sup>11</sup></b>
<b>ZdravReform Program</b>	Technical Assistance and Training, Grant Funding Related to Loan Program Strategy and Pilot Design:  - Quality Assurance  - Management and Information Systems  - Payment and Financial Management	Follow-Up Technical Assistance and Training:  - Working Models Finalized  - Pilot Projects Implemented	1) Technical Assistance and Training related to Oblast-wide Implementation of Pilot Projects  2) Roll-out and Dissemination
<b>World Bank Health Reform Project</b>	1) Bank Loan Proposals Finalized  2) Bank Review and Approval Process	Bank Loan/Project Preparation Funds Flow Begins:  Capital, Equipment, Supplies, Personnel	Contingency Loan Fund Available for Oblast-wide Implementation of Pilot Projects

<sup>11</sup> ZdravReform activity will not occur due to funding cutbacks.

#### 4.1 Pilot Site Identification

Project resources initially were concentrated in a pilot site program. *ZdravReform*, World Bank and Kaluga health care experts worked together to select sites and plan activities to design and test new approaches and systems in 1995-1996. After initial discussions and disagreements, the Oblast Health Authority and THIF announced selection of six pilot facility sites: one hospital, a hospital network, and two polyclinics in Kaluga city; and two central rayon hospitals and associated polyclinics:

- Emergency Hospital
- Children's Hospital/Network
- Polyclinic No. 1 ("Oktoberskaia")
- Polyclinic No. 5
- Maloyaroslavets rayon
- Ferzikovo rayon

Counterparts later agreed to extend the pilot sites beyond the central rayon facilities to rayon-wide systems of care. The rayons typically include feldsher stations, physician stations/posts, and small district hospitals, similar to nursing facilities.

Kaluga health leaders defined selection criteria: All facilities had to i) be closely affiliated with the THIF; ii) have a well-trained staff and expertise in payment reform areas; iii) have optimal chances for accuracy in data reporting in financial and clinical areas; iv) be recognized as "leaders" among facilities; v) have potential for general practice/family medicine integration with the Bank loan component; vi) be representative of all levels in the referral hierarchy; and, vii) display "readiness" for reform as measured by quality of staff, leadership, and interest in reform policies.

A strategy for roll-out under the Bank loan program also was developed. In 1997, diagnostic centers will be organized and equipped; in 1998, payment reforms will be extended to the rest of Kaluga city and the seven targeted rayons under the Health System Restructuring component. The remainder of the oblast would be "brought-in" in Year 5 of the loan program.

#### 4.2 Outlining a Pilot Site Strategy

Designing and implementing new provider payment systems, with associated management and information systems and quality assurance programs, requires consideration of a number of important issues, enumerated in Box 1.

A general strategy for technical assistance and training was worked out collaboratively. In late summer 1995, specific tasks were outlined. In October 1995, *ZdravReform* and the oblast governor signed a letter of agreement or Memorandum of Understanding (MOU), with the general review and approval of the World Bank. The MOU reflected the agreements between *ZdravReform* experts and Kaluga health sector leaders, namely, specific reform models to be tested, team leaders in each substantive

## Box 1

### Development and Implementation of Provider Payment Reforms: A General Framework

- Define services covered (i.e., benefit package) and/or facilities to be covered
- Obtain unit cost information, including historic trends
- Define an “efficient” level of service provision costs
- Evaluate administrative costs of options including costs to payers, providers, and consumers
- Evaluate available data and information systems available
- Clarify priority of objectives in choosing payment system, such as:
  - efficiency
  - improved quality of care
  - equity and access for patients
  - fairness across providers
  - administrative simplicity
- Choose payment method or methods, which may vary by setting or by provider type  
*(Make sure payment systems are complementary across providers and settings)*
- Set payment rates and levels to:
  - reflect only appropriate and necessary care
  - cover costs of adequate provision of services
- Develop contracts among payers, providers, and consumers
- Develop management information and quality monitoring systems at facility and payer levels
- Provide appropriate training of personnel for design, analysis, and implementation of new systems
- Develop needed regulatory structure including appeals process and rules for unanticipated consequences
- Demonstrate and evaluate system in pilot facilities and pilot geographic areas
- Modify, refine, and implement reforms oblast-wide
- Undertake needed complementary delivery system restructuring and manpower training changes
- Monitor cost, quality, access, and revise system periodically as needed

Note: Adopted from Schieber, 1995

area, and the implementation plan for specific site-based approaches, with expected timelines for assistance and training. Boxes 2 and 3 list the reform models, approaches and expected timelines that were attached to the original MOU.

## Box 2

### Implementation Plan

#### Facility or Geographic Area

*Six Pilot Sites:*

*Polyclinic Number 1 (Oktober'skaia District), Kaluga City  
Polyclinic and Hospital Number 5, Kaluga City  
Emergency Hospital, Kaluga City  
City Children's Hospital, and Children's Referral Network in Kaluga City  
Central Rayon Hospital and Polyclinic/Maloyaroslavets Rayon  
Central Rayon Hospital and Polyclinic/Ferzikovo Rayon*

#### Team Leaders

*Tatyana Volkodov (Provider Payment),  
Natalia Kremleva (Quality)  
Valery Shiraev, Oblast Information Center, (Management and Information Systems)*

#### Demonstration Site Overview of Approaches

- Integration of Financial Flows

*Integration of financial flows, currently controlled by Health Committees and the Territorial Fund. The latter will be the major purchaser of care.*

- Payment Methods

*1) Capitation payment to all facilities contracted by branches of Territorial Fund or other organizational entities for provision of all types of care to subscribers (including inpatient, outpatient, emergency care, drugs, auxiliary services, etc.)*

*2) Groups of primary care providers (PCPs) in polyclinics act as partial fundholders. Their budget includes primary care, ambulatory specialist care, consultations, lab tests, emergency care, drugs, and also 10-20 percent of inpatient care. These PCPs contract with other providers such as specialists in polyclinics and hospitals, hospitals, emergency care stations, pharmacies, and outside providers.*

*3) Hospitals are prepaid with a global budget by the insurer for approximately 80 percent of volume of work—using case-mix adjusted rates for setting the global budget. The global budget is supplemented by retrospective payment by PCPs as fundholders for their referrals (referrals will be open and competitive across providers).*

- Management and Information Systems (MIS)

*Standard Data Elements—Clinical, Financial, Administrative*

*Hardware/Software Systems Design*

*Cost Accounting Systems*

*Management Issues, e.g.,*

- *Contracts for Facility Autonomy*
- *Contracts for Staffing*
- *Board of Directors*
- *Training of Staff*

*Financial Modeling/Actuarial Data Base Development*

*Financial Management*

- Quality Improvement

*Continuous Quality Improvement (CQI) Methods and Approaches*

*CQI Process Developed in Pilot Sites*

*Complementary Measures and Systems Related to New Payment System, e.g.,*

- *Ambulatory Care Measures*
- *Hospital Admission Criteria*
- *Referral Criteria*
- *Discharge/Follow-Up Care*

*New Quality of Care Tools (e.g., Clinical Care Mapping Training)*



### Box 3

#### Suggested Implementation Timeline

##### October-December 1995

Design and Specify Payment Methods in Pilot Sites  
Develop Model Contractual Responsibilities  
Develop Data Base  
Develop and Award Grant Application for Pilot Sites  
Begin to Establish Analytic Tools

##### Suggested Month-by-Month Activities

1) October

*Evaluation of current payment approaches at pilot sites*  
*Begin to examine specific payment design features of alternative payment approaches, e.g.,*

- *capitation/fundholding formula and benefits covered*
- *global budgets and case-mix adjustments for hospital care*
- *how physicians paid*
- *possible use of withholds*
- *phase-in approach (e.g., fully at-risk in year 1?)*

*Begin to assemble data for years 1990-1995*

2) November

*Begin Hardware and Software design*  
*Develop Uniform Data Set*  
*Develop Indicators of Volume of Work within Pilot Sites*  
*Quality Workshop*  
*Develop/Submit Grant Application for Pilot Sites*  
*Initiate Capacity Building at Pilot Sites*

3) December

*Finalize Design of Payment Methods*  
*Develop Analytic Tools, e.g.,*

- *financial/demand modeling*
- *cost accounting methods*

*Develop Model Contracts for payer, facilities, and staff*

##### January-March 1996

Integrate Financial Flows in Pilot Sites  
Initiate Quality Improvement Process in Polyclinics and Hospitals  
Develop Greater Detail for Payment Method Design  
Continue Development of Analytic and Design Tools

## Suggested Month-by-Month Activities

### 1) January

*Develop Analytic Tools, e.g.,*

- *utilization management*
- *refining case-mix measures*

*Draft Quality Improvement Approaches and Indicators—Polyclinics*

*Integrate Financial Flows with Administrators of Pilot Rayons and Sites*

*Develop Payment Approach for Emergency Care and Paraclinics*

*Quarterly Reporting of Results—Tver and Kaluga*

### 2) February

*Draft Quality Improvement Approaches and Indicators—Hospitals*

*Develop Capitation Rate Methodology (four levels)*

*Develop Preliminary Capitation Rates*

### 3) March

*Develop Approach for Interpayments between Primary Care Practices and Specialists*

*Begin to Develop Simulation Data Base*

*Finalize Model Contracts*

## April-June 1996

Integrate MIS Tools with Payment Changes  
Integrate Quality Tools with Payment Changes  
Simulate Flow of Funds through Contracts  
Fully Implement New Systems in Pilot Sites

## Suggested Month-by-Month Activities

### 1) April

*Integrate New Quality Measures and Processes*

*Integrate Management and Information Systems Components*

*Begin Simulation (Only) of Flow of Funds through New Contracts*

*Quarterly Reporting of Results—Tver and Kaluga*

### 2) May

*New Quality of Care Tools, e.g.,*

- *clinical care mapping*

3) June

*New Quality of Care Tools, e.g.,*

- *clinical care mapping*

*Begin Piloting/Implementation of New Approaches*

- *payment methods*

- *management and information systems*

- *quality improvement*

July—October 1995

Continue Working Pilots

Evaluate Pilot Payment Models

Refine Payment Models

Integrate Refinements

Suggested Month-by-Month Activities

1) July

*Evaluate Simulation Results*

*Begin Evaluation of Pilot Sites*

- *financial*

- *information/management*

- *quality*

- *access*

*Quarterly Reporting of Results—Tver and Kaluga*

2) August

*No New Activity*

3) September

*Finalize Evaluation*

*Refine Payment Models*

4) October

*Integrate Refinements*

### 4.3 Multi-pronged Collaboration with Pilot Sites

Kaluga leadership and *ZdravReform* agreed upon a multi-pronged approach to achieve output objectives, including:

- Technical Assistance
- Training
- Grant Award to the Kaluga THIF
- Basic Equipment
- Tools for Improved Decisionmaking

Technical assistance tapped the experience and recognized expertise of health care professionals from the United States, Western Europe, and Russia. Russian experts from other *ZdravReform* sites were especially valued for their knowledge of the Russian system and their experience with earlier Program activities. These experts adapted lessons and experiences from sites in Siberia and Central Asia—Kemerovo, Altai Krai, Tomsk, Novosibirsk, and Issyk-kul—for use and application in Kaluga. For example, the Polyclinic Manager System, a software system for polyclinic managers and physicians designed and tested in Kemerovo and Altai Krai, was found suitable to Central Russia. Utilization patterns by age and gender groups across the population in Kemerovo were useful for teaching per capita analysis and designing “phase-in” formulas for payment purposes. Outpatient clinical indicators for quality assurance teams, developed in Siberian oblasts, also were applicable.

Training took place at onsite workshops and longer-term training programs, and on study tours to the United States and selected Western European countries. Study tours in early 1995 demonstrated alternative health systems to senior-level counterparts. The tours were followed by eight intensive workshops held in Kaluga or nearby Tver oblast from September 1995 to April 1996. Four workshops focused on finance and resource management, two on management and information systems, and two on quality improvement. Over 250 health care leaders and technicians from the two oblasts participated. This joint participation provided economies in program spending (costs and time needed) as well as inter-oblast networking opportunities.

The workshops provided to *ZdravReform* technical assistance experts a venue for initial presentation of concepts, approaches, options, and analytic tools to counterparts. Lessons learned in the workshops later were implemented with site-by-site technical assistance. For example, the utilization management workshop was a springboard to the formation of pilot sites teams from among local experts, who then worked with *ZdravReform* experts on local issues and objectives. Training materials such as software programs, articles from Western health care journals, and how-to manuals on hospital global budgets, utilization management, and other topics became follow-up tools.

In a grants competition in fall 1995, the *ZdravReform* Small Grants Program awarded \$95,000 to the Kaluga THIF, and distributed grant funds to pilot sites under THIF auspices. The grant reinforced training and technical assistance by funding site capacity development, travel to

ZdravReform pilots in Western Siberia, computer modeling, training materials, and local consultant time to work with pilot projects.

The grant also funded a limited procurement (up to \$15,000) of basic computer hardware and software for the pilot projects.

Also provided were tools such as U.S. and Western European care guidelines, manuals and reference materials, clinically-based software programs, and, in late 1996, a new electronic CD-ROM library incorporating literature on "best practices" in quality, management, and finance/resource use.

Following sections review key technical assistance and training activities related to the substantive areas of financing and resource management, information systems and organization management, and quality improvement.

#### *4.3.1 Financing and Resource Management*

A **Payment Methods Workshop** outlined a number of principles for considering alternative payment systems (see Box 4), then reviewed several incentive-based payment systems for both inpatient and outpatient care. These payment systems approaches included fundholding (described earlier in this paper); case-mix systems (e.g., Diagnosis Related Groups, Clinical Statistical Groups),<sup>12</sup> where a facility receives a fixed payment per hospital stay; global budgets for hospitals; capitation, including the role of contracts and contracting for providers and services under capitation; co-payments, including co-insurance and deductibles for services; and methods for cost analysis and pricing of services.

Participants expressed particular interest in hospital global budgets, in which an aggregate payment is fixed in advance to cover expenditures for specific services during a period of time. It sets a cap for the total budget without designating allocations for individual components. Conceptually, it can be thought of as an old Soviet 18-line item budget compressed into a one-line budget. The purpose of this approach is to i) control expenditure growth for inpatient care (a problem in Kaluga, particularly with regard to volume) by setting a total budget limit, while ii) improving efficiency by allowing flexibility in use of resources within the budget limits.

In addition, presentations were made on the integral roles of financial modeling and of estimating revenues and costs, then explicitly "matching" available revenues to package of cost-effective services. Finally, there were presentations on the importance of complementary management and information systems and quality assurance systems.

In the latter part of the second day, workshop participants divided into smaller working groups, one group for each oblast. ZdravReform experts were assigned to each of these groups. The work groups reached consensus on, then designed a package of integrated funds flows, and new inpatient

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<sup>12</sup> "Case-Mix" refers to the number and type of patients that a hospital admits and treats.

and outpatient payment systems for the pilot sites under the World Bank loan program. The work groups also developed a strategy and timeline for implementation which was used in the MOU between *ZdravReform* and the governor of the oblast (see Boxes 2 and 3).

## Box 4

### Ten General Principles for Choosing a Payment System

- 1) Incentives are important; incentives change behavior. Even though some provider behavior will be unaffected by incentives, enough providers will respond to make a difference.
- 2) Payment Methods are among the two or three most critical aspects of how a country's health care insurance and health care systems are structured.
- 3) Payment methods should pay more to those who do more to improve health outcomes.
- 4) No method is necessarily appropriate for all situations, and none is perfect. Decisionmakers must keep in mind objectives—efficiency, equity, and access.
- 5) Experimentation with different methods is an essential step in every country developing optimal payment methods.
- 6) A method's defining characteristic is the unit of payment. The unit can range from the highly disaggregated (something very small such as per service) to something much larger (capitation).
- 7) Whatever the unit of payment, providers have incentives to increase the number of units, while decreasing their cost per unit.
- 8) The level of financial risk to the provider increases as the unit of payment becomes larger. This requires equal changes and increases in the level of autonomy (flexibility) and managerial ability.
- 9) Payment methods should be kept as simple as possible, even though some complexity is inevitable. Providers must understand fundamental incentives.
- 10) The successful implementation of any payment method depends upon the consistent and accurate availability and reporting of patient data and financial data necessary for its operation.

Note: Adopted from Quinn, 1995

Oblast leaders presented the products of these workgroups to the larger group for discussion and feedback. Figures 2 and 3 present a schematic overview of the funds flow and payment models that were initially developed during the workshop.

In brief, participants concluded that broader pooling of funds would be established, to include emergency care, pharmaceuticals for special population groups, and referral (oblast-level) facilities. A partial fundholding model would be developed for payment of providers, with:

- capitation payments going to the outpatient provider for all outpatient services (including primary care, specialist referrals, paraclinical services, emergency care, pharmaceuticals), plus 20-30 percent of (discretionary) inpatient services; and,

- the remaining 70-80 percent for expected inpatient care volume allocated to the hospital on a global budget basis. The global budget would not be allocated on an 18-category basis, but on a “lump-sum” basis monthly, providing managers with more flexibility and autonomy in use of funds for care.

In addition, there would be incentives to outpatient providers, including:

- fee-for-service payment for “priority services” (e.g., immunizations) on an outpatient basis; and,
- incentive payments to the primary care and “narrow” specialists for reducing the number of specialists.

This was followed a few weeks later by a **Financial Modeling Workshop** for economists, accountants and physicians. Participants heard presentations and studied analytic tools on the following topics:

- significance and utility of pooling and integrating funds from the Oblast Health Authority, the Health Insurance Fund, the local rayon budgets, out-of-pocket revenues, and other sources of revenues from across the oblast, especially in the context of the Russian health insurance reform laws. Pooling and integration of funds can lead to more prudent management of resources, lowered incidence of adverse risk problems, lowered administrative costs, and better purchaser-provider contracts based on quality and efficiency;
- estimating demand for services at the macro (oblast) level, including patterns of utilization and cost by different population groups;
- understanding basic Western concepts in economic analysis: average and marginal analysis, economies of scale and scope, cost-effectiveness and cost-benefit analysis, etc.;
- estimating demand for services at the facility level, both hospital and polyclinic. The director of *ZdravReform/Russia* developed a computer software package for the participants for use after the workshop. The model was based on demand for hospital services in the United States;
- developing a benefits package and modeling costs of including different types of procedures and services, such as new technologies; and,
- discounting, understanding the time value of money, and calculating net present values.

Participants formed workgroups to solve a series of problems, both on paper and using computer models and simple, static spreadsheet analysis. The final day of the workshop was devoted to computer-based analysis of hypothetical issues such as projected savings of decreasing hospital admissions of social cases or introducing new technologies such as lithotripsy.



In the first example, decreased admissions to hospitals provided the opportunity to lower both “fixed” and “variable” costs<sup>13</sup> of hospital care. But an analysis of costs showed most savings came from a real reduction in fixed costs effected through release of staff, and closing of wings (not just beds) and entire facilities. Some of the savings would be channeled into more staff, equipment, and pharmaceuticals in the outpatient setting to accommodate greater flows of patients there. Money would be set aside for training of staff and patient education activities. Savings would not accrue until facilities were closed. If phased-out, the time value of money would have to be calculated to adjust realized savings.

A **Hospital Case-Mix Workshop** focused on development of a simplified case-mix classification system for Tver and Kaluga oblasts. The case groupings would be developed as a simple one category of payment for each admission. Levels of payment would vary only by specialty department (i.e., 16 payment categories if there were 16 clinical departments in hospitals in an oblast), but this simple categorization could be the basis for more refined classification systems in the future.

In each oblast, this case-mix classification scheme could be used for purposes of payment for services and for quality assurance activities. In Tver, the focus on payment related to the oblast’s interest in refining current per admission payment approach (per diem, with adjustments for clinical department and level of facility) and adjusting paying for hospital care within their pilot rayon-based capitation arrangements (Vishniy Volochok, and Kuvshinova pilot rayons). In Kaluga, the case-mix adjusted system could help adjust global budgets which would be developed on an expected case-mix and volume basis.

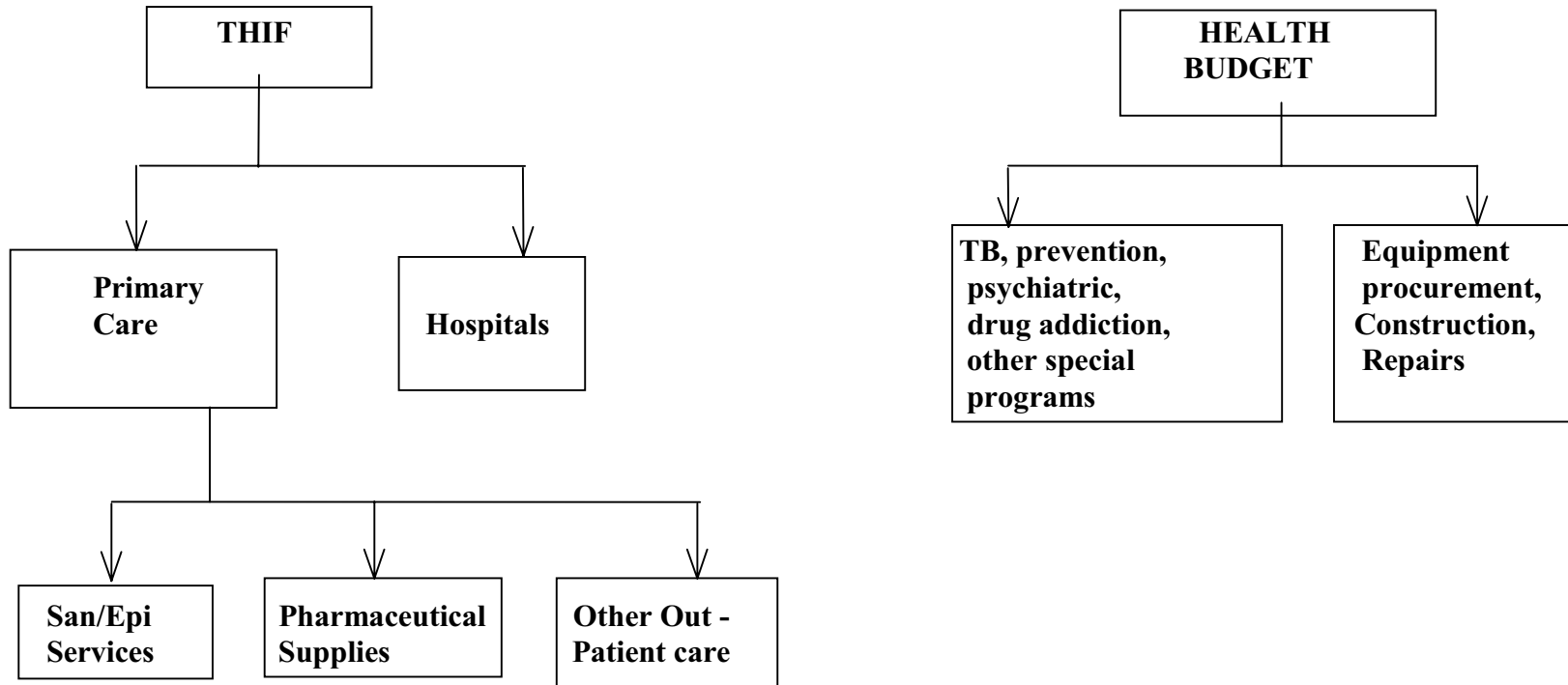
The workshop was held in March 1996, but the process had begun in January. Detailed cost and clinical data were collected from 16 hospitals in Tver and a smaller number of facilities in Kaluga. Four data forms were developed, for hospital-level information, department-level hospital information, total polyclinic-level information, and clinical information. American and Russian analysts in the *ZdravReform/Almaty* office analyzed the information, which was then fed back to conference participants in terms of cost analysis and development of a preliminary case-mix system.

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<sup>13</sup> “Fixed” costs refers to such things as buildings, equipment, utilities that are more or less “fixed,” i.e, they do not vary with volume of services or size of population, and cannot be easily changed in short period of time. “Variable costs” are costs that occur as the volume of services and population change, for example, supplies and pharmaceuticals.

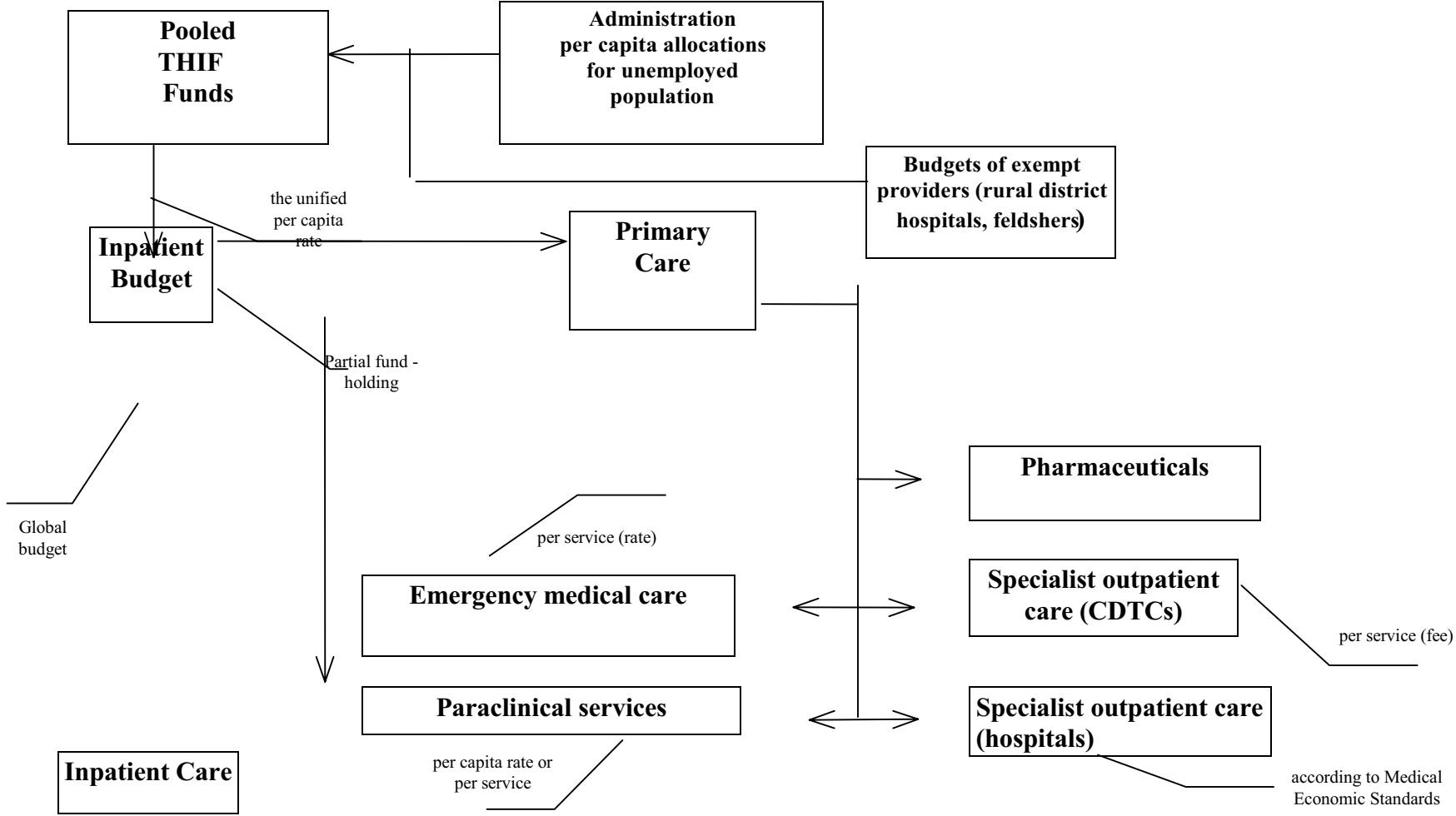
Figure 2

**THE PROPOSED INTEGRATED FINANCING MODEL**



Source: Adapted from Sheiman, 1996

**Figure 3: Partial Fund-Holding Model**



## Box 5

### Designing and Implementing a Global Budget

#### Major Design Issues:

- 1) Establish scope and amount of the global budget: population, types of services, and types of health facilities.
- 2) Identify the formula for allocating the budgets to individual health institutions, health professionals and provider groups.
- 3) Establish the rules of performance, especially the financial sanctions and rewards for budget performance.

#### Steps for Setting Up the Global Budget:

- 1) Establish the base year budget  
*(historic budget trends is most feasible, but may build-in existing inefficiencies)*
- 2) Establish annual adjustment factors, such as inflation, changes in technology, changes in productivity, and changes in patient demographic mix
- 3) Establish rules for budget performance, i.e., who can keep the surplus and who is “at risk” for greater-than-expected expenditures.
- 4) Develop measures of case-intensity or case-mix.
- 5) Identify sources of funds for new services, new health needs, unexpected health needs.
- 6) Establish rules for other, additional sources of revenues outside the global budget.
- 7) Establish rules for special input categories such as capital investments (new buildings or equipment) and medical education.

The workshop focused on several topic areas:

- the British global budget model and experience, recent reforms, and refinements in the health sector in Great Britain. The discussion included effects on efficiency, quality, access, and equity;
- the use of contracts to develop performance targets and, more generally, the implementation of the British reforms, with suggested approaches and lessons for Tver and Kaluga. For example, cost and volume contracts, specifying a price per case and expected volumes of cases by case-mix category, could be developed for hospitals. Model contracts from the Contracts Workshop (see below) were utilized;
- critical role of management autonomy at the facility level and the related roles of administrative, clinical and costing information systems;

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package of manuals, materials, and technical assistance worked out by ZdravReform and the World Bank staff over two visits in April and July of 1996.

- interaction with GP fundholding groups, contractual relationships, methods of partitioning hospital budgets and outpatient payments; and
- suggested steps and approaches for development of global budgets in Kaluga and Tver, with an emphasis on phase-in by the THIF and use by the pilot site hospitals.

In addition to these resource management workshops, a series of technical assistance visits and activities focused on the pilot site work. Dr. Igor Sheiman, *ZdravReform*'s coordinator for Program activities in this oblast, worked intensively with each pilot site on cost accounting methods, contracts, pooling of funds at the rayon level, and development of capitation rates.

Other Russian experts, working as *ZdravReform* consultants, also played key roles. Edward Freed (an actuary) and Natalia Matveeva (an economist), both from Kemerovo, worked with pilot sites and the Territorial Fund. Freed (see, for example, Freed, February 1996) developed global budget allocation amounts for rayons and individual facilities, based on population and adjusted for age/sex differences.

His work was hampered by aggregate-only (vs. person-based) data systems, and he developed recommendations for improving data collection for future analysis. Matveeva (see her report of February 1996, and the tables in Appendix A of this case study) developed detailed spending and utilization patterns (e.g., visits, admissions, ALOS by type of case) for Maloyaroslavets rayon for use in profiling physicians and patterns of care. These data can be used by physicians and decisionmakers for then re-organizing care for more efficient delivery of services.

#### 4.3.2 *Information Systems and Organizational Management*

The work in this technical area began with study tours on medical records and systems management in the United States in spring 1995.

*ZdravReform* technical consultants also met on different occasions with Kaluga oblast health officials and technicians to develop a plan of action for automating health sector management activities to support reform objectives. Consultants included Moscow-based *ZdravReform* staff as well as expert Russian consultants Leonid Malkov (February/March 1996) and Anatoly Vorobyov of the Federal Health Insurance Fund (June 1996). In addition, the Oblast Health Authority and THIF worked together on a plan of action.

Kaluga counterparts also were provided access and funds to visit and work with counterparts in Kemerovo and Barnaul, where there is testing and development of software systems related to polyclinics (the "Polyclinic Manager" software system<sup>16</sup>) and the Territorial Fund tracking software

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<sup>16</sup> The "Polyclinic Manager" is a software program developed by Russian programmers, economists, physicians, and administrators. It is based on earlier software developed under the name "ARENA." The first three versions of ARENA were developed and installed in over 500 polyclinics throughout Russia between 1980 and 1984. The new software is in the public domain (under U.S. law) and available to all who request it. The system is a patient-oriented relational data base which includes six integrated program modules:

- 1) patient registration and appointment module;
- 2) clinical statistical module;

## Box 6

### Contracts and Health Sector Reform

Three types of contracts are normally used under a purchaser-provider split in health care delivery:

- **Block Contracts**—in which the purchaser agrees to pay a fee in exchange for access to a broadly defined range of services. This type of contract predominates due to lack of information; in its simplest form, there is no specification of either cost per patient or volume. Increasingly, however, indicative levels of service and detailed specifications are being written into these contracts;
- **Cost and Volume Contracts**—in which payment for specific services is more explicitly related to services being offered. Payments also can be differentiated in accordance with level of service (e.g., high, medium, low) rendered for categories of patients;
- **Cost Per Case Contracts**—in which a single cost is set for each item of service. Its use has been limited because the level of detail and precision of information needed on cost of individual treatments is not often available.

system. Kaluga will use the systems to better track funds flows, utilization, and quality various system levels of care delivery.

Workshops developed approaches to improved internal management of organizations and care delivery.

The **Contracts Workshop** focused on the process of contracting as a method for making explicit the way of organizing and delivering services, and the expected performance of delivery of these services and associated outcomes. In most industrialized countries, contracting has become integral in light of changes to the traditional purchase-provider split between financing of care and the provision of care. The contract requires transparency of accountabilities and expectations. It encourages advance planning and preparation by both parties to live within the new definitions of performance.

Contracts define relationships between categories of participants in any health care system. Types of contracts vary widely. The typology of contracting is based on the following criteria: i) contracting parties, ii) legal status of contracts, iii) contents of contracting, and iv) comprehensiveness of contracting (i.e., level and scope, such as bilateral or multilateral relationships).

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- 3) financial management module;
  - 4) clinical outcomes management module;
  - 5) electronic medical record module; and,
  - 6) resource management module for scheduling and associated productivity management.

The program is written in Paradox for Windows. It supports either network or freestanding PC applications. Hardware requirements include at least a 486 processor, 8 megabytes of RAM, and 540mb of hard disk. The program includes the source code for development and maintenance of all linked data files; all menu-driven data input screens; and a series of standard screens and hard copy reports.

The workshop provided training in the concepts of contracting and worked with participants in small groups to develop contracting models for each oblast based on individual organizational, payment system, and quality improvement reforms. The workshop developed a base of principles that could be used to work with pilot sites in the following days to develop site-specific contracting processes and strategies. Model contracts (in Russian) were provided from the United States (e.g., managed care organizations) and from other oblasts in Russia, specifically from Kemerovo and from Tomsk. Small group sessions enabled participants to develop draft contracts based on pilot site models of organizational reform.

### **Box 7**

#### **Creating a “Waiver” Document for Approving Pilot Programs**

A “waiver” document “waives” current laws and regulations for a time-limited period for the purpose of testing and evaluating the feasibility of new ideas and innovations. Guidelines for developing “waiver” documents and a “waiver” process include:

- 1) **Criteria for Consideration**—Any pilot or demonstration program should be considered on the basis that an innovative program or approach will meet pre-specified criteria, such as improved efficiency, cost-effectiveness, and quality of services delivered.
- 2) **Defined Time Period for Testing**—Create a time-limited period of demonstration of impacts (e.g., 3-5 years), to insulate the pilot program from politicization and changes in leadership. This time limitation also allows for evaluation and refinement.
- 3) **Simplicity**—Develop a waiver document, but keep it as simple as possible. It is a public contract which states goals and objectives, subject to explicit parameters for both initial approval and its continuation.
- 4) **Parameters for Approval and Continuation**—Approving initial testing and continuation of program can be based on factors such as i) no adverse impact on public budgets, ii) no lessening of quality, access, or equity of care.
- 5) **Signing of Agreement**—It should be signed by appropriate local, oblast, and central-level officials.
- 6) **Does the Innovation Work?**—Set out a system of monitoring and rigorous evaluation, both to protect patients if there is an issue of deteriorating quality, and to disseminate and replicate lessons if there are benefits from the demonstration program.

The focus in Tver was on developing model contracts for the information center, such that there would be information sharing arrangements across multiple organizations—THIF, Oblast Health Authority, and facilities—to collect, process, and generate information on health utilization and outcomes, demographics, patterns of spending, and so on. The Kaluga contractual arrangements already in place served as a model for Tver oblast.

In addition, Tver pilot sites expressed concern that the use of normatives would slow down the process of reform. A model "waiver" document was developed (in English and Russian) for the oblast governor’s signature that would allow pilot sites to develop and implement new approaches for payment, quality, and increased organizational autonomy. The simple two-page document

granted flexibility from old normatives for budgeting and provider payment systems, staffing normatives, and the old quality control system of financial sanctions. It stated that designated pilot sites could “make local decisions and implement innovative programs” subject to no diminishing loss in quality or access to care. *The waiver was signed in May 1996 by Governor Platov.*



A **Utilization Management (UM) Workshop** helped establish a process of setting up procedures to enable maximum efficiency in the use of resources for patient care. UM is an essential tool when operating under prospective per admission, per capita and global budget payment incentives. In a sense, UM is the management tool that “bridges” both development and changes in quality and payment systems development.

The workshop provided training in UM concepts and was a forum to draft UM models for each oblast based on individual payment and quality improvement reforms. Workshop participants developed a base of principles for work with pilot sites in the following weeks that led to site-specific UM processes and strategies.

The workshop reviewed and explained topics such as referral controls, hospital admission criteria, concurrent review, and retrospective review. Concurrent review takes place on a day-to-day basis, simultaneous with patient care processes. Retrospective review examines in summary the appropriateness and necessity of the previous treatment course that a patient received after discharge from a facility.

Polyclinic, general hospital and specialty hospital leaders were grouped together. Each group developed plans to decrease unnecessary admissions (e.g., outpatient surgeries; "social cases" which could be referred to nursing homes or day care centers), shorten length of stay (e.g., pre-admission testing; discharge planning), and encourage physician productivity (e.g., profiling). These groups also worked on forms development and chronic care management.

#### 4.3.3 *Quality Improvement*

ZdravReform/Russia’s CQI specialist Stanley H. Tillinghast, a medical doctor, along with two Russian physicians, Valery Tjerniavsky in 1995 and Anna Karatkova in 1996, provided leadership in this technical area.

A **Quality Improvement Workshop** in early fall 1995 in Kaluga brought together physicians and leaders from the oblast Territorial Funds and Health Authorities to introduce CQI concepts and approaches. The workshop reviewed "structure-process-outcomes" approaches used in the United States and most Western countries over the last 2-3 decades. There also was a review of the practices current in most of the former Soviet Union, which rely on punitive-based quality control reviews of practices and peer-review based Medical Economic Standards.<sup>17</sup>

The workshop then focused on the more recent activity in Western countries related to changes in psychology of the medical community and subsequent changes in approach to quality. This includes both assuring and always attempting to improve quality of care, such as through the CQI process, which relies on reporting and examination of problems to ultimately develop improved interventions.

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<sup>17</sup> Medical Economic Standards typically has norms for diagnosis, treatments, and some measures of resource use such as length of hospital stay.

In addition, there was a discussion of using outcome-based or evidence-based clinical guidelines in medicine. Critical pathways also were discussed as a tool for guiding clinical decisionmaking.

Dr. Oksana Tchkaida, a physician from the President's Hospital in Moscow, presented early findings from the hospital's use of evidence-based quality improvement programs, which focus on a limited number of interventions including surgeries. The program was initiated through the U.S.-based American International Health Alliance (AIHA) Hospital Partnerships program and nurtured through the *ZdravReform* grant program.

Additional topic areas focused on the pivotal role of well-designed information systems to track approaches to care, to profile individual physician practices, and to use the information later in the integration of care approaches.

The workshop used a manual for developing a quality assurance and CQI program which was modified from one developed for a *ZdravReform* workshop in Novosibirsk in spring 1995. Participants also received examples of U.S.-based clinical guidelines to specific diseases, and examples of critical pathways.

An **Infection Control Workshop**, in Kaluga in April 1996, built upon the CQI workshop by discussing specific applications of CQI concepts. The workshop reviewed techniques and approaches used for infection control in the United States. It related previously discussed concepts to Continuous Quality Development (CQD). For example, the CQD process carefully collects information and provides comparative statistics to identify "best practices," and it rewards innovation and improved approaches. Current Russian quality control uses reporting of problems to punish providers through fines and sanctions. This often results in dramatic underreporting of incidence of infections rather than in improved quality of care.

Kaluga Emergency Hospital provided such an illustration of the traditional approach. In the last year, there were zero reported wound infections, even though a casual round in the hospital Intensive Care Unit revealed at least one infection. No reported wound infections at a major hospital in one year is unheard of by Western standards. But, because Russian physicians can be fined up to an equivalent of two months of salary, they are reluctant to report infections.

The workshop broke into working groups to develop indicators, and the technical assistance team followed up the workshop with visits to individual facilities in both oblasts for intensive on-site application of principles learned in the training program

In addition to the workshops, activity in this technical area has included:

- development of CQI teams in each pilot site, with pilot site activities linked with the THIF monitoring systems and indicators;
- care indicators development, including inpatient and ambulatory indicators adapted from models developed in *ZdravReform* sites in Western Siberia (see Attachment B); and

- linkages of quality indicators with payment incentive schemes.

Kaluga and Tver oblasts each have initiated new process improvement indicators based on workshop experience, related to clinical areas such as preventive immunizations, “delayed care” such as advanced stages of TB and cancer, improved status indicators for inpatient stays infection rates, and infant mortality rates.

Some sites have started to collect data from the previous three years to track trends and identify positive changes in approach. Some pilot sites have tied these indicators to payment incentives through bonus pools. For example, use of immunization and preventive care indicators are used for calculating payouts from physician bonus pools.

Quality of care materials from the U.S. Agency for Health Care Policy and Research (AHCPR) and other U.S.-based organizations have been translated and disseminated, including 30 to 40 clinical guidelines on areas such as unstable angina, hypertension, asthma, pneumonia, ulcer and congestive heart failure.

Finally, the “Polyclinic Manager” software system, mentioned above, is available from the Kemerovo testing sites to update the current ARENA I system now in place in both Tver and Kaluga. In Kemerovo, the baseline data collection for the new system began in June and will be available for application in Central Russia oblasts in fall 1996. This software system promises improvement in areas of i) utilization tracking and ii) clinical outcomes management.

## **5.0 FINDINGS, RESULTS, PRELIMINARY IMPACTS**

Results to date in Kaluga have been generally positive, with a number of pilot sites reporting progress in development of new payment methods and use of financial resources. As of the end of 1996, a few facilities had moved to implementation, while other sites were developing final details of action for full implementation.

The payment models ultimately chosen by the sites have been a per capita-based (“rayon-at-risk”) model for rayons, and a partial fundholding/global budget for urban polyclinic and hospital sites, as discussed above (see Figure 3). Polyclinics will implement fundholding for services such as primary care, diagnostic and therapeutic specialty referrals (within polyclinic structure), paraclinical services, emergency care, and pharmacies; plus 20-30 percent of inpatient care (e.g., discretionary services). Global budgets for hospitals will be “one-line item” budgets based on expected case-mix and volume of the remaining 70-80 percent of inpatient care. Hospitals in the individual rayon sites will be paid on a completed case basis using case-mix or some version of clinical statistical groups.

Pilot sites have each reported work relating to tracking inpatient and outpatient costs. Patient flows, an area of activity especially relevant to the rayon-level pilot sites, have been analyzed.

Each pilot site has embraced UM processes. Data were collected and analyzed, with a focus on identifying:

- inappropriate admissions;
- pre-admission duplication;
- opportunity for shortening lengths-of-stay; and,
- alternatives to hospital care, such as care on an outpatient basis or in day care centers for “social cases.”

These analyses were used to develop an appropriate payment level for pilot sites. Other steps in negotiating an at-risk agreement are summarized in Box 8.

### **Box 8**

**General Steps:  
Developing an “At-Risk” Global Budget for Hospitals  
and  
Partial Fundholding Budgets for Polyclinics**

**Kaluga Pilot Sites**

- 1) Develop a “baseline” (1-3 year) data base of patient utilization and costs.
- 2) Analyze utilization patterns, including patient flows, across facilities and geographic areas (e.g., outside of rayon).
- 3) Analyze expenditure patterns by:
  - demographics (age/sex)
  - mix of patients (e.g., by diagnostic categories).
- 4) Adjust per capita budgets for differences in costs across age/sex groups in a particular catchment area served.
- 5) Adjust budgets for differences in patterns of utilization.
- 6) Subtract from this “base budget” target levels of inappropriate and unnecessary patterns of care and associated costs, for example, inappropriate admissions, pre-admission duplication of testing, and alternatives to hospital care such as outpatient care or day care centers care for “social cases.”
- 7) Develop a draft budget of appropriate and necessary care, based on expected volume and case-mix.
- 8) Develop a sharing agreement on who receives expected surpluses generated by new efficiencies, typically apportioned to both facility and to the Territorial Fund (payer).
- 9) Develop rules for unexpected risk related to levels of patient demand and or expenditures.
- 10) Conclude final negotiation and signing of contract.

Work on physician incentives has seen the least progress or change to existing policies and practices. Some sites have developed a “positive” physician incentive bonus strategy based on principles of CQI. Some sites have reported physician payment based on a “completed case” system, but they have given no details.

In general, though, physicians at pilot sites receive a base or minimum salary, plus are eligible for additional compensation through incentives. There is typically a department-based bonus fund, whereby a portion of the salary fund, plus a portion of surplus funds under the “at-risk” arrangement,<sup>18</sup> are set aside to distribute as tax-free bonuses.<sup>19</sup> Criteria for distributing bonuses depends typically on three factors: i) health indicators related to efficiency and quality; ii) “intensity points” related to case-mix, difficulty of services, conformance with administrative and clinical norms, and productivity factors; and iii) local work team criteria. These criteria are used in a somewhat complicated formula that establishes a base level of points needed and caps the bonus amount at some percentage of salary level (e.g., 100 percent). A list of illustrative criteria is given in Box 9. In general, the oblast will need to improve criteria along two dimensions: i) efficiency measures, such as lowered numbers of inappropriate admissions and lowered specialist referrals, and ii) “positive” indicators tied to quality improvement, while dropping sanctions related to old Soviet quality control approaches.

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<sup>18</sup> This portion or percentage is usually at the discretion of the facility itself.

<sup>19</sup> Under Russian law, bonuses are not subject to the same taxes as salaries effectively increasing the relative value of these payouts.

## Box 9

### Illustrative Indices for Physician Incentives

Indices	Measuring Unit	Standard	Assessment in points	
			Initial Point	Deviation Unit
1. Complications in diabetes, coma	% of the registered	0.02%	1	+ - 0.5 for 0.01%
2. Aggravation of asthma bronchi	% of the registered	17%	2	+ - 1 for 1%
3. Gastro-intestinal hemorrhages caused by ulcer disease	% of the registered	0.03%	4	+ - 0.5 for 0.1%
4. Patients with Ischemic Heart Disease (ISD) fatal outcome under 60	% of the registered	0.04%	1	+ - 0.5 for 0.1%
5. Patients suffering insults or crisis	% of the registered	0.1%	1	+ - 0.5 for 0.5%
6. Cancer cases detected at 1st and 2nd stages	case		5	5 for 1 case
7. Divergence between the out-patient clinic and hospital diagnosis	% of planned hospitalizations	3.8%	1	+ - 0.5 for 1%
8. Median sick leave rate due to: IHD ulcer diseases	days	13.7 16.0	5 5	1 for 1 day
9. Number of citizens not x-rayed for 2 or more years	% of those subject	15%	4	+ - 1 for 1
10. Compliance with supervision and treatment standards according to 50 ambulant records	% of norm	85%	5	+ - 1 for 1%
11. Mammary gland cancer detected at 3rd and 4th stages	case		2	- 2 for case
12. Grounded complaints	case	0	0	- 0.5 for case
13. Hospitalization rate due to all diseases	cases/1,000	220.0	10	+ - 1 for 10 cases
14. Hospitalization rate due to therapeutic reasons	cases/1,000	110.0	10	+ - 1 for 10 cases
15. Ambulance call rate by chronic diseased	cases/1,000		5	+ - 1 for 10 cases
16. Patients treated in day-care hospital	case		5	+ 0.05 for case

## 5.1 Pilot Site Profiles

Expected implementation dates for the sites range from summer 1996 to early 1997. The following sections give site-by-site profiles of the pilots. The profiles include background information, progress to date, and challenges that remain. Table 3 provides an example of the historic level of funding for each site, and it illustrates that most revenues for these sites come from the Territorial Fund.

<b>Table 3</b>				
<b>1994 Revenues by Source: Pilot Sites</b>				
<b>(000 rubles)</b>				
	<b>Territorial Fund</b>	<b>Oblast</b>	<b>Local (Rayon/City)</b>	<b>Other<sup>20</sup></b>
<b>Polyclinic No. 1</b>	356.7	227.3		5
<b>Polyclinic No. 5</b>	598.8	398.2		110.8
<b>Emergency Hospital</b>	2871.3	921.2		200.0
<b>Children's Network</b>	346.8	2569.9	66	63.5
<b>Ferzikovo Rayon</b>	767.4	297.6		
<b>Maloyaroslavets Rayon</b>	1758.5	1205.5	50	

### 5.1.1 Kaluga City Emergency Hospital

The Emergency Hospital is a referral facility for entire oblast. It has 450 beds and 660 staff. The bed size has been decreasing: In 1994 the hospital had 560 beds; by September 1995, this number had been reduced by 50, to 510 beds. The 1996 number reflects an additional reduction of 60 beds (40 in gynecology, 20 in urology). Space has been provided for an outpatient surgery center. Ninety-nine staff slots have been eliminated, 79 of them through attrition.

Approximately 10 beds in every department (average bed size of 40) have been converted to "rehabilitation" beds. This move eliminated 20 staff positions. The "rehab" beds have saved the

<sup>20</sup> From out-of-pocket payments, employer contracts, Chernobyl Fund Program, and donations.

hospital 8.7 percent in cost per average bed day. The hospital's chief doctor apportions the cost structure of a bed day to the following percentages: 20 percent utilities, 27 percent salaries, 43 percent medications, and 10 percent food.

The hospital has 110 physicians, most are surgical specialists; 20 are intensivists. Only eight are therapists, the Soviet equivalent of primary care physician. Most beds are in surgical units; only 90 beds are non-surgical (infectious diseases and medical therapy). A large emergency center is open 7 days a week, 24 hours a day, and receives referrals from all over the city.

Stated goals of hospital are to i) open an outpatient surgical center with funds received from the World Bank loan; ii) reduce ALOS from 14 to 10 days (the criteria for choosing this lowered number are not clear); iii) increase the share of admissions for emergency surgeries from 56 percent to 70-80 percent; iv) reduce unnecessary admissions; v) refer more planned (referred) surgeries to the nearby Railroad Hospital, which has 70 surgical beds. Currently the emergency/planned ratio is 80/20. The facility wants the global budget to cover emergency cases, and use retrospective case-based payment for planned cases.

The facility has developed an on-site health reform team, which includes the deputy chief doctor, the chief economist, a programmer, and others. To more precisely estimate its global budget, the hospital has reviewed its caseload; physician expert groups categorized 30 percent of cases as inappropriate admissions or as cases where patients can be discharged earlier for treatment in another hospital or other setting. One obstacle to reducing inappropriate admissions is that about 70 percent of admissions come through ambulance delivery.

Specifically, four types of cases were identified for potential savings:

- treatment can take place at an outpatient center;
- admission should be to a less intensive hospital;
- patient is stabilized and can be referred within 48 hours to a less intensive inpatient treatment setting; or
- patient can be discharged earlier than currently is customary and can be referred for outpatient polyclinic care, day care, or home care.

The hospital calculated costs per case from these projected reductions in admissions and lengths of stay and applied the savings to the overall global budget.

The global budget will be implemented in January 1997, based on expected volume and case-mix. Above a threshold of cases, the Fund will reimburse the Hospital on an individual case basis. No rules for fewer-than-expected cases exist; the hospital will keep the entire surplus. The Fund will hold a reserve fund for higher volume and/or severity than estimated.

The hospital will maintain a 10 percent withhold fund for staff bonuses, awarded on volume and quality of work. Quality standards are tied in to compliance with Medical Economic Standards, plus other measures: re-hospitalization, inappropriate admissions, missed diagnoses, unplanned



referrals to the ICU, re-operations, post-surgical mortality, and overall mortality. Indicators vary by individual clinical and paraclinical departments. Many of these indicators came from the *ZdravReform* CQI technical assistance work and are mixed-in with the old punitive fines and penalties system.

Both physicians and non-physicians, such as union leaders, take part in a broad peer review system that judges compliance with standards. The peer review system has been in place for four years, and the chief doctor reports it's encouragement of quality care has helped to reduce queues and to increase access to surgical care.

The hospital has at its own expense three positions—epidemiologist, clinical pharmacologist, and quality coordinator—that originally were planned to be paid by the World Bank loan program.

### *5.1.2 Polyclinic No. 1*

Polyclinic No. 1 has a medical staff of 44 physicians, of whom 12 are therapists, seven are obstetricians/gynecologists, and seven are dentists. In 1995, it had a catchment area of 30,000 adults. In 1994, its reported 170,524 physician/patient encounters, about 80 percent of which were visits to the polyclinic; another 20 percent were home visits from physicians.

The polyclinic has kept costs low in several ways: For example, in 1995 the polyclinic had the lowest rate of hospital referrals in Kaluga oblast (but still an astoundingly high 33 patients per 100). This is due to its “second opinion” program and referral criteria relating to general condition, with a range of indicators and level of severity. Referrals to any hospital are possible, though there are strong administrative disincentives to refer to the oblast hospital, because it is more expensive per admission.

There has been “shopping” on the basis of quality of care, but until recently no comparisons on the basis of price (other than the oblast hospital) since there was no incentive. The polyclinic has a women’s consultation center and in the past year has established a day-care center, which has the potential to lower referrals to hospitals. Utility costs are low, too, because of the compact, one-floor polyclinic structure. The polyclinic participated in Kaluga’s fundholding experiment in 1991-92, and its administrators claim familiarity with Western cost accounting approaches, financial modeling, and quality assurance for new incentives.

The Territorial Fund did an analysis of inpatient costs for 1993-95 for each urban referral hospital, which included ALOS and bed-day costs by diagnostic category. On basis of this cost analysis, the polyclinic developed contracts with three referral hospitals.

Since May 1996, the polyclinic has operated under a fundholding contract with the Territorial Fund. The capitation rate that the Fund pays to the polyclinic is based on the three-year cost analysis data base. In addition, the Fund estimated savings it would realize from cases that once were referred to hospitals but now would be treated on an outpatient basis, in day care or home care. It incorporated the cost of such cases, including associated costs of pharmaceuticals, in the rate paid to the polyclinic.

The polyclinic currently runs a general practice, which pays physicians a salary plus fee-for-service for pre-surgical care, post-surgical care (e.g., removal of bandages), and extra patients (e.g., home care). It plans to establish a second general practice. The polyclinic also will have two therapist groups, one with five therapists and the other with seven; one is located outside the polyclinic.

The general practice has been given partial fundholding for primary care; in the future it will be given additional funds for specialty referrals. *The entire pool of general practitioners will be put at risk as a group.* They are paid a base salary, with a bonus pool that is linked to utilization management processes and improvements in efficiency (e.g., decreases in diagnostic tests, specialist referrals, admissions, plus achieving immunization targets). Specialists will be paid on a fee schedule basis; it should be noted that self-referrals are currently a problem.

Early results of the fundholding experiment, as compared with 1995 include:

- a lower average cost per patient of 13.8 percent; in some cases (specific diagnostic categories) the decrease has been as much as 30 percent;
- referrals in number of patients to the oblast facility has dropped from 131 to 111 per month, from 88 to 62 for cardiology patients; and,
- specialist referrals on an outpatient basis have dropped 29 percent.

The facility has created 12 day-care beds staffed by a physician and a nurse; patient flow is 25-30 per month. It has doubled the number of monthly outpatient surgeries, from 40 to 80 per month. Outpatient surgery rates could increase even further, but lack of supplies and equipment prevent operation at full capacity.

The polyclinic has developed more precise cost estimates for referral and admissions, and these are used in negotiating fees and payments. The facility also has re-worked quality indicators for district therapists, obstetrician/gynecologists, subspecialists and nurses, including compliance with Medical Economic Standards and “positive indicators.” The indicators are used for bonus disbursement, which is as much as 30 percent of base salary.

The facility is engaging in employee education programs and seminars. It notes a generally higher morale among staff.

Old software systems are still in place. There is no knowledge of the new software systems developed by *ZdravReform* in Siberia.

### 5.1.3 Polyclinic No. 5

Polyclinic No.5<sup>21</sup> had 40 physicians and 355,217 reported visits in 1994. Several other facilities are affiliated with the polyclinic: a day care center (15 day beds with a 60 visit per day capacity), a smaller polyclinic station across the river from the polyclinic, four feldsher stations (FAPs) in rural areas, and two FAP physicians. The catchment area was 46,000 in 1995, not including 6,500 people who used employer-based clinics.

Polyclinic physicians have historically participated in a bonus pool program, with indicators of quality and performance. If the physicians meet a threshold or performance target, a pool of funds is released to the physician group. Decisions for allocation of pool are made by a peer review processes.

There is an associated hospital which is small—it had 70 beds, 1,397 discharges, and 27,771 total bed-days in 1994—so referrals are often to other hospitals. In fact, most admissions are “easy” cases based on “social” rather than medical criteria. Referrals are based on price and quality. There is no cost savings incentives for referring to least expensive site, but there are strong retrospective administrative controls to refer do so.

Referrals from the polyclinic to the hospital have increased significantly in last few years due to: i) incentives for increased admissions (payment on a per case basis), ii) lack of pharmaceutical coverage for outpatients, and iii) a lack of incentives to lower or stop the increase in admissions. Polyclinic managers expressed interest in obtaining new funding to increase capacity for emergency care in polyclinic; this could reduce overall numbers of inpatient referrals.

As mentioned above, the Territorial Fund analyzed inpatient patient flow and costs for each urban referral hospital in Kaluga for 1993-95, including average lengths of stay and bed-day costs by diagnostic category. The analysis caused the polyclinic/hospital to identify opportunities for cutting admissions or increasing efficiencies in the delivery of care in three areas:

- inappropriate admissions;
- duplication of tests and pre-admission testing; and,
- earlier discharge/referral of hospitalized patients to alternative treatment settings, such as day care.

As a result, the polyclinic adopted new protocols for outpatient services: referral criteria for day care, referral criteria to the hospital, and diagnostic protocols for general practitioners and sub-specialists.

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<sup>21</sup> Total expenditures in 1994 were broken out by polyclinic and its associated hospital: hospital expenditures were 286,629,500 rubles, of which 234,548,700 came from the Territorial Fund, 50,337,500 came from the Oblast Health Authority, and 1,743,500 came from out-of-pocket payments for individual services. The polyclinic expenditures were 1,107,826,000 rubles of which 598,784,700 came from the Territorial Fund, 398,276,200 from Health Authority, 7,500,000 came from the Chernobyl program fund, and 103,265,100 came from out-of-pocket payments.

As described above, the Fund estimated its savings from having the polyclinic assume care responsibilities now referred to inpatient facilities, and it incorporated the additional cases into the outpatient capitation rate. A fundholding contract between the Fund and the polyclinic was signed in August 1996 and was implemented in September. At the time this case study was written, they had no results to report except for “higher morale” on the part of the polyclinic staff.

The polyclinic will have 13 therapists in one primary care group, which will have a single fundholding account. There will be three pools of funds: polyclinic, outpatient referrals (specialists), and hospital care. Costing and pricing of all polyclinic, day care and paraclinical services were completed in summer 1996. Payment rates were developed as well as a negotiated fee schedule for specialists and per case negotiated rates for referrals. From the fundholding account, the polyclinic will develop a salary pool for bonuses. The facility will cut staff through attrition and use extra budget for increasing bonus pools. The Oblast Health Authority will continue to pay for pharmaceuticals and ambulance care. Today, there are 3 trained GPs working in the polyclinic.

The physician bonus system has estimated that bonuses will be 25 percent of base salary, but this tracking of performance and distribution of bonuses is on paper only; no payment has been made due to lack of revenues from the Fund. Distribution indicators are similar to the ones outlined in Box 9. The indicators are weighted according to policy priorities at any point in time. Currently, the priority is lowering admissions.

The polyclinic/hospital complex also may negotiate a contract with the Emergency Hospital for two-way referrals. The Emergency Hospital would receive all emergency cases, and Polyclinic/Hospital No.5 would take Emergency Hospital patients for pre-operative admission testing and also post-operative sub-acute patients following surgery. This could mean a shift in beds to day care or skilled nursing beds at the polyclinic.

As with Polyclinic No.1, old software systems still are in place, although some have been updated. For example, there is the installation of new software (“ReStar”) for purposes of financial management and quality tracking. It contains 5,000 codes for individual services, based on the standard MOH coding system of 52,000 codes updated just recently. Again, there is no knowledge of new *ZdravReform* software systems developed in Siberia.

#### *5.1.4 Kaluga City Children’s Hospital and Network*

The Kaluga City Children’s Hospital and Network is a vertical network hierarchy for children's care; approximately 68,000 children are served. Currently, a local network is being developed. There is a 300 bed hospital, with multiple departments: resuscitation, primary care, ENT, neurology, neonatology, “0-3 years,” chronic care, and others. (There is no maternity hospital.) For outpatient care, there is a main polyclinic for diagnostic tests and six outreach branches. There are home visits as well. The outpatient care network is not legally organized but has developed common goals, such as diagnostic screening and morbidity rate targets. The network’s stated goals

of reform are i) increased efficiency, ii) increased primary care, and, iii) restructured organization and delivery of care.

The hospital currently uses the traditional 18 budget categories with Oblast Health Authority. It has used some “interpayments” arrangement in polyclinic and about 2 percent of funds are held for a physician bonus pool.

Importantly, the network will need political support of Oblast Health Authority and the City Health Department since it is planning to move under the Territorial Fund. It will move to payment by capitation for the network of care, with either main polyclinic or hospital as fundholder. Interestingly, the network expects to receive more funds under capitation arrangement.

*ZdravReform* suggested fundholding for six polyclinics; the polyclinics agreed and hope to implement fundholding in early in 1997. Primary care doctors will receive funds for primary care, specialty care, and 20-30 percent of hospital care. Payment to physicians initially will be salary plus bonus. Ambulance care will continue to be paid from the oblast budget.

The hospital will be paid on a global budget basis, adjusted by DRG categories. About 80 categories are being developed, based on following classification categories and adjusters: diagnosis (with an emphasis on high volume categories), age, sex, referrals, and utilization of pharmaceuticals. Some adjusters for “severity” are being considered. Analysis has shown that a fee schedule (vs. salary) approach for specialty referrals could generate savings. Savings estimates were also generated for reduced ALOS, reductions in tests, and reduced infections; altogether, savings estimates were about 25 percent of total hospital budget for care.

The facility administrator and Territorial Fund also report activity related to:

- analysis of utilization patterns, including ALOS;
- inappropriate tests/diagnostics;
- iatrogenic infections, referrals, and specialty consultations.

*ZdravReform* economist Dr. Tatyana Makarova provided technical assistance in internal costing approaches to the Children’s Hospital and Network, and the Program provided funds for collaboration with colleagues at the Children’s Hospital in Tver, where micro-costing analysis has been underway for two years. Costs are being calculated now by department.

There has been less emphasis by *ZdravReform* on this site because it will not continue as a pilot site after the Program contract expires. Work under the Bank loan program also will cease due to concerns that assistance only reinforces the outdated vertical delivery system of care. Public health experts generally agree that health systems that focus on vertical integration of a single service—for example, pediatric care—are not cost effective. Integrating pediatric services with other health care delivery services (horizontal integration) achieves better results.

### 5.1.5 *Maloyaroslavets Rayon*

Maloyaroslavets rayon has been a leader in health reform in Kaluga and Tver oblasts. Several reform groups have been established: a leadership group, a specialty care, an economics group, and a quality group. In addition to the central rayon hospital and polyclinic, participating rayon facilities include i) the dental polyclinic at central facility site, ii) the emergency center at central facility, iii) a milk kitchen for children 0-1 years, iv) a district hospital, v) three ambulatory centers, and vi) 31 FAPs.

The catchment area in 1995 was approximately 51,000 persons, 27,000 of whom lived in urban areas. This is a relatively large rayon. It is a center of highway transportation links and has a good revenue base from industry, which contributes 12 percent of overall oblast revenues.

The central rayon hospital has 240 beds, down from 300 beds two years ago. It has nine departments: surgery (50 beds), traumatology (30 beds), gynecology (30 beds), maternity (20 beds), neurology (20 beds), infectious diseases (30 beds), internal diseases (60 beds), rehabilitation (3 beds). About 160 of 240 beds are surgical beds. The rayon employs 106 physicians, 16 of which are hospital-based. Sixteen are internists and 10 are pediatricians. There are 480 nurses. There are a reported 600 visits per day. A new central rayon hospital building was started but construction was halted due to funding problems

The rayon is building a new rural district hospital. The current one has 50 beds; the new one will have 120 beds and is intended to be a post-acute/skilled nursing facility care.

Currently, outpatient care is reimbursed on a per visit basis subject to overall budget cap. Paraclinical services are paid on a line-item budget basis. A new financing plan will fully integrate/pool all revenue sources—local/rayon, Territorial Fund, and Oblast Authority—and the rayon will develop a separate fund account organization for disbursement for all care. The payment design chosen by the rayon is similar to other sites: a capitation "rayon-at-risk" arrangement with increased facility autonomy. There is interest in global budget arrangements for inpatient care and in fundholding with bonus pool arrangements for outpatient care. New family and general practices will receive capitation payment in 1997. Fundholders will pay for specialists, paraclinicals, ambulance, and pharmaceuticals. The rayon wants to include 1-2 drugstores in urban areas and all pharmacies in rural areas in the capitation arrangement.

There will be new GP-fundholding practices within polyclinic structure. District therapists will become general practitioners, and they will be allowed to join with pediatricians and obstetrician/gynecologists to form family care groups. There will be polyclinic-based fundholding, with secondary fundholding accounts for individual doctors which can be used for base salary plus bonuses. Fundholder will pay for emergency care, pharmaceuticals, outpatient care and discretionary inpatient care (20 percent of inpatient costs on average). Funds will flow to specialists and hospitals through general practitioners. Over time, these general and family groups will move outside the legal structure of polyclinic.

Over the next few years, 17-20 practices (nine of them in urban areas) are planned, using existing ambulatory centers and the polyclinic in the rural district hospital. These practices eventually will be group-based (e.g., therapists and pediatricians), but will start with solo family practitioners. Three rural solo practices will provide care at ambulatory centers in 1997 under the new model. The rayon hopes to establish up to 30 general practices under the World Bank financing program over the next 6-7 years.

There will be a separate consultative, diagnostic and treatment center with specialists and paraclinical services.

In early 1996, several analytic activities were initiated to prepare for the new payment scheme:

- technical consultants from Kemerovo developed cost analysis of inpatient and outpatient costs, including differences in costs across age and gender groups (see Table A-1 in Appendix A);
- technical consultants also developed utilization profiles, such as use of specialist care, types of visits, admissions per capita, patient flows in and out-of the rayon, flows across facilities, use of services by each district (see Tables A-2 through A-7 also in Appendix A).

To develop more precise estimates of the hospital global budget, rayon physician expert groups developed estimates of inappropriate utilization and admissions. An analysis of costs per case were applied to these estimates to add up savings from reduction in admissions. Tables A-8 through A-11 (Appendix A) illustrate this approach for the patients referred out of the rayon to the more expensive oblast hospital. Cost analysis for polyclinic care was used to factor in new, additional costs for expected increases in outpatient care and other sub-acute care such as day care. These analyses have served as models for other pilot sites in the oblast which also are preparing for the new payment approach.

Residual savings were split between inpatient and outpatient care, though exact percentages may favor primary care sector. A figure of 473 million rubles was given to the World Bank staff in June. Finally, there was an analysis of the cost of additional paraclinical services and pharmaceuticals for outpatient care. These estimates were subtracted out of the hospital global budget.

Final calculations of the hospital global budget were done in late 1996. These include:

- costing of the remaining services into the fundholder budget—emergency care, laboratory testing, drug cost benefits, chemical dependency, mental diseases, tuberculosis, obstetrical service points, and community hospitals;
- development of new drug supply model—establishment of pharmacies, requirements of drug prescription procedure, setting up drug reserve stock, and budgeting primary care for drugs; and,

- budgeting general departments of primary care as secondary fundholders.

A cost/volume contract was developed for the global budget payment. There will be a 15 percent risk corridor developed between the Fund and the rayon.

A physician bonus pool was set up based on the following targets: admission reduction, reduction in ALOS adjusted by diagnosis, reduction of duplication of tests, and patient outcomes.

The rayon has also set up a utilization management unit for i) pre-admission testing, ii) admission certification, iii) concurrent review, v) discharge planning, and v) moving social cases to day care centers and skilled nursing facilities.

While the calculations for the general practices and the hospital global budget are final, there is internal discussion with the Territorial Fund as to whether there should be a rural/urban adjuster for the capitation rates to encourage or attract providers to rural areas.

Contracts were expected to be signed in early 1997, with implementation April 1. Estimates of first year impacts include a 12 percent change in numbers of inpatient/outpatient flows (which they estimate could save 10.8 percent of funds), and another 12 percent drop in patients referred to oblast-level facilities (approximately 20 percent savings). The savings estimates do not include expected increases in costs for more intensive outpatient care or numbers of services.

No changes in staffing are expected, although general practitioners in rural areas will be asked at the end of the first year about reducing the number of outreach feldsher stations included in the capitation rate. Some may be eliminated if their closure is not expected to hurt quality. General practices will have a centralized financial tracking and management service provided through the centralized rayon facilities' staff and through a central "Resource Management Committee."

As mentioned above, three general practitioners already are in place with an office outside the polyclinic structure. Each will have a risk pool if the capitation rate is not sufficient; high cost cases will be referred to oblast or federal facilities. Physicians will be paid on the basis on normative salary base plus up to 30 percent in incentive bonuses. The remaining surplus will be used for equipment and supplies—at least initially—and this policy can be reviewed by the Resource Management Committee.

Patient education to discontinue bypassing referral system will be emphasized in 1997. Currently, 18 percent of patients bypass assigned physicians. The goal is to lower it by 60 percent in the first year.

#### *5.1.6 Ferzikovo Rayon*

The Ferzikovo rayon site includes the central hospital and polyclinic and other participating facilities/units in rayon: i) district hospital (30 beds), used for "social" admissions only, ii) 20 FAPs, and iii) three ambulatory centers. The central rayon facility in 1994 was a 210 bed general



acute hospital, with a broad range of surgical and medical units and beds. The catchment area in 1994 was 17,500 (total population of rayon). This is a rural rayon measuring 1,266 square kilometers; it is largely agriculture-based, with only 760 employees employed in non-agricultural jobs.

The rayon is heavily overbedded, with 8.72 beds per 1,000 population. The number of out-of-rayon referrals (about 35 percent in a recent analysis of patient referral patterns) has suggested the need for target caps for inpatient care with accompanying selective contracting with other hospitals in the oblast. Indeed, the rayon has spent much of its time focusing on approaches to convert beds and to refer patients to nearby urban centers for care, especially for specialized care. Closed beds can be converted to other uses as appropriate. Some options have been discussed including use of space for physician living quarters, use of beds for skilled nursing care or hospice care, and selling of assets to private-sector groups.

Reform also has been slowed by the local oblast and rayon elections of November 1996, and generally the rayon has been decimated by the loss of key personnel—the deputy director, the chief economist, and the chief accountant—over the last year. It has lagged behind other pilot sites for several months.

Nevertheless, payment models will be implemented by April 1997. To prepare for this implementation, they have developed a three-year data base for analysis of patient flows, levels of utilization activities, specialist referrals, and estimates of increases in outpatient flows. It will have two general practices initially, with plans for five independent general practices and one group practice within the polyclinic.

They are implementing management restructuring in parallel with payment reforms, including:

- shutting down half of the central rayon hospital, from 210 to 115 beds;
- developing a referral structure for sending patients to the city hospitals to which most patients now self-refer;
- shutting a maternity wing of the central rayon facility while expanding the outpatient Mother Child Health center for prenatal care;
- consolidating laboratory and pharmacy services; and,
- providing staff with vacation time when patient demand is low (summer months).

They have also closed the local district hospital of 30 beds. (It has been taken over by the oblast psychiatric hospital.)

## 6.0 DISCUSSION

Reform activities in Kaluga oblast have utilized World Bank expertise and *Zdrav Reform* Siberian products in financing and resource management (e.g., Freed and Matveeva), management and information systems (e.g., Polyclinic Manager software) and quality improvement (e.g., ambulatory care indicators). Indeed, the original rationale for *Zdrav Reform* activity in Central Russia stemmed from the ability and opportunity to work with counterparts that "rolled-out" products from elsewhere in the NIS. The rationale also emphasized the two oblasts' proximity to Moscow leadership and Kaluga's "average" profile relative to other Russian oblasts in terms of demographics, health status, and level of readiness for health sector reform activities.

The leverage of the \$80 million World Bank Loan program was a strong motivating factor to resolve technical and political challenges to reform. Indeed, the Kaluga pilot site profiles demonstrate a commitment to change and a systematic approach to design and implement reforms. A recent World Bank team on-site evaluation in Kaluga in June 1996 and again in December 1996 concluded that for the most part the pilot sites showed measurable initiative and progress in applying new tools and techniques, and the Bank team was encouraged to move ahead with the loan program.

Some relatively minor technical steps remain related to implementation at the pilot sites, including final global budget calculations, cost and volume contracts with payers of services, and contracts within pilot sites.

Nevertheless, obstacles remain relative to full reform. One is the continued issue of underfunding. The underfunding stems from the lack of both compliance with and collection of the payroll tax and municipal and rayon contributions for the non-working population. For example, in 1996 the city health department provided almost no funding for non-working population due to lack of available revenues. The Kaluga Territorial Fund leadership stated in December 1996 that revenues have been almost impossible to estimate over the last few years, and that anticipated revenues have accumulated at a much lower level (60-85 percent, depending upon the month and quarter) than what was budgeted at the beginning of the year.

Currently, the Fund can provide revenues only for Articles 1 and 2 (minimum salaries and taxes on provider salaries) under the negotiated at-risk arrangements. Patients themselves pay for all medications and inpatient meals.

The underfunding is further complicated by a proposed October 1996 "Article 3 decree" for all the Russian Federation. This decree proposed that municipal and rayon administrations, rather than the Territorial Funds, pay for utilities and maintenance of health facilities. The decree was enacted in some oblasts with the agreement of both the Ministry of Health and Federal Insurance Fund as a way to increase funding for health care. However, the decree effectively blunts incentives for efficiency in management and organization of care; it is expected that managers will be more reluctant to close beds, wings, or entire facilities as costs are essentially "passed through" under this decree.

The decree was not enacted in Kaluga oblast. Instead, the general underfunding issue is rightly perceived by Territorial Fund leadership as a reinforcement for continuing or even accelerating reforms to improve efficiency of existing resources, rather than as a potential obstacle to the World Bank program.

The Territorial Fund is pursuing several areas of financial analysis and modeling in order to consider alternative approaches to ensure that costs and covered services are consistent with available revenues in the short term. These areas of interest are:

- developing a plan for rationing of services, particularly high-end discretionary services such as elective surgeries;
- restructuring the basic benefits package;
- introducing cost-saving inpatient diagnostic-based clinical protocols. The Fund is now introducing new protocols for outpatient care, such as management of hypertension, but are it is not introducing any new protocols for inpatient care where more substantial savings might be possible;
- making a more focused analysis for facility-based decisions, that is, picking a small number of facilities and looking at options for reducing ALOS, decreasing admissions, using nursing care services and day care, and so on. This could help the local facility chief develop options for restructuring the facility or mix of facilities in a geographic area; and
- changing the current per admission rates or approaches for facilities outside the pilot site.

The oblast also is considering financial management training, both in Russia and in England. With the start of the pilot program, there is a perception of a clear attitudinal shift, but the oblast needs to see that there is appropriate managerial capacity in the implementation stages across the entire oblast.

The Fund is also reviewing the downturn of beds over the last few years. Decreasing staff has also been initiated, but Mr. Omelchenko, the Fund director, does not perceive Kaluga as especially over-doctored at 2.7 per thousand population. Salaries and salary scales are also still perceived as under the Federal normatives, along with salary scales and funding issues such as Article 3.<sup>22</sup>

Clearly, Kaluga oblast has taken significant steps over the last few years. Much remains ahead, but already Kaluga has become a recognized leader across the Russian Federation and across the NIS countries generally.

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<sup>22</sup> There has historically been less interest in reducing staff positions because of the normative which tied levels of staffing to number of beds. Once beds are reduced, allocated monies for staff is also reduced. The Chief Doctor's salary is also tied to the number of beds.

## Acronyms

AHCPR	(US) Agency for Health Care Policy and Research
AIHA	American International Health Alliance
ALOS	Average Length of Stay
CQD/CQI	Continuous Quality Development/Improvement
CY	Calendar Year
DRG	Diagnosis Related Group
FAP	Feldsher Ambulatory Facility
FHIF	Federal Health Insurance Fund
ICD	International Code of Diseases
IDS	( <i>ZdravReform</i> ) Intensive Demonstration Site
IHD	Ischemic Heart Disease
MES	Medical Economic Standard(s)
MIS	Management and Information System
MOH	Ministry of Health
MOU	Memorandum of Understanding
NIS	New Independent State(s)
OECD	Organization for Economic Cooperation and Development
OHA	Oblast Health Authority
PC	Personal Computer
QA	Quality Assurance
THIF	Territorial Health Insurance fund
UM	Utilization Management

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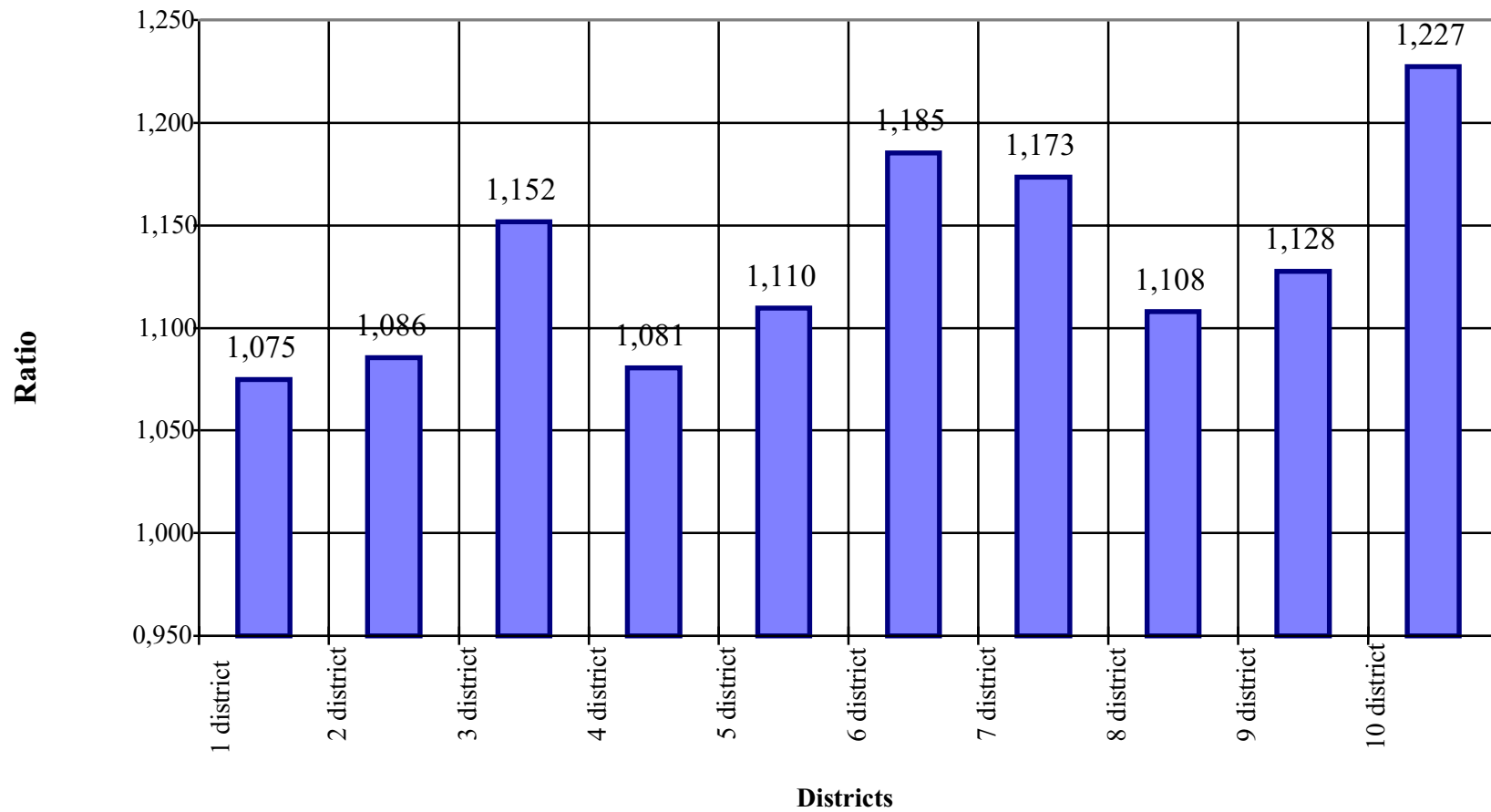
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## **Appendix A**

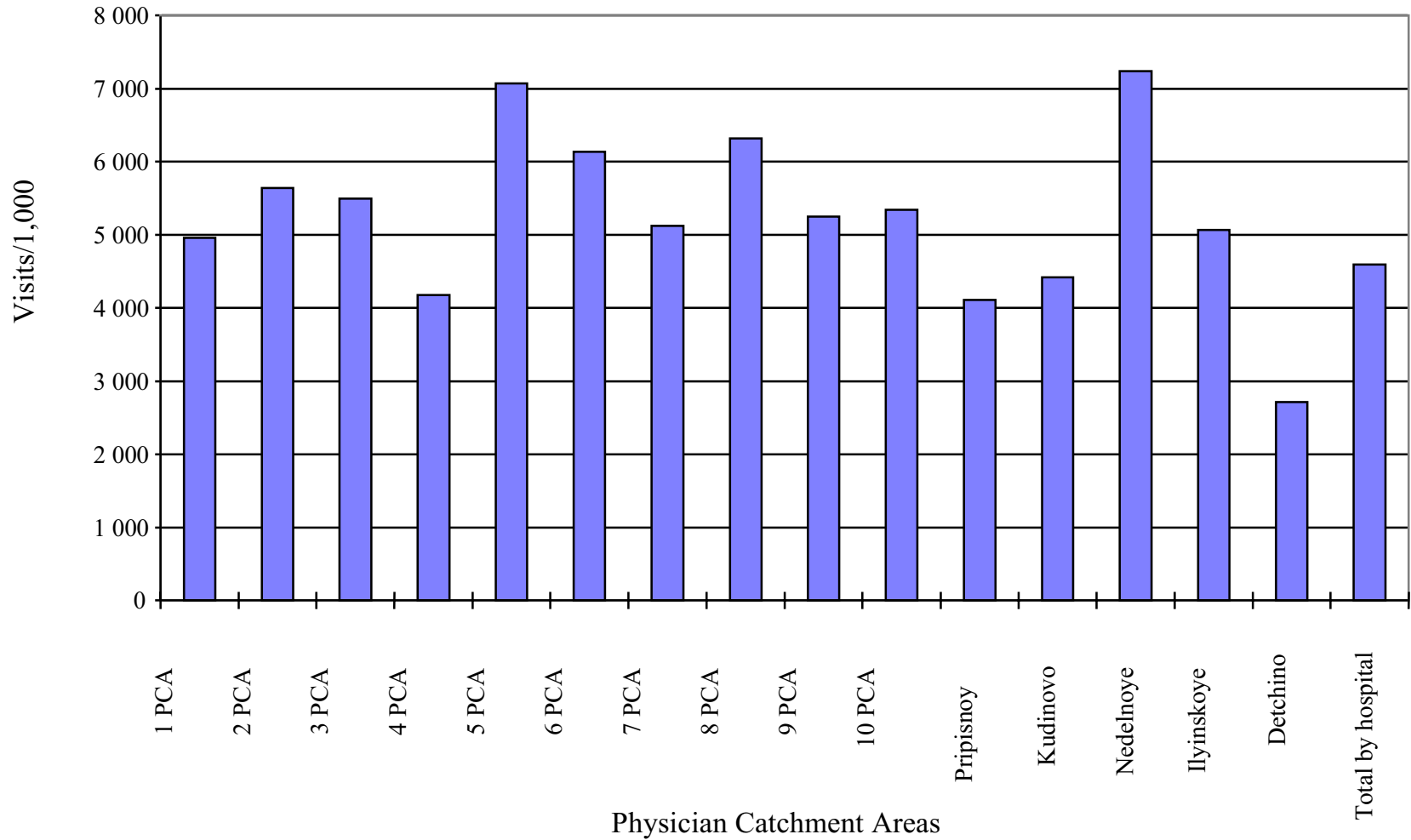
**Selected Expenditure and Utilization Analysis:**

**Maloyaroslavets Rayon**

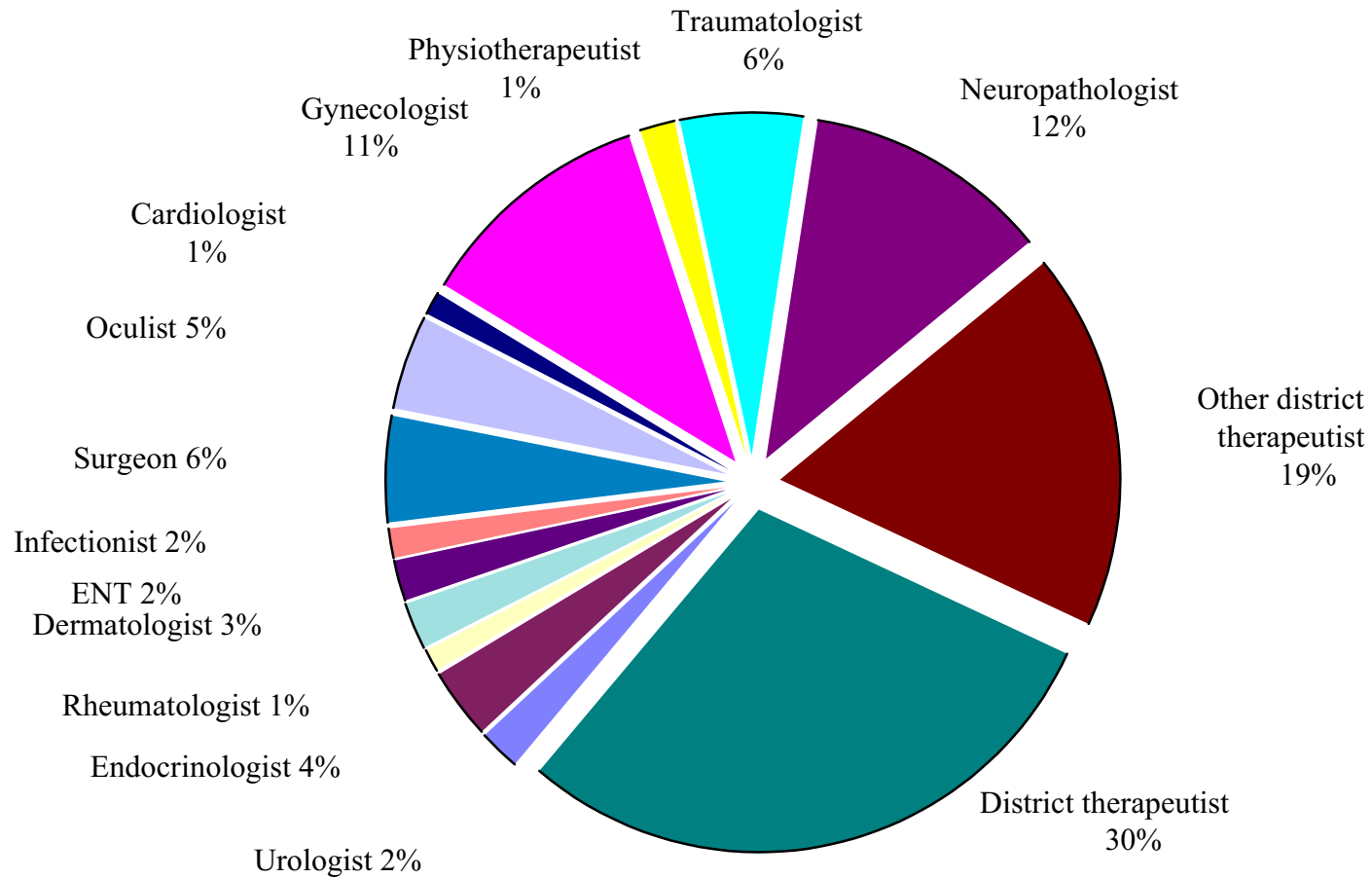
**Table A-1:  
Age/Gender Cost Ratios, by District, 1996**



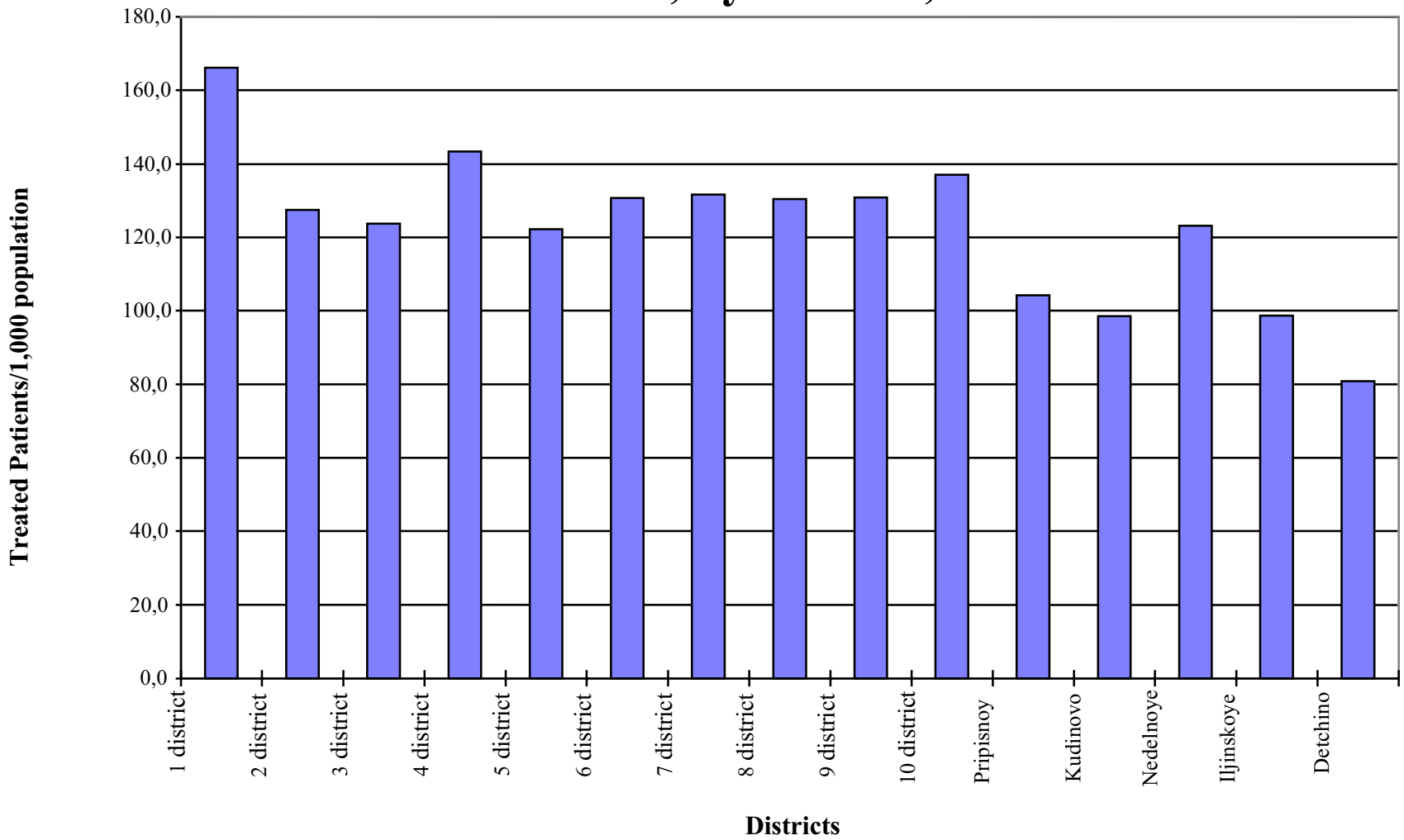
**Table A-2:  
Total Visits\1,000 population, 1995**



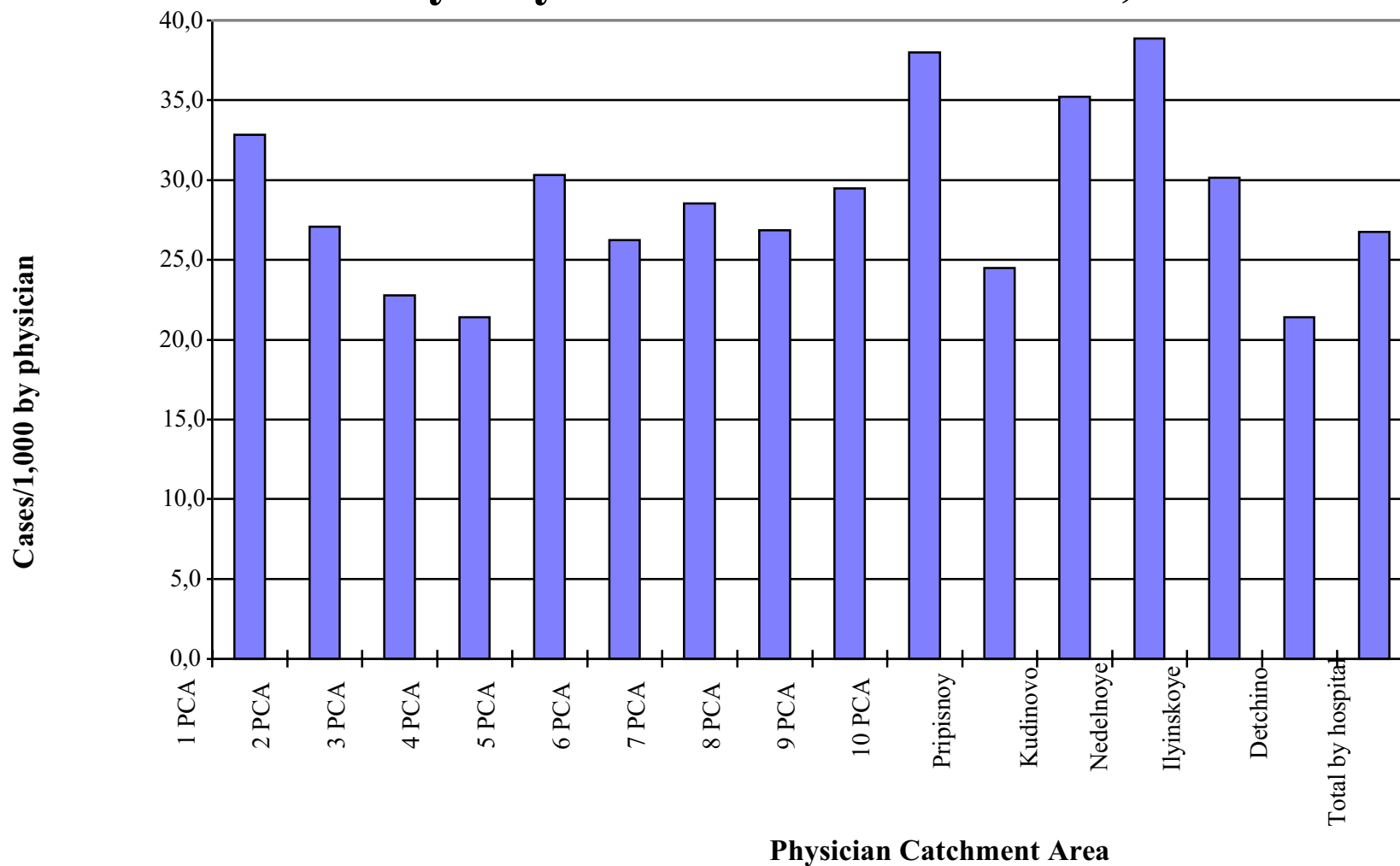
**Table A-3:  
Visits by Specialty, 1995**



**Table A-4:  
Level of Admissions, by District, 1994**

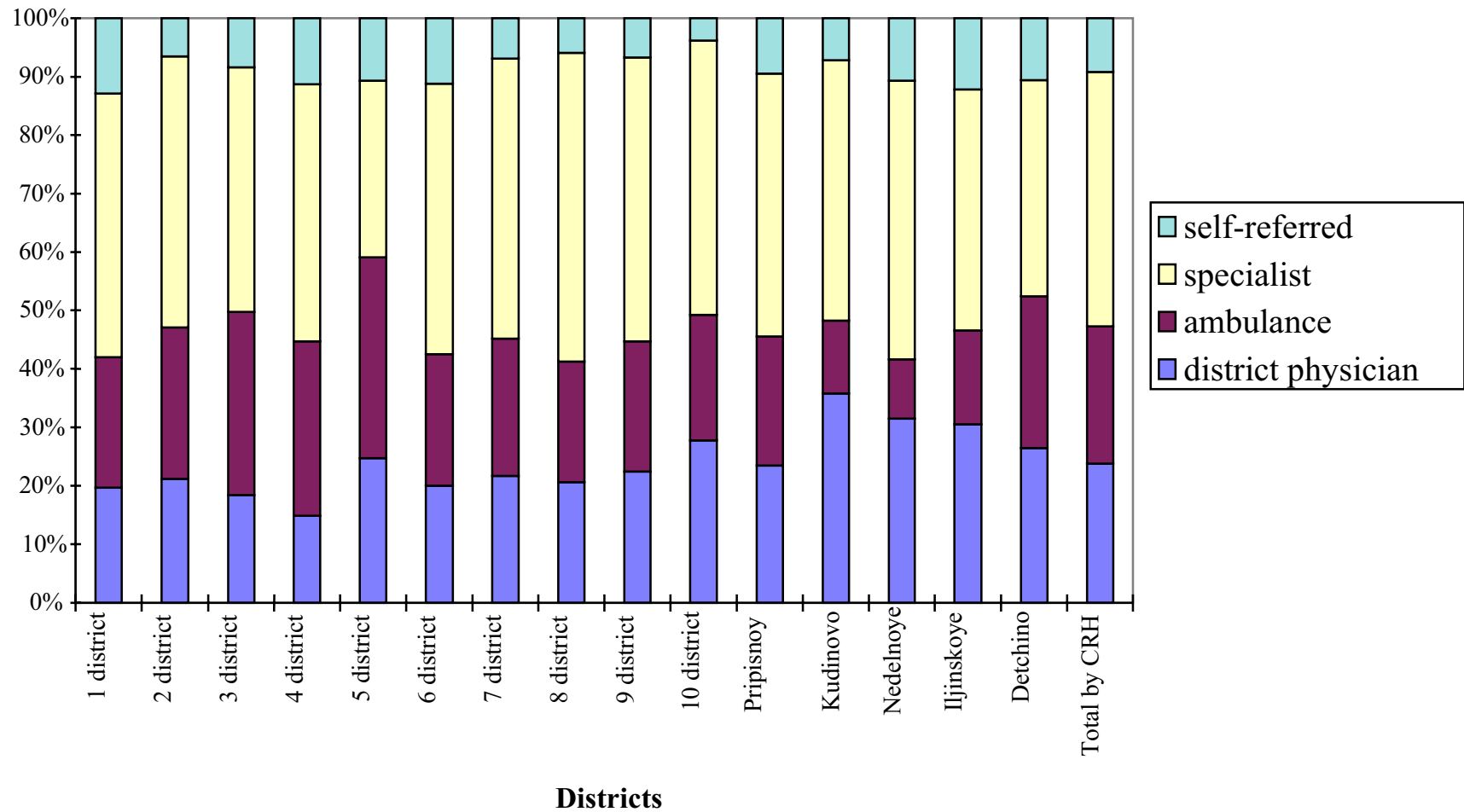


**Table A-5:  
Admissions/1,000 Population  
by Physician Catchment Areas, 1994**





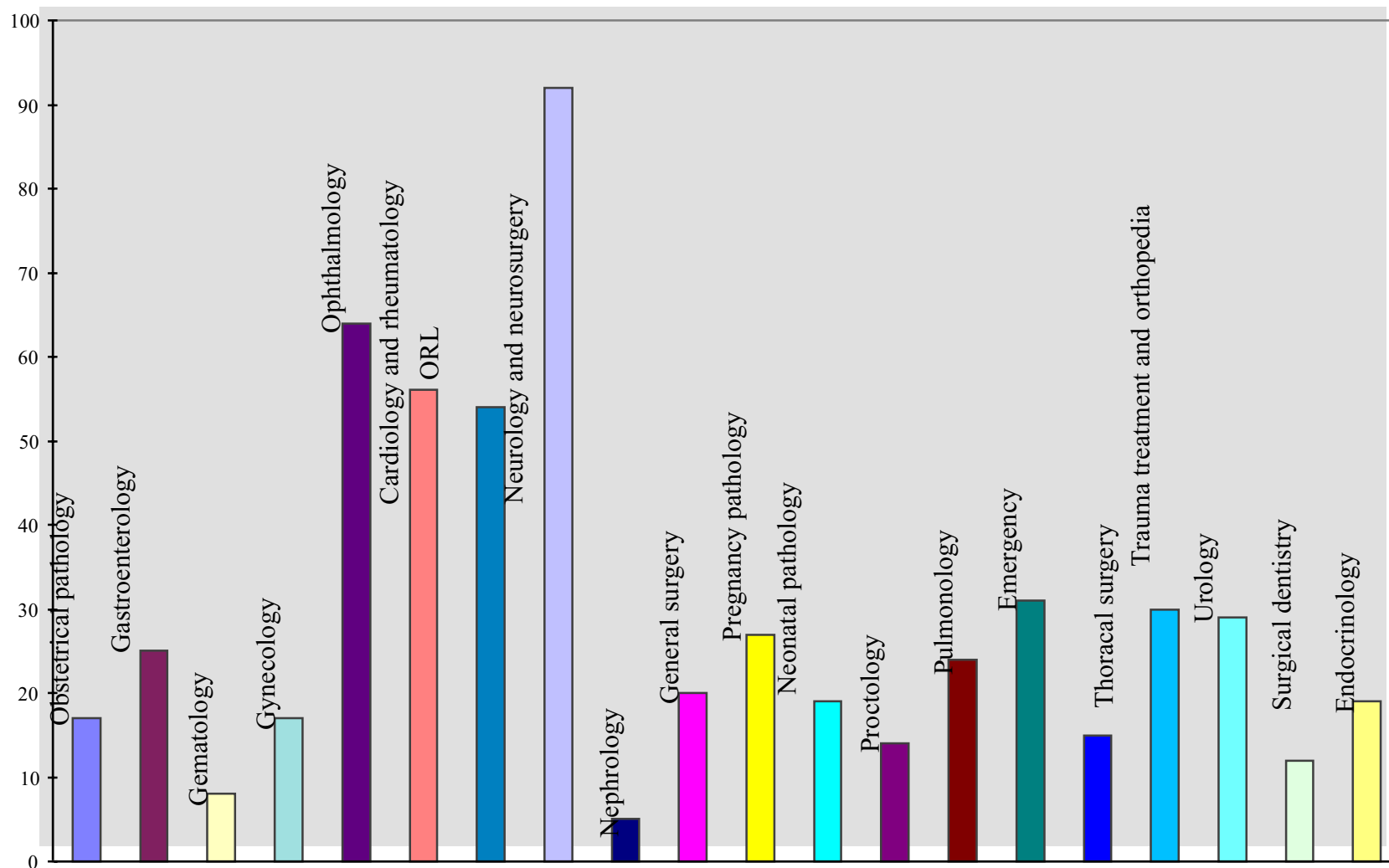
**Table A-6:  
Admissions by Type of Referral, 1994**



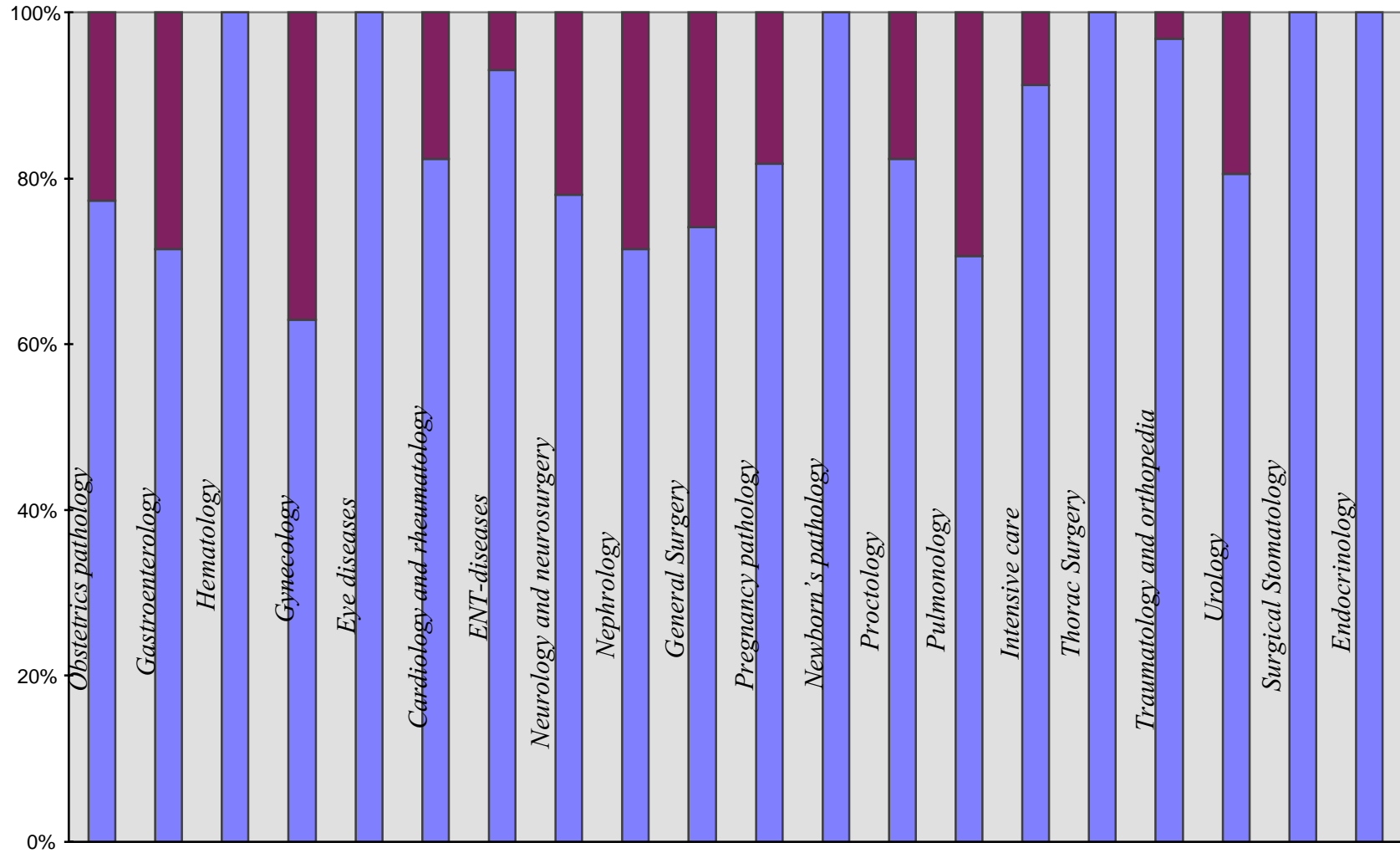
**Table A-7:  
Level of Admissions and Patient Flows  
Across Districts Within Rayon**

Therapeutic districts	Population	Admissions per 1000 citizens, 1995	including	Allocation according to referrals				Number of visits per 1000 citizens
			Admissions by district physicians	specialist	district physician	ambulance	self-referred	
1 district	1 920	166,1	32,8	45%	20%	22%	13%	4 955
2 district	2 032	127,5	27,1	46%	21%	26%	7%	5 638
3 district	2 895	123,7	22,8	42%	18%	31%	8%	5 494
4 district	2 712	143,4	21,4	44%	15%	30%	11%	4 170
5 district	1 980	122,2	30,3	30%	25%	34%	11%	7 067
6 district	2 249	130,7	26,2	46%	20%	22%	11%	6 134
7 district	1 648	131,7	28,5	48%	22%	24%	7%	5 120
8 district	2 047	130,4	26,9	53%	21%	21%	6%	6 317
9 district	1 934	130,8	29,5	49%	23%	22%	7%	5 252
10 district	1 526	137,0	38,0	47%	28%	22%	4%	5 342
Pripisnoy	6 487	104,2	24,5	45%	24%	22%	9%	4 109
Kudinovo	3 802	98,6	35,2	45%	36%	13%	7%	4 417
Nedelnoye	1 364	123,2	38,9	48%	32%	10%	11%	7 230
Iljinskoye	1 327	98,7	30,1	41%	31%	16%	12%	5 069
Detchino	10 605	80,9	21,4	37%	26%	26%	11%	2 710
<b>Total by CRH</b>	<b>44 528</b>	<b>112,6</b>	<b>26,7</b>	<b>44%</b>	<b>24%</b>	<b>24%</b>	<b>9%</b>	<b>4 955</b>

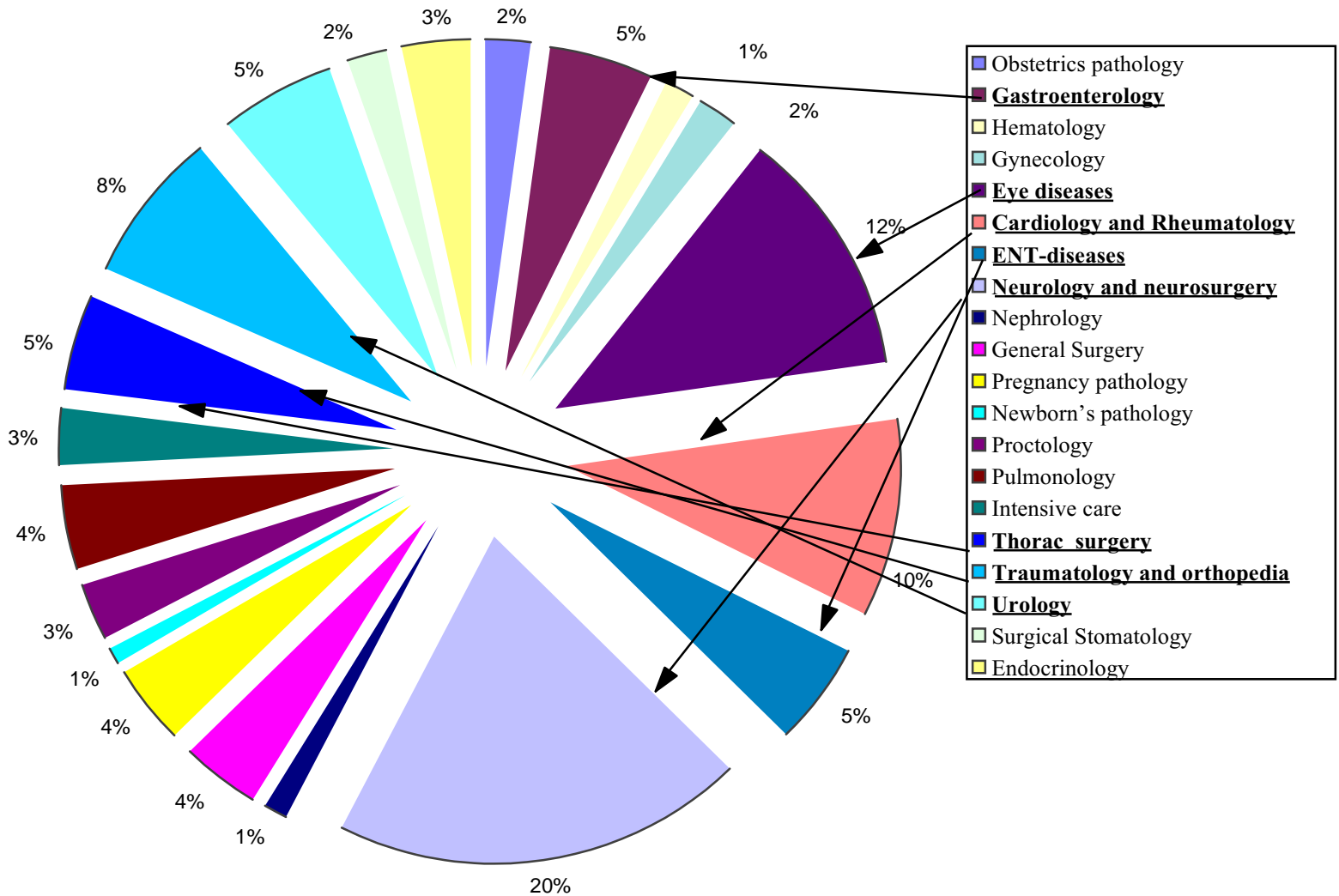
**Table A-8:  
Cases Referred to Oblast Hospital, by Diagnosis**



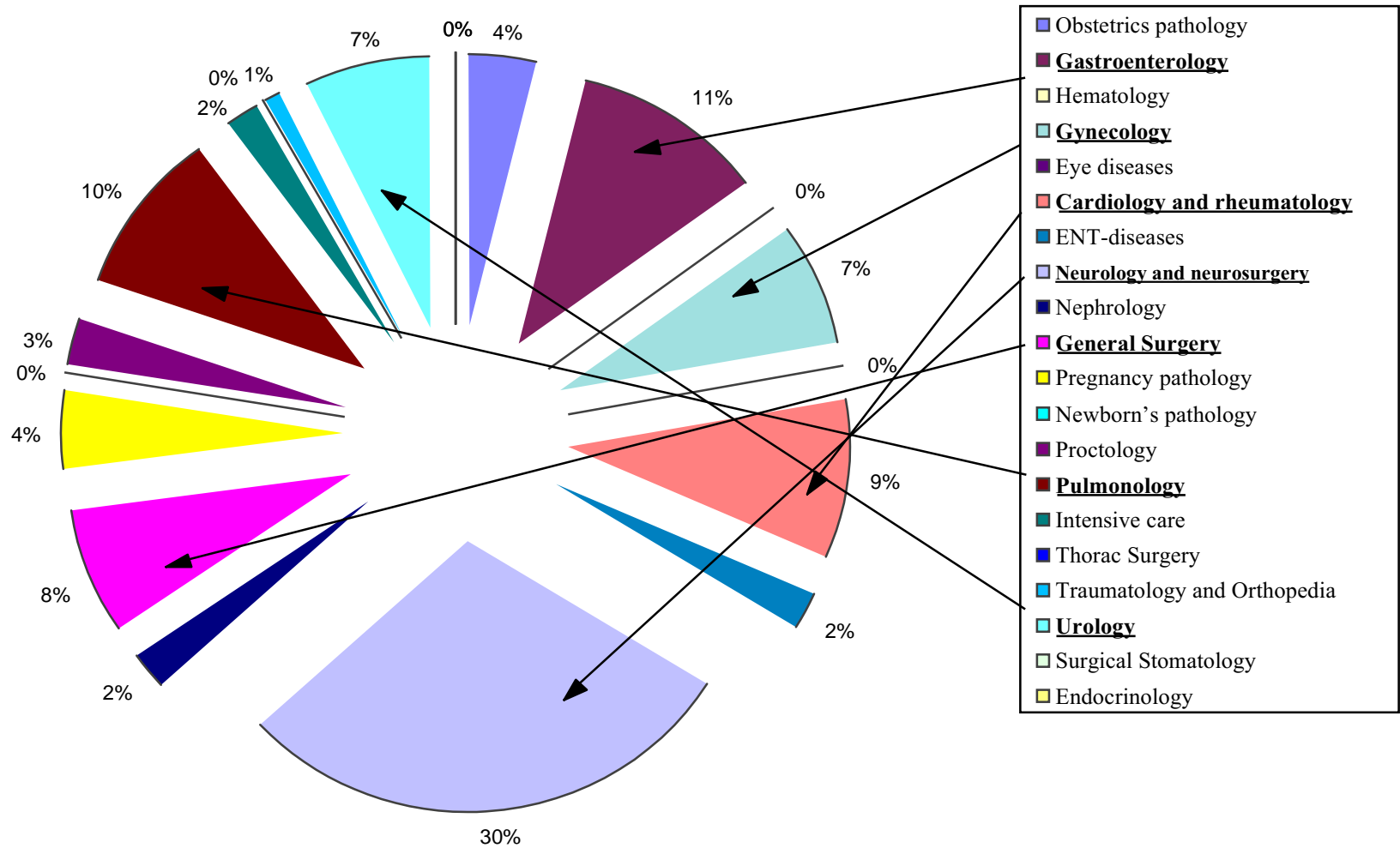
**Table A-9:  
Share of Appropriate and Inappropriate Referrals,  
by Diagnosis, to Oblast Hospital**



**Table A-10:  
Relative Share of Costs, by Diagnosis, of Cases Referred  
to Oblast Hospital**



**Table A-11:  
Relative Share of Costs, by Diagnosis, for Cases Inappropriately  
Referred to the Oblast Hospital**



## **Appendix B**

**Development of Quality of Care Indicators:**

**Siberia**

## Developing Quality of Care Indicators: Siberia

*Excerpted from presentation by Stanley J. Tillinghast, MD, former Medical Director, ZdravReform/Russia, at the annual meeting of the American Public Health Association, November 1996.*

The Russian Ministry of Health is increasingly focused on the quality of ambulatory care, particularly primary care. Inadequate ambulatory care leads to increased hospital utilization for patients who become more seriously ill as a result of inadequate outpatient treatment. One task of the quality improvement component of the *ZdravReform* Program in Russia was the introduction of indicators of the quality of ambulatory care.

Developing such objective measurements of quality of care will permit comparisons among Russian facilities and regions, and with other countries. In many cases, care will likely be shown to be adequate; resources then can be devoted to areas shown to have problems.

**Background.** Traditional attempts to measure quality of care in Russia and other areas of the former Soviet Union focused on chart reviews, looking for procedural variances, rather than on actual health outcomes. These countries have recently used Medical Economic Standards (MES) to measure quality of inpatient care. These are ICD-9-specific estimates of average length of stay, diagnostic and treatment interventions, consultations, etc. Care is considered suboptimal if less is done for the patient than the recommended average; such cases result in reduced reimbursement. This tends to drive utilization upward as unnecessary interventions are done just to meet the MES norms, although the scientific basis for the norms often is not clear.

**Methods.** As part of *ZdravReform/Russia*, polyclinics in several Siberian oblasts were restructured, with changes in payment mechanisms; an increased role for primary care physicians; and new medical information systems to support clinical, financial, administrative and quality improvement functions. To assess quality of care, clinical indicators of quality were developed. In order to compare quality in different regions, a uniform indicator methodology was needed.

*ZdravReform/Russia's* Medical Director and Russian physicians responsible for quality of care in their respective oblasts formed a working group to develop the indicators. The group deliberately chose a limited set of common indicators rather than an exhaustive list: first, because they felt Russian physicians and health care managers needed to get experience with a manageable number of indicators; second, because the usefulness of indicators decreases as less common conditions are included; and, third, because they wanted to focus on conditions for which there was a strong evidence-based link between long-term health outcomes and intermediate process and outcome indicators.

The group selected a limited number of disease entities for development of indicators on the basis of the following criteria, as recommended in the literature:

- Condition is common;
- Burden of disease on society and health care system is significant;



- Early diagnosis and ambulatory treatment improve outcomes;
- Appropriate diagnosis and treatment are well defined; and
- A large gap exists between current care and optimal care.

The conditions that they selected were:

- Circulatory: ischemic heart disease, hypertension, congestive heart failure
- Respiratory: asthma, chronic obstructive pulmonary disease, tuberculosis
- Cancer: lung, breast, colorectal, cervical
- Pediatric: diseases prevented by immunization, low birthweight
- Other: diabetes mellitus, peptic ulcer disease

For each condition, they attempted to define the scientific evidence for benefit of prevention and early detection; patient education; treatment to prevent complications; and consequences of inadequate outpatient care. A candidate indicator was defined, usually as a rate. For each rate-based indicator, they defined:

- a numerator representing the number of events (either desirable or adverse) occurring in a population at risk for those events;
- a denominator of the number of individuals in the service area at risk for the events; and
- a source of data for collection.

Since a clinical information system would include in its specifications the collection of data needed for assessment of those indicators, the group had significant flexibility in defining data sets needed. Not currently available in the medical record is information on family history or personal behavior, both of which significantly affect the risk of common serious conditions such as breast cancer and coronary artery disease. The clinical information system eventually will include patient demographic information, diagnoses, medical history summary, laboratory test results and pharmacy prescription information. The group therefore decided to incorporate in a future version a risk identification questionnaire which would be scanned into the computer database.

The data on diagnoses and risk are important, because they make it possible to define the population at risk of an indicator-related event much more accurately than does the use of simple age- and sex-adjusted population rate. The latter rate does not account for substantial difference in disease prevalence among different populations.

**Results.** Results of the analysis are shown below. For many chronic diseases, the group was interested in reduction in hospitalization as a goal in itself (to reduce health care costs) and an indication of better outpatient care. Recent strong evidence of improved outcomes and significant cost savings from patient education programs led the group to define participation in patient education as a process indicator for a number of chronic diseases. For common forms of cancer for which there is evidence that early detection improves outcomes, they decided to measure adherence to screening recommendations and proportion of cancers detected at an early stage. For infectious diseases for which immunization is available, rate of immunization is an

indicator. For obstetrics, identification and follow-up of high-risk pregnancies and percentage of deliveries with complications are indicators.

**Hospitalization Rate as Indicator: Chronic Diseases for Which Decrease in Hospital Admissions Indicates Higher Quality Care**

- Circulatory: ischemic heart disease, congestive heart failure, hypertension
- Respiratory: asthma, chronic obstructive lung disorder
- Other: diabetes, peptic ulcer disease

**Patient Education as Indicator: Chronic Diseases for Which Participation in Patient Education Indicates Higher Quality Care**

- Circulatory: ischemic heart disease, congestive heart failure, hypertension
- Respiratory: asthma, chronic obstructive lung disorder
- Other: diabetes, peptic ulcer disease, arthritis

**Reduction of Risk as an Indicator: Conditions Needing Identification of Risk, Treatment of High Risk Individuals**

- Hypertension
- High Cholesterol
- Pregnancy
- Diabetes
- Alcoholism

**Screening, Early Detection as Indicator: Forms of Cancer in Which Early Detection Indicates Better Health Outcomes**

- Breast cancer
  - % of women 50-74 with mammogram past 2 years
  - % breast cancers detected at early stage
- Cervical cancer
  - % of women 20-64 with Pap smears done past 3 years
  - % cervical cancers detected at early age
- Colorectal cancer
  - % of service population over 50 with sigmoidoscopy past 10 years or annual fecal occult blood test
  - % colorectal cancers detected at early stage

**Immunization Rate as Indicator: Rate of Immunization Indicates Higher Quality Care for:**

- Adults: over 65, or chronic diseases
  - pneumococcus

- influenza

- Children
  - diphtheria-pertussis-tetanus
  - measles-mumps-rubella
  - poliomyelitis
  - hemophilus influenzae B
  - varicella?
  - hepatitis B?

**Discussion.** The indicator set was defined with detailed definitions (see following example of ischemic heart disease) permitting programming appropriate items to retrieve from the clinical information system for measurement of indicator rates. This set of candidate indicators must now be validated for their accuracy and usefulness. Chart reviews may define accuracy of collection of data, but only if chart documentation is complete. Usefulness will be defined by the degree to which indicators are actually used to change care processes.

This deliberately limited set of indicators is provider-focused: It emphasizes what the provider has done for the patient. Another important dimension not yet included is patient perception of and response to care. Two physicians might have identical indicators by this dataset, yet one could be much more attuned to dealing with the psychosocial problems of the patient. Future work will deal with patient satisfaction and functional status measurement and with inclusion of “benchmark” indicators permitting more direct comparison with health care systems outside the former Soviet Union.

ZdravReform’s Russian colleagues increasingly discuss the use of indicators and de-emphasize reliance on MES with its limitations as a measure of quality of care. This work is still at an early stage and will benefit from further collaboration with international partners who also use this promising new tool for measuring and improving quality of care.

### Selected Clinical Indicators for Quality of Ambulatory Care: Detailed Definitions

Indicator	Numerator	Numerator Definitions	Source	Denominator	Denom. Definitions	Source
<b>Ischemic heart disease (IHD)</b>						
Prevention: general population	Number of patients ages 40-64 with total cholesterol measurement within 5 years	All men and women 40-64 at time of analysis; Total serum cholesterol test done < 5 years	Demographic database + Laboratory database	Number of patients 40-64		Demographic database
Prevention: high-risk population	Number of high-risk patients 30-64 with total cholesterol measurement within 3 years	High-risk: Men and women with two or more of the following risk factors: •Male •Family history of myocardial infarction, coronary artery surgery, angioplasty, or angina; before age 55 in men, 65 in women •Current cigarette smoker •Hypertension •Diabetes mellitus •Known HDL < 35 mg/dl	Health Evaluation Questionnaire	Number of high-risk patients ages 30-64	Same as numerator	Demographic database
Secondary prevention: IHD patients	Number of patients with known IHD with total cholesterol measurement within 3 years	All men and women with diagnosis of IHD: •Myocardial infarction •History of cardiac arrest •Coronary artery surgery •Coronary angioplasty •Angina pectoris •Prescription for nitroglycerin  Definite IHD by self-report: •Myocardial infarction •Coronary artery surgery •Coronary angioplasty •Cardiac arrest with resuscitation	IHD patients: Hospital discharge diagnoses: 410-411, 427.5  Polyclinic database diagnosis of IHD  Pharmacy record: prescription for nitroglycerin  Self-report on history questionnaire of definite IHD  Laboratory database	Number of patients with IHD	Same as numerator	IHD patients: same as numerator
	Number of IHD patients with total cholesterol <200 mg/dl, OR LDL cholesterol <100 mg/dl	IHD patients: as above LDL cholesterol = total cholesterol - HDL - (triglycerides/5)	IHD patients as above  Laboratory database:	Number of IHD patients		

<b>Indicator</b>	<b>Numerator</b>	<b>Numerator Definitions</b>	<b>Source</b>	<b>Denominator</b>	<b>Denom. Definitions</b>	<b>Source</b>
	Number of IHD patients on lipid-lowering drugs	Lipid-lowering drugs: <ul style="list-style-type: none"> <li>•lovastatin, simvastatin, pravastatin, fluvastatin</li> <li>•niacin (nicotinic acid)</li> <li>•cholestyramine, colestipol</li> <li>•gemfibrozil, clofibrate, bezofibrate</li> </ul>	Pharmacy prescription database	Number of IHD patients		
Risk factor reduction (smoking)	Number of IHD patients quitting smoking	Self-report of quitting; preferably confirmed by carbon monoxide or thiocyanate levels	Visit record	Number of IHD patients		
Control of angina pectoris; reduction of IHD events	Number of known IHD patients admitted for unstable angina, myocardial infarction	ICD-9 codes: 410.X, 411.X, 427.5 (maximum 1 per patient)	IHD patients as above; Hospital discharge diagnosis database	Number of IHD patients		
Long-term health outcomes	Number of patients with IHD death	Cause of death: atherosclerotic coronary vascular disease	Death certificate database	All patients; All IHD patients		Demographic database
	Number of patients disabled from work	Disability due to IHD per physician	Disability forms database	All IHD patients		