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Increasing the Efficiency of Hospitals in Drohobych, Ukraine: An Assessment of Payment for Hospital Services by Complexity Groups

July 1995

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Increasing the Efficiency of Hospitals in Drohobych, Ukraine: An Assessment of Payment for Hospital Services by Complexity Groups

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Prepared by:
Annemarie Wouters, Ph.D.
Kevin Quinn, M.A.

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ACRONYMS

ABD	actual bed-day
ALOS	average length-of-stay
DCMH	Drohobych Central Municipal Hospital (also DCCH: Drohobych Central City Hospital)
DRG	Diagnosis-related Groups
DTMA	Drohobych Territory Medical Administration
EBD	expected bed-day
ER	emergency room
ICD-9	International Classification of Diseases, Version 9
IDS	Intensive Demonstration Site
LOS	length-of-stay
PBD	planned bed-day
TB	tuberculosis
STD	sexually transmitted diseases
ZAP	Zdrav*Reform* Project

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EXECUTIVE SUMMARY

A Zdrav*Reform* team traveled to Drohobych, Ukraine, in November 1994 to assess an innovative payment system, akin to the diagnosis-related groups used in the United States, then being used by the Drohobych Territorial Medical Administration (DTMA) to pay eight hospitals it manages. The six objectives of the assessment were to: provide an analytical description of the payment system, including a discussion of the structure of the DTMA, the role of the DTMA in the management, implementation, and financing of health services, and especially of the new payment system instituted between August 1992 and October 1993; assess the incentives created by the new payment system; determine the impacts of the new payment system on selected service characteristics, such as average length-of-stay (ALOS), number of beds, expenditures, hospital costs, and revenues; identify options for strengthening the new payment system and related support systems; document lessons learned for dissemination; and, finally, identify possible areas for future collaboration.

Background

In 1991, the DTMA was established as a supervisory body to 12 health institutions, including eight hospitals, two clinics, and two special service facilities in the Drohobych Territory. It also became the single payer through which budget allocations were channeled to facilities. In August 1992, the DTMA introduced a new payment system to eight of these 12 institutions, based on "complexity group," in response to the belief that the traditional payment method, based on the number of beds, resulted in an inefficient system of poor quality. For a particular facility and department, a complexity group includes those diagnoses that fall within the same range of average length-of-stay, usually five days. The classification of patient cases by average length-of-stay attempts to create groups of diagnoses of somewhat uniform resource requirements. There are approximately 100 of these groups.

This innovation was made possible through a waiver granted from the L'viv Oblast government that permitted the DTMA to replace the usual budget allocation formula based on the number of beds with the new payment system. The waiver ended in October 1993 but is expected to be reinstituted in January 1995. The complexity group-based payment system paid facilities according to a formula that included a base payment and an additional payment. Key variables for the formula included expected bed-days for each complexity group, actual bed-days for each complexity group, and planned costs per bed-day. Expected bed-days for each group is a norm set by the Commission of Experts, an independent medical committee responsible for quality assurance. Planned costs per bed-day consist of planned operating costs set by the L'viv Oblast government according to a variety of norms; and they cover salaries, nutrition, medicines, linens, and selected indirect costs. Formula One, which existed between August 1992 and February 1993, included a base payment that multiplied planned costs per bed-day by the department's expected length-of-stay for each complexity group and an additional payment that rewarded facilities a proportion of planned bed-day costs when actual bed-days fell below expected bed-days. Formula Two, which was in place between March and October 1993, included a base payment that multiplied planned costs per bed-day by the departmental actual

bed-days and an additional payment that rewarded facilities a proportion of planned bed-day costs (a smaller proportion than under Formula One) when actual bed-days fell below expected bed-days. In January 1995, it is expected that Formula One will be reinstituted.

The purposes of the complexity group-based payment mechanism are to: improve the cost-effective use of the limited government budget to the Drohobych territory by reducing length-of-stay; to ensure acceptable quality of care given the resources available; and to reward productive health workers. The system is essentially one of administered prices, which are set by the DTMA in collaboration with the individual facilities in the form of a contract.

Assessment

The assessment of the new payment system consisted of conducting in-depth interviews with the senior management staff of the DTMA and selected hospital officials and analyzing limited secondary data using descriptive statistics. The assessment provides suggestive rather than definitive conclusions, because the innovative payment system was in place only a short time and during a period of hyperinflation, and because only limited data from a noncontrolled experiment were available for the analysis.

On the whole, the new financing method introduced in Drohobych is an excellent example of the experimentation that is necessary if the Ukrainian health care system is to become better equipped to improve the health of the population. Policymakers at the oblast and national level and in other regions of Ukraine will be able to learn from the new financing system's successes and problems. International comparisons strongly suggest that Ukraine should shift its emphasis from keeping patients in hospitals to improving their health with more medicines, better medical equipment, and more care provided in clinics and at home. The DTMA's new financing method gives hospital managers incentives to reduce length-of-stay, improve the availability of medicines and supplies, and generally spend limited funds more productively. It is a major improvement over the prevailing system of funding hospitals to build more beds and increase the number of bed-days used by patients.

Specifically, the shift from payment per bed to payment based on complexity groups appears to have had several beneficial effects on the delivery of health services, especially under the first payment formula. In general one can observe that health professionals were increasingly concerned with more efficient use of resources, particularly length-of-stay. There was increasing recognition of the importance of information systems, including cost management, patient records, and other information systems. Efforts were made to develop diagnostic and treatment protocols that are based on current scientific knowledge yet are practical in the local context.

In looking at the payment formulas, Formula One created more incentives to reduce actual length-of-stay, and there were limited rewards for improving efficiency in the general use of resources. The dominant incentive, however, was to keep actual bed-days below planned bed-days, rather than below expected bed-days. Only a portion of the difference between expected

and actual bed-days contributed to an increase in surplus. Under Formula Two, in effect from March to October 1993, the incentive was to increase actual bed-days.

The analysis of service statistics showed that, consistent with the incentives created under the first formula, the use of hospital resources, in terms of numbers of total beds and total bed-days, and average length-of-stay fell from 1991 to 1992. The number of beds was reduced by 80 beds, or 5 percent.Bed-days fell by 6 percent and ALOS fell from 15.4 days to 15.0 days. Surprisingly, whereas one would have expected the number of discharges to increase, they actually fell by 4 percent between 1991 and 1992. Some of these indicators also behaved consistently with the new incentive created under the revised formula. Since the revised formula paid more when actual bed-days increased, it was not surprising to see that the total number of beds remained unchanged. It was also not surprising to find that the average length-of-stay increased from 15.0 days to 15.4 days. Surprisingly, the number of bed-days summed for all inpatient facilities remained unchanged, and the number of discharges continued to fall, this time by 3 percent.

The rate of payment comparing previous and new allocations, measured by total payments under the new system as a percent of total planned operating costs, indicated that departments received between 76 and 104 percent of planned operating costs. The complexity group payment system had a modest impact on the number of bed-days for each department; in most cases, actual bed-days fell below expected bed-days. However, not surprisingly, reductions in actual bed-days appeared to be disappearing as a result of the implementation of the second payment formula.

Recommendations

The report makes the following suggestions for strengthening the incentives created by the complexity group payment system for more cost-effective health care. The discussion focuses on Formula One, which is expected to be reinstituted in 1995.

(1) The *payment formula:* Of the two formulas tested during the waiver period, it is recommended that Formula One, the formula in place between August 1992 and February 1993, be used when the system is reintroduced. This seems to be the decision already made by policymakers; thus the findings of this report simply encourage this decision. Some revisions of the formula should be considered and are described below.

Complexity group payment focuses on efficiency gained by reductions in length-of-stay. Although figures were not based on cost-effectiveness studies, the Commission of Experts used skilled judgement to arrive at these expected bed-days. Setting more efficient norms for length-of-stay is important, but it is not the only means to promote efficiency. Setting more efficient per diem costs provides another important mechanism for stimulating hospitals to use resources more cost-effectively. The first recommendation is that policymakers should consider replacing planned bed-day costs with an expected bed-day cost that is believed to reflect more efficient use of resources (unless it is believed that planned bed-day costs already reflect efficient processes).

This recommendation will depend on getting valid and reliable information on actual costs and is addressed in recommendation #2.

Expected bed-day costs should include a more complete accounting of resources (direct and indirect, personnel and nonpersonnel) at a level that reflects their more efficient and cost-effective use. Currently, the payment formula covers all salaries, nutrition, medicines, linens, and selected indirect costs. Capital costs are paid through a separate mechanism—special applications to the DTMA for major capital costs. The bed-day costs rate used in the formula should be improved to ensure that all noncapital costs, relevant minor capital costs, and all indirect costs are fully accounted for. Although one could include capital costs in the costs per bed-day rate, it is reasonable to have separate payment of major capital costs if there is a special need to ensure rational allocation of expensive and sophisticated equipment.

(2) *Cost data, analysis, and management:* Both the DTMA and the health facilities critically need cost management systems to generate more accurate, complete, and timely cost information. They also need tools to conduct appropriate cost analyses to support managerial decision making. The DTMA requires such information and analysis tools to set the payment rates. Health facilities need actual cost data and cost analysis tools to negotiate financially viable rates and to track financial status on an ongoing basis. Cost management should cover personnel, nonpersonnel, and capital costs, distinguish among fixed and variable costs, include appropriate cost accounting allocations, and be formulated in such a way as to support analysis required for the payment system. Careful attention should be paid to depreciation of fixed assets, since this is currently not being done.

Without sufficient autonomy in daily operational management, financial management, and personnel management, hospital managers will have difficulty reallocating resources in their hospitals to improve the cost-effectiveness of their services in the ways indicated by the information and analysis generated from the improved cost management systems. Therefore, along with improved cost management, a strategy for giving health facilities more independence in management should continue to be developed.

(3) *Payments based on actual costs plus profit:* Payment systems using rates based on actual costs plus a margin for profit should be used with extreme caution. As is well known from experience in the United States, this form of government-subsidized, cost-based reimbursement encourages high, often inefficient resource utilization and rapid cost escalation. Initially, actual costs could be used as guidelines to set prospective payments; but eventually, payment rates should be based on expected efficient resource utilization patterns, since the objective of prospective payment is to make actual resource use more efficient.

(4) *Long-term goal of payment formula:* In the long run, policymakers should consider dropping the second component of the payment formula, but only when managers have adequate information about actual costs and are able to reallocate costs as needed to improve efficiency. In Formula One, the first component, consisting of expected bed-days (EBD) multiplied by planned costs per bed-day (pcbd), [EBD * pcbd], generates a surplus to those facilities which

are able to reduce actual bed-days below expected bed-days only if the facility is able to reduce some of its actual costs. If all of the costs of the facility are fixed, that is if they are the same regardless of the number of bed-days, then the base payment offers no reward for reduction in length-of-stay. In the case where all costs are fixed, the second component of the payment formula, which offers an explicit financial reward for reducing actual bed-days below expected bed-days, provides the only incentive to managers to reduce length-of-stay. On the other hand, if some of the costs incurred by the facility are variable, that is they are directly proportional to the number of bed-days and managers have the authority to reduce these expenses as length-of-stay falls, then the base payment includes a surplus, since payment will be more than the actual costs incurred. In the case where some variable costs exist, the financial reward created by the second component of the formula is duplicative. To summarize, as managers acquire more information on actual costs and obtain managerial authority to adjust variable costs, the second component of the formula will become increasingly unnecessary.

(5) *Budget-neutral payment rates:* Payment rates should be set such that the total payment made to inpatient facilities falls within the DTMA budget. This is especially important considering that the DTMA does not expect to receive substantial increases in its budget. Cost containment should be an important goal of this prospective payment system.

(6) *Refining complexity groups:* The guiding economic principle underlying the development of groups for payment is that the treatment costs for the diagnoses included in each group should be quite similar and that the grouping should encourage sound medical practice. If a complexity group is characterized by a wide variation in resource costs for the diagnoses included, health providers will tend to attract and accept patients with lowest-cost diagnoses within the complexity group. The new system of payment focuses on average length-of-stay. In Ukraine, length-of-stay is a major determinant of costs, and it is also the most available and accurate data item from patient records for classification into complexity groups. However, it is likely that there remains substantial variation in treatment costs among the diagnoses included in a single complexity group. Using case-level actual cost data and medical records in conjunction with clinical expertise and statistical analysis, policymakers should investigate refining complexity groups. In making these revisions, important criteria should not only be that the groups are clinically appropriate and require similar resource intensity, but also that the classification system generates a manageable number of groups that can be adequately handled by available management and information systems. Also, as other regions in Ukraine become interested in adopting such payment systems, the complexity groups should have a fairly generic structure that can be easily replicated in other regions.

Several options for revising the complexity groups are possible and are listed for future consideration. The ranges in length-of-stay chosen for each group should be verified to ensure that they represent appropriate groupings that balance the need to have small variation in resource use in each group yet create sufficient risk and flexibility to encourage more efficient practices and penalize waste. Other indicators may prove useful to distinguish between diagnoses requiring substantially different resources, such as the presence or absence of major or minor surgeries and/or procedures, the presence or absence of certain comorbidities,

identification of primary and secondary diagnoses, and/or other risk factors such as age. To better deal with differences in severity of illness among patients with the same ICD-9 code diagnosis, policymakers might consider developing two or three categories of severity of illness for selected diagnoses to ensure classification into the appropriate complexity groups.

Another option for revising the complexity groups is to reconsider the underlying departmental structure underlying them. Currently, the complexity groups focus attention on the treatment rendered in a specific department. Each time a patient is transferred to a new department, the case is assigned to a new complexity group and the hospital receives additional payment. While this departmental structure encourages specific departments to become more efficient, it does not address the continuity of the overall treatment process in terms of whether the combinations of departments used in the case were the most efficient and appropriate. For example, the complexity groups could be restructured to be independent of departments. This would also enhance the replicability of the system to other regions, since the system could be adopted regardless of the types of departments available in any given hospital.

A final option to consider is whether to improve the clinical meaningfulness of each group by limiting groups to include only similar diagnoses. Currently, each complexity group includes a wide variety of different medical conditions. Creating more medically homogeneous groups would not only make this patient classification system more understandable to health professionals who are most concerned with the medical nature of their cases, but also would provide a medical classification system for analyzing various service statistics.

(7) *Updating data:* Payment rates should be updated regularly to incorporate inflation, changes in real costs of treatment, case-mix, practice patterns, productivity, and technology. Policymakers should be careful to update payment systems in such a way that they reward health facilities that introduce more efficient modes of treatment, at least in the short run, while creating long-term incentives to discard inefficient systems.

(8) *Monitoring and evaluation:* There are seven major areas of importance for monitoring and evaluating the impacts of the complexity group payment system: (i) financial viability/cost containment; (ii) efficiency; (iii) practice patterns; (iv) equity; (v) quality of patient care; (vi) diffusion of new technologies; (vii) factors used to update group definition and payment rates. Health managers and policymakers should give critical attention to collecting such information immediately and on a continual basis. An agenda should be developed to analyze this information both at the managerial and research levels.

(9) *Patient record information:* Several improvements in the DTMA information system would make it easier for hospital and DTMA managers to track the necessary indicators to implement, monitor, and evaluate the payment system. First, the DTMA keeps basic data on each discharge in handwritten ledgers. These data would be far more useful to DTMA management if they were computerized. A database program or even a series of spreadsheets running on a personal computer would be all that would be required. Second, more information should be recorded on the patient discharge record. The top priority for an additional element to be included in the

DTMA files would be primary diagnosis, using as many digits of the ICD-9 classification as possible. This variable would provide basic information on what types of cases are being treated in each department and at what length-of-stay. The second priority would be inclusion of primary procedure, where appropriate. This variable would include major diagnostic and therapeutic procedures, such as surgery. Although procedure does not now feature in the "New" Financing System, this information would be useful in case the DTMA wished to include it in the future. The third priority would be secondary diagnosis, since two patients with a given diagnosis can require very different levels of care if one has a major comorbidity and the other does not. The fourth priority would be age and sex. These basic information items could be added at minimal extra effort. Both hospitals and the DTMA will have to incur additional administrative costs to be able to accurately and regularly classify patient cases into complexity groups using this new patient record information.

(10) *Quality of care:* The Commission of Experts, as an independent group, plays an important role in assuring that quality of care remains acceptable. From international experience there is a wide variety of approaches for achieving quality of care, including Total Quality Management methods that encourage team-oriented approaches to improving quality on a continual basis (e.g., as part of the normal routine). Since the formula to be put in place encourages more efficient use of resources, the Commission of Experts may want to track more carefully those cases which are discharged early or required less resource intensity to ensure that quality of care was not sacrificed.

In light of limited budgets, further attention should be given to ensuring that the standards used for monitoring quality of care encourage efficient and affordable use of resources. The Commission of Experts should be apprised of the cost-effectiveness of the standards they use on a regular basis.

(11) *Influencing case selection and coding practices:* The Commission of Experts also plays an important role in assuring that health professionals are not influencing payments by case selection or diagnosis coding practices. The commission should monitor whether patients with the more costly cases within a complexity group are being turned away from the facility or being provided lower quality care to keep costs down. The commission should discourage health professionals from manipulating the system by verifying that health professionals gave appropriate diagnoses, penalizing unjustified reclassification of cases from a lower to a higher complexity group, and more carefully managing cases with high lengths-of-stay.

(12) *Cost-effectiveness studies:* In a single payer system of administered prices, there is nothing intrinsic in the payment structure to ensure that the payment rates strike the right balance between benefits and costs. Prices based solely on costs reflect resource use but may not fully capture the value placed on the service by either the health provider or the patient. Cost benefit studies provide essential information to indicate whether the benefits justify the costs. Since cost-benefit analyses are difficult to conduct, cost-effectiveness studies provide a second-best method to check whether value is being obtained for the costs incurred.

(13) *Case-level payments:* Policymakers might consider basing payments on case-level rather than department-level behavior, as is currently done. Using department-level sums of bed-days reduces the emphasis given to rendering cost-effective care in each specific case. A disadvantage of case-level payment, however, is the increase in administrative costs required. Alternatively, the department-level payment formula could be retained while encouraging departmental managers to provide sufficient oversight of individual cases under their authority.

(13) *Hospital-specific rates:* The current system of setting rates for each inpatient facility should be continued following the philosophy that hospitals should face equal pressure to improve efficiency. It is well known that equal payment rates across hospitals generally lead to uneven pressure to become more efficient. Under more "regional" rates, some hospitals would gain while others would lose, and not necessarily according to their levels of efficiency. With hospital-specific rates, it is critical to reset rates periodically to ensure that pressures for efficiency are appropriate and then maintained.

This report is organized into eight chapters. Chapter 1 reviews the objectives of the assignment. Chapters 2 and 3 provide detailed descriptions of the organizational structure of the DTMA and the new payment system. Chapter 4 begins the assessment with an analysis of the incentives created by the payment formulas. Chapter 5 presents the empirical results on service statistics, costs, revenues, and cost-recovery rates. Chapter 6 describes the process of quality assurance. Chapter 7 suggests indicators which could be used for future monitoring and evaluation activities. Finally, Chapter 8 concludes the report with suggestions for strengthening the innovative payment system.

Chapter 1

ASSIGNMENT BACKGROUND

1.1 Rapid Response Activities

Zdrav*Reform* (ZAP) Program Director Nancy Pielemeier and Program Technical Deputy Marty Makinen visited Ukraine in July 1994 to introduce the Zdrav*Reform* Program to the Ministry of Health, visit four oblasts to assess them as potential intensive demonstration sites (IDSs), identify rapid response activities, and make initial contacts with potential collaborating organizations in Kiev. The four oblasts under consideration as IDSs are L'viv, Ivano-Frankivsk, Chemivtsi, and Odessa.

As a result of the visits, three rapid response activities were identified:

(1) Drohobych: evaluation of the innovative system similar to diagnosis-related groups (DRGs) in the United States, as used by the Drohobych health authorities to allocate funds to providers.

(2) Chemivtsi: analysis, using cost-effectiveness techniques, of the pregnancy screening program (which uses sonograms) conducted by the Chemivtsi Diagnostic Center.

(3) Odessa: evaluation of the self-financing program of the Family Health Center, which provides maternal and child care.

This document is the product of the rapid response activity in Drohobych. The remaining two activities are also near completion.

1.2 Purpose and Method

In collaboration with the Drohobych Territory Medical Administration (DTMA), the purpose of this rapid response activity was to evaluate the group-based payment system, to provide advice on improvements, and to document lessons learned for dissemination. The objectives were to provide an analytical description of the payment system, including a discussion of the structure of the DTMA, the role of the DTMA in the management, implementation, and financing of health services, and especially of the new payment system instituted during August 1992 to October 1993; to assess the incentives created by the new payment system; to determine the impacts of the new payment system on selected service characteristics, such as average length-of-stay (ALOS), number of beds, expenditures, hospital costs, and revenues; to identify options for strengthening the new payment system in terms of both the mechanism itself and related support systems; to document lessons learned for dissemination; and finally, to identify possible areas of future collaboration.

Assessing the DTMA payment system according to complexity groups used both qualitative and quantitative methods. The team had in-depth discussions with the senior management of the DTMA and met with the hospital directors and/or senior management of three hospitals, followed by site visits of the facilities.

In addition, the consultant team collected substantial amounts of secondary data, including hospital service statistics for the period 1991-1993, hospital expenditures for 1992 and 1993, a sample of patient records on lengths-of-stay for Drohobych and Stebnyk hospitals for the months of April 1993 and September 1993, bed-day cost summary tables for all departments of the eight facilities for the months of April 1993 and September 1993, and a description of the complexity group diagnoses for selected facilities and departments. This data were analyzed using basic descriptive statistics.

Chapter 2

ORGANIZATION AND FINANCING OF MEDICAL CARE IN DROHOBYCH TERRITORY

2.1 Introduction

Drohobych is an industrial city of 81,000 people near the Carpathian mountains in L'viv Oblast in western Ukraine. To improve the efficiency with which medical care was provided, government officials reorganized the administration of health care facilities in 1991. The Drohobych Territory Medical Administration (DTMA) was created to coordinate the administration of hospitals and clinics in Drohobych and Stebnyk, a nearby mining town of 23,000. residents. At the same time, what had been one large organization comprising the Drohobych Central City Hospital, the Drohobych Central Polyclinic, and the Drohobych Dental Polyclinic was divided into three separate organizations. The creation of smaller administrative units continued in 1993 when other departments of Central City Hospital were split off into separate hospitals. The DTMA includes all medical facilities in Drohobych and Stebnyk but excludes those elsewhere in the Drohobych Rayon (region), notably in the nearby towns of Truskavetz and Boryslav.

This report is a description and assessment of how the DTMA funds the inpatient facilities within its domain. As shown in Exhibit 2.1, there have been important changes in the financing mechanism in the last three years. What we describe as the "old financing system" was in place prior to August 1992 and then again from November 1993. It is essentially the same as the method used to finance medical facilities throughout Ukraine. What we describe as the "new financing system" was in place between August 1992 and October 1993 and is expected to be reintroduced in 1995.

The August 1992-October 1993 period—already a short length of time in which to observe the effects of a new financing system—should actually be divided into two subperiods. From August 1992 to February 1993, hospital budgets depended on *expected* rather than *actual* bed-days. From March 1993 to October 1993, budgets depended on *actual* bed-days, creating fundamentally different incentives. In 1995, budgets once again will depend on *expected* bed-days. Expected bed-days for groups of diagnoses were norms for length-of-stay set by the Commission of Experts, an independent medical committee responsible for quality assurance activities. This is in contrast to planned bed-days, which were the number of bed-days set by the government according to desired occupancy rates.

Exhibit 2.1
Changes in Financing Methods, 1991-1995

Date	Change
1991	Drohobych Territory Medical Administration created.
August 1992	New financing method implemented; hospitals budgets depend on *expected* bed-days, not actual bed-days.
March 1993	New financing method adjusted; hospital budgets depend on *actual* bed-days.
October 1993	New financing method terminated.
1995	New financing method reinstituted; hospital budgets depend on *expected* bed-days.

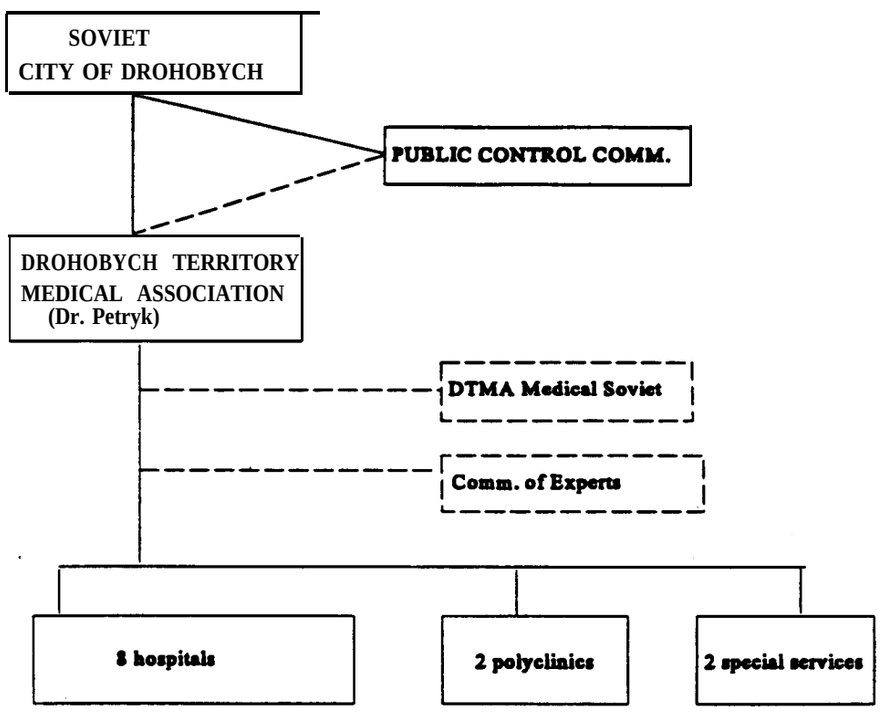
2.2 Structure of the Drohobych Territory Medical Administration

The Drohobych Civic Soviet elects the chief doctor of the DTMA, who has been Dr. Mychaylo Petryk since it was formed. The activities of the DTMA are overseen by the Public Control Commission, which includes deputies (i.e. representatives) from the Drohobych Soviet as well as medical personnel and representatives of other organizations. The commission was more active when the new funding system was in place than when it was not.

Dr. Petryk is assisted by the DTMA Medical Soviet, which comprises the chief doctors of the various facilities as well as certain department heads, specialists, and other members. The Medical Soviet coordinates the operations of the various hospitals; the extent to which it can do so depends on the funding system. A separate Commission of Experts is responsible for overseeing the quality of medical care within the DTMA; its role is described in Chapter 6. The chief doctor of the DTMA nominates physicians to be chief doctors of the facilities and chief of the Commission of Experts, subject to the approval of the DTMA Medical Soviet. See Exhibit 2.2, an organization chart of the DTMA.

In Ukraine, the health care system is a highly integrated network of polyclinics, hospitals, pharmacies, and sanatoria. Patients are assigned to polyclinics for free care; when they require inpatient care, management of the case is transferred from a polyclinic physician to a hospital physician. Polyclinic physicians generally cannot treat their patients in the hospital. All health workers, including physicians, are salaried public employees. Physician salaries are the equivalent of roughly $10 United States a month, although physicians often supplement their incomes by seeing private patients. The legal status of such private practice is still not quite clear. Virtually all facilities are owned by the government. Private insurance exists, but to a limited extent.

EXHIBIT 2.2
STRUCTURE OF DROHOBYCH TERRITORY MEDICAL ASSOCIATION



In 1990, government accounted for about 98 percent of all health spending, compared with an average of 74 percent in the Organization for Economic Cooperation and Development (OECD) countries and 42 percent in the United States.[1]

Essentially all (98.8 percent) of the funding for DTMA facilities comes from the government. The remainder is from nonbudget sources, such as contributions from industrial enterprises. The initial 1994 budget for all DTMA facilities totaled 58 billion koupons; this has subsequently been increased to 70 billion koupons because of inflation. The volatile and declining value of the koupon relative to the U.S. dollar makes comparisons problematic, but this sum equals about $600,000 to $700,000.

The DTMA includes eight hospitals with a total of 1,420 beds, two stand-alone polyclinics, a blood transfusion service, and an ambulance service. In December 1993, there were 3,083 employees, including 3,005 full-time staff members and 978 people for whom a DTMA facility was a second job. The staff included 619 physicians, 1,359 nurses, 677 health care aides, and 428 other staff (see Exhibit 2.5). A complete description of staffing levels by facility is provided in Annex A, Exhibit A.l.

2.3 Overview of Inpatient Care in Drohobych Territory and Ukraine

The use of hospital resources in Drohobych Territory is similar to that of Ukraine generally but substantially in excess of what is seen in Western Europe and North America. Exhibit 2.3 shows that the number of beds per thousand residents, the number of bed-days per thousand residents, the number of discharges, and the average length-of-stay have been very similar in Drohobych, Ukraine, and Russia. This similarity occurs despite the different years for which data were available and the approximate nature of calculating a population base for the DTMA usage statistics.

Relative to the countries of the OECD, however, Ukraine and the other Newly Independent States (NIS) show a disproportionately heavy reliance on hospital care. Beds per thousand residents, the admission rate, and the number of bed-days per thousand residents are all 40 percent to 50 percent higher in Ukraine than in the OECD countries. Although Ukraine's average length-of-stay is similar to that of the OECD, it is 80 percent higher than in the United States, which is in the forefront of the international movement to redirect spending from inpatient care toward various forms of ambulatory care, such as physician office visits and ambulatory surgery.

Ukraine's heavy reliance on hospital care is all the more striking because the country spends so little of its national income on health. Ukraine manages to hospitalize a substantially higher percentage of its population and keep them longer than the United States does, even though

[1] George J. Schieber, "Health Care Financing Reform in Russia and Ukraine," *Health Affairs,* September 1993, pp. 294-99.

Ukraine spends much less of its much smaller national income on health care. In 1990, Ukraine spent about 2.7 percent of its gross domestic product on health, compared with 12.1 percent in the United States and an average of 7.6 percent in the OECD countries.[2]

Part of the explanation is that Ukrainian health care workers receive lower real wages (in terms of purchasing power) than their Western counterparts. But the major reason is that the average patient uses far fewer resources (supplies, medicines, equipment, staff time) per day in a Ukrainian hospital than he or she would in Western Europe or North America.

The international comparison suggests that Ukraine could improve the efficiency of its health care sector by transferring resources away from inpatient hospital care. Moreover, the money still devoted to inpatient care could be spent more productively if fewer patients were admitted and the average length-of-stay were shortened, with the savings devoted to doing more for each patient. Similar thinking led Drohobych officials to the experimental hospital financing system that is the focus of this study.

Exhibit 2.3
Comparison of Hospital Use

	Beds per Thousand Residents	Bed-days per Thousand Residents	Admission Rate (Percent)	Average Length-of-stay
DTMA	**14.4**	**4.8**	**31.8**	**15.4**
Ukraine	**13.0**	**4.0**	**24.3**	**16.4**
Russia	**13.8**	**3.7**	**22.8**	**16.6**
OECD	**9.1**	**2.7**	**16.3**	**15.6**
United States	**4.8**	**1.2**	**13.7**	**9.1**

Notes:
1) Data for Ukraine, Russia, United States, and OECD are for 1990 or the most recent available year before 1990. Source: George J. Schieber. "Health Care Financing Reform in Russia and Ukraine." *Health Affairs,* September 1993, p.295.
2) Data for the DTMA are for 1991 and were provided by the DTMA.
3) DTMA figures per number of residents assume the relevant denominator is the population of Drohobych plus that of Stebnyk. They should be interpreted with caution, since DTMA hospitals treat patients from other areas, and Drohobych and Stebnyk residents are also treated by non-DTMA hospitals.

[2] Schieber, "Health Care Financing Reform in Russia and Ukraine," pp. 294-99.

2.4 Hospitals within the DTMA

In 1993, the eight DTMA hospitals accounted for slightly over two-thirds of the DTMA budget and the total DTMA workforce. The remainder was consumed by the Drohobych medical and dental polyclinics, the ambulance service, the blood transfusion service, and DTMA general administration.

The budget for the hospitals was 5.28 billion koupons, or about $518,000 in very approximate terms; year-to-year comparisons are unreliable because of volatile changes in the exchange rate. As in other countries, personnel was the largest budget item, comprising $209,000 in basic salary and $76,000 in benefits. (See Exhibit 2.4; complete accounting is provided in Annex A, Exhibit A.2.) Basic salary averaged approximately $7 to $10 per month per employee. Overhead costs, particularly heat and power, was the next largest item at $78,000, followed by food for patients.

The eight hospitals provided almost a half-million bed-days of patient care in 1993, with an average length-of-stay of 15.4 days. Except for Stebnyk Town Hospital, all the hospitals are in Drohobych. Basic statistics on hospital use are provided in Annex A, Exhibit A.3, and summarized in Exhibit 2.5.

Drohobych Central City Hospital is the largest hospital in the territory. It has eight departments: neurology (many of whose patients have suffered strokes), therapy (what would be called internal medicine in the United States), cardiology, traumatology, surgery, neurosurgery, eye microsurgery, and rehabilitation. Patients are commonly transferred from a treatment department, such as therapy or cardiology, to the rehabilitation department, whose function is closer to that of an intermediate-care facility in the United States than to an American-style rehabilitation department. Most departments serve mainly local residents, but the neurosurgery and eye microsurgery departments, in particular, serve the broader region. The hospital provides the emergency room (ER) for adult patients in Drohobych; the ER also serves as a kind of intensive care ward for patients immediately after surgery. Average intensity of care (as roughly approximated by funding per bed) ranked Stebnyk Town Hospital as the lowest among the eight hospitals. Funding per bed was $324 in 1993, compared with $365 for the group. Funding for medicines was just $4 per bed for the year. (See Exhibit A.2.E.)

Stebnyk Town Hospital also comprises eight departments. The emergency, surgery, therapy, gynecology, and pediatric departments primarily serve the residents of Stebnyk. The infectious diseases, pulmonary, and ear, nose, and throat specialty departments serve the broader area. The hospital also houses the town polyclinic.

Exhibit 2.4: DTMA Hospitals Budget, 1993

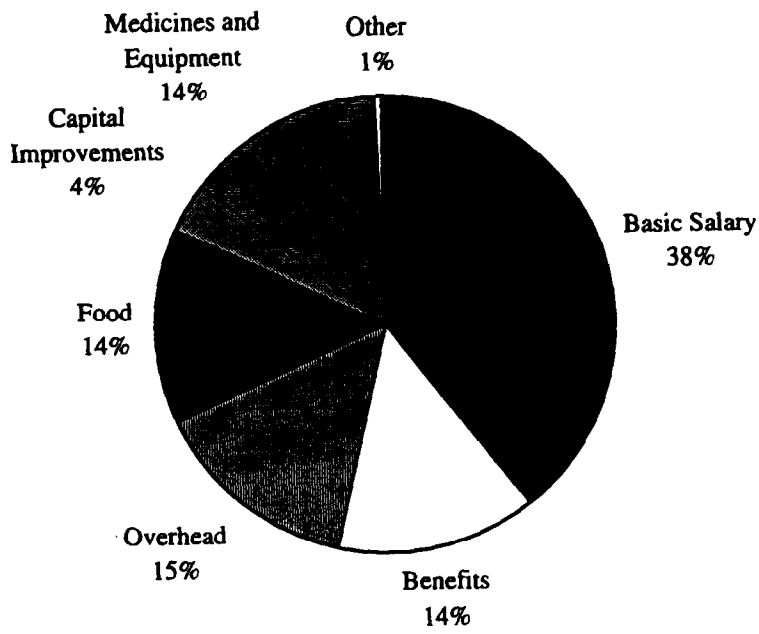


Exhibit 2.5
Basic Statistics on DTMA Inpatient Facilities

	Departments	Beds	Bed-days	Average Length of stay	Discharges	staff	1993 Budget (koupons)	1993 Budget (United States $)	Share of Budget
Drohobych Central City Hospital	8	425	154,091	15.9	9,686	613	1,441,695,962	141,899	27%
Stebnyk Town Hospital	8	330	104,418	13.2	7,866	420	1,085,985,495	106,888	21%
Hospital for Industrial Enterprises	2	100	33,700	18.3	1,863	238	442,862,004	43,589	8%
Children's Hospital	3	160	46,454	14.5	3,198	239	539,924,892	53,142	10%
Maternity Hospital	4	170	50,432	10.2	4,966	282	643,741,646	63,360	12%
Oncology Hospital	1	100	31,356	22.4	1,391	132	562,327,043	55,347	11%
Tuberculosis Hospital	1	75	28,809	95.7	287	81	311,583,213	30,668	6%
Dermatology/STD Hospital	1	60	20,970	16.3	1,286	76	239,451,734	23,568	5%
All Hospitals	**28**	**1,420**	**470,230**	**15.4**	**30,543**	**2,025**	**5,266,571,989**	**232,805**	**100%**

Notes
1) All data except United States dollar figures from Drohobych Territory Medical Administration. United States dollar figures calculated by Abt Associates Inc. using an average 1993 exchange rate of 10,160 kp = $1
2) United States dollar figures are very approximate. In January 1993 the exchange rate was 722 kp; in December 1993 it was 25,317 kp. The value in United States dollars of DTMA spending therefore depends critically on when the expenditures were made. This table assumes they were spread equally.
3) Figures exclude other DTMA operations, that is, the Drohobych medical and dental polyclinics, the ambulance service, the blood transfusion service, and overall DTMA administration.

The Hospital for Industrial Enterprises was previously funded through certain local industries, in particular an oil-cracking plant. It still is able to draw on these sources for some funding and therefore has fewer problems purchasing equipment and supplies than the other hospitals. Its funding per bed in 1993 was $436, including $61 in medicines. It comprises therapy and neurology departments as well as a polyclinic that may be used by workers in these local industries.

Children's Hospital serves pediatric patients in Drohobych. It includes an emergency room plus three departments: children under two, children two and older, and infectious diseases. It was part of Drohobych Central City Hospital until July 1993.

The Maternity Hospital includes two obstetrics departments (normal and high-risk pregnancies), a gynecology department, and a gynecological surgery department. It also was part of the Central City Hospital until July 1, 1993.

The Oncology Hospital treats cancer patients on both an inpatient and outpatient basis. Like the Tuberculosis Hospital and the Hospital for Dermatology and Sexually Transmitted Diseases, it is relatively small and comprises just one department. It is the best-funded of the hospitals. Its 1993 funding was $553 per bed, including $130 in medicines.

The Tuberculosis Hospital treats only about 300 cases a year, but the average length-of-stay is about three months.

The Hospital for Dermatology and Sexually Transmitted Diseases treats about 1,300 inpatients a year.

2.5 The "Old" Payment System to Hospitals

The "old" payment system was in place prior to August 1992 and then again after November 1993. Its central characteristics are that funding decisions flow in a relatively straight line from the oblast to the hospital and that funding depends heavily on the number of beds a hospital has.

Under the old system, Drohobych Central City Hospital and the Stebnyk Town Hospital (as well as the Drohobych Central Polyclinic) function fairly independently of the DTMA. They have their own accounting departments, and each of their budgets is approved in L'viv. Standardized norms for wages, prices, and utilization rates are established at the oblast and national level. Once funding levels are approved, however, the actual money comes from the municipal level. The budgets for the other hospitals and services also require approval from L'viv, although the money flows through the DTMA since these other facilities do not have their own accounting departments. There is relatively little scope for the hospitals to coordinate their operations, for example by buying supplies as a group. Importantly, it is difficult for hospital managers to shift funds from one budget article (e.g., salaries) to another (e.g., medicines). The process of allocating capital expenses appears to be relatively ad hoc rather than formally budgeted.

The funding levels themselves are driven by the number of beds and bed-days. The budget for physician salaries depends on the number of beds. A Figure of 25 beds per physician is sometimes used, although in 1993 the payroll for the eight DTMA hospitals included 349 physicians, or one for every four beds. Presumably not all these physicians work full time at the hospital. The budget for meals, medicines, and other variable expenses depends on the actual number of bed-days. The budget for heat, power, linens, and other overhead expenses depends on the planned number of bed-days. The plan varies by department, but as a rule a bed is expected to be in use 320 to 350 days a year.

The incentives are clear: if a hospital reduces its number of bed-days, and especially if it closes beds, its budget is cut. The nature of hospital costs everywhere is that the first few days of a patient's stay tend to be more expensive than the later days. (In the initial days, either the illness is particularly acute or the patient is undergoing surgery or other therapeutic procedures.) By keeping a patient an extra day, hospitals receive more revenue while incurring relatively little cost. This payment method, and the incentives it creates, are hardly unique to Ukraine. Until recently, the same method prevailed in Canada's single-payer system. That system is now moving toward the case-based approach used in the United States.

2.6 The "New" Payment System to Hospitals

In 1990, government officials in the Drohobych area began to explore alternative forms of payment for health institutions because they increasingly believed that a payment system based on the number of beds generated an inefficient system of poor quality, and because the attempts to initiate reform were increasingly feasible. There was a strong interest in establishing a system which would reward productive physicians for work well done. The first step was the creation in 1991 of the DTMA as a body to coordinate the operations of local facilities. The second step was to implement the new funding system for hospitals.

When the new funding system was in place from August 1992 to October 1993, the DTMA had its funding approved by L'viv (and provided by the municipal government). It was otherwise relatively free to divide that funding across facilities. It did so through a series of "contracts" with the facilities. It also increased the efficiency of the hospitals' operations by facilitating bulk purchases of supplies. Certain medicines, for example, were bought in bulk from the factory, thereby taking a short cut through the distribution chain.

The payment system itself was initially designed to reward hospitals that decrease their length-of-stay. Payment depended almost entirely on the *expected* number of bed-days, determined by an independent group of experts for each group of diagnoses, which in turn depended on the characteristics of the patients admitted to the hospital. The precise mechanism by which these figures were calculated is, of course, crucial to how the system operated. It is explained in Chapter 3. The importance of the overall design was that a hospital did not get its funding cut if it reduced its actual bed-days. In addition to this fundamental incentive, the hospital also received a small "surplus," or bonus, when actual bed-days were not as high as expected bed-days. By closing beds and otherwise decreasing length-of-stay, a hospital could generate savings

that could be used to buy equipment, increase salaries, and buy medicines and other supplies (see Exhibit 2.6.).

Exhibit 2.6
Comparison of Old and New Financing Systems

Old Financing System	New Financing System
Individual hospital budgets approved at the oblast level.	Individual hospital budgets approved by the DTMA.
Funding depends on beds and actual bed-days.	Funding depends on expected bed-days for each case (except from March to October 1993).
Hospital loses funding if it cuts beds.	Hospital keeps funding if it cuts beds (except from March to October 1993).
Relatively little coordination among hospitals of major purchases.	Increased coordination among hospitals of major purchases.
Sanctions from Committee of Experts include administrative penalties only.	Sanctions from Committee of Experts also include financial penalties for hospital departments.

This initial design was in place only between August 1992 and February 1993. At the direction of the oblast, for reasons not well known but suggesting reluctance to experiment with a new payment system, the funding formula changed in March 1993 so that the vast bulk of a hospital's budget again depended on actual bed-days. The rest of the new financing system remained in place until the old system was reinstituted in October 1993. All funds continued to flow through the DTMA, and hospitals continued to be paid a "surplus" when actual bed-days were not as high as expected. This surplus, however, represented a very small part of a hospital's total budget.

The new payment system also included changes to the system that the DTMA used to ensure the quality of medical care within the hospitals. Quality assurance is best addressed separately, and is the subject of Chapter 6.

2.7 Other Initiatives within the DTMA

The DTMA is also implementing or considering other initiatives designed to increase the cost-effective use of limited public budgets. Although not directly related to the hospital payment method, these initiatives could have significant effects on the organization and productivity of medical care. These developments—some of which depend critically on developments at the oblast and national levels—include the following:

Increased use of polyclinics. If less emphasis is put on inpatient care, there would be an increased role for polyclinics and other ambulatory settings. The DTMA believes this care would be a more cost-effective way to treat many illnesses. Polyclinic physicians may also be given admitting and practicing privileges at hospitals to improve the continuity of care. Increased availability of free medicine would make the shifting to ambulatory settings more acceptable, since patients in polyclinics must pay for medicines that they could receive free if they were in the hospital.

Experiments in establishing voluntary health insurance. Under the new financing system, the DTMA also operated a small voluntary insurance program in which industrial enterprises paid for increased benefits for their workers. Such benefits included fewer patients per room, increased choice of physician, and quicker hospital admissions. The DTMA is considering a set of minimum medical services for insurance packages, with an emphasis on preventive care. Its own priority would be the poor and elderly.

Encouraging the private practice of medicine. Currently, patients receive free care only if they visit a polyclinic. The DTMA is considering the possibility of paying private physicians to see patients who otherwise would go to the polyclinic. The physicians would be allowed to bill patients an extra amount above the DTMA payment. Private physicians could also be given admitting and practicing privileges at hospitals.

Increased autonomy for hospitals. Except for major equipment purchases and other items that require coordinated action, the DTMA would like to increase the autonomy that individual hospitals have in their day-to-day operations. Under this initiative, each hospital would have its own accounting department; currently, only the two largest hospitals handle their own funds.

Chapter 3

COMPLEXITY GROUP-BASED PAYMENT: DESCRIPTION

3.1 Purpose and General Approach

As mentioned in the previous chapter, Drohobych Territorial Medical Administration was granted a waiver by L'viv Oblast to substitute the usual per bed budget allocation rule with complexity group-based reimbursement. This waiver was in effect from August 1992 to October 1993. It is expected the system will be reinstituted in 1995. For a particular facility and department, a complexity group includes those diagnoses which fall within the same range of ALOS, usually five days. The complexity groups pertain only to inpatient facilities; ambulatory clinics are not included.

The purposes of the complexity group-based reimbursement are to improve the cost-effective use of a fixed government budget to the Drohobych territory, primarily by reducing length-of-stay; to ensure acceptable quality of care given the resources available; and to reward productive health workers. The DTMA realizes that realistically, government budgets are not likely to increase substantially in the future, so it is increasingly important to improve the cost-effective use of resources.

The system is one of administered prices that the DTMA sets by contract in collaboration with the individual facilities. The DTMA functions as a monopolistic health insurance fund. If voluntary insurance funds are introduced in the future, their funds are likely to be channeled through the DTMA. Payment rates are facility- and department-specific rather than region-wide. Since the rates are based on the current cost structures of each facility and the departments within those facilities, there is little pressure to change the overall facility cost structures; however, there is pressure to think in terms of the costs per case, especially in terms of reducing lengths-of-stay to stay below the norm established for the complexity group. As with most payment systems, the challenge still remains of achieving the right balance between patient well-being and resource use.

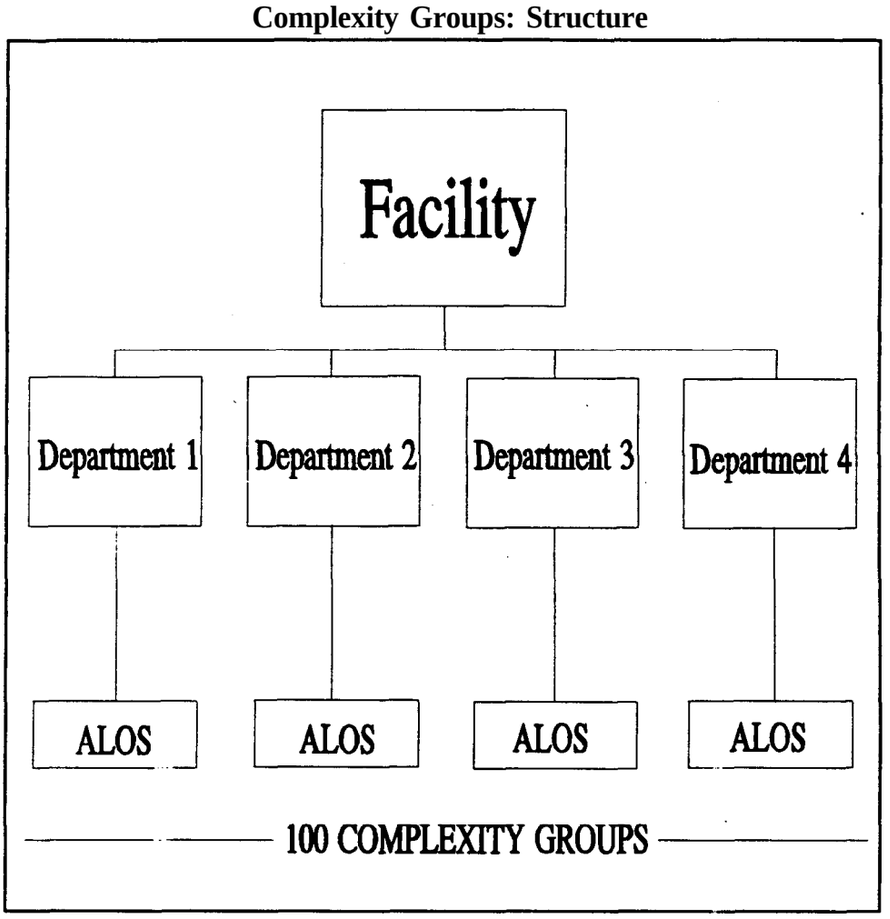
3.2 Classification Structure of Complexity Groups

The complexity group-based payment rates are facility- and department-specific. As preparation for the system, three years of patient records, primarily from Drohobych Central Medical Hospital, were reviewed to identify groups of ICD-9 diagnoses for which a single bed-day cost rate could be set. The groups are calculated using the following three levels of classification:

(i) facility-specific;
(ii) department-specific;
(iii) range of average length-of-stay.

These levels of classification generate approximately 100 complexity groups as shown in Exhibit 3.1. A more complete example of complexity group is given in Annex B. To some extent, the facility-specific classification allows for some distinction among types of diagnoses or age groups; however, many of the facilities treat a wide range of diagnoses. Classification by department also means that complexity groups will sometimes be distinguished by whether a surgical procedure is used. Some departments consist of more similar types of diagnoses; other departments, such as internal medicine and rehabilitation, treat a wide variety of diagnoses. In comparison to the diagnosis-related groups in the United States, the classification of diagnoses into major organ groups and the presence of various surgeries and/or procedures is not as systematic.

Exhibit 3.1
Complexity Groups: Structure



The classification attempts to create groups of somewhat homogeneous resource requirements by categorizing the diagnoses treated in each department according to expected average length-

of-stay based on current practice patterns and the expert opinion of the Commission of Experts. Each complexity group usually covers a range of an ALOS of five days. For example, complexity group I usually includes those diagnoses with an ALOS of one to five days, group II includes those from six to ten days, group III includes those from eleven to fifteen days and so on. For each complexity group, the expected length-of-stay is set by an outside group of medical experts. Expected bed-days for each case depends on its complexity group. Exhibit 3.2 lists the complexity groups.

The complexity groups cover those ICD-9 codes generally treated in DTMA facilities; they are not intended to be comprehensive of all ICD-9 codes. As diagnoses appear that are not already in the system, they are incorporated into a complexity group or are treated as a special case. The Commission of Experts deals individually with cases that involve existing ICD-9 codes whose ALOS does not match the expected complexity group and decides whether the substantially different ALOS is merited.

3.3 Setting Bed-day Costs

Bed-day costs are calculated for each department in each facility and are used as the basis for calculating hospital budgets and corresponding matching DTMA payments to hospitals. Total departmental costs are determined, primarily from norms set by the L'viv Oblast, and then divided by the "norm" number of bed-days, also set by the government.

Departmental bed-day costs include the following components as specified in government regulations (noted as Budget Articles): departmental and supporting paraclinic (e.g., lab and X-ray department) minimum guaranteed planned salary and additional salary benefits for health professionals (Article 1); social security for departmental and supporting paraclinic professionals (Articles 2); 3 percent bonus salary allocation for departmental and supporting paraclinic professionals; nutrition (Article 9); medicines (Article 10); linens (Article 14); and indirect costs (Article 3).

Salaries are based on the planned number of professionals in each category and on the wage structure specified in corresponding budget articles. They include the minimum guaranteed salary and additional salary from night shifts, holidays, vacation and other leave, and a 3 percent incentive bonus. Social security is calculated as 37 percent of the salary base, with 1 percent designated for a pension fund. Only the salary costs of ancillary departments are included. These are calculated using simple cost accounting techniques. Based on previous experience, the salaries of each ancillary department are apportioned to each medical department. The nutrition and medicine costs are based on department-specific norms per actual number of bed-days; the linen costs are calculated using norms per planned bed-days. Indirect costs are calculated as 67 percent of the salary base and are intended to cover maintenance, utilities, engineering, and administration. Precise costs of procedures and depreciation of capital assets are not included in bed-day costs. To summarize, costs include planned rather than actual expenses, some cost allocation from supporting ancillary services, and overhead but do not include some major components, especially capital assets (building and equipment).

Exhibit 3.2

List of Complexity Groups by Hospital and Department

	Cost per Day	1		2		3		4		5		6		...	Highest Group		
		Range	ELOS	Range	ELOS	Range	ELOS	Range	ELOS	Range	ELOS	Range	ELOS		Group No.	Range	ELOS
Drohobych Central City Hospital																	
Emergency	NA	3-5	4.0	5-7	6.0	8-10	9.0	14	14.0								
Neurosurgery	140,418	1-5	3.0	6-10	8.0	11-15	14.0	16-20	18.0	21-25	24.0	26-30	28.0	...	12		120.0
Therapy	107,468	1-5	3.0	6-10	8.0	11-15	13.0	16-20	18.0	21-25	23.0	26-30	28.0	...	9	41-45	43.0
Rehabilitation	263	1-5	4.0	6-10	9.0	11-15	14.0	16-20	18.0	21-25	22.0						
Neurology	108,816	1-5	4.0	6-10	8.0	11-15	12.0	16-20	18.0	21-25	24.0	26-30	28.0	...	7		34.0
Cardiology (except acute myo. infarct.)	295	0-5	4.0	6-10	8.0	11-15	13.0	16-20	18.0	21-25	23.0	26-30	28.0	...	8	36-40	38.0
Cardiology (acute myocardial infarction)	303	10-15	14.0	16-20	18.0	21-25	23.0	26-30	27.0	31-35	33.0	36-40	38.0	...	90	51-55	54.0
Eye Microsurgery (therapy)	127,239	1-5	3.0	6-10	8.0	11-15	13.0	16-20	23.0								
Eye Microsurgery (surgery)	127,239	1-5	3.0	6-10	8.0	11-15	13.0	16-20	18.0	21-25	23.0						
Surgery	13	16-20	18.0	21-25	23.0	26-30	28.0	31-40	36	41-50	45.0	51+	66				
Trauma	12	16-20	18.0	21-25	21.0	26-30	28.0	31-35	33	36-40	38.0	41-45	42	...	9	56-60	60
Stebnyk Town Hospital																	
Pediatrics	19	1-5	3.9	6-10	9.3	11-15	12.8	16-20	18.3	21-25	23.3	26-30	27.1	...	9	41-50	46.8
Therapy	16	1-5	4.0	6-10	8.2	11-15	13.2	16-20	18.1	21-25	22.1	26-30	27.0	...	9	41-45	43.0
Neurology	NA																
Gynecology	NA																
ENT	17	1-5	3.3	6-10	7.9	11-15	13.2	16-20	17.5	21-25	23.6	26-30	28.6				
Infectious Diseases	16	1-5	3.6	6-10	7.9	11-15	12.8	16-20	18.8	21-25	23.0	26-30	27.9	...	12	> 70	70.6
Surgery (non-trauma)	21	1-5	3.2	6-10	6.6	11-15	14.2	16-20	18.1	21-25	23.5	26-30	29.4	...	10	46-49	50.0
Surgery (trauma)	21	1-5	3.0	6-10	8.7	11-15	11.0	16-20	17.4	21-25	21.0	26-30	27.5	...	8	36-40	40.5
Pulmonary	15	1-5	3.5	6-10	8.3	11-15	12.8	16-20	17.9	21-25	23.2	26-30	27.8	...	8	36-40	40.5
Hospital for Industrial Enterprises																	
Therapy	NA																
Neurology	NA																
Pediatric Hospital																	
Emergencies	NA	3-5	4.0	5-7	6.0	8-10	9.0	14	14.0								
Pediatrics: < 2	387	1-5	4.3	6-10	8.3	11-15	13.0	16-20	18.5	21-25	24.0	26-30	28.0	...	10	NA	48.5
Pediatrics: 2+	257	1-5	4.0	6-10	9.0	11-15	13.0	16-20	18.0	21-25	23.0	26-30	27.0	...	7	31-35	32.0
Pediatrics: infectious	341	1-5	4.0	6-10	7.0	11-15	14.0	16-20	18.0	21-25	22.0	26-30	26.0	...	8	NA	35.0
Maternity Hospital																	
Gynecological surgery	345	NA	1.0	NA	2.0	NA	3.0	NA	5.0	NA	7.0	NA	10.0	...	12	NA	28.0
Gynecology II	284	NA	1.0	NA	2.0	NA	3.0	NA	5.0	NA	7.0	NA	10.0	...	12	NA	28.0
High-risk pregnancies	310	NA	12.0	NA	14.0	NA	16.0	NA	22.0								
Maternity	525	NA	6.0	NA	8.0	NA	7.0	NA	12.0	NA	14.0	NA	18.0	...	12	NA	28.0
Oncology Hospital	27	0-5	3.8	6-10	7.9	11-15	12.4	16-20	18.1	21-25	22.5	26-30	28.2	...	11	51-55	53.0
Tuberculosis Hospital	18	NA	90.0	NA	140.0	NA	190.0	NA	200.0								
Dermatology/STD Hospital	16	6-10	8.5	11-15	13.7	16-20	18.0	21-25	23.3	26-30	29.5	31-35	35.0	...	9	50-60	65.0

Notes

1) Source: Abt Associates, based on information from the DTMA.

2) Cost-per-day differs widely because complexity groups were developed at different points during the hyperinflation in recent years.

3) ELOS = Expected length of stay. NA = Not available.

4) Anomalies in the table were also present in the source documents.

To arrive at bed-day costs, the total facility costs are divided by the norm for number of bed-days as set by the government for the particular facility and department. Typically, the "norm," or planned, bed-day number is substantially lower than the actual bed-day number.

These cost calculations are one of the few types of data stored on a computer system (386). This allows the DTMA to regularly update prices and salaries, a critical point in light of high rates of inflation.

All prices and salaries are set by the government. Any changes in prices must be approved by the Drohobych territory and L'viv Oblast governments. Since May 1994, prices have changed three times. Prices have increased by a factor of three since January 1994.

3.4 Rules for Complexity Group-based Payment

Throughout the period, the payment came in two parts, a basic payment and an additional payment. Payment formulas (both the basic and additional components) for the hospital changed during the implementation period. In February 1993, the L'viv Oblast government requested a decrease in the surplus earned by hospitals for reducing average length-of-stay. The two payment formulas are described below. It is important to note that there is no mechanism to ensure that the total payments made to hospitals under these rules will be affordable under the annual DTMA budget. The DTMA recognizes this problem. Currently, it has some funds contributed for industrial enterprises, which it can use to cover budget overruns. In such cases, salaries are always protected, while other nonpersonnel items are cut.

Since complexity groups are department-specific, each time a patient is transferred to another department the case is assigned a new complexity group and the hospital receives additional payment. Each department generates its own revenues as patients spend time in that particular department. To review terms presented in Chapter 1, "expected" bed-days for groups of diagnoses were norms for length-of-stay set by the Commission of Experts, an independent medical committee responsible for quality assurance activities. By contrast, "planned" bed-days were the number set by the government according to desired occupancy rates. Planned bed-day costs are planned operating costs divided by planned bed-days.

3.4.1 Payment from August 1992 to February 1993

In the first six months of the waiver period, hospitals benefitted fully from reductions in average length-of-stay below expected norms set for the complexity groups and were penalized for higher lengths-of-stay.

(1) *The hospital received basic monthly reimbursement for the expected length-of-stay for patients seen by that department in the particular month, regardless of whether their actual bed-days were above or below the standards for the complexity groups.* The bed-day cost is multiplied by the expected bed-days for the department based on complexity

groups. The lengths-of-stay recorded for each patient in a department are added for a given month.

(2) *The hospital also received an additional surplus based on the difference between actual and expected bed-days and the portion of total costs for nonpersonnel items.* If departments' actual bed-days were longer than expected, this surplus was set at zero.

The following notation is used:

r	=	nonpersonnel share of total planned operation costs (about 70-80 percent)
q	=	direct departmental salary (all components) share of total planned operation costs (20 percent or less)
pcbd	=	planned cost per bed-day (budget)
ABD	=	actual bed-days
EBD	=	expected bed-days
PBD	=	planned bed-days

For the period August 1992 to February 1993, the payment formula in (3.1) was in effect and is hereafter referred to as Formula One:

$$\text{(3.1)} \quad \text{total payment} = \underbrace{(EBD * pcbd)}_{(1)} + \underbrace{[(EBD - abd) * r * pcbd]}_{(2)}$$

3.4.2 Payment from March 1993 to October 1993

In the latter eight months of the waiver period, the L'viv Oblast minimized the incentive of facilities to reduce length-of-stay. Hospitals received payment for the actual length-of-stay recorded in a department plus a smaller portion of the surplus earned from reducing length-of-stay below the complexity group standards.

(1') *The hospital received basic monthly reimbursement for the actual length-of-say for all patients seen by that department in the particular month.* The bed-day cost is multiplied by the actual number of bed-days recorded in a particular department for a given month. Again, the lengths-of-stays recorded for each patient in a department are added for a given month.

(2') *When the total length-of-stay for all patients in a department for a month is less than the total length-of-stay for these patients based on the expected ALOS of the relevant complexity groups, facilities receive a portion of the surplus generated by the reduction in ALOS.* The portion they receive depends on the percent of department-direct salaries of total costs, plus 37 percent to cover salaries. If the department's actual total length-of-stay is greater than the expected length-of-stay, the surplus component of total payment is zero.

For the period March 1993 to October 1993, the payment formula in (3.1') was in effect, and is hereafter referred to as Formula Two:

$$\text{(3.1')} \quad \text{total payment} = \underbrace{(ABD * pcbd)}_{(1)} + \underbrace{(EBD - ABD) * 1.37 * q * pcbd}_{(2)}$$

Each version of the payment formula includes two basic components. The first group of terms, (l), establishes the basic payment rate. The second group of terms, (2), adds surplus payments, supposedly to increase incentives to reduce average length-of-stay.

3.4.3 Other General Payment Rules

(1) *Under Formula One, if a particular case results in a longer ALOS than allowed for by the usual complexity group assigned to the diagnoses (e.g., the case is moved up to a higher complexity group), the Commission of Experts sometimes investigates the case to determine whether the higher LOS is merited.* This is critical to prevent manipulation of the reimbursement mechanism to receive higher reimbursement. The higher LOS is reimbursed according to the formula for the higher complexity group; however, the physician may be penalized if the Commission of Experts determines that the extended stay was unmerited.

(2) *If a diagnoses appears that is not covered in the current set of complexity groups, it is generally paid according to actual length-of-stay.*

(3) *Reimbursement for residents is different than reimbursement for nonresidents.* Generally nonresidents pay full price as set by the reimbursement rate unless it is an emergency. Under the old budget system (number of beds), nonresident patients did not have to pay anything.

(4) *Reimbursement is paid regardless of the health outcome, recognizing that the hospital still has to cover its costs.* A poor health outcome may be investigated by the Commission of Experts. If a serious deficiency is found, the hospital may be financially penalized.

3.5 Use of Payment and Surplus: Special Funds and Salary Incentives

Payments from the DTMA to inpatient facilities are used to fund the various components of the planned budget. The payment amount is divided among the various cost categories according the relative portion of each cost item in planned total costs. For example, if salaries constitute 28 percent of total costs, then 28 percent of reimbursement goes to salary payments. The payment mechanism always guarantees that health professionals receive a minimum guaranteed salary as specified in Article 1. When facilities generate a surplus resulting from shorter departmental length-of-stay, they can use the surplus to support a variety of funds, such as social development, capital accumulation, and other salary bonuses. Certain percentages are recommended for these allocations, but there is some flexibility. The surpluses generated from

reductions in length-of-stay and reduction in salaries from actual employed staff who cost less than planned employed staff can be used to provide a salary bonus, but only if a surplus remains after payment to the funds listed above and after deficits from previous months have been paid. Deficits occur when expenses exceed planned costs for that month.

The DTMA calculates three special coefficients to indicate whether funds are available to provide a percentage bonus above actual salary. Such funds may exist because actual employees are fewer than planned for such and/or because a surplus has been generated from the formula and has not been allocated to other special funds. On the other hand, funds available for salary bonuses may decrease when actual personnel exceed the number planned and/or there are operating deficits. Excess salary, remaining surplus, and deficits are reported as a percentage of actual salary to determine percentage bonuses. The sum of these three coefficients indicates the percentage bonus available to augment actual salaries for that month.

3.6 DTMA's Proposed Future Complexity Group-based Payment

According to the DTMA, when the system is reinstituted in 1995, it will closely follow the payment formulas which existed from August 1992 through January 1993. As a result, the incentives to reduce average length-of-stay will be greater.

In the future, there are several ideas under consideration. First, there will be an increasing emphasis on looking at case-level reimbursement rather than departmental aggregate behavior. Hospitals will be encouraged to make larger reductions in length-of-stay for diagnoses in higher complexity groups. For example, hospitals treating a diagnosis that falls in a complexity group with a standard ALOS of 25 would be encouraged to trim the stay by more days than in the case of a diagnosis which falls in complexity group with a standard ALOS of 13 days. Second, there is interest in basing payment rates on actual costs plus a margin for profit. Third, there is some interest in refining complexity groups to include more similar diagnoses.

Chapter 4

COMPLEXITY GROUP-BASED PAYMENT: INCENTIVES

Financial incentives change human behavior. This fundamental observation holds true even in health care, where many providers are motivated more by helping other people than by money. Experience around the world has shown that financial incentives do not affect care in every case, but they do affect it in enough cases to be of importance. Such cases tend to be those in which there is clinical uncertainty. If it is obvious that performing an operation will save someone's life, that operation will tend to take place regardless of financial incentives. But if the situation is less than obvious, incentives can be important. Consider the example of an inpatient whose physicians disagree about whether he can go home today. If the hospital is paid per patient day, hospital net revenue will increase if the patient remains in the hospital, since the increase in revenue will almost certainly exceed the increase in cost. If the hospital is paid per case, so there is no increase in revenue, net revenue will decrease because of the increased cost of caring for the patient another day. It is not surprising that in the United States, Canada, and other countries, average length-of-stay falls when hospitals move from being paid per day to being paid per case. Moreover, the changes tend to be more pronounced over time, since it is less costly to make changes as time goes by.

This chapter examines whether the payment formula and rules lead to the desired objectives of the DTMA that the complexity group-based payment system should improve the cost-effective use of fixed government budgets, primarily in terms of reductions in average length-of-stay. The formulas for payment were fully explained in Chapter 3 and are repeated here for convenience. The following notation is used:

r	=	nonpersonnel share of total planned operation costs (about 70-80 percent)
q	=	direct departmental salary (all components) share of total planned operation costs (20 percent or less)
pcbd	=	planned cost per bed-day .
ABD	=	actual bed-days
EBD	=	expected bed-days
PBD	=	planned bed-days.

For the period August 1992-February 1993, Formula One in (3.1) was in effect:

$$\text{(3.1)} \quad \text{total payment} = \underbrace{(EBD * pcbd)}_{(1)} + \underbrace{[(EBD - ABD) * r * pcbd]}_{(2)}$$

For the period March-October 1993, Formula Two in (3.1') was in effect:

$$\text{(3.1')} \quad \text{total payment} = \underbrace{(ABD * pcbd)}_{(1)} + \underbrace{(EBD - ABD) * 1.37 * q * pcbd}_{(2)}$$

Each version of the payment formula includes two basic components. The first group of terms, (l), establishes the basic payment rate. The second group of terms, (2), adds surplus payments—supposedly to increase incentives to reduce average length-of-stay. Exhibits 4.1 and 4.2 summarize the analysis of financial impacts under each payment system.

4.1 Incentives to Increasing Payments

The incentives to reduce actual bed-days can be partially demonstrated by showing how the payments change as actual bed-days decrease. Equations (4.1) and (4.2) are the first derivatives of total payment with respect to actual bed-days.

During the period August 1992-February 1993, change in payment for a one-day decrease in actual bed-days equals:

(4.1) change in payment for one-day reduction in ABD = r * pcbd

During the period March 1993-October 1993, change in payment for a one day decrease in actual bed-days equals:

(4.2) change in payment for one-day reduction in ABD = – (1 – 1.37*q) * pcbd

In the first period, when the hospital reduces actual bed-days, it gains a sizeable portion (r) but not all of the planned cost per bed-day. In the second period, however, the hospital loses a significant portion of the planned bed-day cost. There is actually a disincentive to reduce actual bed-days. This result is striking, given that the objective of the system had been to reduce lengths-of-stay. The second payment formula actually encourages longer lengths-of-stay.

4.2 Incentives to Recover Planned Operating Costs (Net Revenues)

The financial security of the inpatient facility depends not only on whether payments increase as a result of a change in actual bed-days, but also on how they compare with the old budget allocations. This requires looking at the degree to which planned operating costs are the same as the new payments. This relationship is shown by looking at a simplified formula for net revenues, or total payments minus planned operating costs (under a financially independent enterprise where actual costs would be known, one would be examining “net revenues”). The formula for total operating costs is given in equation (4.3)[3]. The equation for the difference between new and old allocations is determined by subtracting (4.3) from either equation (3.1) or (3.1’) and then simplifying.

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3 A simplified version of operating costs is used here. Operating costs depend, in part, on the number of actual bed-days, since medicines and nutrition costs are calculated using actual bed-days. Including this relationship in the cost portion of the formula complicates the presentation, yet does not change the final result; therefore it is omitted from this elementary calculation.

(4.3) total planned operating costs = pcbd * PBD (or planned budget allocation)

4.2.1 August 1992-February 1993

Under the first payment formula, the difference between the new and old budget allocation can be expressed as in equation (4.4):

(4.4) difference between new DTMA payments and old planned budget allocation =

$$= \underbrace{pcbd * [EBD–PBD]}_{(1)} + \underbrace{r * pcbd *[EBD–ABD]}_{(2)}$$

Equation (4.4) shows that the difference between EBD and PBD is the largest determinant of the difference in the new and old allocations, whereas only a portion, "r," of the difference between EBD and ABD is included. If EBD are substantially larger than PBD, new payments will more than cover costs.

As shown in equation (4.5), a decrease in actual bed-days increases the difference between new and old payments, a result that is consistent with the discussion in the previous section. Stated differently, the first period payment formula generates two kinds of surplus: the first terms, (l), shows a surplus generated from the difference between EBD and PBD; the second terms, (2), shows a surplus resulting from the desired behavior of reducing ADB below EBD.

(4.5) change in excess of new above
old allocations for one-day decrease in ABD = r * pcbd.

In the first period, equation (4.4) also shows that there is an incentive to increase admissions, especially those where ABD is less than EBD. Each admission results in additional expected bed-days. If the hospital can treat the patient under this norm, it gains total revenue.

4.2.2 March-October 1993

Under Formula Two, the difference between the new and old allocation can be expressed as in equation (4.4'):

(4.4') difference between new DTMA payments and old planned budget allocation =

$$= \underbrace{pcbd * [ABD – PBD]}_{(1)} + \underbrace{1.37 * q *pcbd [EBD – ABD]}_{(2)}$$

Equation (4.4') shows that, in contrast to the first payment formula, the largest determinant of the difference between the new and old allocations is the difference between ABD and PBD. If actual bed-days are substantially less that PBD, the difference in allocation falls. Only a

portion, 1.37*q, of the difference between EBD and ABD contributes to the difference in allocations.

(4.5') change in net revenues for one-day reduction in ABD = – (l–l.37 * q) * pcbd.

Notably as shown in equation (4.5'), the combined effect of terms (1) and (2) leads to the result that the difference between new payment and old allocation decreases with decreases in ABD, a relationship contrary to the stated purpose of the payment system.

Like the first payment formula, the second payment formula offers an incentive to increase the number of admissions, especially those where ABD is less than EBD. However, since a smaller portion of this difference is rewarded, the incentive to increase admissions is weaker.

These results demonstrate that neither payment system provides substantial incentive to reduce length-of-stay, although Formula One performs better. This is due to several special characteristics of the payment mechanism. First, total costs are primarily based on planning norms, including planned bed-days, rather than on actual costs. That is, the cost per bed-day (pcbd) is basically a reflection of planning norms. Second, the payment system uses these planning norms (e.g., the planned cost per bed day) as a basis for setting payment rates. The end result is that planning norms such as PBD play a key role in influencing the behavior of hospitals.

Exhibit 4.1
Summary of Financial Incentives under Two Tested Payment Systems

	Formula One: August 1992-February 1993	**Formula Two March 1993-October 1993**
Total payment	(EBD * pcbd) + [(EBD - ABD) * r * pcbd]	(ABD *pcbd) + (EBD - ABD) * 1.37 * q * pcbd
Total operating cost: (old planned budget allocation)	pcbd * PBD	pcbd * PBD
Net revenues: (new payment-old planned budget alloc.)	pcbd * [EBD - PBD] + r * pcbd *[EBD - ABD]	pcbd * [ABD - PBD] + 1.37 * q * pcbd [EBD - ABD].
Financial impacts of one-day fall in ABD:		
• change in payment	increase by: (r * pcbd)	decrease by: [- (1 - 1.37 *q) * pcbd]
• change in net revenues	increase by: (r * pcbd)	decrease by: [- (l-l.37 * q) * pcbd]
• key bed-day determinants of net revenues (or cost recovery)	major determinant:[EBD - PBD] minor determinant: r *[EBD - ABD]	major determinant: [ABD - PBD] minor determinant: 1.37 * q *[EBD - ABD]

r = nonpersonnel share of total planned operation costs (about 70-80 percent)
q = direct departmental salary (all components) share of total planned operation costs (20 percent or less)
pcbd = planned cost per bed-day
ABD = actual bed-days
EBD = expected bed-days
PBD = planned bed-days

Exhibit 4.2
Summary of Financial Incentives under Two Alternative Payment Systems

	Prospective-type Payment	Cost-based Payment
Total payment	ecbd * EBD	acbd * ABD
Total operating costs	acbd * ABD	acbd * ABD
Net revenues	ecbd * [EBD - t*ABD]	0
Financial impacts of one-day fall in ABD:		
• change in payment	0	increase by: [acbd]
• change in net revenues	increase by: [ecbd * t * ABD]	0
• key bed-day determinants of net revenues (or cost recovery)	[EBD - t*ABD]	none

r = nonpersonnel share of total planned operation costs (about 70-80 percent)
q = direct departmental salary (all components) share of total planned operation costs (20 percent or less)
pcbd = planned cost per bed-day
ecbd = expected cost per bed-day
acbd = actual cost per bed-day
t = factor by which acbd is greater or less than ecbd
acbd = t * ecbd
ABD = actual bed-days
EBD = expected bed-days
PBD = planned bed-days

4.3 Comparisons with Other Payment Systems

To further clarify the incentives created under the payment experiment, an alternative prospective-type payment formula is presented in equation (4.6). The payment formula is discussed in conjunction with a new formula of total operating costs, (4.7), and finally, with a formula that calculates the difference between payments and costs, (4.8). In this section, the difference between payments and costs is referred to as net revenues, because planned costs are now replaced by true costs in terms of either efficient actual costs or actual costs. Prospective payment means that rates of reimbursement are set in advance of services being rendered and are usually based on some desired rather than actual cost level.

Some new variables are used:

ecbd = expected cost per bed-day
acbd = actual cost per bed-day
t = factor by which "acbd" is greater or less than "ecbd"
acbd = t*ecbd

Under the prospective-type payment system:

(4.6) total payment =ecbd*EBD

(4.7) total operating costs = acbd * ABD

(4.8) net revenues = ecbd * [EBD – t*ABD]

(4.9) change in payment for one-day reduction in ABD = 0

(4.10) change in net revenues for one-day reduction in ABD = ecbd * t * ABD

Equation (4.6) is similar to the first payment system shown in equation (3.l), except that the second component of the surplus group is dropped. Also, the payment rate is based on the expected cost of a bed-day, which reflects actual costs but at levels that correspond to cost effective and efficient treatment and administrative practices. Another critical factor is introduced in equation (4.7), namely, the actual costs of the hospital, using both ABD and the actual costs per bed-day (acbd). The acbd can also be expressed as some multiple of ecbd. The factor of proportion, t, is probably greater than one, since actual costs are probably higher than the efficient cost rate. The end result is that net revenues depend on two major factors. First, net revenues increase when the number of ABD falls below EBD. Second, net revenues increase when t falls, or intuitively, when the actual bed-day cost rate (acbd) approaches the efficient bed-day cost rate (ecbd). Equation (4.9) shows that total payment is not affected by changes in ABD, but net revenues increase with an decrease in ABD.

To further elucidate the incentives created under the experimental payment system, it can also be contrasted with the more traditional cost-based payment system shown in equations (4.11) through (4.15). Cost-based reimbursement consists of payments, which are tied directly to actual costs incurred.

Under the cost-based payment system:

(4.11) Total payment = acbd*ABD

(4.12) Total operating costs = acbd * ABD

(4.13) Net revenues = 0

(4.14) change in payment for one-day reduction in ABD = acbd

(4.15) change in net revenues for one-day reduction in ABD = 0

Under the cost-based payment system, the actual costs of health care are fully paid. No surplus is gained from improvements in efficiency. Equation (4.14) shows that payment increases directly by actual costs as ABD increase. No losses are incurred by increases in resource utilization. Equation (4.15) shows that costs are exactly reimbursed. Profits are earned only to the extent that acbd incorporates a profit allowance as a cost of the service.

4.4 Department versus Case-level Incentives

With the current formulas, incentives to change actual bed-days are created at the department rather than the case level. All of the payment formulas use department-level variables, such as department actual bed-days and department expected bed-days. As long as the department makes an overall reduction in. actual bed-days below expected bed-days, it benefits from the small surplus, regardless of whether individual cases achieved actual bed-days below expected bed-days. For example, in some departments the overall reduction in actual bed-days could have been achieved by having all of the cases reporting ABD below EBD. In other departments, the same overall reduction in actual bed-days could have been achieved by having a few cases report relatively large reductions in ABD below EBD that more than compensate for other cases where ABD were larger than EBD. The department-level based formulas emphasize rendering cost-effective care at an aggregate level, but reduce concern for rendering cost effective care in each specific case.

4.5 Incentives to Improve Efficiency

One of the major strengths of the new payment system is that it removes the incentives to expand the number of beds in each hospital. Empty beds do not generate revenue, yet may require some costs to keep them available. Under the old system, allocations to hospitals were

based on the number of beds; now, they are based on complexity groups. There is much less resistance to cutting unused beds.

Incentives for promoting other improvements in efficiency are still limited. In the Drohobych system payment rates are based on existing facility-specific planned cost structures and few mechanisms have been put in place to assess, on a regular basis, the most cost-effective practices (clinical, logistical, administrative), either within a particular facility or among the various institutions. That is, it is not necessarily the case that planned costs reflect efficient practices. There is little information about actual costs and what resources are really required to render cost-effective care. The payment system does not encourage administrators to channel various diagnoses into more cost-effective settings. For example, it is quite possible that bronchitis could be treated in the same facility in two different departments (e.g., internal medicine, rehabilitation) and therefore receive two different payment rates. Similarly, bronchitis could be treated at an inpatient facility and an outpatient facility and be fully reimbursed at different rates in both settings.

Incentives for efficiency focus on reductions in lengths-of-stay and not on intensity of service. The latter is true because the formula uses planned bed-day costs rather than actual costs. The Commission of Experts promotes efficiency by setting shorter expected lengths-of-stay for each complexity group; however, cost-effectiveness, efficiency, or productivity studies are not currently being done to support such decisions. As seen above, the first payment formula encourages physicians to think more in terms of rational resource use since reductions in actual lengths-of-stay bring financial rewards. Some of the surplus can be used to augment the intensity of service. Given the low level of capital investment, intensity of service is currently not a large component of costs; however, as more resources are put into the health infrastructure, the payment mechanism will need to guide efficient use of resources beyond concerns for length-of-stay.

When payment levels do not cover total operating costs, the facility usually absorbs the loss by cutting capital improvements, maintenance, and other nonpersonnel items of their choice. Facilities are allowed to find other sources of money to support their activities, but these funds are hard to find.

The strength of all of these incentives must be considered in light of the hyperinflation which existed during the period of implementation and undermined the real value of surpluses earned. Also, augmentation of already low wage levels of health workers by small bonus percentages were quite small in comparison to potential private sector wages to be earned after hours. For the same reasons, the financial penalties imposed by the Commission of Experts were quite small in real terms.

4.6 Influencing the System to Maximize Payments

In any payment system, health facility managers frequently attempt to influence or manipulate variables to maximize the payments they receive. In the complexity group-based payment

system, there are four major ways in which health providers and managers may attempt to influence payment: (1) modifying diagnoses; (2) increasing admissions; (3) modifying length-of-stay; and (4) attracting and accepting lower-cost cases within a complexity group.

First, in cases where the diagnoses are not very clear or where there are multiple diagnoses, payment rates rather than clinical criteria may strongly influence the selection of ICD-9 codes on the patient record. In the United States, this is known as diagnoses-related group "creep." Providers are made aware of those groups which bring in higher payments. Second, as mentioned in section 4.2, under the first payment formula there is an incentive to increase the number of inpatient admissions, especially those where actual bed-days tend to be less than expected bed-days. Third, when a case potentially straddles two complexity groups because the length-of-stay is reaching the higher end of the range for ALOS, a provider may choose to keep the patient long enough to qualify for the next highest complexity group—assuming classification into a complexity group can be changed at the time of discharge. This is especially true when the particular ICD-9 diagnosis is included in both groups (often to capture differences in severity of illness). If the provider keeps the patient in the lower complexity group, the surplus payment is lost. If it can be somehow justified that the patient belongs in the higher complexity group, the surplus payment is gained as long as the actual length-of-stay falls below the new, higher, expected length-of-stay. For example, diagnosis code 250 (diabetes) is included in seven of the nine complexity groups for the Department of Internal Medicine at Drohobych City Medical Hospital, covering a range of six to 40 days. Although the descriptions differentiate among the manifestations of diabetes, there still remains substantial room for upcoding. Hospital administrators may think, "once a patient is in the hospital for ten days, the hospital might as well keep him for an eleventh day. " Fourth, hospitals may try to attract and treat those cases which are the least costly within a complexity group. This is most possible when the complexity group includes diagnoses with a fairly wide range of treatment costs. Providers may even discourage more costly patients or refer them to other facilities.

4.7 Conclusions

Exhibit 4.3 summarizes the incentives created under Formulas One and Two and the two contrasting systems of prospective payment and cost-based payment. A major strength of the new system is that it removes budget rewards for increasing the number of beds. In looking at the payment formulas, Formula One creates more incentives to reduce actual length-of-stay than Formula Two. Under Formula Two, the incentive is to increase actual bed-days.

The results on factors affecting net revenues provide the most telling evidence. Under Formula One, implemented from August 1992 to February 1993, the major way to get positive net revenues is to keep expected bed-days below planned bed-days. Only a portion, r, of the difference between EBD and ABD contributes to increases in net revenues; net revenues increase slightly with reductions in actual bed-days. Under Formula Two, which was in effect during the period March 1993 to October 1993, the major determinant of net revenues is whether planned bed-days are below actual bed-days. Again, only a portion of the difference between

EBD and ABD contributes to increases in net revenues. Strikingly, the overall incentive under the second payment formula is to increase ABD. That outcome couldn't be less desired.

The comparison with the prospective-type payment system showed that a greater incentive to decrease actual bed-days below expected bed-days exists when payment is based solely on the expected level of bed-days. Additional gains in net revenues can be achieved if actual costs approach the efficient bed-day cost rate. To the extent that planned bed-days or planned bed-day costs represents efficient delivery of health care services, incentives exist to improve overall efficiency. However, when planned costs or planned bed-days do not represent efficient practices (e.g., either too high or too low compared to the efficient level), there is no mechanism that motivates facilities to find the most cost-effective bed-day costs; rather, the main goal is to stay below planned bed-days and incur costs equal to or below planned bed-day costs. In a prospective payment system, the variables planned bed-days and planned bed-day costs are replaced by expected (efficient) bed-days and expected (efficient) bed-day costs. These incentives exist at the department rather than at the case level. As long as the department behaves according to the patterns described above, the distribution of these patterns among the various cases does not affect the final result.

Finally, all payment systems are vulnerable, to being influenced or manipulated by health professionals and managers who hope to maximize payment to their facilities. In the experimental system, there are three avenues for manipulation, including modifying diagnoses, increasing admissions, and modifying lengths-of-stay to fall into higher complexity groups.

Exhibit 4.3
Summary of Incentives:
Formulas One and Two Contrasted with Prospective- and Cost-based Payment

Item	Formula One	Formula Two	Prospective	Cost-based
Improved efficiency in bed-day costs	limited*	1imited*	yes	decrease
#ofbeds	maintain/decrease	maintain/increase	decrease	increase
# of actual bed-days	decrease	increase	decrease	increase
# of discharges (proxy for admissions)	increase (++)	increase (+)	increase (++)	no effect
average length-of-stay	decrease	increase	decrease	increase
intensity of service (e.g., tests, procedures, medicines)	increase (proportional to surplus & budget)	increase (proportional to surplus & budget)	increase (within limit of payment rate)	increase

*depends on the extent to which planned bed-day costs correspond to efficient practices

Chapter 5

IMPACTS OF COMPLEXITY GROUP-BASED PAYMENT ON HOSPITAL SERVICES, REVENUES, AND COSTS

5.1 Evaluating the Impacts of the New Financing System

It appears that the new financing system did affect the decisions made by hospitals in 1992 and 1993 in Drohobych Territory. The new financing system changed important aspects of their financial situation and operation. There are three caveats, however:

> ***The new system was in place only a short time.*** The new system began in August 1992 and ended in October 1993. Moreover, the fundamental incentive of the system changed in February 1993. As actual bed-days increased, payments to hospitals fell in the first part of the period but rose in the second part.
>
> ***The economy was plagued with hyperinflation.*** The estimated inflation rate in 1992 was 843 percent and in 1993 7,000 percent. Financial incentives have effects only if the incentives are noticed; with prices and incomes changing daily, changes in financial incentives become lost in the "noise" of hyperinflation.
>
> ***There was no controlled experiment.*** Changes in behavior can be erroneously attributed to changes in financial incentives. We would have preferred to compare hospital utilization in DTMA hospitals with similar hospitals that continued to be financed under the old system, but no such comparison was possible.

5.2 Data

Our available data on operations at the hospital (as opposed to the department) level is per year. In comparing 1991 with 1992, we are comparing a full year under the old system with a year in which the old system was in place for seven months and the new system in place for just five months. In comparing 1992 and 1993, 1993 includes two months of Formula One, eight months of Formula Two, and two months of the old system.

The financial analysis focuses on a particular formulation of department costs (hereafter referred to as planned operating costs) and complexity group payments. As described in Chapter 3, planned operating costs for each department are calculated using costing norms set in L'viv, simple cost accounting for selected inputs, and a limited set of cost categories. Line items included are departmental and supporting paraclinic health professional minimum guaranteed planned salary and additional salary benefits, social security, bonus salaries, nutrition, medicines, linens and indirect costs. Planned operating costs cover only the operating portion of costs and are used as the basis for setting payments for complexity groups. Bed-day costs are calculated by dividing department costs by the "norm" number of bed-days, also set by the L'viv Oblast.

Data on planned costs and complexity group-based payment, initially compiled by the accounting department, are computerized on a monthly basis to determine the formula bed-day costs, departmental basic and surplus payments, and the allocation of these payments primarily to salary. Of the 15-month period during which the new payment system was implemented, this study examines two months of data from each department of each of the eight hospitals for a total of 30 departments, including: DCMH (8), Stebnyk (7), industrial enterprises (2), children's (3), maternity (5), dermatology and sexually transmitted diseases (l), tuberculosis (l), and oncology (3). The months of April and September 1993 are used because the computerized system was not fully in place until January 1993, they represent two comparable months under the most recent payment formulas, and changes in formulas were being made through February 1993. All the cost and payment figures cover a one-month period.

5.3 Methods

Clearly, the data available are quite limited, both in terms of the types of service, cost and payment data available, and the number of years and months being observed. The aims of the analysis are to give a clearer picture of how the payment system operates, to provide a general impression of preliminary impacts of the system, and to indicate what types of analysis would be useful and feasible for future monitoring and evaluation.

The analysis of service statistics focuses on overall changes in hospital operations, with occasional reference to changes at specific hospitals. The cost and revenue analysis is conducted primarily at the departmental level, since the complexity group payment system is calculated for departments. Some hospital-level facial analysis is done where appropriate.

Basic descriptive statistics are used to summarize the trends and patterns. Since the period of observation was affected by high inflation rates, all of the planned operating costs are converted to April 1993 values using monthly inflation rates (a deflation factor of 6.61). In some cases, these real costs are then converted to dollars using the April 1993 exchange rate estimated at 3,500 koupons per dollar. The inflation rate series is provided in Annex C, the foreign exchange rate series in Annex D.

5.4 Changes in Hospital Services

5.4.1 Changes in Services: 1991-92

The use of hospital resources fell from 1991 to 1992, whether that use was measured by beds, bed-days, discharges, or average length-of-stay (see Exhibit 5.1).

Beds. One purpose of the new financing system was to allow hospitals to reduce the number of beds in use without losing funding, as happens under the old financing system. The number of beds in use fell 5 percent between 1991 and 1992, from 1,500 in the eight DTMA hospitals to 1,420. The reductions were spread fairly evenly across the five largest hospitals, as shown in Exhibit 5.2.

Exhibit 5.1: Use of Hospital Resources Fell Between 1991 and 1992

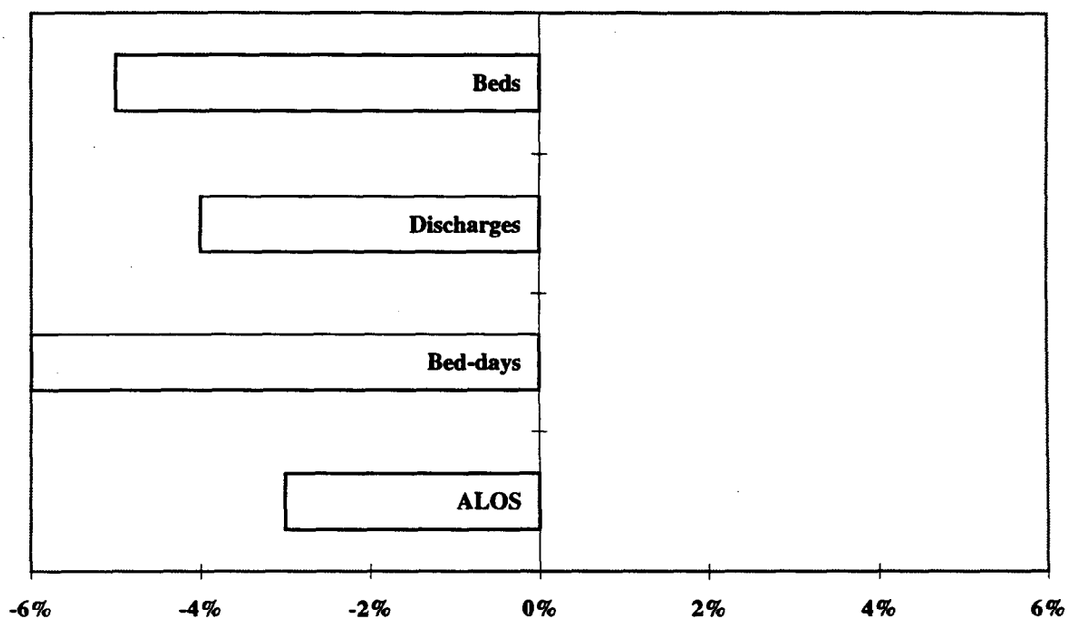

Exhibit 5.2
Bed Reductions, 1991 to 1992

Hospital	Department	Reduction in Number of Beds
Hospital for Industrial Enterprises	Therapy	20
Maternity Hospital	High-risk pregnancies	12
Maternity Hospital	Gynecological surgery	12
Stebnyk Town Hospital	Surgery	12
Stebnyk Town Hospital	Gynecology	6
Drohobych Central City Hospital	Surgery	6
Children's Hospital	Pediatrics: < 2- years old	6
Children's Hospital	Pediatrics: 2+ years old	6
All hospitals		**80**

Notes
1) Source is Drohobych Territory Medical Administration. See also Exhibit A.3.
2) Figures shown reflect the 1993 list of hospitals (e.g., Children's Hospital is not part of the Drohobych Central City Hospital). This adjustment is described in the notes to Exhibit A.3.

Bed-days. Since Formula One rewarded hospitals that reduced actual bed-days (assuming a constant number of expected bed-days), we would expect actual bed-days to fall. This, in fact, occurred, with a 6 percent decrease from 503,600 bed-days to 471,232 bed-days. Each of the six largest hospitals showed decreases. From another perspective, 21 of the 28 departments within the eight DTMA hospitals showed decreases. While the absence of comparable information from other areas means that we canuot make a definitive statement, the data are certainly consistent with Formula One having a noticeable effect on the number of bed-days.

Discharges. When hospitals are paid per case, there is an incentive to increase the number of cases and especially the number of "easy" cases. The fundamental incentive is that the incremental cost of treating another case generally falls as the number of cases increases. Since a hospital already has paid for overhead costs (heat, light, administration, etc.) and has a

relatively fixed payroll, admitting another patient generally results in a modest increase in total costs. If this patient is at the low end of patients in that group in terms of resource use, the hospital's incentive is even stronger.

Despite this incentive, discharges actually fell 4 percent from 1991 to 1992, from 32,799 to 3 1,498 (we use discharges as a proxy for admissions). They rose 1 percent at Drohobych Central City Hospital but fell 17 percent at the Children's Hospital, 12 percent at the Hospital for Industrial Enterprises, 5 percent at Stebnyk Town Hospital, and 5 percent at the Maternity Hospital. It is unclear why this decline occurred. Interestingly, a similar phenomenon occurred when the American system of diagnosis-related groups was introduced, even though that system features similar incentives to increase admissions.[4]

Average Length-of-Stay. Formula One encourages hospitals to reduce actual length-of-stay in each case below a predetermined "expected" level. At first glance, therefore, it would generate a strong incentive to reduce average length-of-stay. However, hospitals have latitude to affect the expected length-of-stay, and they have substantial incentives to do so. The interplay of expected and actual lengths-of-stay could generate the paradoxical result that the goals of the new financial system are met on a case-by-case basis but not overall. That is, actual days could be fewer than expected days in almost all cases but hospital-wide length-of-stay might be unchanged.

In fact, average length-of-stay did fall 3 percent between 1991 and 1992, from 15.4 days to 15.0. This finding suggests that Formula One did make an impact on hospital treatment patterns—especially since the system was in place only five months of the year. This inference must be tentative however, given the lack of appropriate comparison data from other areas. Moreover, some evidence is consistent with hospitals "gaming" the system; this evidence is discussed in the next section.

Intensity of Care. Intensity of care refers to the volume of resources (e.g., staff attention, medicines, supplies, operating room time) that are brought to bear on the average case. The new financing system was intended to increase the intensity of care by allowing hospitals to buy more medicines, supplies, and equipment. Intensity can be difficult to quantify; rough measures include number of staff per case or per bed-day, spending on medicines per bed-day, and so on. Unfortunately, this information was not available. Even if it were available, the hyperinflation of 1991-93 means that any comparison of spending at two points in time would be unreliable.

Patient Outcomes. An inevitable but unfortunate consequence of focusing on readily available utilization data is that we may ignore the fundamental question of whether patients have better health under one system than under the other. In addition to increasing the intensity of care, the new payment system was designed to increase the quality of care by allowing the Commission of Experts to assign financial penalties for poor care.

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[4] See Robert F. Coulam and Gary L. Gaumer, "Medicare's Prospective Payment System: A Critical Appraisal." *Health Care Financing Review,* 1991 Annual Supplement, pp.54-5.

On the other hand, it is conceivable that reductions in length-of-stay meant that patients were discharged too soon, or "sicker and quicker. " This concern was widespread in the United States when the DRG system was introduced, but is apparently without foundation.[5] In Ukraine, the international comparisons discussed in Section 2.3 strongly suggest that length-of-stay can be reduced without hurting patient health.

Quality of care and patient outcomes are difficult to quantify, and little evidence is available on the impact of the new payment system. Anecdotal evidence from people involved in the system was that it did result in better care, since physicians were more conscious that their efforts were being evaluated.

5.4.2 Changes in Utilization: 1992-93

The amount of change between 1992 and 1993 was more modest than between 1991 and 1992 (see Exhibit 5.3). The number of beds and actual bed-days was unchanged. Average length-of-stay rebounded to its previous level, but the number of discharges fell by another 3 percent. These results are generally as we would expect, given the fundamental change in the new financing system in February 1993.

Beds. Formula Two reinstituted the rewards for increasing the number of actual bed-days, so hospital administrators had little reason to reduce the number of beds in use. In fact, the bed configuration in each hospital was unchanged between 1992 and 1993.

Bed-days. We would expect Formula Two to result in increased bed-days at each hospital, but this was not the case. Bed-days were unchanged overall, rising modestly in five hospitals, falling in two hospitals, and unchanged at Drohobych Central City Hospital.

Discharges. Since Formula Two is much closer to payment per diem than per case, there is much less incentive to increase the number of admissions than there is under Formula One. In any case, discharges fell 3 percent, matching the decline observed between 1991 and 1992.

Average length-of-stay. Under Formula Two, there remains some incentive to reduce average length-of-stay, since each department receives a "surplus" payment when actual days are fewer than expected days. However, this incentive is dwarfed by the incentive to increase actual bed-days. Accordingly, we would expect to see an increase in average length-of-stay, which is exactly what happened. Length-of-stay rebounded 3 percent from 15.0 days to reach its 1991 level of 15.4 days. In six of the eight hospitals, average length-of-stay increased from 1992 to 1993 after falling from 1991 to 1992 (see Exhibit 5.4).

Patient Outcomes. The operation of the surplus fund and the assignment of penalties for quality of care problems were the same under Formula Two as under Formula One. There was,

[5] See Coulam and Gaumer, "Medicare's Prospective Payment System: A Critical Evaluation," p 66.

Exhibit 5.3: Hospital Utilization Changed Little Between 1992 and 1993

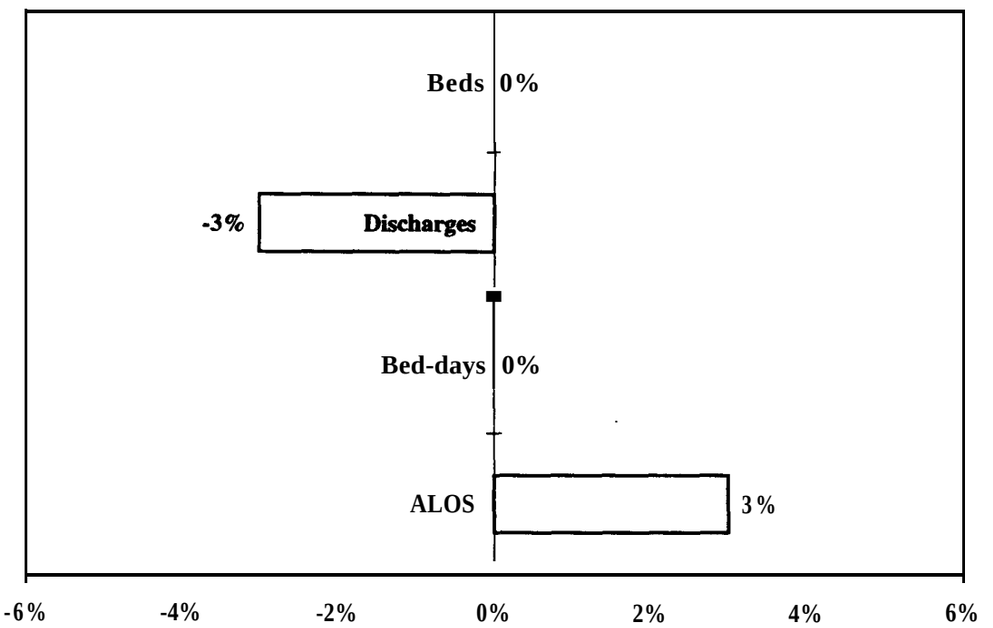
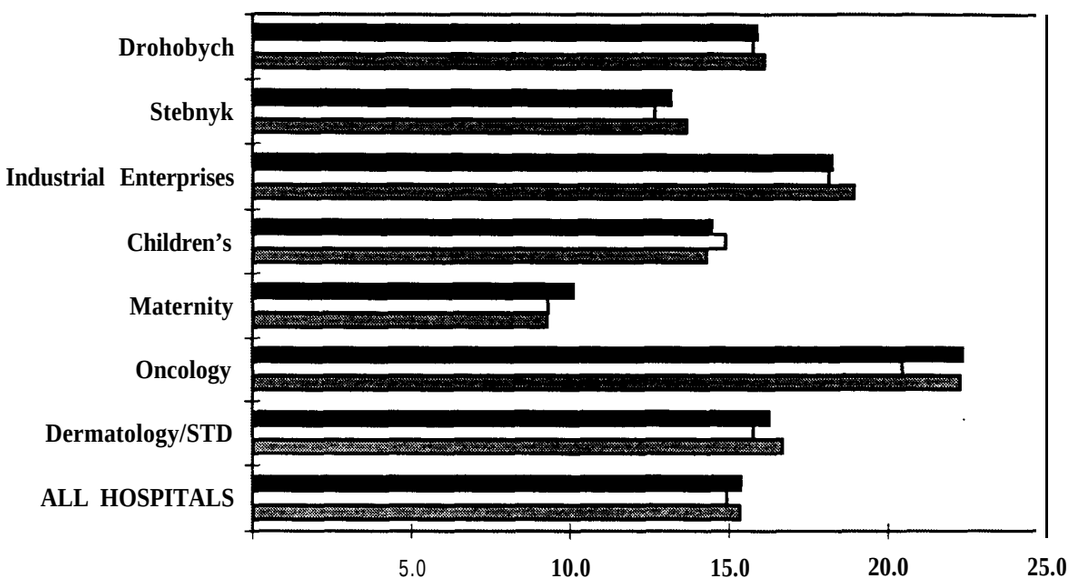


Exhibit 5.4: Average Length of Stay Fell in 1992, Then Rose in 1993



Average Days of Stay. Omits TB Hospital.

however, less incentive to discharge patients early. In any case, our lack of data on outcomes means that we cannot draw even tentative conclusions.

5.5 Findings on Costs and Revenues

The findings are discussed in two parts, first looking at costs in general, and second looking at payment statistics. All of these exhibits show trends under Formula Two since the two months examined are April and September 1993. Exhibits 5.5-5.11 summarize the results. Annex E provides the spreadsheet model of how costs and payments are calculated.

5.5.1 Planned Operating Costs

As shown in Exhibits 5.5 and 5.6, in terms of dollars, monthly operating costs for running a department range from $458 to $808. In the upper half of this range are the DCMH, children's, and tuberculosis hospitals; the lower-cost hospitals include Stebnyk, Industrial Enterprises, maternity, dermatology, and oncology. However, the costs per bed-day are all extremely small, ranging from $0.31 to $0.57.

In real terms, differences in planned operating costs between April and September 1993 vary, showing both increases and decreases. By contrast, all hospitals, with the exception of dermatology, had real cost increases in personnel and medicines. Costs for linens and nutrition, when data were available, decreased in real terms. Similarly, bed-day costs fluctuated considerably.

The major components of operating costs include personnel (21 to 36 percent), nutrition and linens (8 to 34 percent), medicines (9 to 29 percent), indirect expenses (12 to 24 percent) and social security (8 to 16 percent).

5.5.2 Complexity Group Payments

Departmental Bed-days: Exhibits 5.7 and 5.8 show that with the exception of Industrial Enterprises in April 1993 and oncology in April and September, all hospitals achieved lower actual bed-days than the expected bed-days by about 2 to 7 percent. For example, as shown in Exhibit 5.9, it appeared that two departments in two hospitals did not have difficulty ensuring that actual length-of-stay was less than expected length-of-stay. We looked at the departments of therapy and surgery at each of Drohobych Central City Hospital (DCCH) and Stebnyk Town Hospital (STH), obtaining two months of case records for one hospital and one month at the other. Of the 637 cases, actual length-of-stay was lower than expected length-of-stay 53 percent of the time and equal to it 19 percent of the time. Only in 27 percent of cases did actual days exceed expected days. Although this result is consistent with a concern that hospitals may be able to adjust the expected length-of-stay so that it can usually be met, the available evidence is insufficient to conclude that this phenomenon occurred. There appears to be no uniform relationship between planned bed-days and expected bed-days.

Exhibit 5.5. Planned Total and Bed-day Costs for Hospitals (General & Children's): Department Averages

Item	DCMH		Stebnyk		Industrial Enter.		Children's	
	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93
Total plan. operating costs (in 4/93 koupons)	2,797,551	2,666,312	1,601,818	1,808,534	1,979,680	1,684,603	2,827,029	2,561,375
Total plan. operating costs (in 4/93 dollars)	799	761	458	517	566	481	808	732
% change, plan. oper. costs	n.a.	*	n.a.	13%	n.a	-10%	n.a	*
% change personnel	n.a.	24%	n.a.	21%	n.a.	27%	n.a.	9%
% change medicines	n.a.	45%	n.a	92%	n.a.	19%	n.a.	83%
% change linen, nutrition	n.a.	*	n.a	-35%	n.a.	-61%	n.a.	*
Formula cost/bed-day (in 4/93 koupons)	1,832	1,744	1,227	1,380	1,364	1,205	1,980	1,858
Formula cost/bed-day (In 4/93 dollars)	0.52	0.50	0.35	0.39	0.39	0.34	0.57	0.53
% change, cost/bed-day	n.a.	-4%	n.a.	13%	n.a.	-10%	n.a.	-5%
Composition of costs								
% personnel	32%	*	29%	31%	21%	30%	36%	*
% social security	12%	*	11%	12%	8%	11%	13%	*
% medicines	15%	*	15%	25%	25%	32%	9%	*
% nutrition & linens	19%	*	27%	16%	34%	15%	17%	*
% indirect	21%	*	18%	16%	13%	12%	24%	•

Exhibit 5.6. Planned Total and Bed-day Costs for Specialist Hospitals: Department Averages

Item	Maternity		Dermatology & STD		Tuberculosis		Oncology	
	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93
Total plan. operating costs (in 4/93 koupons)	,772,933	1,816,745	1,848,955	2,252895	2,968,257	2,865,831	1,864,008	2,427,345
Total plan. operating costs (in 4/93 dollars)	506	519	528	644	848	819	533	694
% change, plan. oper. costs	n.a.	*	n.a.	22%	n.a.	-3%	n.a.	33%
% change personnel	n.a.	20%	n.a.	106%	n.a.	45%	n.a.	32%
% change medicines	n.a.	94%	n.a.	-23%	n.a.	18%	n.a.	85%
% change linen, nutrition	n.a.	*	n.a.	-8%	n.a.	-43%	n.a.	-13%
Formula cost/bed-day (in 4/93 koupons)	1,473	1,489	1,077	1,313	1,352	1,305	1,243	1,618
Formula cost/bed-day (In 4/93 dollars)	0.42	0.43	0.31	0.37	0.39	0.37	0.35	0.46
% change, cost/bed-day	n.a.	2%	n.a.	22%	n.a.	-3%	n.a.	33%
Composition: costs								
% personnel	34%	*	20%	33%	21%	32%	34%	33%
% social security	12%	*	7%	12%	8%	12%	12%	12%
% medicines	12%	*	29%	19%	14%	18%	18%	25%
% nutrition & linens	20%	*	29%	22%	42%	25%	16%	8%
% indirect	22%	*	15%	14%	14%	14%	20%	22%

* insufficient data

Exhibit 5.7. Payment Statistics for Hospitals (General & Children's): Department Averages

Item	DCMH		Stebnyk		Industrial Enter.		Children's	
	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93
Actual—expected bed-days (% difference of expected)	-7%	-5%	-2%	-2%	-5%	0.5%	-7%	-6%
Expected—planned bed-days (% difference of planned)	9%	0	-9%	-16%	11%	-25%	2%	-15%
Actual—planned bed-days (% difference of planned)	2%	-5%	-11%	-18%	5%	-24%	-4%	-20%
Total payment as % of total plan. operating costs	104%	97%	90%	83%	107%	76%	98%	82%
Surplus payment as % of total payment	1.8%	1.6%	0.9%	1.0%	1.3%	0	2.2%	2.6%
Previous month deficit as % of total planned operating costs	0.5%	0.9%	0.3%	3.2%	1.3%	3.0%	3.6%	2.0%
No. department w/sanctions	1	0	0	0	0	0	1	0
Average sanction (%)	22%	n.a.	n.a.	n.a.	n.a.	n.a.	3%	n.a.
Coefficients: salary reward								
Excess salary as % of actual salary	6%	3%	-3%	-12%	1%	-28%	11%	-13%
Remaining surplus as % of actual salary	3%	2%	1%	1%	2%	0	3%	2%
Previous deficit as % of actual salary	-3%	-4%	-2%	-13%	-8%	-18%	-21%	-10%
Bonus salary as % of actual salary	6%	1%	-4%	-25%	-6%	-46%	-7%	-21%

Exhibit 5.8. Payment Statistics for Specialist Hospitals: Department Averages

Item	Maternity		Dermatology & STD		Tuberculosis		Oncology	
	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93
Actual—expected bed-days (% difference of expected)	-6%	-7%	-5%	-3%	-2%	-3%	0	2%
Expected—planned bed-days (% difference of planned)	1%	4%	-16%	3%	5%	6%	-6%	-1%
Actual—planned bed-days (% difference of planned)	-4%	-3%	-20%	1%	3%	3%	-6%	0%
Total payment as % of total plan. operating costs	98%	101%	81%	101%	103%	104%	94%	100%
Surplus payment as % of total payment	2.7%	4.0%	1.2%	0.7%	0.5%	0.9%	0.2%	0
Previous month deficit as % of total planned operating costs	18.7%	14.7%	0	2.3%	0	0	0	4%
No. department w/sanctions	2	0	0	0	0	0	0	0
Average sanction (%)	9.5%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Coefficients: salary reward								
Excess salary as % of actual salary	-3%	-4%	-21%	0	4%	-1%	-3%	3%
Remaining surplus as % of actual salary	2%	3%	1%	1%	1%	1%	0	0
Previous deficit as % of actual salary	-51%	-30%	0	-13%	0	0	0	-19%
Bonus Salary as % of actual salary	-53%	-32%	-19%	-12%	5%	0	-3%	-16%

Exhibit 5.9: Hospital Departments Appeared to Have Little Trouble Meeting Length-of-Stay Targets

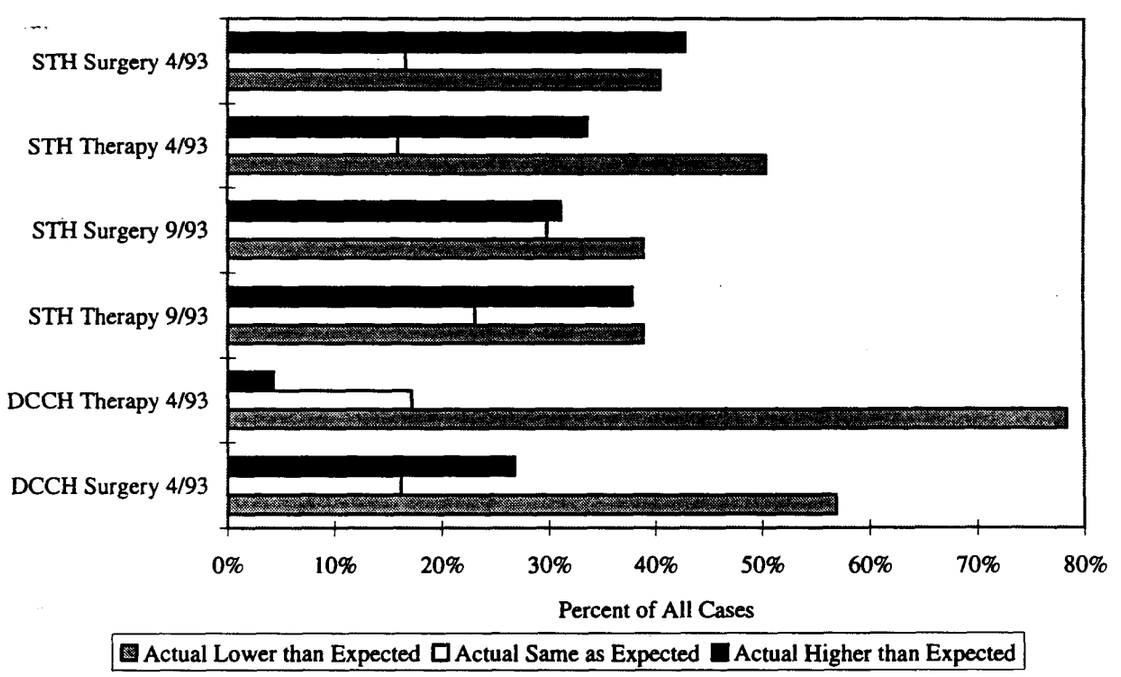


Exhibit 5.10 Comparisons of the Department of Internal Medicine Among Three Hospitals: Costs and Payment Statistics

Item	DCMH—Internal Med.		Stebnyk—Internal Med.		Indust. Enterp.-Internal Med.	
	April 93	Sept 93	April 93	Sept 93	April 93	Sept 93
Total plan. operating costs (in 4/93 koupons)	4,088,562	3,268,047	1,974,979	2,273,724	2,521,504	1,832,287
Total plan. operating costs (in 4/93 dollars)	1,168	934	564	650	720	524
% change in costs:	n.a.	n.a.	n.a.	15%	n.a.	-27%
% change personnel	n.a.	-6%	-	25%	n.a.	7%
% change medicines	n.a.	56%	n.a.	92%	n.a.	-26%
% change linen, nutrition	n.a.	n.a.	n.a.	-31%	n.a.	-62%
Cost per bed-day (in 4/93 koupons)	2,048	1,584	1,152	1,326	1,473	1,071
Cost per bed-day (In 4/93 dollars)	0.59	0.45	0.33	0.39	0.42	0.31
% change, cost/bed-day	n.a.	-23%	n.a.	15%	n.a.	-27%
Actual - expected bed-days (% difference of expected)	-9%	-5%	-2%	0	-6%	1%
Expected - planned bed-days (% difference of planned)	8%	5%	8%	-12%	15%	-21%
Actual - planned bed-days (% difference of planned)	-2%	0	6%	-12%	7%	-20%
Total payment as % of total plan. operating costs	100%	101%	107%	88%	109%	80%
Reward salary/actual salary	3%	-10%	16%	-3%	12%	-34%

Exhibit 5.11 Payment Statistics: Total Hospital Measures

Item	DCMH	Stebnyk	Indust. Ent.	Children's	Maternity	Derm. & STD	TB	Oncology
Actual - expected bed-days (% difference of expected)								
April 1993	-7%	-2%	-5%	-6%	-6%	-5%	-2%	0
Sept 1993	-5%	-2%	-1%	-7%	-9%	-3%	-3%	-1%
Expected - planned bed-days (% difference planned)								
April 1993	8%	-8%	11%	1%	-2%	-16%	5%	-6%
Sept 1993	-1%	-17%	-24%	-13%	4%	3%	6%	1%
Actual - planned bed-days (% difference of planned)								
April 1993	1%	-10%	6%	-5%	-8%	-20%	3%	-6%
Sept 1993	-6%	-17%	-14%	-19%	-5%	1%	3%	2%
Total payment as % of total planned operating costs								
April 1993	101%	90%	107%	99%	95%	81%	103%	91%
Sept 1993	95%	84%	76%	83%	100%	101%	104%	103%
Previous month deficit as % of total planned operating costs								
April 1993	0	0	1%	3%	18%	0	0	0
Sept 1993	1%	4%	3%	2%	15%	2%	0	4%

Comparison of Departmental New Payment to Old Planned Budget Allocation: The new payment does not always equal planned operating costs. Exhibits 5.10 and 5.11 show that when actual bed-days are greater than planned bed-days, new payments exceed operating costs by the same ratio. Similarly, when actual bed-days are less than planned bed-days, the ratio of total reimbursement to operating costs falls by the same amount. The range for this ratio is 76 percent to 107 percent. Clearly, when the formula is based on rewarding actual bed-days, payments will exceed previous planned levels as actual length-of-stay increases. *Departmental Additional Surplus:* According to the payment formulas given in Chapter 3, the surplus received by hospitals under Formula Two is small. This is clearly seen in Exhibits 5.7 and 5.8, where the surplus reimbursement constitutes less than 3 percent of total reimbursement.

Hospital Comparisons for Internal Medicine: In comparing the internal medicine departments of DCMH, Stebnyk, and Industrial Medicine, no clear pattern emerges for either planned operating costs or the other payment statistics. Exhibit 5.10 presents the findings for the three internal medicine departments. The exception is that in most cases the departments were able to achieve reductions in actual bed-days below expected bed-days.

Hospital-level Impacts: Exhibit 5.11 shows that the results at the hospital level are quite similar to those given for the departments. Actual bed-days are less than expected bed-days. The differences between expected and planned bed-days are quite variable. Whether the hospital's reimbursement covers total planned operating costs is closely related to the difference between actual and planned bed-days. Most hospitals are carrying some deficit from the previous month.

5.6 Conclusions

The conclusions below are drawn cautiously because we recognize that the new system was in place only a short time, the economy was plagued with hyperinflation, and no comparisons could be made with a control group.

Consistent with the incentives created by Formula One, the use of hospital resources, including the number of beds, bed-days, and average length-of-stay, fell from 1991 to 1992. Overall, beds fell by 5 percent, bed-days by 6 percent, and ALOS by 3 percent. Contrary to expectations, the number of discharges fell by 4 percent. It is unclear why this decline occurred. The changes observed during 1992 and 1993 were also not surprising given the reduced incentives under Formula Two to improve efficiency. The amount of change in these service statistics was more modest. The number of beds and bed-days remained unchanged while ALOS returned to its original (and higher) level. As is the case from 1991 to 1992, the number of discharges continued to fall, which is difficult to explain.

In spite of the limited nature of the data, there are two important fmdings. The first is related to whether new payments exceed old planned budget allocations. Comparisons of new payments to planned budget allocations (as seen in section 4.2) as measured by payment as a percentage of total planned operating costs is largely dependent on whether actual bed-days are greater than planned bed-days and whether expected bed-days are substantially greater than planned bed-days.

When actual bed-days exceed planned bed-days, the ratio of new payments to planned operating costs is usually over 100 percent. When actual bed-days are fewer than planned bed-days, the ratio is less than 100 percent. The same relationship generally holds when looking at the difference between expected and planned bed-days. These findings are consistent with the discussion of the payment formulas given in section 4.2. Overall, departments generated new payments, which were 76 to 104 percent of planned operating costs.

The second major finding pertains to the ability to increase payments by reducing lengths-of-stay. The complexity group payment system has had a modest impact on the number of bed-days. In most cases, actual bed-days fall below expected bed-days. These results are somewhat surprising since it was demonstrated that the second payment formula provides a disincentive to reduce actual bed-days. The results might be explained by the fact that hospital managers and health workers are not fully aware or have not yet adjusted to the incentives created by the second-payment formula. Still, some adjustment appears to be taking place, since reductions in actual bed-days are often smaller in September than in April 1993. In fact, in industrial enterprises and oncology, actual bed-days are increasing and are above expected bed-days. One can also conjecture that cases in the oncology hospital are somewhat complex, making it more difficult to cut length-of-stay.

Other findings show that most hospitals carry some deficit from the previous month. Financial penalties are rarely instituted. These sanctions have a minimal effect on reimbursement, since the surplus reimbursement usually constitutes less than 3 percent of total reimbursement. All hospitals except the one for dermatology and STDs have experienced sizeable increases in the real costs of personnel and medicines.

Chapter 6

QUALITY ASSURANCE

6.1 Introduction

The quality of medical care within Drohobych Territory is overseen by the Commission of Experts, which comprises four physicians and its Chief, Dr. Ihor Lishchynsky. The chief is appointed by the Medical Soviet, while the physicians are nominated by the chief and approved by the chief doctor of the DTMA. The commission is guided by a set of health care quality standards. Under both the old and new financing systems, the commission can impose a range of administrative penalties on physicians and other medical personnel. Under the new financing system, it can also impose financial penalties on individual hospital departments. These penalties are small and appear to be infrequent, thus mitigating their impact. Their primary value is that they constitute regular and specific feedback on quality to each department.

6.2 Health Care Quality Standards

The territory's health care quality standards are similar to the medical and economic standards used elsewhere in the former Soviet Union. They were based in part on standards used in St. Petersburg and Kemerovo in Russia, then adapted to local medical practice in 1991. The development process reportedly required intensive involvement by physicians and chief nurses in the hospitals affected. Drohobych Central City Hospital took the lead role in developing the standards, and in many cases the other facilities simply adopted those standards. The standards were also reviewed by medical experts at the oblast level.

The teams developing the standards relied both on prevailing practice within Drohobych Territory and on literature reviews. The standards for the DCCH Neurology Department, for example, include references to CT scans even though there is no CT scanner in Drohobych. In those instances, the expectation is that patients will be transferred to L'viv for the test. As the standards were put into practice, some changes were made as the need arose. These revisions appear to have occurred on an *ad hoc* basis; a systematic mechanism for updating the standards has not been established.

For each diagnosis, the standards list the tests to be administered, the treatment to be given, the average length-of-stay in the past, and the expected outcomes. Physicians are expected to provide the tests and treatment indicated or to be able to justify their omission. One reason for omission would be a lack of clinical symptom for that patient; another would be a shortage of supplies (such as X-ray film). Annex F contains the complete list of standards for the Drohobych City Medical Hospital Surgery Department.

The standards are silent as to the timing and frequency of treatment and testing even though these factors are very important considerations in the quality of care. Although frequency is not listed, we were advised that earlier regulations prescribed the number of times certain tests

should be repeated, depending on whether the results were normal or not. Future versions of the standards would probably be more useful if the timing and frequency of treatments and tests were specifically included.

6.3 Quality Assurance

The Commission of Experts reviews all cases of death (about 200–250 a year) as well as all emergency admissions. The commission also selects cases at random from each department. Potential problems are identified by one of the experts, then discussed with the chief of the commission and the chief of the department.

Under both the old and new systems, the commission may impose administrative penalties. For example, a physician might be required to take recertification exams earlier than he or she otherwise would have (every five years). A public finding of inadequate care might also be made. In rare cases, the physician can be fired.

Under the new system, the commission also uses a point system to assign financial penalties to the department. Each record that is screened starts with 10 points; points are then subtracted for each deficiency. Insufficient patient history might cost 0.5 point, while inappropriate diagnosis might cost 1.0 point. If 50 records are screened in a month, a department would start with 500 points. With that perfect score, a department would receive 100 percent of its surplus (as described in Chapter 3). If a department received only 400 points, it would receive 80 percent of its surplus. In egregious cases, such as no medical care being provided, the penalty could equal 100 percent of a department's surplus for up to three months.

From the commission's point of view, the penalty is on the department. It is up to the department to take further action. In some cases, a department may hold the individual physician financially responsible. A physician's basic salary (i.e., Article I) cannot be reduced, but benefits may be reduced.

6.4 Operation of the Penalty System,y 1992–93

Although complete data were unavailable, a check of department records suggests that penalties were not common. In April 1993, only three of the 28 departments within DTMA hospitals were penalized. In September 1993, none were. Moreover, the magnitude of the penalties in April 1993 was small. Surpluses are themselves small; in April 1993 they equaled 1.8 percent, 2.2 percent, and 2.7 percent of the total monthly budget for the three departments that were penalized. The penalties were 3 percent, 9.5 percent and 22 percent, respectively, so each department received at least 99.5 percent of the budget it otherwise would have received (see Exhibits 5.7–5.8).

The penalties may have been small, but they are important. Their value is that they provide regular and specific feedback at the appropriate organizational level (i.e., the department). Although a definitive evaluation was not possible, anecdotal evidence suggests that the quality

of care did improve during the period when the new financing system was in effect. The thoroughness and accuracy of patient charts improved in particular, as we would expect when the quality assurance mechanism was retrospective chart review.

Chapter 7

FUTURE MONITORING AND EVALUATION

With the reintroduction of the new financing system (Formula One) in 1995, we can expect important changes in the operations and financial situation of the DTMA hospitals. Moreover, the impacts will probably become clearer over time. The changes increase the importance of improving the availability of statistical and other information to hospital and DTMA officials. Improved information is required to ensure the continued viability of the new financing system in Drohobych Territory. More broadly, it will also help other areas of the Ukraine and the former Soviet Union learn from Drohobych's experience.

7.1 Current Information Support Systems for Complexity Group Payments

This section provides a brief look at the information systems, particularly patient records and cost management, in light of how they support the implementation of the complexity group payment system. The DTMA recognizes the importance of improving both of those databases; however, not much has been done to tailor them to the specific needs of the payment system. Computerization is also quite limited.

Patient discharge records include the following items: patient's name, patient's address, complexity group, actual length-of-stay, expected length-of-stay, physician's name (in some cases). These records are, for the most part, not computerized, although one or two facilities are beginning to do so. The quality of patient records is monitored to some extent by the Commission of Experts. In the process of conducting its regular medical audit exercise it may cite a provider who keeps poor diaries or classifies a patient with an inappropriate diagnosis based on symptoms recorded. Each month the hospitals compile a list of all patients admitted, including the complexity group classification, the expected length-of-stay, and the actual length-of-stay, along with other basic information including patient address and supervising doctor. In general, however, hospitals do not have substantial clinical records departments with experienced coders to classify cases into complexity groups according to length-of-stay and ICD-9 codes.

From patient records and other sources, the DTMA regularly compiles a fairly extensive set of hospital statistics in handwritten ledgers. Standard forms are used from the period before independence and are required by the Central Ministry of Health for monitoring the activities of health facilities. The basic data provided in Chapter 2 was quite readily available from these ledgers.

Budget records are the primary source of cost information. The DTMA regularly records hospital expenditures for each of the budget articles. These budgets show allocations based on planning norms. These records are all in handwritten ledgers. The only computerized cost information includes the departmental level complexity group payment calculations. Each department record includes planned costs by major line item, various indirect cost items and indirect cost rates, previous month deficits, financial penalties, the planned cost per bed-day,

the base payment, the surplus payment, and the allocation of these latter two items, especially to cover salary.

Cost accounting systems exist to a limited degree. For example, planned bed-day costs include indirect salary costs from paraclinics, which are derived by simple apportionment of paraclinic costs to the departments they serve. Costs for maintenance, administration, and general support are included as an indirect cost rate mark up over direct personnel costs. Although spreadsheets for payment calculations include fields to record actual costs and to conduct some variance analysis, such information is not yet being collected.

7.2 Suggested Indicators

There are seven major areas of importance for future monitoring and evaluation: (1) financial viability/cost containment; (2) efficiency; (3) practice patterns; (4) equity; (5) quality of patient care; (6) diffusion of new technologies; and (7) updating data. Suggestions for indicators are summarized in Exhibit 7.1.

Financial viability: These indicators show whether the health facilities are able to cover their costs or at least the components of costs which are critical for financial viability in both the short and the long run. (1) Net revenues—defined as total annual payments minus total annual costs—indicate whether a facility can cover its costs and the amount of surplus available to reinvest in improvements to promote the efficiency and the quality of care. (2) Net revenue per discharge for each department provides a measure of the average amount of revenue realized per discharge in a particular department. (3) Cost recovery rates—defined as the percentage ratio of total payments divided by a cost component such as total costs, fixed costs, variable costs or operating costs—indicates the extent to which a facility can cover its costs or various cost components. This indicator should be calculated for the hospital as a whole and for each department. (4) Amount and trends of the DTMA budget (in real terms) indicate whether the payment system has resulted in real growth in public health expenditures. (5) Net DTMA allocation—defined as the DTMA budget minus DTMA payments to hospitals—shows whether the payment system is affordable within the budget given to the DTMA. This is critical since the payment system is not directly tied to the DTMA budget allocation. (6) Amount and trends in hospital budgets/expenditures (in real terms) indicates whether the payment system has resulted in real growth in expenditures for inpatient facilities. This could also be calculated for each department. (7) Cost per discharge (case-mix adjusted, if possible)—defined as total hospital and/or departmental costs divided by the number of corresponding discharges—measures cost containment efforts. (8) Deficit payment ratios—defined as the annual deficit divided by total costs—indicates the financial strength of health facilities and whether they are operating beyond available payment allocations.

Exhibit 7.1
Indicators for Monitoring and Evaluating the Payment System

Topic	Suggested Indicators	
Financial Viability	net revenues cost recovery rates cost per discharge hospital budgets/expenditures net DTMA budget after payments to hospitals	net revenue per discharge amount & trends in DTMA budget (real) deficit payment ratios
Intermediate Efficiency	occupancy rates inpatient labor hours/discharge	average length-of-stay cost-effectiveness of selected procedures
Practice Patterns	average length-of-stay number of bed-days/1,000 pop. intensity of service hospital case-mix	number of admissions per year severity of illness types of post-hospital care
System Efficiency	number of beds/1,000 population, comparison of selected indicators for various categories of facilities such as: (1) rural/urban, (2) general vs. specialist, (3) large vs. small	
Equity	access and adverse outcomes for selected vulnerable groups, including the poor	
Quality of Care	hospital readmission rates cost-effectiveness studies standards of care patient satisfaction	inpatient mortality rates process indicators patient health outcomes adequacy of medicines, supplies, equipment
New Technologies	payment rewards for adopting new, more efficient technologies process indicators of how new technology is brought into the payment system	
Updating indicators	inflation case mix productivity changes	real costs of inputs practice patterns new technologies

Intermediate Efficiency: These indicators show improvements in efficiency at the facility level. (1) Occupancy rates—defined as occupied bed-days as a percentage to total available bed-days per year—reflect the extent to which hospital resources are being used. (2) Average length-of-stay (case-mix adjusted, if possible)—defined as the number of patient days divided by total discharges—is useful to determine whether practice patterns are using more cost-effective treatments. (3) Inpatient labor-hours per discharge (case mix adjusted, if possible) provides an overall measure of labor productivity.

Practice patterns: These indicators show how the payment system affects how health professionals treat patients. Corresponding information on quality of care should be examined in conjunction with these indicators to determine whether the changes in practice patterns enhance efficiency without jeopardizing quality. (1) Average length-of-stay was defined in the previous paragraph. (2) Number of admissions provides important information, since the payment system tends to encourage an increase in the number of inpatient admissions. Utilization review may be required to assess whether increases in inpatient admissions are really justified. (3) Number of bed-days per 1,000 residents provides a measure of trends in the use of inpatient services as a whole. (4) Severity of illness provides a measure of what types of cases are being seen in inpatient facilities. The payment system may affect what types of patients use hospitals. (5) Intensity of service indicators show how the use of tests, exams, and other procedures may be affected by the payment system. (6) Types of post-hospital care are important to track when payment systems encourage reductions in length-of-stay. Alternative health care settings may or may not be appropriate for patients who need services after discharge. (7) Hospital case mix refers to the average severity of the cases being treated.

System Efficiency: All of the variables listed under financial viability, efficiency, and practice patterns should be compared among different types of hospitals. Comparisons of categories of hospitals would be useful. Examples include: (1) rural versus urban, (2) general versus specialty, (3) large versus small number of beds. In addition, it will be important to monitor the number of beds per 1,000 population, since it is well noted that there is currently an excess.

Equity: Payment systems may create incentives for hospitals to change the way they treat certain cases, particularly if specific types of diagnoses and/or specific types of patients generate deficits in net revenues earned. Indicators are needed to determine which cases are denied access or are otherwise adversely affected as a result of the payment system. The focus should be on vulnerable populations, including the very poor and those at high risk of illness.

Quality of Care: Any payment system should ensure that quality of care remains at an acceptable level. Although assessment of quality of care is difficult, there are some typical indicators used to identify major problems. All of these indicators should include case-mix adjustors. (1) Hospital readmission rates provide information on whether patients are being discharged too early and subsequently suffering relapses or complications such that they must be readmitted to the hospital. (2) Inpatient mortality rates may indicate gross errors in medical practice. (3) Cost-effectiveness studies indicate whether alternative forms of treatment are both efficient and effective. (4) Process indicators are useful to check the extent to which expected steps in the process of care (as specified by standards) are being undertaken. (5) It is important to monitor patient health status at discharge, especially when there are payment incentives to reduce lengths-of-stay.

Development and diffusion of new technologies: Payment systems can discourage or encourage the use of new technologies, depending on whether payments cover the costs of acquiring and using such technologies. The diffusion of new technologies also depends on how quickly payment rates can be adjusted to account for the use of new technology. Measures should be

developed to track the availability of new technologies and the process used to bring them into the payment system.

Updating indicators: Payment rates will need to be updated regularly to incorporate inflation, changes in real costs of treatment, case mix, practice patterns, productivity, and technology. Many of these indicators have already been mentioned above; however, they will have to be tracked so as to facilitate updating payment rates on a regular basis.

7.3 Using the Indicators

Information systems are needed to support managerial and policy decisions. Indicators, methods of analysis, and reporting are likely to be different depending on the type of decisions involved.

The administrative costs of supporting managerial information under case-based payment systems can be quite high both for the fund holder (the DTMA) and each hospital. Each patient record has to be coded into a complexity group. Cost accounting is essential for setting accurate payment rates. Indicators for updating the groups is necessary. Monitoring quality on a continual basis is essential.

In preparing the evaluation to determine impacts of the new payment system, it is important to carefully think through the expected changes in each of the indicators chosen as early as possible. These expectations can then be used to judge the successes and failures of the system. In analyzing the indicators to test hypotheses, both basic descriptive statistics and more rigorous statistics should be used. For example, in almost all cases, it is important to adjust indicators for case-mix to ensure comparability of indicators among facilities and over time. Policymakers should consider designing an evaluation of the system using experimental design. A more systematic and scientific approach to data collection would enable one to more clearly attribute changes in indicators to the implementation of the payment system. This would include collecting data on a variety of indicators before, during, and after the pilot test, as well as collecting the same set of indicators in comparison facilities outside of the pilot test region. This would address many of the ambiguities raised with the findings of this rapid assessment.

Chapter 8

RECOMMENDATIONS

On the whole, the new financing method introduced in Drohobych is an excellent example of the experimentation that is necessary if the Ukrainian health care system is to become better able to improve the health of the population. Policymakers at the oblast and national levels and in other regions of the Ukraine will be able to learn from both the successes and the problems of the new financing system. International comparisons strongly suggest that Ukraine should shift its emphasis from keeping patients in the hospital to improving their health with more medicines, better medical equipment, and more care provided in clinics and in the home. The DTMA's new financing method gives hospital managers appropriate incentives to reduce length-of-stay, improve the availability of medicines and supplies, and generally spend limited funds more productively. It is a major improvement over the prevailing system of funding hospitals to build more beds and increase the number of bed-days used by patients.

The basic goals set by the DTMA were to improve the efficiency of public health services, to reward productive health workers, and to ensure acceptable quality of care. To this end, they introduced payment according to groups of diagnoses. The following recommendations suggest areas where the incentives created by the complexity group payment system for more cost-effective and affordable health care services could be strengthened. The focus here is on the payment formula proposed to be reintroduced in 1995, which was the one in place between August 1992 and February 1993 (Formula One).

(1) *The payment formula:* Of the two formulas tested during the waiver period, we recommend that Formula One, the formula in place between August 1992 and February 1993, be reintroduced. This seems to be the decision already taken by policymakers, thus the findings of this report simply encourage this decision. Some revisions of the formula should be considered and are described below.

Complexity group payment focuses on efficiency gained by reductions in length-of-stay. Although not based on cost-effectiveness studies, the Commission of Experts used expert judgement to arrive at these expected bed-days. Setting more efficient norms for length-of-stay is important, but it is not the only means to promote efficiency. Setting more efficient per diem costs provides another important mechanism for stimulating hospitals to use resources more cost-effectively. The first recommendation is that policymakers should consider replacing planned bed-day costs with an expected bed-day cost that is believed to reflect more efficient use of resources (unless it is believed that planned bed-day costs already reflect efficient processes). Doing this will depend first on getting valid and reliable information on actual costs. This is addressed in recommendation #2.

Expected bed-day costs should include a more complete accounting of resources (direct and indirect, personnel and nonpersonnel) and at a level which reflects more efficient and cost-effective use of resources. Currently, the payment formula covers all salaries, nutrition,

medicines, linens, and selected indirect costs. Capital costs are paid through a separate mechanism; namely, special applications for major capital costs are made to the DTMA and the Medical Soviet. The bed-day costs rate used in the formula should be improved to ensure that all noncapital costs, relevant minor capital costs, and all indirect costs are fully accounted for. Although one could include capital costs in the costs per bed-day rate, it is reasonable to have separate payment of major capital costs if there is a special need to ensure rational allocation of expensive and sophisticated equipment.

(2) *Cost data, analysis, and management:* Both the DTMA and the health facilities critically need cost management systems to generate more accurate, complete, and timely cost information. They also need tools to conduct appropriate cost analyses to support managerial decision making. The DTMA requires such information and analysis tools to set the payment rates. Health facilities need actual cost data and cost analysis tools to negotiate financially viable rates and to track financial status on an ongoing basis. Cost management should cover personnel, nonpersonnel, and capital costs; distinguish among fixed and variable costs; include appropriate cost accounting allocations; and be formulated in such a way as to support analysis required for the payment system. Careful attention should be paid to depreciation of fixed assets, since this is currently not being done.

Without sufficient autonomy in management of daily operations, finances, and personnel, hospital managers will have difficulty reallocating resources to improve the cost-effectiveness of their services in the ways indicated by the information and analysis generated from the improved cost management systems. Therefore, along with improved cost management, a strategy for giving health facilities more independence in management authority should continue to be developed.

(3) *Payments based on actual costs plus profits:* Payments systems using rates based on actual costs plus a margin for profit should be used with extreme caution. As is well known from experience in the United States, this form of government-subsidized cost-based reimbursement encourages high, often inefficient resource utilization and rapid cost escalation. Initially, actual costs could be used as guidelines to set prospective payments, but eventually payment rates should be based on expected efficient resource utilization patterns, since the objective of prospective payment is to make actual resource use more efficient.

(4) *The payment formula—long-term goal:* In the long run, policymakers should consider dropping the second component of the payment formula, but only when managers have adequate information about actual costs and are able to reallocate costs to improve efficiency. In Formula One, the first component, consisting of expected bed-days (EBD) multiplied by planned costs per bed-day (pcbd), [EBD * pcbd], generates a surplus to those facilities that are able to reduce actual bed-days below expected bed-days only if the facility is able to reduce some of its actual costs. If all of the costs of the facility are fixed—that is, they are the same regardless of the number of bed-days—then the base payment offers no reward for reduction in length-of-stay. In the case where all costs are fixed, the second component of the payment formula that offers an explicit financial reward for reducing actual bed-days below expected bed-days provides the

only incentive to managers to reduce length-of-stay. On the other hand, if some of the costs incurred by the facility are variable—that is, they are directly proportional to the number of bed-days, and managers have the authority to reduce these expenses as length-of-stay falls—then the base payment includes a surplus, since payment will be more than the actual costs incurred. In the case where some variable costs exist, the financial reward created by the second component of the formula is duplicative. To summarize, as managers acquire more information on actual costs and obtain managerial authority to adjust variable costs, the second component of the formula will become increasingly unnecessary.

(5) *Budget-neutral payment rates:* Payment rates should be set such that the total payment made to inpatient facilities falls within the DTMA budget. This is especially important, considering that the DTMA does not expect to receive substantial increases in its budget. Cost containment should be an important goal of this prospective payment system.

(6) *Refining complexity groups:* The guiding economic principles underlying the development of groups for payment are that the treatment costs for the diagnoses included in each group should be quite similar, and that the grouping should encourage sound medical practice. If a complexity group is characterized by a wide variation in resource costs for the diagnoses included, health providers will tend to attract and accept those patients within the complexity group with the lowest-cost diagnoses. The new system of payment focuses on average length-of-stay. In Ukraine, length-of-stay is a major determinant of costs, and it is also the most available and accurate data item from patient records for classification into complexity groups. However, it is likely that there remains substantial variation in treatment costs among the diagnoses included in a single complexity group. Using case-level actual cost data and medical records in conjunction with clinical expertise and statistical analysis, policymakers should investigate refining complexity groups. In making these revisions, important criteria should not only be that the groups are clinically appropriate and require similar resource intensity, but also that the classification system generates a manageable number of groups that can be adequately handled by available management and information systems. Moreover, as other regions in Ukraine become interested in adopting such payment systems, the complexity groups should have a fairly generic structure, which can be easily replicated in other regions.

Several options for revising the complexity groups are possible and are listed here for future consideration. The ranges in length-of-stay chosen for each group should be verified to ensure that they represent appropriate groupings that balance the need to have small variation in resource use in each group, yet create sufficient risk and flexibility to encourage more efficient practices and penalize waste. Other indicators may prove useful to distinguish between diagnoses requiring substantially different resources, such as the presence or absence of major or minor surgeries and/or procedures, the presence or absence of certain comorbidities, identification of primary and secondary diagnoses, and/or other risk factors, such as age. To better deal with differences in severity of illness among patients with the same ICD-9 code diagnosis, policymakers might consider developing two or three categories of severity of illness for selected diagnoses to ensure classification into the appropriate complexity groups.

Another option for revising the complexity groups is to reconsider the departmental structure underlying them. Currently, the complexity groups focus attention on the treatment rendered in a specific department. Each time a patient is transferred to a new department, the case is assigned to a new complexity group and the hospital receives additional payment. While this departmental structure encourages specific departments to become more efficient, it does not address the continuity of the overall treatment process in terms of whether the combinations of departments used in the case were the most efficient and appropriate for treating the case. For example, the complexity groups could be restructured to be independent of departments. This would also enhance the replicability of the system to other regions, since it could be adopted regardless of the types of departments in any given hospital.

A final option to consider is whether to improve the clinical meaningfulness of each group by limiting them to include only similar diagnoses. Currently, each complexity group includes a wide variety of different medical conditions. Creating more medically homogeneous groups would not only make this patient classification system more understandable to health professionals who are most concerned with the medical nature of their cases, but also would provide a medical classification system for analyzing various service statistics.

(7) *Updating data:* Payment rates should be updated regularly to incorporate inflation, changes in real costs of treatment, case mix, practice patterns, productivity, and technology. Policymakers should be careful to update payment systems in such a way that they reward health facilities that introduce more efficient modes of treatment, at least in the short run, while creating long-term incentives to discard inefficient systems.

(8) *Monitoring and evaluation:* There are seven major areas of importance for monitoring and evaluating the impacts of the complexity group payment system: (i) financial viability/cost containment; (ii) efficiency; (iii) practice patterns; (iv) equity; (v) quality of patient care; (vi) diffusion of new technologies; (vii) updating data. Health managers and policymakers should give critical attention to collecting such information immediately and on a continual basis. An agenda should be developed to analyze this information both at the managerial and research levels.

(9) *Patient record information:* Several improvements in the DTMA information system would make it easier for hospital and DTMA managers to track the necessary indicators to implement, monitor, and evaluate the payment system. First, the DTMA keeps basic data on each discharge in handwritten ledgers. These data would be far more useful to DTMA management if they were computerized. A database program, or even a series of spreadsheets running on a personal computer, is all that is required. Second, more information should be recorded on the patient discharge record. The top priority for an additional element to be included in the DTMA files would be primary diagnosis, using as many digits of the ICD-9 classification as possible. This variable would provide basic information on what types of cases are being treated in each department and at what length-of-stay. The second priority would be inclusion of primary procedure, where appropriate. This variable would include major diagnostic and therapeutic procedures, such as surgery. Although procedure does not now feature in the New Financing

System, this information would be useful in case the DTMA wished to include it in the future. The third priority would be secondary diagnosis, since two patients with a given diagnosis can require very different levels of care if one has a major comorbidity and the other does not. The fourth priority would be age and sex. These basic information items could be added at minimal extra effort. Both hospitals and the DTMA will have to incur additional administrative costs to be able to accurately and regularly classify patient cases into complexity groups using this new patient record information.

(10) *Quality of care:* The Commission of Experts, as an independent group, plays an important role in assuring that quality of care remains acceptable. From international experience there is a wide variety of approaches for achieving quality of care, including Total Quality Management methods which encourage team-oriented approaches to improving quality on a continual basis (e.g., as part of the normal routine). Since the formula to be put in place encourages more efficient use of resources, the Commission of Experts may want to track more carefully those cases that are discharged early or required less resource intensity to ensure that quality of care was not sacrificed.

In light of limited budgets, further attention should be given to ensuring that the standards used for monitoring quality of care encourage efficient and affordable use of resources. The Commission of Experts should be appraised of the cost-effectiveness of the standards they use on a regular basis.

(11) *Influencing case selection and coding practices:* The Commission of Experts also plays an important role in assuring that health professionals are not influencing payments by case selection or diagnosis coding practices. The Commission should monitor whether patients with the more costly cases within a complexity group are being turned away from the facility or being provided lower quality care to keep costs down. The Commission should discourage health professionals from manipulating the system by verifying that health professionals gave appropriate diagnoses, penalizing unjustified reclassification of cases from a lower to a higher complexity group, and more carefully managing cases with high lengths-of-stay.

(12) *Cost-effectiveness studies:* In a single payer system of administered prices, there is nothing intrinsic in the payment structure to ensure that the payment rates are the correct ones to strike the right balance between benefits and costs. Prices based solely on costs reflect resource use but may not fully capture the value placed on the service by either the health provider or the patient. Cost benefit studies provide essential information to indicate whether the benefits justify the costs. Since cost-benefit analyses are difficult to conduct, cost-effectiveness studies provide a second-best method to check whether value is being obtained for the costs incurred.

(13) *Case-level payments:* Policymakers might consider basing payments on case-level rather than department-level behavior, as is currently done. Using department-level sums of bed-days reduces the emphasis given to rendering cost-effective care in each specific case. A disadvantage of case-level payment, however, is the increase in administrative costs.

Alternatively, the department-level payment formula could be retained while encouraging departmental managers to provide sufficient oversight of individual cases under their authority.

(14) *Hospital-specific rates:* The current system of setting rates for each inpatient facility should be continued, following the philosophy that hospitals should face equal pressure, to improve efficiency. It is well known that equal payment rates across hospitals generally lead to uneven pressure to become more efficient. Under more "regional" rates, some hospitals would gain while others would lose, and not necessarily according to their levels of efficiency. With hospital-specific rates, it is critical to reset rates periodically to ensure that pressures for efficiency are continually appropriate.

Annex A

PERSONS CONTACTED

USAID/Kiev

Nicole Simmons — ph. 220-83-95, 220-55-89, 220-50-97
fax 220-90-13, 220-70-79

Olena Truhan
(Abt Admin./Kiev)

KIEV

Dr. Volodymyr D. Yurchenko
Deputy Minister of Health
7 Grushevsky Street
252021, Kiev-21
(We were not able to meet with him, but prepared a short preliminary summary for him)

DROHOBYCH

Dr. Mychaylo G. Petryk
Chief, Drohobych Territorial Medical Administration

Dr. Ihor Lishchynsky
Chief, Commission of Experts, Drohobych Territorial Medical Administration

Yevgenia Svvshch
Economist, Drohobych Territorial Medical Administration

Bohdan Sosyak
Computer Programmer, Drohobych Territorial Medical Administration

Dr. Stepan Shebunchak
Chief of Statistics, Drohobych Territorial Medical Administration

Dr. Lesia Koval
Chief, Drohobych Central Hospital

Dr. V. Bihuniak
Chief, Stebnyck Hospital

Dr. M. Bihun
Chief of Drohobych Central Polyclinic

Dr. Tzabak
Chief of Internal Medicine, Hospital for Industrial Enterprises

Dr. Vitali Didushevsky
Interpreter
(Member, Commission of Experts, Drohobych Territory Medical Administration)

Annex B

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Annex C

BASIC SERVICE STATISTICS

Exhibit A.1
DTMA Staffing Levels As Of December 1993

A. Person Counts

	By Time Status		Total	By Profession			
	Full Time	Part Time	Staff	Physicians	Nurses	Aides	Other
Drohobych Central City Hosp.	584	17	601	115	263	166	57
Stebnyk Town Hospital	421	3	424	66	201	115	42
Hospital for Industrial Enterprises	218	6	224	40	123	46	15
Children's Hospital	214	14	228	40	91	81	16
Maternity Hospital	258	3	261	40	119	76	26
Oncology Hospital	129	6	135	20	55	34	26
Tuberculosis Hospital	74	2	76	15	30	23	8
Dermatology/STD Hospital	72	4	76	13	30	17	16
Sub-total: All Hospitals	**1,970**	**55**	**2,025**	**349**	**912**	**558**	**206**
Dental polyclinic	223	1	224	80	101	28	15
Drohobych polyclinic	508	7	515	147	278	67	23
DTMA administration + other	304	15	319	43	68	24	184
DTMA Total	**3,005**	**78**	**3,083**	**619**	**1,359**	**677**	**428**

B. Percentage Breakdown by Hospital

	By Time Status		Total	By Profession			
	Full Time	Part Time	Staff	Physicians	Nurses	Aides	Other
Drohobych Central City Hosp.	97%	3%	100%	19%	44%	28%	9%
Stebnyk Town Hospital	99%	1%	100%	16%	47%	27%	10%
Hospital for Industrial Enterprises	97%	3%	100%	18%	55%	21%	7%
Children's Hospital	94%	6%	100%	18%	40%	36%	7%
Maternity Hospital	99%	1%	100%	15%	46%	29%	10%
Oncology Hospital	96%	4%	100%	15%	41%	25%	19%
Tuberculosis Hospital	97%	3%	100%	20%	39%	30%	11%
Dermatology/STD Hospital	95%	5%	100%	17%	39%	22%	21%
Sub-total: All Hospitals	**97%**	**3%**	**100%**	**17%**	**45%**	**28%**	**10%**
Dental polyclinic	100%	0%	100%	36%	45%	13%	7%
Drohobych polyclinic	99%	1%	100%	29%	54%	13%	4%
DTMA administration + other	95%	5%	100%	13%	21%	8%	58%
DTMA Total	**97%**	**3%**	**100%**	**20%**	**44%**	**22%**	**14%**

C. Percentage Breakdown by Time Status and Profession of Employee

	By Time Status		Total	By Profession			
	Full Time	Part Time	Staff	Physicians	Nurses	Aides	Other
Drohobych Central City Hosp.	19%	22%	19%	19%	19%	25%	13%
Stebnyk Town Hospital	14%	4%	14%	11%	15%	17%	10%
Hospital for Industrial Enterprises	7%	8%	7%	6%	9%	7%	4%
Children's Hospital	7%	18%	7%	6%	7%	12%	4%
Maternity Hospital	9%	4%	8%	6%	9%	11%	6%
Oncology Hospital	4%	8%	4%	3%	4%	5%	6%
Tuberculosis Hospital	2%	3%	2%	2%	2%	3%	2%
Dermatology/STD Hospital	2%	5%	2%	2%	2%	3%	4%
Sub-total: All Hospitals	**66%**	**71%**	**66%**	**56%**	**67%**	**82%**	**48%**
Dental polyclinic	7%	1%	7%	13%	7%	4%	4%
Drohobych polyclinic	17%	9%	17%	24%	20%	10%	5%
DTMA administration + other	10%	19%	10%	7%	5%	4%	43%
DTMA Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Notes

1) Source is Drohobych Territory Medical Association.

2) "Physicians" is believed to include dentists.

Exhibit A.2
1993 Hospital Budgets

A. In Koupons

	Article 1 Basic salary + other wages	Article 2 Social Security etc.	Article 3 Overhead (Power, maint.)	Article 4 Travel, Confs	Article 9 Food and meals	Article 10 Medicines	Article 12 Med. equip., furniture	Article 14 Linens	Article 16 Capital improve.	Article 18 Other expenses	Total
Drohobych Central City Hospital	725,056,600	265,717,200	300,856,900	7,004,846	80,378,000	16,789,032	48,366,160	1,458,911	95,159,055	559,400	1,441,695,962
Stebnyk Town Hospital	465,556,790	159,343,317	76,487,756	1,433,372	218,994,988	141,215,257	5,220,457	823,524	26,571,523	9,661,489	1,085,985,495
Hospital for Industrial Enterprises	211,229,813	77,683,031	6,953,700	755,889	82,536,685	62,332,344	2,719,558	159,163	-	1,508,179	442,862,004
Children's Hospital	179,812,975	66,513,588	116,218,046	501,642	56,996,954	92,236,666	13,831,751	-	10,408,580	3,404,690	539,924,892
Maternity Hospital	246,016,231	90,935,106	70,199,312	1,807,690	40,411,354	155,232,770	2,253,281	-	35,117,763	1,768,139	643,741,646
Oncology Hospital	133,949,792	49,136,015	94,981,870	528,400	107,466,748	131,608,208	20,955,265	174,910	23,343,300	182,535	562,327,043
Tuberculosis Hospital	84,856,244	30,985,596	76,818,878	762,294	86,484,986	28,025,121	3,026,728	146,031	-	477,335	311,583,213
Dermatology/STD Hospital	79,697,371	29,369,796	48,219,418	95,114	55,134,769	26,161,677	1,288	186,340	-	618,857	239,451,734
All Hospitals	2,126,175,816	769,683,649	790,735,880	12,889,247	728,404,484	653,601,075	96,374,488	2,948,879	190,600,221	18,180,624	5,267,571,989

B. In (Approximate) U.S. Dollars

	Article 1 Basic salary + other wages	Article 2 Social Security etc.	Article 3 Overhead (Power, maint.)	Article 4 Travel, Confs	Article 9 Food and meals	Article 10 Medicines	Article 12 Med. equip., furniture	Article 14 Linens	Article 16 Capital improve.	Article 18 Other expenses	Total
Drohobych Central City Hospital	$ 71,364	$ 26,153	$ 29,612	$ 689	$ 7,911	$ 1,652	$ 4,760	$ 144	$ 9,366	$ 55	$ 141,899
Stebnyk Town Hospital	$ 45,823	$ 15,683	$ 7,528	$ 141	$ 21,555	$ 13,899	$ 514	$ 81	$ 2,615	$ 951	$ 106,888
Hospital for Industrial Enterprises	$ 20,790	$ 7,646	$ 684	$ 74	$ 8,124	$ 6,135	$ 268	$ 16	$ -	$ 148	$ 43,589
Children's Hospital	$ 17,698	$ 6,547	$ 11,439	$ 49	$ 5,610	$ 9,078	$ 1,361	$ -	$ 1,024	$ 335	$ 53,142
Maternity Hospital	$ 24,214	$ 8,950	$ 6,909	$ 178	$ 3,977	$ 15,279	$ 222	$ -	$ 3,456	$ 174	$ 63,360
Oncology Hospital	$ 13,184	$ 4,836	$ 9,349	$ 52	$ 10,577	$ 12,954	$ 2,063	$ 17	$ 2,298	$ 18	$ 55,347
Tuberculosis Hospital	$ 8,352	$ 3,050	$ 7,561	$ 75	$ 8,512	$ 2,758	$ 298	$ 14	$ -	$ 47	$ 30,668
Dermatology/STD Hospital	$ 7,844	$ 2,891	$ 4,746	$ 9	$ 5,427	$ 2,575	$ 0	$ 18	$ -	$ 61	$ 23,568
All Hospitals	$ 209,269	$ 75,756	$ 77,828	$ 853	$ 71,693	$ 64,331	$ 9,486	$ 290	$ 18,760	$ 1,789	$ 518,462

C. Percentage Breakdowns for Each Hospital

	Article 1 Basic salary + other wages	Article 2 Social Security etc.	Article 3 Overhead (Power, maint.)	Article 4 Travel, Confs	Article 9 Food and meals	Article 10 Medicines	Article 12 Med. equip., furniture	Article 14 Linens	Article 16 Capital improve.	Article 18 Other expenses	Total
Drohobych Central City Hospital	50%	18%	21%	0%	6%	1%	3%	0%	7%	0%	100%
Stebnyk Town Hospital	43%	15%	7%	0%	20%	13%	0%	0%	2%	1%	100%
Hospital for Industrial Enterprises	48%	18%	2%	0%	19%	14%	1%	0%	0%	0%	100%
Children's Hospital	33%	12%	22%	0%	11%	17%	3%	0%	2%	1%	100%
Maternity Hospital	38%	14%	11%	0%	6%	24%	0%	0%	5%	0%	100%
Oncology Hospital	24%	9%	17%	0%	19%	23%	4%	0%	4%	0%	100%
Tuberculosis Hospital	27%	10%	25%	0%	28%	9%	1%	0%	0%	0%	100%
Dermatology/STD Hospital	33%	12%	20%	0%	23%	11%	0%	0%	0%	0%	100%
All hospitals	40%	15%	15%	0%	14%	12%	2%	0%	4%	0%	100%

D. Percentage Breakdowns for Each Budget Article

	Article 1 Basic salary + other wages	Article 2 Social Security etc.	Article 3 Overhead (Power, maint.)	Article 4 Travel, Confs	Article 9 Food and meals	Article 10 Medicines	Article 12 Med. equip., furniture	Article 14 Linens	Article 16 Capital improve.	Article 18 Other expenses	Total
Drohobych Central City Hospital	34%	35%	38%	81%	11%	3%	50%	49%	50%	3%	27%
Stebnyk Town Hospital	22%	21%	10%	17%	30%	22%	5%	28%	14%	53%	21%
Hospital for Industrial Enterprises	10%	10%	1%	9%	11%	10%	3%	5%	0%	8%	8%
Children's Hospital	8%	9%	15%	6%	8%	14%	14%	0%	5%	19%	10%
Maternity Hospital	12%	12%	9%	21%	6%	24%	2%	0%	18%	10%	12%
Oncology Hospital	6%	6%	12%	6%	15%	20%	22%	6%	12%	1%	11%
Tuberculosis Hospital	4%	4%	10%	9%	12%	4%	3%	5%	0%	3%	6%
Dermatology/STD Hospital	4%	4%	6%	1%	8%	4%	0%	6%	0%	3%	5%
All Hospitals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

E. Funding Per Bed (in Approximate U.S. Dollars)

	Article 1 Basic salary + other wages	Article 2 Social Security etc.	Article 3 Overhead (Power, maint.)	Article 4 Travel, Confs	Article 9 Food and meals	Article 10 Medicines	Article 12 Med. equip., furniture	Article 14 Linens	Article 16 Capital improve.	Article 18 Other expenses	Total
Drohobych Central City Hospital	$ 168	$ 62	$ 70	$ 2	$ 19	$ 4	$ 11	$ 0	$ 22	$ 0	$ 334
Stebnyk Town Hospital	$ 139	$ 48	$ 23	$ 0	$ 65	$ 42	$ 2	$ 0	$ 8	$ 3	$ 324
Hospital for Industrial Enterprises	$ 208	$ 76	$ 7	$ 1	$ 81	$ 61	$ 3	$ 0	$ -	$ 1	$ 436
Children's Hospital	$ 111	$ 41	$ 71	$ 0	$ 35	$ 57	$ 9	$ -	$ 6	$ 2	$ 332
Maternity Hospital	$ 142	$ 53	$ 41	$ 1	$ 23	$ 90	$ 1	$ -	$ 20	$ 1	$ 373
Oncology Hospital	$ 132	$ 48	$ 93	$ 1	$ 106	$ 130	$ 21	$ 0	$ 23	$ 0	$ 553
Tuberculosis Hospital	$ 111	$ 41	$ 101	$ 1	$ 113	$ 37	$ 4	$ 0	$ -	$ 1	$ 409
Dermatology/STD Hospital	$ 131	$ 48	$ 79	$ 0	$ 90	$ 43	$ 0	$ 0	$ -	$ 1	$ 393
All Hospitals	$ 147	$ 53	$ 55	$ 1	$ 50	$ 45	$ 7	$ 0	$ 13	$ 1	$ 365

Notes

1) Source for all data except U.S. dollar figures is Drohobych Territory Medical Association. U.S. dollar figures calculated by Abt Associates using an average 1993 exchange rate of 10,160 Kp = $1 U.S.

2) U.S. dollar figures are very approximate. In January 1993 the exchange rate was 722 Kp; in December 1993 it was 25,317 Kp. The conversion of spending to U.S. dollars therefore depends critically on when the expenditures were incurred during the year.

3) Figures exclude other DTMA operations, that is, the Drohobych medical and dental polyclinics, the ambulance service, the blood transfusion service and overall DTMA administration.

4) The budget articles shown are the only ones relevant for this study.

5) Budget components do not always sum to budget totals, due to anomalies in the source data.

Exhibit A.3
Basic Operating Statistics, DTMA Hospitals

A: 1991

	Beds	Discharges	Bed-days	Avg. Length of Stay	Bed-days as % of Plan
Drohobych Central City Hosp.					
Neurosurgery	40	1,006	15,183	14.1	109%
Therapy	70	1,458	25,165	15.0	104%
Rehabilitation	45	988	15,812	26.4	93%
Neurology	50	916	17,132	15.2	98%
Cardiology	60	1,166	21,159	16.7	102%
Eye Microsurgery	40	1,019	14,048	13.7	102%
Surgery	66	1,872	22,825	11.6	102%
Trauma	60	1,197	22,743	16.1	109%
Hospital total	**431**	**9,622**	**155,330**	**16.1**	**103%**
Stebnyk Town Hospital					
Pediatrics	40	857	11,195	13.1	82%
Therapy	45	992	16,487	16.5	106%
Neurology	15	396	5,967	14.9	114%
Gynecology	36	855	14,997	19.0	98%
ENT	60	1,910	18,900	9.9	95%
Infectious diseases	60	1,606	20,796	12.9	109%
Surgery	52	1,391	18,890	16.6	107%
Pulmonary	40	831	14,280	17.0	103%
Hospital total	**348**	**8,838**	**121,512**	**13.7**	**104%**
Hospital for Industrial Enterprises					
Therapy	80	1,405	27,367	19.4	99%
Neurology	40	722	13,107	18.2	94%
Hospital total	**120**	**2,127**	**40,474**	**19.0**	**97%**
Children's Hospital					
Pediatrics: < 2	56	1,096	17,468	14.9	104%
Pediatrics: 2+	56	1,120	16,928	14.8	89%
Pediatrics: infectious	60	1,629	20,798	12.6	111%
Hospital total	**172**	**3,845**	**55,164**	**14.3**	**101%**
Maternity Hospital					
Gynecological surgery	52	2,118	15,680	7.4	91%
Gynecology II	40	1,295	14,402	11.1	108%
High-risk pregnancies	42	717	10,881	11.2	86%
Maternity	60	1,273	9,315	6.5	51%
Hospital total	**194**	**5,403**	**50,278**	**9.3**	**81%**
Oncology Hospital	**100**	**1,448**	**32,543**	**22.3**	**93%**
Tuberculosis Hospital	**75**	**265**	**27,350**	**97.7**	**102%**
Dermatology/STD Hospital	**60**	**1,251**	**20,949**	**16.7**	**100%**
ALL HOSPITALS	**1,500**	**32,799**	**503,600**	**15.4**	**98%**

B: 1992

	Beds	Discharges	Bed-days	Avg. Length of Stay	Bed-days as % of Plan
Drohobych Central City Hosp.					
Neurosurgery	40	1,006	14,995	13.9	99%
Therapy	70	1,451	25,611	15.3	108%
Rehabilitation	45	1,053	15,753	14.9	105%
Neurology	50	892	16,438	15.2	101%
Cardiology	60	1,211	20,470	15.3	94%
Eye Microsurgery	40	1,092	14,371	13.1	98%
Surgery	60	1,910	21,706	10.2	104%
Trauma	60	1,075	21,703	16.6	106%
Hospital total	**425**	**9,754**	**153,925**	**15.8**	**104%**
Stebnyk Town Hospital					
Pediatrics	40	527	8,405	15.9	66%
Therapy	45	1,043	16,150	15.3	104%
Neurology	15	362	5,724	15.6	109%
Gynecology	30	1,221	12,408	10.1	123%
ENT	60	1,911	18,218	9.5	92%
Infectious diseases	60	1,363	18,899	13.8	99%
Surgery	40	1,201	14,063	11.7	103%
Pulmonary	40	789	13,581	17.1	98%
Hospital total	**330**	**8,417**	**107,448**	**12.7**	**98%**
Hospital for Industrial Enterprises					
Therapy	60	1,212	22,690	18.6	101%
Neurology	40	657	11,403	17.5	82%
Hospital total	**100**	**1,863**	**34,093**	**18.2**	**94%**
Children's Hospital					
Pediatrics: < 2	50	876	14,978	15.8	67%
Pediatrics: 2+	50	982	13,422	13.3	100%
Pediatrics: infectious	60	1,328	19,237	14.4	79%
Hospital total	**160**	**3,186**	**47,637**	**15.0**	**79%**
Maternity Hospital					
Gynecological surgery	40	1,519	13,398	8.8	104%
Gynecology II	40	1,456	14,718	10.1	100%
High-risk pregnancies	30	333	7,650	12.6	110%
Maternity	60	1,825	12,215	6.5	84%
Hospital total	**170**	**5,133**	**47,981**	**9.3**	**98%**
Oncology Hospital	**100**	**1,533**	**31,470**	**20.5**	**89%**
Tuberculosis Hospital	**75**	**273**	**27,488**	**97.5**	**103%**
Dermatology/STD Hospital	**60**	**1,339**	**21,190**	**15.8**	**102%**
ALL HOSPITALS	**1,420**	**31,498**	**471,232**	**15.0**	**97%**

C: 1993

	Beds	Discharges	Bed-days	Avg. Length of Stay	Bed-days as % of Plan
Drohobych Central City Hosp.					
Neurosurgery	40	1,003	15,153	13.8	109%
Therapy	70	1,467	24,734	14.9	102%
Rehabilitation	45	1,079	16,189	14.9	103%
Neurology	50	882	17,465	15.7	100%
Cardiology	60	1,280	21,359	15.2	103%
Eye Microsurgery	40	1,099	14,339	13.0	104%
Surgery	60	1,734	21,049	11.0	103%
Trauma	60	1,085	21,768	16.7	105%
Hospital total	**425**	**9,686**	**154,091**	**15.9**	**105%**
Stebnyk Town Hospital					
Pediatrics	40	634	9,463	14.8	74%
Therapy	45	1,019	16,552	16.2	106%
Neurology	15	395	5,650	14.3	108%
Gynecology	30	1,014	12,304	12.1	122%
ENT	60	1,725	16,324	9.4	82%
Infectious diseases	60	1,235	16,088	13.0	84%
Surgery	40	1,102	14,101	12.7	104%
Pulmonary	40	742	13,963	18.8	101%
Hospital total	**330**	**7,866**	**104,418**	**13.2**	**95%**
Hospital for Industrial Enterprises					
Therapy	60	1,145	21,281	18.5	102%
Neurology	40	691	12,419	18.0	90%
Hospital total	**100**	**1,863**	**33,700**	**18.3**	**97%**
Children's Hospital					
Pediatrics: < 2	50	926	15,706	15.9	106%
Pediatrics: 2+	50	968	13,496	13.7	80%
Pediatrics: infectious	60	1,280	16,686	13.0	90%
Hospital total	**160**	**3,198**	**46,454**	**14.5**	**92%**
Maternity Hospital					
Gynecological surgery	40	1,494	13,764	9.1	104%
Gynecology II	40	1,230	14,114	11.4	106%
High-risk pregnancies	30	496	9,716	12.1	107%
Maternity	60	1,620	13,301	7.5	71%
Hospital total	**170**	**4,966**	**50,432**	**10.2**	**93%**
Oncology Hospital	**100**	**1,391**	**31,356**	**22.4**	**89%**
Tuberculosis Hospital	**75**	**287**	**28,809**	**95.7**	**108%**
Dermatology/STD Hospital	**60**	**1,286**	**20,970**	**16.3**	**100%**
ALL HOSPITALS	**1,420**	**30,543**	**470,230**	**15.4**	**98%**

D: PERCENTAGE CHANGE 1991 TO 1992

	Beds	Discharges	Bed-days	Avg. Length of Stay	Bed-days as % of Plan
Drohobych Central City Hosp.					
Neurosurgery	0%	0%	-1%	-1%	-10%
Therapy	0%	0%	2%	2%	4%
Rehabilitation	0%	7%	0%	-44%	14%
Neurology	0%	-3%	-4%	0%	3%
Cardiology	0%	4%	-3%	-8%	-7%
Eye Microsurgery	0%	7%	2%	-4%	-3%
Surgery	-9%	2%	-5%	-12%	2%
Trauma	0%	-10%	-5%	3%	-3%
Hospital total	-1%	1%	-1%	-2%	1%
Stebnyk Town Hospital					
Pediatrics	0%	-39%	-25%	21%	-19%
Therapy	0%	5%	-2%	-7%	-2%
Neurology	0%	-9%	-4%	5%	-4%
Gynecology	-17%	43%	-17%	-47%	25%
ENT	0%	0%	-4%	-4%	-3%
Infectious diseases	0%	-15%	-9%	7%	-9%
Surgery	-23%	-14%	-26%	-29%	-3%
Pulmonary	0%	-5%	-5%	1%	-5%
Hospital total	-5%	-5%	-12%	-7%	-6%
Hospital for Industrial Enterprises					
Therapy	-25%	-14%	-17%	-4%	2%
Neurology	0%	-9%	-13%	-4%	-12%
Hospital total	-17%	-12%	-16%	-4%	-4%
Children's Hospital					
Pediatrics: < 2	-11%	-20%	-14%	6%	-36%
Pediatrics: 2+	-11%	-12%	-21%	-10%	12%
Pediatrics: infectious	0%	-18%	-8%	14%	-29%
Hospital total	-7%	-17%	-14%	4%	-22%
Maternity Hospital					
Gynecological surgery	-23%	-28%	-15%	19%	15%
Gynecology II	0%	12%	2%	-9%	-7%
High-risk pregnancies	-29%	-54%	-30%	13%	28%
Maternity	0%	43%	31%	0%	64%
Hospital total	-12%	-5%	-5%	0%	20%
Oncology Hospital	0%	6%	-3%	-8%	-3%
Tuberculosis Hospital	0%	3%	1%	0%	0%
Dermatology/STD Hospital	0%	7%	1%	-5%	1%
ALL HOSPITALS	-5%	-4%	-6%	-3%	-2%

E: PERCENTAGE CHANGE 1992 TO 1993

	Beds	Discharges	Bed-days	Avg. Length of Stay	Bed-days as % of Plan
Drohobych Central City Hosp.					
Neurosurgery	0%	0%	1%	-1%	10%
Therapy	0%	1%	-3%	-3%	-6%
Rehabilitation	0%	2%	3%	0%	-2%
Neurology	0%	-1%	6%	3%	-1%
Cardiology	0%	6%	4%	-1%	9%
Eye Microsurgery	0%	1%	0%	-1%	5%
Surgery	0%	-9%	-3%	8%	-1%
Trauma	0%	1%	0%	1%	-2%
Hospital total	**0%**	**-1%**	**0%**	**1%**	**1%**
Stebnyk Town Hospital					
Pediatrics	0%	20%	13%	-7%	12%
Therapy	0%	-2%	2%	6%	3%
Neurology	0%	9%	-1%	-8%	-1%
Gynecology	0%	-17%	-1%	20%	-1%
ENT	0%	-10%	-10%	-1%	-10%
Infectious diseases	0%	-9%	-15%	-6%	-15%
Surgery	0%	-8%	0%	9%	1%
Pulmonary	0%	-6%	3%	10%	3%
Hospital total	**0%**	**-7%**	**-3%**	**4%**	**-3%**
Hospital for Industrial Enterprises					
Therapy	0%	-6%	-6%	-1%	2%
Neurology	0%	5%	9%	3%	9%
Hospital total	**0%**	**0%**	**-1%**	**1%**	**4%**
Children's Hospital					
Pediatrics: < 2	0%	6%	5%	1%	58%
Pediatrics: 2+	0%	-1%	1%	3%	-20%
Pediatrics: infectious	0%	-4%	-13%	-10%	15%
Hospital total	**0%**	**0%**	**-2%**	**-3%**	**17%**
Maternity Hospital					
Gynecological surgery	0%	-2%	3%	3%	-1%
Gynecology II	0%	-16%	-4%	13%	6%
High-risk pregnancies	0%	49%	27%	-4%	-3%
Maternity	0%	-11%	9%	15%	-15%
Hospital total	**0%**	**-3%**	**5%**	**9%**	**-5%**
Oncology Hospital	**0%**	**-9%**	**0%**	**9%**	**0%**
Tuberculosis Hospital	**0%**	**5%**	**5%**	**-2%**	**5%**
Dermatology/STD Hospital	**0%**	**-4%**	**-1%**	**3%**	**-1%**
ALL HOSPITALS	**0%**	**-3%**	**0%**	**3%**	**1%**

Notes

1. "Discharges" exclude deaths and transfers. There are 200-250 deaths a year, or less than 1% of discharges. Transfers are important within a hospital (especially to rehab) but are irrelevant between hospitals.
2. ALOS as shown is calculated by DTMA using a denominator of discharges+deaths+transfers and will therefore differ from bed-days/discharges. In general, the two calculation methods yield similar results, except for the rehabilitation departments.
3. The pediatric and maternity hospitals were created as of July 1, 1993. Those departments previously were intact units within the Drohobych Central City Hospital.
5. Sum of departmental data doesn't always equal facility totals. In cases of discrepancy, facility totals are believed to be more accurate.
6. In 1991, Stebnyk Town Hospital had separate ENT departments for adults and children and separate surgery departments for vascular and other surgery. The ENT and surgery department data shown here for 1991 have been made comparable with the 1992 data.

Annex D

COMPLEXITY GROUP LISTING

DROHOBYCH CENTRAL MUNICIPAL HOSPITAL
NEUROLOGIC DEPARTMENT

CLINICAL AND STATISTICAL GROUPS

Complexity Group	Nosologic units	Code	Average stay at hospital	Bed-day cost	Treatment cost	Note
1	2	3	4	5	6	7
Group I (1 to 5 days)	1.Different mild paroxysms 2.Expert examination 3.Others	349 B80 B68	4	108816	435300	
Group II (5 to 10 days)	1.Lumbago 2.Cephalgic and vestibular paroxysms 3.Epilptic status 4.Gangliolites with mild pain 5.Chest radicualgias with mild pain syndrome	724.2 784.0 345.3 729.2 724.4	8	108816	870500	
Group III (11 to 15 days)	1.Traznsient cerebral circulation disorders 2.Aftermath of ischemic stroke 3.Vertebral-basilar insufficiency, moderate 4.Vertebral syndrome, mild 5.Chest radiculargias with severe pain 6.Brain tumors 7.Vegetodystonias	435 438 433.2 432.8 724.4 295.8 191.0	12	108816	130800 130683	

1	2	3	4	5	6	7
Group IV (16 -20 days)	1.Ischemic stroke with mild neurologic deficit 2.Vascular encephalopathies 3.Moderate lumboischialgias and cervical-brachial neuralgias (osteochondrosis) 4. Moderate vertebral syndrome 5.Trigeminal neuralgia 6.Gangliolites, ganglioneurites with strong pain 7.Remote aftermath of skull and brain injury	435 437.2 722.6 732.8 350.1 729.2 907	18	108816	1958700	
Group V (21 to 25 days)	1.Severe vertebral syndrome 2.Fallopian, radial and optic nerves with moderate motion disorders 3.Polyradiculoneurlgias 4.Cerebral and spinal arachnoidites 5.Encephalites 6.Disseminated sclerosis, encephalomyelitis 7.Lateral amyotrophic sclerosis 8.Vertebral-basilar insufficiency, severe 9.Progressive muscular atrophies 10. Myastheinias	732.8 351 354.3 729.2 322.9 323 340,323 335.5 433.2 359 358	24	108816	2611600	
Group VI (26 to 30 days)	1.Ischemic stroke with moderate neurologic deficit 2.Syringomyelia 3.Radicular syndromes, moderate severity 4. Polineurites of various etiology 5.Friedreich's disease 6. Acute lumboischialgias and cervical-brachial neuralgias	434 336.0 353 357.8 334.0 722.6	28	108816	3046800	

1	2	3	4	5	6	7
Group VII (31 to 35 days)	1. Ischemic stroke with severe neurologic deficit 2. Brain hemorrhage 3. Subarachnoidal hemorrhage 4. Spinal circulation disorder 5. Acute radicular syndrome 6. Polyradiculoneurites 7.Radiculoischemias 8.Myelopathies 9. Fallopian, radial and optic neurites with severe motor disorders	434 431 430 436 353 357 353 336.1 352	34	108816	3699700	
Group VIII	All diseases with unusual course, their treatment terms being substantially different from average statistical ones		Payment is made according to the number of days spent at hospital			

Annex E

INFLATION RATE SERIES

Table 1
Consumer Prices
Armenia, Belarus, Georgia, Moldova, Ukraine, Russia

	Consumer Price Index (CPI) (Jan. 93 = 100)							Monthly Inflation, CPI (%)						
	Armenia	Belarus	Georgia	Moldova	Ukraine	Russia	U.S.	Armenia	Belarus	Georgia	Moldova	Ukraine	Russia	U.S.
1992 Jan	11.8	13.6	5.4	10.8	10.6	13.1	96.8	110.9	158.6	27.1	240.1	285.2	300.0	0.1
Feb	13.8	20.4	8.6	17.4	12.3	16.2	97.2	17.0	50.0	22.4	59.6	15.3	26.0	0.4
Mar	15.7	24.4	11.6	19.7	13.7	19.3	97.7	14.2	19.4	73.6	14.2	12.1	18.0	0.5
Apr	19.0	29.3	16.9	23.9	15.2	22.9	97.9	20.9	18.0	95.0	21.9	7.9	18.6	0.1
May	25.2	32.8	22.4	26.1	16.8	24.9	98.0	32.6	15.8	41.6	8.9	14.4	10.1	0.2
Jun	30.6	36.5	24.4	27.6	21.4	28.1	98.3	21.5	11.4	9.9	5.9	28.9	14.5	0.4
Jul	35.4	41.3	27.8	28.9	26.0	30.5	98.6	15.7	13.1	13.9	4.5	22.1	6.9	0.2
Aug	36.7	45.6	29.7	30.9	28.2	34.0	98.9	6.5	5.9	7.0	8.7	8.3	9.8	0.2
Sep	37.1	48.9	31.1	34.4	31.2	36.0	99.1	1.3	8.8	4.6	11.8	10.8	14.9	0.3
Oct	43.1	55.1	41.1	41.9	35.0	39.6	99.6	16.1	12.6	32.1	19.7	12.4	9.0	0.4
Nov	56.7	66.6	56.1	58.0	42.7	63.3	99.6	31.5	21.0	36.5	40.7	22.0	27.0	0.2
Dec	76.0	87.1	79.3	72.8	57.7	79.3	99.5	32.2	30.7	20.8	26.8	35.1	25.4	0.1
1993 Jan	100.0	100.0	100.0	100.0	100.0	100.0	100.0	33.4	14.8	36.4	37.1	73.2	26.0	0.5
Feb	141.7	119.7	129.0	117.4	126.8	124.8	100.4	41.7	19.7	29.0	17.9	26.8	24.6	0.4
Mar	165.2	153.3	150.2	142.4	157.3	149.2	100.8	16.6	28.1	16.4	21.4	22.1	19.7	0.4
Apr	187.9	191.2	175.8	182.1	194.4	177.7	101.0	13.7	24.7	17.1	13.9	23.6	19.1	0.2
May	233.3	228.7	246.5	184.1	248.0	209.5	101.1	24.2	19.6	40.2	13.6	27.6	17.9	0.1
Jun	300.3	299.8	351.0	207.3	325.6	251.6	101.3	28.7	26.3	42.4	12.6	31.7	20.0	0.2
Jul	334.5	355.8	452.8	246.5	586.0	307.9	101.3	11.4	23.2	29.0	18.9	37.6	22.4	0.0
Aug	416.8	435.1	534.8	298.2	711.1	367.6	101.6	24.6	22.3	18.1	21.0	21.7	25.9	0.3
Sep	477.2	605.4	817.2	375.2	1285.8	477.4	101.8	14.5	36.0	52.8	25.8	80.3	23.2	0.2
Oct	742.6	876.4	1846.3	443.4	2136.7	570.5	102.7	55.6	44.8	101.2	18.2	66.1	19.5	0.9
Nov	3993.6	1253.6	3324.5	517.5	3103.2	664.1	102.4	437.8	43.2	101.7	16.7	45.3	16.4	0.2
Dec	6238.9	1923.6	8522.8	862.8	5920.3	777.1	102.4	100.3	48.5	96.9	51.5	90.9	12.5	0.0
1994 Jan	15035.8	2566.3	13365.1	986.3	7057.7	880.8	102.7	62.5	40.7	104.9	44.5	19.2	17.9	0.3
Feb	17817.6	3046.2	18740.3	1246.7	7917.0	975.8	102.8	18.5	18.7	40.7	26.4	12.6	10.8	0.1
Mar	25746.4	3366.9	24320.1	1413.8	8400.0	1048.1	102.9	44.5	10.2	23.2	13.4	6.7	7.4	0.1
Apr	40421.8	4319.7	50780.3	1484.6	8900.0	1132.2	103.0	57.0	28.3	108.6	5.9	6.0	8.8	0.1
May	63260.2	5577.5	76982.9	1520.1	9367.0	1215.7	103.2	56.5	28.7	51.6	2.4	5.2	6.9	0.2
June	69016.9	6866.1	103466.0	1581.3	9732.3	1288.4	103.5	9.1	19.5	34.4	4.7	3.9	6.0	0.3
July	67774.6	8438.0	119605.5	1695.5	9936.7	1356.9	103.8	-1.8	26.6	15.6	2.2	2.1	5.3	0.3
Aug	70262.2	12943.9	229087.6	1841.0	10434.2	1419.3	104.2	3.7	53.4	91.7	8.1	5.0	4.6	0.4
Sep	74710.0	16244.6	456175.5	1833.7	11088.6	1521.5	104.6	6.3	25.5	100.0	2.6	7.3	7.2	0.3
Oct	[illegible]	20413.5	[illegible]	1762.1	11604.8	1626.1	104.7	[illegible]	26.7	[illegible]	4.2	7.6	6.9	0.1

Source: Belarus, Georgia, Moldova, Ukraine - IMF Staff estimates; Russia - EC3C2

Annex F

FOREIGN EXCHANGE RATE SERIES

Table 2
Nominal Exchange Rates (local/$)
Armenia, Belarus, Georgia, Moldova, Ukraine, Russia

	Nominal Exchange Rates (NER) 1/ (avg., local/$)						Nominal Exchange Rates Index (NERI) ($/local)					
	Armenia	Belarus 3/	Georgia	Moldova	Ukraine 2/	Russia	Armenia	Belarus	Georgia	Moldova	Ukraine	Russia
1992 Jan	0.510	72.5		0.189	110.0	186.0	437.3	711.0		259.4	798.2	214.4
Feb	0.550	75.5		0.186	103.0	185.9	437.3	740.4		276.6	852.4	260.4
Mar	0.550	127.0		0.182	85.0	152.3	437.3	440.4		339.1	944.1	317.6
Apr	0.550	133.0		0.154	100.0	163.6	437.3	420.3		333.5	878.0	315.1
May	0.550	122.5		0.129	96.0	134.4	437.3	450.0		399.1	931.0	352.3
Jun	0.500	119.5	100.0	0.126	89.0	126.0	481.0	467.8	572.0	407.6	986.5	384.1
Jul	0.517	121.0	101.2	0.140	92.0	143.3	474.0	440.9	554.8	366.3	1114.3	337.8
Aug	0.809	137.5	205.0	0.162	168.0	168.2	297.5	406.5	279.0	316.2	522.6	287.8
Sep	1.014	184.0	255.0	0.228	245.0	210.0	237.7	299.3	228.2	228.0	364.5	280.0
Oct	1.787	238.5	398.0	0.301	460.0	353.8	134.6	234.4	143.7	170.3	195.1	136.8
Nov	2.173	290.5	412.0	0.414	620.0	428.3	110.7	194.2	139.0	123.9	141.6	116.5
Dec	2.083	330.5	414.5	0.447	722.0	414.6	115.5	169.1	138.0	114.6	121.6	116.7
1993 Jan	2.105	559.0	572.0	0.512	1278.0	484.0	100.0	100.0	100.0	100.0	100.0	100.0
Feb	2.835	625.0	593.0	0.650	1284.0	569.0	84.8	89.4	96.5	78.8	68.4	85.1
Mar	3.207	879.0	664.0	0.746	1898.0	686.0	75.7	63.7	86.6	68.7	67.3	72.5
Apr	3.760	1096.0	1399.0	0.818	3002.0	767.0	64.0	51.0	40.9	62.6	29.2	63.1
May	4.316	1185.0	1946.0	1.041	2881.0	926.0	54.4	47.2	29.4	49.2	29.7	52.2
Jun	5.437	1827.0	3519.0	1.314	3658.0	1080.0	44.2	30.6	16.3	39.0	24.0	44.8
Jul	5.714	2000.0	5475.0	1.208	4765.0	1015.0	40.8	28.0	10.4	42.1	19.1	47.2
Aug	4.827	2821.0	6976.0	1.541	14007.0	986.0	48.6	19.8	8.2	33.2	6.3	49.1
Sep	8.105	3195.0	12300.0	2.042	16105.0	1073.0	29.3	17.7	4.6	30.1	5.8	49.1
Oct	10.080	4186.0	23870.0	2.378	22833.0	1186.0	23.9	13.4	2.4	21.5	3.8	40.7
Nov	15.000	5930.0	38884.0	2.969	24000.0	1194.0	14.0	9.4	1.5	16.8	3.4	40.3
Dec	75.000	7311.0	77394.0	3.840	25317.0	1240.0	3.2	7.6	0.7	14.1	3.5	39.0
1994 Jan	71.000	6801.0	159570.0	3.790	26000.0	1444.0	3.4	8.2	0.4	14.1	3.6	34.8
Feb	124.000	7721.0	202803.0	3.850	30200.0	1683.0	1.9	7.2	0.3	13.3	2.9	30.8
Mar	185.000	11023.0	708810.0	3.880	30139.0	1775.0	1.2	5.1	0.1	12.9	2.9	28.2
Apr	262.000	19133.0	722667.0	4.070	33396.0	1794.0	0.9	2.9	0.1	12.6	2.8	27.0
May	317.000	26164.0	951260.0	4.085	39142.0	1880.0	0.8	2.1	0.1	12.6	2.2	26.7
June	317.000	26330.0	800000.0	4.066	39970.0	1958.0	0.8	2.1	0.1	12.6	2.2	24.7
July	317.000	27403.0	941000.0	4.098	39570.0	2028.0	0.8	1.8	0.1	12.6	2.2	23.9
Aug	320.000	32815.0	1485000.0	4.142	40210.0	2122.0	0.8	1.7	0.0	12.4	2.2	22.8
Sep	330.000	40814.0		4.198	48864.0	2347.0	0.7	1.2		12.2	1.8	20.6
Oct				4.235	68840.0	3044.0				12.1	1.3	16.9

1/ Data prior to the introduction of national currencies has been converted at the exchange rate upon introduction of the currency (e.g. 1 Dram = 200 Armenian Rubles, 1 Leu = 100 Moldovan Rubles).
2/ The nominal exchange rate for Ukraine was drawn from the following sources: Jan 1992 - Sept 1992: market rate; Oct 1992 - Oct 1993: interbank auction rates; Nov 1993 - Jan 1994: NBU administered rate; and since Feb 1994: NBU auction rate.
3/ On August 20, after the Belarussian ruble was replaced by the "rubel," all prices, wages, and bank assets and liabilities were reduced by a factor of 10; the attached graphs do not reflect this change.

Source: Belarus, Ukraine - IMF Staff Estimates; Moldova - Infotag news; Russia - EC3C2

Annex G

PAYMENT SPREADSHEET FORMULAS (DTMA)

Payment Spreadsheet (DTMA)

name of hospital		Department		
planned salary	1,536,700	salary expenses of paraclinics attributed to department	1,475,800	actual expenses: multiple items (not yet in use)
planned nutrition	1,067,300	indirect expense rate	34%	
planned medicine	4,975,500	planned beddays	1,733	
planned linens	250,100	actual beddays	2,555	
income (?)	not used	expected beddays	2,569	
amortization (?)	not used	additional salary (nightshift, holidays, leave)	5.00	
capital improve. (?)	not used	additional salary, paraclinics	12.00	
		penalities	0.00	
		previous month deficit	744805.31	

	planned expenses (1)	planned expenses/day [(1) ÷ 1733 beddays] (2)	est. actual expenses [(2) × 2555] (3)	actual expenses (See above) (4)	variance [(3) - (4)] (5)
planned dept. health workers salary	1,536,700.00	886.73	2,265,590.59	0	2,265,590.59
planned paraclinic salary	1,475,800.00	851.59	2,175,804.39	0	2,175,804.39
Additional dept. health worker salary	76,835.00	44.34	113,279.53	0	113,279.53
Additional paraclinic salary	177,096.00	102.19	261,096.53	0	261,096.53
3% bonus salary, dept. health worker	48,406.05	27.93	71,366.10	0	71,366.10
3% bonus salary, paraclinics	49586.88	28.61	73,107.03	0	73,107.03
social security	1,244,836.00	718.31	1,835,290.34	0	1,835,290.34
planned nutrition	1,067,300.00	615.87	1,573,543.85	0	1,573,543.85
planned medicines	4,975,500.00	2,871.03	7,335,489.04	0	7,335,489.04
planned linens	250,100.00	144.32	368,727.93	0	368,727.93
indirect costs	1,024,250.00	591.03	1,510,074.29	0	1,510,074.29
income (not used)	0.00	0.00	0.00	0	0.00
amortization (not used)	0.00	0.00	0.00	0	0.00
capital improvement (not used)	0.00	0.00	0.00	0	0.00

Total cost 11,926,409

Bedday cost 6881.95

payment (6881 × 2555),	17,583,369.62 salary %: 28.21	surplus payment (2569-2555) × (1-0.2821) × 688.95	18393.55
paraclinic salary %	14.27%	reserve fund (5% × 18393.55)	919.68
dept. health worker salary %:	13.93%	social development (40% × 18393.55)	7,357.42
payment for salary (.2821 × 17,583,369)	4,960,244.17	material interest, bonus, innovation (18393.55 - 919.68 - 7,357.42)	10,116.45
payment for paraclinic salary (.1427 × 17,583,369)	2,510,007	social security (37% × 10,116.45)	3,743.09
payment for dept. health worker salary (.1393 × 17,583,369)	2,450,236.23	Risk fund (10% × 10,116.45)	1,011.65
payment for bonus salary (0.03 × 4,960,244.17)	144,473.13	Reserve fund for salary (2.5% × 10,116.45)	252.91
payment for bonus salary, paraclinic (0.03 × 2,510,007)	73,107.03	Fund stimulation of adminis. and maintenance (4% × 10,116.45)	404.66
payment for bonus salary, dept. hlth worker (0.03 × 2,450,236.23)	71,366.10	remaining surplus for salary stimulation (10,116.45 - 3,743.09 - 1,011.65 - 252.91 - 404.66)	4,704.15
net salary - bonus, paraclinic (2,510,007 -73,107.03)	2,436,900.91	Coefficient (excess salary after reserve fund) 655,309.12 - 16,382.73 1,723,561.00	0.37
net salary - bonus, dept. health worker (2,450,236.23 - 71,366.10)	2,378,870.12	Coefficient (remaining surplus) (4,704.15/1,723,561.00	0.00
actual guaranteed salary requirements	1,723,561.00	Coefficient (previous month deficit) (744,805/1,723,561.00)	-0.43
planned salary - actual salary require. (2,378,870.12 - 1,723,561.00)	655,309.12	Coefficient (sum of three coefficients above) (.37 + 0 -0.43)	-0.06
reserve fund (2.5% × 655,309.12)	16,382.73		
social security (37% × 4,960,244.17)	1,835,290.34		

Annex H

QUALITY STANDARDS LISTING

"Approve"
DMTMA Head Doctor
M.H.PETRYK
SIGNATURE
SEAL
26 January 1994

HEALTH CARE QUALITY STANDARDS

FOR INDOOR PATIENTS

AT NEUROLOGIC DEPARTMENT OF CMH

City of Drohobych

Disease	WHO Intern. Disease Classifi-cation-9 Code	Ave ra-ge stay at ho-spit al	Examination	Treatment	Results
1	2	3	4	5	6
Cerebrovascular disorder:	434	36			
1. Ischemic stroke a). with severe neurologic insufficieny	434	36	CBC, urinalysis, blood sugar, coagulogram,: prothrombin, cholesterol, R.W., residual nitrogen, proteins, bilirubin, creatinine, C.R.P., Echo- and ECG, therapeutist's, eye specialist's advice	Vasodilators, dehydratants, nootrops, antihypertensive agents, tranquilizers, anticoagulants, Rheopolyglucinum, vitamins, antibiotics, PT, massage, electrostimulation, AC, hormones, anabolics	Regression of cerebral symptoms, some regression of neurologic insufficiency, invalidism
b). with moderate neurologic insufficiency	-"-	28	-"-	-"-	Regression of general and focal symptoms, some rehabilitation, temporal or general disability
c). with mild neurologic insufficiency	-"-	18	-"-	-"-	Total regression of neurological symptoms, temporal disability, in some cases employment
Cerebral hemorrhage	431	36	-"- lumbar puncture	Hemostatics, spasmolysants, antihypertensives, dehydratation, analgetics, nootrops, hormones, antibiotics, rehabilitation therapy	Regression of general and focal symptoms, SCF sanation, total or partial loss of ability to work, different degree of recovery.

1	2	3	4	5	6
Subarachnoid hemorrhage	430	32	-"-	-"-	Regression of general cerebral symptoms, freedom from headach no meningeal symptoms, CSF improvement, routine recovery, angiography at the Neurosurgery Institute 2 to 4 weeks after the discharge, solution as to work ability is solved after agiographic examination. In severe cases with serious CSF dynamics disorders - transfer to disability
Transient cerebral circulation disorder	435	12	-"-	BP, cardiac rhythm correction, spasmolysands, anticoagulants, Rheopolyglucinum,. angioprotectors	Freedom from general cerebral an focal symptoms, recovery of labor ability or its temporal loss
Vertebro-basilar insufficiency	436	15	-"- cervical spine x-ray	-"-	Freedom from vestibular disorder recovery of labor ability or its temporal loss
Spinal circulation disorder	437	35	Spinal x-ray, lumbar puncture, CSF dynamic tests, neurosurgeon's advice	BP correction, rheologic improvement, anticoagulants or coagualnts, spasmolysands, nootrops, dehydratation, rehabilitation therapy	Recovery of disordered functions- complete or partial, complete or partial work ability loss, rarely - temporal.

1	2	3	4	5	6
Vascular encephalopathies	437.1	18	CBC, urinalysis, blood sugar, coagulogram, prothrombin, cholesterol,. R.W., residual nitrogen, proteins, bilirubin, creatinine, C.R.P., Echo, ECG, therapeutist's , ophtalmologist's advice	-"-	Some disordered functions improvement, partial or complete work ability loss
Myelopathies	336.1	31	Spinal x-ray, in some cases lumbar puncture, neurosurgeon's advice	-"-	-"-
Ischemic stroke aftermath	483	15	CBC, urinalysis, coagulogram, cholesterol, β-lipoproteins, urea, ECG, in some cases ophtalmologist's , therapeutist's advice	Cerebrolysinum, Retabolilum, ATP, anticholinesteroids, angioprotectors, massage, ET, PT, AC	Disordered functions improvemen complete or partial work ability loss, complete or partial routine rehabilitation
Peripheral nervous system disease due to osteochondrosis	722 723 724				
1. Radicular syndromes a).severe		32	CBC, urinalysis, feces for helminths eggs, x-ray of a required spine portion, R.W., in some cases, protein fractions, bilirubin, neurosurgeon's advice	Vitamins, analgetics, dehydratation, nonsteroids, biopromoters, anticholinesterase agents, PT, massage, electrostimulation, AC	Pain alleviation, reflecto-tonic disorders relief ,namely symptoms of tension, increases in the range c spinal movements, in severe cases referral to neurosurgery department
b). moderate		27	-"-	-"-	Pain relief, spinal function restoration, labor ability recovery or its temporal loss

1	2	3	4	5	6
2. Vertebral syndromes	723				Complete or partial pain relief, improved or normal spinal function, recovery (b,c,d) or temporal work ability loss. In som cases -employment
a). acute	724	24	-"-	- "-	-"-
b). moderate		17	-"-	-"-	-"-
c).mild		22	-"-	-"-	-"-
d).lumbago	724.2	8	-"-	-"-	
Cervical-brachial neuralgias and lumbo-ischialgias	722 723 724	17	-"-	-"-	Complete or partial pain and muscular and tonic disorders relie recovery, in some cases temporal loss of work ability
4.Radiculoischemias	722 723 724	31	-"-	-"-, rehabilitation therapy	Pain arrest, complete or partial motion disorders recovery. Temporal work ability loss, in severe cases, partial or complete
Peripheral nervous system disease, of infection, toxic or other etiology	352 357				
1.Fallopian, radial and optic neuritis	351 352 354.2	23	CBC, urinalysis, blood sugar, R.W., protein fractions, rheumatic tests, in some cases skull or chest x-ray, gynecologist's. urinologist's, therapeutist's advice	Anti-inflammatory therapy, hormones, interferon, spasmolysands, dehydratation, desensibilizing therapy, vitamins, anticholinesterase agents, massage, PT, ET, AC	Complete or partial recovery of disordered functions; recovery, i some cases temporal work ability loss

1	2	3	4	5	6
2.Trigeminal neuralgia	350	17	CBC, urinalysis, blood sugar, R.W., paranasal sinuses, skull x-ray, ENT specialists' advice, EchoCG	Analgesics, Finlepsin, spasmolysands, tranquilizers, PT, blockades	Reduced frequency and severity of attacks, sometimes their eradication, in severe cases - referral to neurosurgery department
3. Acute polyradiculoneritis	357	36	-"- , lumbar puncture	Hormones, antibiotics, Detoxification, dehydratation, vitamins, analgetics, rehabilitation therapy, in severe cases assisted breathing	Complete functional recovery, temporal work ability loss
4. Polyneurites of various etiology	357	27	-"-	-"- AC	Complete or partial recovery of motion and sensitivity recovery, temporal disability, in severe cases - permanent disability
5. Ganglionites, ganglioneurites	353	18	CBC, urinalysis, feces for helminths eggs, blood sugar, ALT, AST, C.R.P., protein fractions, globulins, bilirubin, thymol, cholesterol, R.W., ECG	Ganglioblockers, Virodex, vit.B12, analgetics, PT, in severe cases x-ray therapy	Pain arrest or alleviation, arrest or alleviation of local skin changes. Work ability recovery
Inflammation CNS disorders					

1	2	3	4	5	6
1. Encephalites, myelites	323	25	CBC, urinalysis, blood sugar, rheumatic tests, transaminases, protein fractures, eye fundus, Spinal x-ray, lumbar puncture, when necessary, therapeutist's, neurosurgeon's gynecologyst's advice	Antibiotics, dehydratation, hormones, desensibilization, resorption therapy, anticholinesterase agents, PT, massage, ET, AC.	Hypertension arrest, recovery or improvement of lost functions, temporal disability, in severe case - invalidism
2. Cerebral and spinal arachnoidites	320 322	24	-"-	-"-	-"-
3. Disseminated sclerosis, encephalomyelitis	340	23	CBC, urinalysis, R.W., blood sugar, bilirubin, eye fundus, field of vision	-"-, Hemosorption, Rheoplyglycinum, immunomodulators,	Complete or partial remission, temporal disability, invalidism
4. Lateral amyotrophic sclerosis	323	24	-"-	Anti-inflammatory , anabolic steroids, vitamins, B, vit.E, anticholinesterase agents, PT	Process stabilization, invalidism

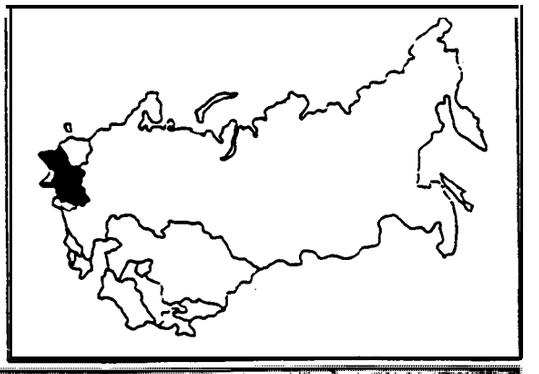
Head doctor of Drohobych CMH
L.M.Koval
Seal, signature

Head of Neurologic Department
N.Y.Kaz
Signature

Annex I

MAP OF UKRAINE

Ukraine



BELARUS
RUSSIA
POLAND
Pripet
Marsh
Chernihiv
Chernobyl
Dnieper
River
Kiev
Zhytomyr
L'viv
Galicia
Carpathian
SLOVAKIA
Uzhhorod
HUNGARY
6,762 feet
Mountains
Dniester
River
Vinnytsya
Southern
Bug
River
Pereyaslav
Kharkiv
Poltava
Dniepr
River
Dnipropetrovs'k
Horlivka
Donets'k
Makuyivka
Donets
Kryvyy Rih
Zaporizhzhya
Manupol
Mykolayiv
Odessa
Kherson
MOLDOVA
ROMANIA
Crimea
Simferopol
National Boundary
Autonomous Boundary
Capital City
Other Cities
0
200 Miles
0
200 Kilometers

Annex J

SCOPE OF WORK

Purpose: In collaboration with the Drohobych Medical Administration, to evaluate the DRG-type payment system, to provide advice on improvements and document lessons learned for dissemination.

Activities: Brief USAID and NIH. Conduct interviews, analyze data and procedures and make calculations to answer how DRGs are constructed, their adequacy of coverage, the adequacy of payment, if mechanics are in place, efficiency changes; and to recommend additional data collection and analyses. Debrief USAID and NIH.

Outputs: Write report that describes DRG system, analyzes its strengths and weaknesses, recommends improvements, further data collections and analyses; and states lessons learned. Include comparisons with Kiev and Dniepropetrovsk DRGs. If successful, activity could result in dissemination through a workshop or training.

Annex K

ABOUT THE AUTHORS

Annemarie Wouters, Ph.D., senior analyst in health economics recently joined Abt Associates in the International Health and Economic Development Area. Previously, she was seven years on the faculty at The Johns Hopkins School of Public Health responsible for teaching and applied research in both United States and international health economics. Her experience includes cost analysis and cost management; and design and evaluation of pricing strategies and initiatives in privatization. Other related areas include quality assurance, efficiency, reimbursement, financial feasibility, and cost-recovery. Examples of her work include analyses of patient episodes of care rendered under a Preferred Provider Network system in the United States, efficiency in health care facilities in Nigeria, impacts of two new patient payment methods on episode costs under a cost recovery initiative in Niger, the cost implications and financial sustainability of quality improvements in maternal care in Nigeria, and a new decentralized reimbursement system for hospitals in Ukraine. Dr. Wouters received her Ph.D. in economics from Boston University and has pursued other course work related to managerial economics.

Kevin Quinn, M.A., senior health economist, works in the Health Policy and Research Area at Abt Associates. His most recent project was the design of a prospective payment system for outpatient hospital services in the State of Montana. He joined Abt from the Congressional Budget Office (CBO) in Washington, D.C., where he was a health economics analyst. He wrote the CBO analysis of two health care reform proposals. being considered by the United States Congress and also constructed a comprehensive and consistent data set of the trends in health insurance status of the United States population. Before joining CBO, Mr. Quinn worked in the United States Senate as a legislative assistant for health policy, handling a wide variety of health policy issues. He moved to Washington from Canada, where he was Director, Economics and Evaluation, of the Saskatchewan provincial Department of Health. His experience also includes four years as a staff reporter for *The Wall Street Journal,* and eight years of teaching economics on a part-time basis. His previous international work comprised in-country analyses of fertilizer markets in China, India, Brazil, Indonesia, Malaysia and Sri Lanka. He received his M.A. in economics from the University of California, Los Angeles.

Annex L

PROSPECTIVE PAYMENT FOR HOSPITAL SERVICES IN THE UNITED STATES

The Impetus for Prospective Payment

Before the 1980s, American hospitals were generally paid for each case either by the charges they levied or the costs they incurred. Private insurance companies paid whatever the hospital charged for a particular case. Government-run insurance programs reimbursed hospitals for the actual costs of each case, with "costs" determined through a government audit of the hospital's financial accounts.

This system was called "retrospective" payment, since the hospital did not know what it would be paid for each case until *after* the patient was discharged. It had one fundamental problem: Hospitals had little or no incentive to operate efficiently. The more costs they incurred, the higher the charges they levied, the more they were paid. Payments for hospital services were rising much faster than inflation. As well, government programs could be paying two hospitals vastly different amounts for the same service, which generated concerns about the fairness of the system.

In 1983, the United States Congress passed a law that changed the way that hospitals were paid by the Medicare program. Medicare is a government-run health insurance plan for people 65 years of age and older and for people with severe disabilities. In 1993 it insured 36.3 million people, who had 11 million hospital stays in 6,400 hospitals for a total of 89 million patient-days.
The new system was called "prospective" payment because the payment was determined *before* the patient was admitted. The payment for each case depends on a formula that is not affected by the hospital's actual costs or charges. If costs exceed payment, the hospital suffers a loss. If costs are less than payment, the hospital makes a profit on that case. The fundamental incentive has changed: Now hospitals have strong incentives to keep costs down.

In the last decade, Medicare's payment method has been copied by most of the Medicaid programs, which are run by the state governments to insure poor people. It has also been copied by a number of private insurers. The development of the Medicare prospective payment system is probably the most important development in health care financing in the United States in the last 25 years.

This brief paper is an explanation of prospective payment written for policymakers in other countries. This type of payment may or may not be suitable for conditions in other countries. It does offer, however, a fascinating example of the importance of financial incentives, even in an area such as health care where many providers are not motivated by money.

The Basic Structure of Prospective Payment

Each hospital case is classified into one of 490 groups, called diagnosis-related groups (DRGs). Medicare pays each hospital a predetermined amount of money for cases in each group to cover nonphysician costs. That payment has two components: a standardized amount and a DRG weight. For example, the payment for a patient with gastrointestinal bleeding would be:

*Standardized Amount * DRG weight = DRG Payment*
*$3,795 * 0.5359 = $2,034*

The standardized amount is the average payment for all DRGs. The DRG weight varies with each DRG; in this example, the payment for DRG 175 (Gastrointestinal Bleeding) is about half the payment the average payment for cases in all DRGs. If there is a complication, such as peritonitis, the case would be assigned to a different DRG. The weight for DRG 174 (Gastrointestinal Bleeding with Complications or Comorbidities) is 0.9726 and the payment is $3,691. If surgery on the stomach is performed, the case is assigned to DRG 155 (Stomach, Esophageal and Duodenal Procedures). The weight is 1.3878 and the payment $5,266. If there are complications, the case is assigned to DRG 154 (DRG 155 with Complications or Comorbidities.) The weight is 4.1740 and the payment $15,839. If the patient is less than 18 years old, regardless of any complications, the case is assigned to DRG 156. The weight is 0.8732 and the payment $3,314.

The assignment of each case to a single DRG is done using basic information from the patient record: principal diagnosis, as many as eight secondary diagnoses, as many as six procedures, age, sex, and whether or not the patient was alive when discharged. Codes for diagnoses and procedures are taken from the International Classification of Diseases, 9th Revision, Clinical Modification. ICD-9-CM is a version of the International Classification of Diseases that is compiled by the World Health Organization. In simplified form, the hierarchy of logical rules used to assign each case to a single DRG is as follows.

- Was a liver transplant, lung transplant or tracheostomy performed? If yes, the case goes to one of four DRGs regardless of diagnosis.

- For the great majority of cases where these procedures were not performed, diagnosis is used to assign the case to a Major Diagnostic Category (MDC). There are 25 MDCs; most are based on a particular organ system (e.g. Diseases and Disorders of the Digestive System). There are some exceptions (e.g. Burns).

- Within each MDC, cases are divided into surgical and medical DRGs. A hierarchy of surgical procedures governs which surgical DRG a case is put into.

- If there is no significant surgical procedure, the case is placed in a medical DRG according to the diagnosis. Sometimes there are two medical DRGs for the same

diagnosis, one for patients 18 years of age and over and the other for patients under 18.

- Some surgical and medical DRGs are further differentiated by whether or not there are significant complications or comorbidities, as in the example of a gastrointestinal hemorrhage with peritonitis.

The most common DRGs in 1992 were: DRG 127, Heart Failure and Shock (6 percent of all cases); DRG 89, Simple Pneumonia and Pleurisy (3.6 percent); DRG 14, Specific Cerebrovascular Disorders except Transient Ischemic Attack (3.2 percent); and DRG 140, Angina Pectoris (3.0 percent).

Even with this elaborate classification scheme, there will be cases that will be much more expensive than other cases within the same DRG. These cases are called "outliers. " Between 5 percent and 6 percent of DRG payments are reserved to pay for outlier cases. Outliers are defined either in terms of unusually long length-of-stay or unusually high costs. The specific "thresholds" vary by DRG. For DRG 175 (Gastrointestinal Hemorrhage), where the average length-of-stay is 3.9 days, the outlier threshold is 19 days. The cost threshold for the typical hospital for that DRG is $22,534. For DRG 174 (Gastrointestinal Hemorrhage with Complications or Comorbities), the average length-of-stay is 6.2 days and the outlier thresholds 27 days and $24,191. In these cases, hospitals do receive payments that are based on the actual length-of-stay or the actual cost.

Special Treatment of Certain Types of Hospitals

Medicare uses the DRG system to pay 5,200 hospitals. Another 1,200 hospitals are exempt from the system and are still paid on the basis of retrospective costs. These hospitals include psychiatric hospitals (and psychiatric units within general hospitals), rehabilitation hospitals (and units), children's hospitals, oncology hospitals and long-term acute care hospitals, which are general hospitals where the average length-of-stay exceeds 25 days. For varying reasons, the Congress believed in 1983 that prospective payment was inappropriate for these kinds of hospitals. Since then, the Congress has directed the Medicare program to develop prospective payment systems for these hospitals, although nothing has been implemented yet.

Of the hospitals that are paid under prospective payment, many receive special payments designed to compensate them either for costs they cannot avoid or for extra services they provide. Despite these special payments, the incentives of prospective payment are maintained: The payment for a particular case does not depend on the cost of that case. The following are the more important adjustments to the basic payment system.

- The standardized amount is higher for hospitals in large urban areas than in other areas.

- Hospitals in parts of the country where labor costs and nonlabor costs are high (calculated separately) receive higher standardized amounts.

- Hospitals that are the only readily available source of inpatient care in isolated areas are paid the highest of three amounts: the DRG payment and the results of two hospital-specific cost formulas.

- Payment that serve a "disproportionate share" of poor people receive an additional payment that is calculated as a percentage of the DRG payment.

- Teaching hospitals receive supplementary payments that depend on the cost of their teaching programs and on the number of intern and resident physicians they have.

Changes in the Prospective Payment System

The Congress Periodically changes the broad rules for prospective payment to hospitals. The changes are usually formally considered by the two committees that have jurisdiction over Medicare: the Finance Committee in the Senate and the Ways and Means Committee in the House of Representatives. The changes may have been originally suggested by individual Members of Congress, the Administration, hospital groups or other health care organizations, or (rarely) other members of the public. Under Congressional direction, for example, the Medicare program is now changing its method of paying for capital costs (i.e., buildings and major equipment) from reimbursement of actual costs to a prospective payment system similar to the DRG system used for operating expenses.

The Health Care Financing Administration, which runs the Medicare program, updates the DRG system each year. It first publishes the proposed changes in the *Federal Register*, a daily publication about federal government regulations. After considering comments that may number in the thousands, it publishes the changes in final form a few months later. The DRG definitions and weights are updated each year; changes are usually minor. Also updated are the standardized amount, the indexes used to adjust for differing labor and nonlabor costs, the specification of large urban areas and similar details.

The American Experience with Prospective Payment

Prospective payment was introduced for all hospitals at the same time. (There was, however, a transition period during which payments to each hospital were based partly on prospective payment and partly on the hospital's actual costs.) Such a sweeping and profound change .generated many predictions that hospitals would become much more efficient (or bankrupt), that they would avoid difficult patients, that patients would be harmed by being discharged "sicker and quicker," and so forth.

Under contract to the Health Care Financing Administration, Abt Associates reviewed numerous studies done by researchers from government, universities, health care associations, providers, consulting firms, and other organizations. That review reached several conclusions about the effects of the prospective payment system in its first eight years.

- Medicare payments were lower than they would have been under the previous payment system. This occurred despite a consensus that prospective payment rates were unnecessarily generous in the several years after the system was introduced.

- Hospitals reduced length-of-stay and shifted the performance of many surgical and diagnostic procedures to outpatient settings. Patients who have had cataract surgery are now routinely sent home the same day, for example.

- The worst fears did not come true. There had been concern that hospitals would admit patients who did not need to be admitted while "dumping" patients who were unusually expensive, that adoption of new technology would be discouraged and that hospitals would be less willing to treat charity cases or poor people in general. The evidence suggests that none of these outcomes occurred.

On the whole, the review concluded that prospective payment generally achieved its original goals of reducing the growth in inpatient hospital costs without compromising patient care.