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*Considerations for a Capitation Payment System
for Primary Care Providers in Macedonia:
Promoting Quality, Equity and Efficiency*

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OVERVIEW

One of the most important components of health sector reform in the Republic of Macedonia is an innovation in paying primary care providers. A capitation system for primary health care will be demonstrated in two pilot areas under the terms of the health sector transition project agreement between the Government of Macedonia and the World Bank. Pilot testing will be launched and evaluated in the municipalities of Ohrid and Prilep prior to national implementation.

The focus of this report is to describe the considerations for designing this capitation payment system. Under such a capitation system, a doctor will be paid a fixed amount for each person who enrolls in his practice. In return, the doctor will provide all the primary health care the individual requires, including personal preventive care.

The report discusses the scope of primary health care to be paid under capitation, formulas for calculating the amount of the capitation payment, regulations and procedures required to implement such a system, and the design of incentives to promote efficiency. Alternative choices may be made for several of these elements in the design of a capitation system. The report discusses the pros and cons of these alternatives and makes recommendations as to which options appear most likely to accomplish the stated goals of health finance reform in Macedonia. However, not all policy decisions have been made (and some which have been made may be changed). Therefore, this report will also cover the implications of alternative choices.

This should be considered as preparatory work for a final report. It is circulated in this form to the Macedonian Ministry of Health (MOH) and local counterparts in order to obtain corrections to points that may be misunderstood and to obtain comments on the method and conclusions. The final report, incorporating comments from the MOH, will present the actual design and implementation plan for paying primary care doctors under capitation.

The goals of this report are the following:

- describe the aspects of the Macedonian health care system that are relevant to the design of a capitation payment system,
- present the goals of a capitation system for primary health care (PHC),
- discuss the possible scope of the system, and
- describe the procedures for calculating payment amounts, and related issues.

BACKGROUND

In the publicly operated health care system in Macedonia, the annual budget allocation to health care facilities is now based on number of personnel and number of beds. This provides no incentive for improving either the quality or quantity of services offered by the clinic. Further it perpetuates inequalities among cities and regions since those who have more continue to get more rather than allowing implementation of the goal of greater equality. Private practice is now legal. In 1996, it was a very small part of medical practice (about 6 percent), but there is a larger proportion of dentists (23%). Some, but not all, private practitioners have contracts with the Health Insurance Fund, (HIF), the financial conduit between health sector revenues and expenditures to support the public health care system.

In recent years, available funds have not been adequate to support the health care system. Because salaries are a fixed expense, this has caused a serious shortage of supplies and equipment for PHC. The lack of equipment for care meant doctors could not provide care when

they wanted to thereby aggravating the efficiency problem. The health reform project includes funds to help purchase basic PHC equipment to remedy this problem.

The Primary Health Care System

The PHC system includes health stations (which provide only PHC), health centers (Domovi) (which provide PHC and sometimes also secondary outpatient care), and medical centers (which provide primary and secondary outpatient care and hospitalizations.) The health centers and medical centers and two of the 7 health stations are each separate health organizations or legal entities. The other 5 health stations are part of either a health institute or a medical center. Although there is usually only one legal entity per municipality, there are almost always multiple locations where PHC is provided within the municipality.¹ There are a total of 18 health centers, 16 medical centers, and 2 health stations for a total of 36 legal entities delivering both curative and preventive primary care in the outpatient setting..

Note that this definition of the PHC system excludes the very important public health activities of the Republican Institute for Health Protection (RIHP). There are also 10 local units of the public health system which provide public health screening and clinical laboratory services. Because these public health activities require specialized skills, they are not suitable to be included in a capitation payment system. Therefore we make a distinction between PHC and public health care.

Outpatient services in the public sector are organized into departments by specialty as listed in Table 1. Each PHC legal entity provides services in one or more of the departments listed as providing primary care. Naturally, many of the departments listed as providing the primary type of care also provide preventive care. We categorize the activities of the pulmonary and TBC units as public health as we believe they consist primarily of TB screening and other public health activities. Services in four departments (pharmacy, emergency medicine, clinical laboratory, and X-rays) include some activities often classified as primary care as well as other activities that are clearly secondary care.

PHC Physicians

Many physicians in most departments providing outpatient primary care are specialists. For example, the doctors in department of employee medicine specialize in medicine of labor. Similarly most children's departments are staffed by pediatricians and most maternal health departments are staffed by physicians with a specialty in obstetrics and gynecology. Specialists typically receive a total of ten years of post-secondary training: four years of post-secondary schooling followed by one year of hospital internship, an additional year of experience as a general practitioner, and four years of specialist training.

The department of Primary Care is usually staffed by general practitioners. Rural medical units are also staffed by GPs together with a nurse and midwife. Sometimes a specialist in pediatrics is included in the team.² GPs typically have the minimum amount of training required to pass the licensing examination (five years post secondary including four years of schooling plus a year of internship.)³ Many are waiting to enter specialty training.

¹ Throughout the report we shall use the definition of municipality in use in 1995 (and early 1996?). This is the only form in which data were available to me.

² MOH, "Highlights on health in the Republic of Macedonia", Sept. 1994

³ The doctor must pass an examination after completion of the practical training.

Table 1
Departments Providing Outpatient Care

Department	Type of Care
1 = Primary medicine	Primary
2 = Employee's medicine	Primary
3 = Preschool children's medicine	Primary
4 = School children's medicine	Primary
5 = Maternal health services.	Primary
6 = Postpartum home care	Primary
7 = Care for respiratory diseases and TBC	Public health and primary
8 = Dental	Primary
9 = Drugs	Primary and secondary
10 = Rural medical units	Primary
40 = Surgery	Secondary
41 = Urology	Secondary
42 = Maxiofacial surgery	Secondary
43 = Obstetrics and gynecological surgery	Secondary
44 = Orthopedics	Secondary
45 = Otolaryngology	Secondary
46 = Opthamology	Secondary
47 = Anesthesiology	Secondary
50 = Internal medicine	Secondary
51 = Pediatrics	Secondary
52 = Infectious diseases	Secondary
53 = Neuropsychiatry	Secondary
54 = Nuclear medicine	Secondary
55 = Respiratory diseases	Secondary
56 = Oncology	Secondary
57 = Anesthesiology	Secondary
58 = Emergency medicine	Primary and secondary
59 = Sports medicine	Secondary
60 = Radiology	Primary and secondary
61= Dermatology and venereal diseases	Primary and secondary
62 = Blood	Secondary
63 = Child psychiatry	Secondary
64 = Psychiatry	Secondary

Family doctors who care for all persons in the same family are very rare in Macedonia. Many Ministry of Health (MOH) officials, joined by prominent Macedonian doctors, advocate the use of family doctors who would provide all primary health care to all the persons in the same family. The knowledge such doctors would gain about problems occurring within the family will allow them to treat problems more effectively and increase patient compliance. In order to further enhance quality of care, the Chamber of Physicians advocates that such family doctors most frequently treat problems in the home rather than in an office or clinic.

Another advantage of family doctors is that their training would be less expensive than that of many of the specialists who now deliver primary health care. Some believe that the current training of GPs (or at least the duration of the current training)⁴ would be adequate for them to function as family doctors. Others suggest that a specially designed training program of shorter duration than the training of other specialists would enhance the quality of care delivered by family doctors. The training program should also enhance the prestige of the post and, consequently, the ability level of doctors choosing to become family doctors. In any case, the limited practice now seen in most departments of Primary Care suggests that such doctors receive a refresher course before being responsible for families with children or pregnant women.

⁴ One suggestion is to increase the amount of hands on experience that doctors receive during their training.

Referral Practices and Patient Choice

Interviews suggest that many doctors in PHC now function more as “traffic policemen” – directing patients toward specialists – than as doctors who treat and cure simple illnesses. This aggravates the budget problems of the HIF because specialists order costly tests and hospitalizations as well as because of the higher salary that specialists earn.

During the period of the former federation of Yugoslavia a patient could see a specialist only with a prescription from the referring doctor -- i.e. in order to see a specialist the patient needed to obtain a referral. The system was abandoned soon after Macedonia received independence as part of the general movement to increase personal freedoms. The increase in specialist costs which occurred in the time period following this decision led to its reversal in the amendments to the health law which occurred in 1995. Now, persons insured may use specialist-consultative and hospital health care without the doctor's order only in case of emergency (Article 42 of Health Law).

The same revision to the Health Law requires that each insured person designate a primary health physician from the same municipal area. The selected physician will be responsible for providing medical assistance and to follow-up the health of the uninsured. Regulations have not yet been written, however. Among the issues to be decided by regulation are the process of designation and the period for which the designation would be in effect. The law apparently suggests only one month (Article 41) but, at least in some discussions within the MOH, a period of one year is being considered. The English translation of the health law is ambiguous about whether a person may choose more than one physician in addition to a dentist (stomatologist). The physician(s) must be chosen from one of the following specialties: general medicine, medicine of labor, pediatrics, school-age children medicine or gynecology.

GOALS OF A CAPITATION SYSTEM FOR PHC

The first goal of a capitation payment system for PHC is to enhance the quality of PHC. The HIF will provide a single payment for all primary health care required by a person in a time interval – a month, for example. A doctor's income will depend on how many people sign up with him. Under the law, people will have free choice among the doctors in an area. Therefore, each doctor will want to please his patients and this should increase the quality of primary health care. The capitation payment should ensure that money is available for the supplies needed for PHC and this should also increase the quality of PHC. Because doctors who work hard will have the opportunity to earn a good salary, this should enhance the status of PHC as a profession and make it more attractive to capable young doctors.

The second goal of capitation is to increase the efficiency of PHC – i.e. the increase in quality and quantity of PHC should not come at a proportional increase in costs. Because doctors will be able to keep the amount by which their payments exceed costs, they will be encouraged to be efficient. The capitation payment system should be designed so as to encourage PHC doctors to deliver more care themselves and to refer less. This will decrease the costs of this care because specialists frequently order many expensive tests and because fewer specialists will be needed. The training of the PHC doctor can be substantially less expensive than the training of specialists, as discussed previously.

Although there are reasons to believe that capitation will increase both the quality and efficiency of PHC, there are other reasons to worry about quality and efficiency under such a system.

Doctors may want to refer too often – it would save them effort and it might please the patient. Patients are not always the best judge of quality of care and so some doctors may be very popular but still deliver poor care. Some doctors might sign up too many patients and not be able to provide adequate care for all of them. In designing the system, we need to be aware of these threats and include measures to counteract them. The measures should include both incentives (i.e., increased payment for the doctor who does the right thing) and regulations which show what is expected and extract penalties for violations. Of course, the health care system must have the infrastructure that will allow high quality efficient care – including well trained doctors and necessary equipment and supplies.

A third important goal of the design of capitation is to increase the fairness of the system, particularly for individual doctors. In the current system, doctors with the same education and experience are paid the same even if one works very hard and the other hardly works. By relating payment to volume of patients, doctors who work harder will be paid more. The capitation system will also ensure equal payment for the same services by private and public doctors. This will foster competition between the two sectors thus spurring both to improve quality and efficiency. Finally, the capitation system will result in a more equal distribution of resources for PHC among different regions of the country.

Doctors will be able to keep the amount by which their payments exceed costs. On the other hand, they will be responsible to deliver all the care required by their patients, even if costs exceed payments (or leave too little salary for the doctor to live on.) Thus the capitation payment system transfers risk from the HIF to the doctor. In designing the capitation payment system, we must ensure that the amount of risk is not so great that doctors face financial ruin.

Finally, because all beneficiaries of the HIF must choose a PHC doctor, the capitation system will automatically produce a complete count of beneficiaries. Therefore it will be possible to improve the auditing of the collection of premiums through payroll taxes as well as all the other ways that the HIF collects funds. Because expenditures for PHC will be simplified, it will also be easier to ensure that the designated funds are going to PHC as intended.

SCOPE OF A CAPITATION SYSTEM FOR PHC IN MACEDONIA

We need to define the scope of services covered by the capitation payment in three ways: First, we need to define the services in a way that allows the doctor to understand what he is responsible for providing in return for accepting the capitation payment. Second, we need to define the services in a way that allows the HIF to identify the money which it is currently spending for these services. When the HIF pays for the services through capitation, it will need to remove this money from future allocations. The third issue on the scope of the capitation system is to identify the doctors who will be eligible to receive a capitation payment.

Services Covered by Capitation

The first issue is the extent to which we make the PHC provider responsible for purchasing, out of the capitation payment, services from other providers. Certain drugs are clearly an appropriate component of PHC treatment. In well specified conditions, an x-ray examination may be necessary to diagnose illnesses which are suitable for primary care. One might even consider that certain kinds of hospital stays are part of primary care.

Including these services in the capitation payment provides a very strong incentive for the efficient use of these services. Doctors will be very reluctant to use them unnecessarily. It might,

however, put the physician at too high a financial risk because he might accidentally receive a higher than average proportion of patients who need these services. A further problem arises in that, when the service is necessary for a patient, the interests of the patient and the doctor directly conflict. The money spent purchasing the service comes directly out of the doctor's pocket. The designers of some capitation payment systems have decided to avoid putting the doctors self-interest in direct conflict with that of the patient.

Risk pools are an alternative way of simultaneously obtaining some of the incentive effects of including these services in the capitation while lowering the doctor's financial risk. In a risk pool, the insurer (in this case the HIF) creates a pool of funds to be spent for a particular purpose. For example, the pool might cover all the drugs that will be used in PHC in a particular municipality over the coming year. The funds would equal the amount that the insurer spent on such drugs in the previous year (adjusted for expected inflation) plus an additional amount (e.g. ten percent more). The additional amount will initially be subtracted from the capitation payment. All drugs used in PHC during the year will be paid from the fund. At the end of the year the amount of money remaining in the fund would be divided among the PHC doctors in proportion to their number of enrollees. Thus doctors will know that if they, and their colleagues, use drugs efficiently they will receive the savings. It reduces risk because payment from the fund depends not on the small number of patients a particular doctor has, but on the much larger number covered by the pool. Further, the pool puts a distance between the doctor's action for the patient and the consequences for his financial situation.

Compared to just including the service within the capitation payment, a risk pool produces less incentive for efficiency and less financial risk. The creation of risk pools is a fairly complicated business and requires substantial data requirements and statistical and financial expertise. It also might create (or aggravate) resentment by a doctor against colleagues whom he believes are not practicing properly. Consequently, it may be wise to design the first capitation system to include only services that can be directly provided by the PHC doctors and their nursing or other allied health personnel.

A group of doctors needs to develop a description of the services which are included in the capitation system. They should be guided by the principle that a service should be included in the capitation payment if and only if it should be provided by the PHC doctor rather than referred to specialist care. As a rule of thumb, many doctors believe that 80 to 85 % of medical problems can be adequately treated in primary care. The list should describe classes of services and diseases. It might give general guidelines for the circumstances or referral rather than attempt an enumeration. The list must be flexible. It will be necessary to modify the list as experience is gained during the pilot about where referral problems occur (when doctors do not refer to specialists quickly enough as well as when they refer patients whom they should treat themselves.)

In developing the description of the kinds of services, it is important to keep in mind the equipment and supplies available to PHC doctors. This will, of course, include the new equipment to be purchased under the World Bank project.

Current Expenditures for PHC

In order to identify PHC expenditures in the current budget allocations of the HIF, it will help to start with the departments used to report outpatient visits to the Republic Institute for Health Protection. For many departments, all services provided in the department will be included as primary care. For most other departments, including all the surgical and psychiatric departments, none of the services would be classified as primary. Table 1 provides a preliminary

classification of departments. The classification should be reviewed after the previously discussed description of services is defined. The table shows only five departments which clearly perform services that most observers would classify as both primary and secondary. Of these five, two—drugs and radiology—may be excluded from the capitation payment system based on financial risk. Emergency medicine might be excluded from the capitation system if it is determined that there is no efficient way to transfer the work to the PHC physician's office. For the remaining small number of departments, if there are any, the percentage of funds which go to PHC should be determined.⁵

Current budget procedures do not allocate the budget among the departments. However, the number of visits in each department is known to the RIHP and has been placed in a RAND/MOH project data base. This can be used to allocate the total HIF budget allocation for the outpatient portion of the legal entity in proportion to the number of visits in each department. Summing the PHC portion of each department will produce the portion of the budget which should be paid through capitation rather than through a budget allocation. The remaining secondary outpatient services would continue to be paid through the current process.

Determining the proportion of the funds now paid to private physicians that are PHC will need to be determined by examining the services paid through invoices. The services billed by sub-specialists can be classified as secondary automatically and those billed by general practitioners can be classified as primary. The procedure codes billed by pediatricians and gynecologists may need to be assigned individually.

Which Doctors Should be Paid by Capitation?

As discussed in the background section, there are a lot of reasons to believe that family doctors would be a very useful concept for Macedonian PHC. Consequently, it makes sense to ensure that the training program for doctors produces graduates who are able to function as family doctors.

In the short run, the situation is that many of the doctors now delivering PHC in Macedonia are specialists (see Table 2). Specialists make up 50% or more of the physicians in four of the six departments that are clearly PHC. These specialists practice PHC for specific populations. Since their existing positions and the funding for their departmental expenses will be abolished by a capitation system, they should be allowed to compete to receive this capitation. These doctors might easily provide the full range of PHC services for their populations.

Table 2
Percent of PHC Doctors Who are Specialists

Department	Total Doctors	Specialists	Percent Specialist
1 = Primary medicine	1066	213	20 %
2 = Employee's medicine	236	131	56%
3 = Preschool children's medicine	315	159	50%
4 = School children's medicine	203	105	52%
5 = Maternal health services	98	84	86%
10 = Rural medical units	242	14	6%
Total	1958	731	37%

Source: MOH, June 1996, Vol. I.

Note: Doctors in the rural medical units may be double counted

⁵ The best way to do this would be to go through the individual visit invoices that have been collected at Ohrid and that will be collected elsewhere. However, if it is known that the PHC portion of the department is very small, an expert opinion would be adequate.

There are a variety of further issues related to who should receive a capitation payment. The first is whether the doctor should be required to enroll the entire family or whether, instead, different doctors could enroll different family members. This is a tradeoff in that the first provides the advantages that come with family doctors. If instead, e.g., children enroll with pediatricians and women of child bearing age enroll with gynecologists, the existing manpower would be better used. An intermediate position would be to initially allow different doctors for each person, but have a policy to encourage family doctors and a policy goal that all PHC will be by family doctors in a fixed time (say seven to ten years.)

If a decision is made that all PHC will be delivered by family doctors in the short run, it will be necessary to consider whether some continuing education would help prepare the current doctors to treat a broader range of patient. Even if one believes that the current education system is adequate for producing family doctors, this does not necessarily mean that persons who completed their education many years ago and have practiced only with one kind of person remember all they learned. For example, perhaps a pediatrician would need some help recalling how to treat a pregnant women or an elderly person. Because specialist departments exist within the PHC system, the general practitioners in primary medicine often do not treat children or pregnant women and thus might also benefit from reminders or from practical tips about these populations.

Another issue is whether women may choose both a gynecologist and another PHC doctor. The choice might be restricted to the family doctor or open to any GP or specialist in employee medicine depending on the decision made about family doctors. If a single doctor is in charge of all medical PHC for everyone at any one time, it maximizes accountability for the women's health status and referrals. It is simpler and avoids confusion over which doctor is responsible for treating which health care problems (especially when they interact.) On the other hand, teaching an existing GP to do all gynecology PHC may be hard or equipment may not be available.

In any case, of course, each person (or each family) will also choose a dentist.

A final issue which requires a rule is what to do about doctors in rural areas where the population is very small. Doctors assigned to such areas by the government, should be excluded from the capitation system and paid a salary instead. The specific form of the rule might be something like: if the population is so small that even if 90% of the population enrolled with the doctor, the salary portion of his capitation would still be less than current salary, then the doctor should receive a salary instead of capitation. The amount of the salary might be the current salary in first year of the pilot. In later years, the amount should be tied to the salaries earned by other PHC doctors. If it is necessary to encourage doctors to go to these rural areas, then one might pay, say a salary equal to 75th percentile of the salary earned from capitation by PHC doctors

PAYMENT AMOUNTS

In this section, we will be discussing the amount of the monthly capitation payment and other payment issues. The way in which the monthly capitation payment is calculated depends on whether the payment should be the same for all citizens or whether it should depend on the age and sex of the citizen. We discuss that issue first below. Then we provide formulas for the calculation of the monthly capitation payment in each case, with illustrations. The formulas each depend on a target amount and we then discuss how this target amount is to be set both in general terms and for the pilot project. The last three sections deal with calculation of additional

payment amounts: (1) a bonus for referring less frequently, (2) a maximum monthly capitation payment, and (3) outlier payments.

Should the Capitation Payment be the Same for Each Citizen?

It is well known that the cost of PHC varies systematically with age and sex. Older persons are much more likely to have chronic diseases and to thereby require more care. Children in the first few years of life are more susceptible to certain kinds of illnesses and are more likely than healthy adults to require treatment when they become sick. Thus it is reasonable to ask whether the capitation payment should vary by age and sex rather than be the same for each citizen.

We shall show below that it is easy to calculate payment amounts appropriate for different groups. Although it does add some complexity to the HIF administration of the capitation payment system, the amount of extra work involved appears to be very small. It is easy to obtain the age and sex of each patient at the time of enrollment – and one would probably want to do so for statistical reporting purposes anyway. The calculation of the appropriate capitation payment for each doctor will be done by computer, and a computer can easily deal with a few categories of patients.

Since some municipalities have an older population than average and some municipalities have a much higher birth rate, using different payment amounts for different groups of patients would result in a distribution of PHC resources more in line with actual needs. The importance of this depends on the extent to which municipalities have very unusual populations.

Using different payment amounts for different groups of patients would result in a distribution of PHC resources across doctors more in line with the needs of each doctor's patients. Whether this is very important depends strongly on whether the MOH decides to allow each family member to enroll with a different doctor. If the MOH does, then because most people will choose a doctor with whom they are familiar, many doctors will have populations that are quite far from average. Consequently average payments will not match the needs of the patients enrolled in individual doctor's practices. For example pediatricians will have almost exclusively children. Specialists in occupational medicine will have almost exclusively working adults who are generally healthy and thus have a payment which exceeds costs. Because these patients are elsewhere, general practitioners will have a higher than average proportion of elderly and thus receive a payment which is less than costs.

Consequently, I will recommend that if you allow different family members to enroll with different doctors then you should pay a different capitation amount for several age and sex groups. A very small number of groups should be sufficient. Four would be adequate: (1) Small children, perhaps age 0-6 although 0-2 is likely to be the really expensive group, (2) Persons over 64, (3) Women between 15 and 49, and (4) All others.

Monthly Capitation Amounts

Formula

In thinking of the capitation payment, it is important to remember that this payment is insurance rather than a fee for service. The payment is not intended to cover exactly the set of services given to each enrollee in each month. Rather it is intended to cover the set of services given to the entire population of patients enrolled in the month. Many of these patients will receive no services in a particular month, others will receive more than one visit.

Another general point is what should be done about the copayments (participation) that patients pay when they visit the doctor. In the current system, the health organization or private doctor gets to keep this amount. This seems like a very good way to motivate the providers to provide needed care and we would recommend its continuation. Currently, the health organization uses these funds for any purpose except salaries – i.e. for supplies, heating, etc. If it is consistent with other constraints on government policy, it would be a good idea to allow the use of the funds for any purpose – including salaries.

If one were going to have exactly the same payment for each person, calculation of the capitation amount is very simple. Let

$$\begin{aligned}
 T &= \text{budget target for HIF expenditure on PHC care in the year} \\
 n &= \text{number of persons expected to enroll, and} \\
 p &= \text{monthly payment.} \\
 \\
 p &= T/(12n) \qquad \qquad \qquad \text{(equation 1)}
 \end{aligned}$$

If the decision is to allow different payments for different kinds of patients, the calculations are only slightly more complicated. Let,

$$\begin{aligned}
 n_i &= \text{number of persons in group } i \text{ that are expected to enroll,} \\
 c_i &= \text{average annual cost of PHC for a person in group } i, \text{ and} \\
 p_i &= \text{monthly payment for group } i.
 \end{aligned}$$

Then c_{bar} = the average annual cost of a person in group i , is calculated as usual,

$$c_{bar} = \text{sum}(n_i c_i) / \text{sum}(n_i)$$

and w_i = the relative weight of group i is given by

$$w_i = c_i / c_{bar}.$$

Finally,

$$p_i = w_i T / (12n) \qquad \qquad \qquad \text{(equation 2)}$$

where as before, T is the budget target and n is the total number of persons expected to enroll.

Target Amounts

The target amount in the capitation formula, T , above is really a policy variable which allows the MOH and HIF policy makers to control the costs of PHC. In the first years of a capitation system, it makes sense to spend approximately the same amount on PHC as would be spent on the current system. In future years, when the economy recovers, or if specialist use declines, the target could be increased according to the available funds.

The target amount, and the monthly capitation system, covers only the HIF portion of the payment for primary health care. Coinsurance amounts will continue to be collected with whatever changes are required when the basic benefits package has been determined. We would recommend that these coinsurance payments continue to remain with the health organizations or private providers.

An estimate of the amount the government now spends on PHC can be derived as:

$$T = n * (\text{number of visits per person}) * (\text{cost per visit} - \text{coinsurance amount}).$$

An estimate of the cost per visit is derived from earlier RAND work, but it is limited in certain ways. Peabody, Ponce and Molyneaux (1997) estimated the cost per outpatient visit in different types of health organizations. The numbers are most reliable for health stations and health centers because these organizations provide predominantly outpatient services. Using these estimates, a primary care visit costs between 321 to 419 denars⁶. It is quite reasonable for policy considerations to operate within the region between these two estimates.

The coinsurance amounts were estimated to total 152 million denars for medical visits and 82 million denars for dental visits. This results in an average coinsurance payment per visit of 25 denars.

Illustrative Calculations of Monthly Capitation Payment

Table 3 illustrates the simple case of a payment which does not vary by sex or age. The number of visits is 1995 data for units classified as primary care by the RIHP. The number of people served is estimated at 97 percent of the 1994 population of Macedonia. Two estimates of the target are used. The first is based on the cost per visit estimate from health stations and health centers. The second is based on a cost per visit estimate that includes an estimate for medical centers based on invoices.

Table 3
Illustration Of Capitation Payments For Dental And Medical PHC

	Annual Visits	Number Served	Visits Per Person Per Year	Monthly Per Capita Payment	
				Lower Bound	Expected Value
Dental PHC	1,341,572	1,878,771	0.71	23	27
Medical PHC	7,668,746	1,878,771	4.08	134	154

Note: visits are calculated from visit data prepared in RIHP. The number served is calculated at 97 percent of the population of Macedonia.

Unfortunately, there is no information about how the cost of dental visits for PHC differs from the cost of medical PHC and so we used the same amount per visit for both types of visits in the illustrative calculation in Table 3. We recommend that this information be produced prior to the beginning of the pilot. It is possible that the cost of a dental visit differs from that of a medical PHC visit. Thus the table contains dental information only to illustrate the payment calculations and should not be taken as final.

Table 4 illustrates the calculation of the monthly capitation rate for different groups of patients. Information about how costs varies with age and sex can be calculated from the invoices which have been gathered at Ohrid, but not yet entered in the computer. Similar data should be gathered for Prilep. Because these data were not yet available, we used estimates from the RIHP. Thus again the estimates are only illustrative. However the data should be available soon. The greatest part of this information can be found in counts of number of visits per person.

⁶The average cost is weighted by the number of visits in each kind of facility, because health stations are only a small proportion of costs.

Table 4
Illustration of Varying Capitation Payments For Medical PHC

Group	Population	Number Served	Annual Visits (1,000s)	Visits Per Person Per Year	Relative Weight	Monthly Per Capita Payment	
						Lower Bound	Expected Value
0-6	271,029	262,899	1,498	5.70	1.40	187	215
65+	163,556	158,649	1,586	10.00	2.45	328	377
Women 15-49	509,037	493,766	1,900	3.85	0.94	126	145
All Others	993,255	963,457	2,685	2.79	0.68	91	105
Total	1,936,877	187,8771	7,669	4.08	1.00	134	154

Referral Bonus

An incentive payment or penalty can encourage physicians to deliver needed care rather than referring patients to specialists. The payment could be calculated based on a comparison of the frequency with which the patient refers his patients to specialist during a particular time period. The time period must be long enough that one can calculate a good estimate of the physician's true mean referral rate. Within that constraint, shorter periods are better as they reinforce appropriate changes in referral rates. Periods of 3 months to a year are reasonable.

If penalties are allowed, the penalty should be subtracted from future capitation payments rather than extracted all at once.

The following formula can be used to calculate the bonus or penalty. Let:

$$\begin{aligned}
 r_j &= \text{number of referrals per person from doctor } j \\
 &= (\text{referrals})/(\text{enrollees}). \\
 Rbar &= \text{average of } r_j \\
 \text{bonus or penalty} &= A * (rbar - r_j)
 \end{aligned}$$

When the doctor refers less than the average, the formula yields a positive number for a bonus. When the doctor refers more than the average, the formula yields a negative number for a penalty. The coefficient *A* is a policy variable used to determine how large bonuses and penalties will be. A reasonable rule of thumb is that the bonus or penalty amount should be less than 10 % of salary for 50 percent of doctors. Thus it will have a large effect only for the doctors who refer a lot less or a lot more.

An alternative to allow penalty payments is to pay only positive bonuses. Doctors with too many referrals would be audited to determine if their referrals were necessary according to accepted standards. Fines would be levied when the doctor is determined to be referring unnecessarily. This procedure would be fairer – and would clearly appear to be fairer. However, it would be much more expensive than an automatic penalty system. The choice between the two alternatives depends rather heavily on the strength of the conviction that right now, many doctors refer too frequently.

Maximum Capitation Payment

It is reasonable to impose a maximum amount which the government will pay to any one doctor in any one month. The amount would be set based on a judgment about the maximum number of patients a doctor can care for properly. If he cannot receive any more salary by enrolling any more patients, then doctors will not want to enroll more patients than this maximum number.

One can get some insight into an appropriate maximum capitation payment based on an estimate of the number of patients which a very busy doctor should be able to deal with on an average day. For example, one might believe that the maximum number of patients a doctor should see on a typical work day is 35. Then, allowing time for vacation and holidays in Macedonia, there are about 220 work days in a year. Calculations continue as:

$$\begin{array}{l r r} \text{Number of visits per year} & = 35 \cdot 220 & = 7700 \\ \text{Average number of visits per person} & & = 4.08 \\ \text{Maximum number of persons} = 7700/4.08 & & = 1887 \end{array}$$

This is about twice the average number of visits per PHC doctor which is 960. It suggests that the maximum capitation payment should be about twice the average capitation payment.

Outlier Payments

Outlier payments are a way of mitigating the risk that a doctor would have to spend too much in providing care to his patients because his patients are sicker than average. These payments are typically used only when the capitation system covers services that need to be purchased from another provider such as drugs, x-rays, specialist services, or hospital care.

Outlier payments in a capitation system usually cover only very expensive cases and then cover all costs of care beyond some threshold. For example, if the threshold were 20,000 denars and a doctor had to purchase 25,000 denars worth of services for a patient in a given year, the insurer would pay the doctor 5,000 denars in addition to the capitation payment.

Outlier payments are an alternative to using risk pools. As discussed earlier, we believe that the initial capitation program should cover only services that can be provided by the PHC provider. Then outlier payments are not necessary.

OTHER ISSUES IN THE DESIGN OF A CAPITATION PAYMENT SYSTEM

Procedures for Choosing Doctors

Here, we discuss procedures for choosing doctors (which we call enrollment) and for switching among doctors. *Enrollment must be completed before capitation payment starts in any area in order to determine the monthly capitation amount for each doctor.*

In designing the enrollment process or any process which involves the population as a whole, it will be useful to think of the citizen as if he were the customer of the HIF (which he is) and the HIF were a private firm. So in examining alternatives procedures for enrollment and switching remember to consider the cost of the procedure to the customer. This suggests that enrolling by mail, which takes the least time for the citizen, should be considered.

It is easy to estimate the cost of enrollment and switching procedures to HIF. They include:

Costs to educate public

Clerk time to

- receive information
- record keeping
- data entry
- programming computers

Effectiveness of capitation at increasing quality and efficiency of PHC.

The last is by far the largest. Similarly, the amount of dissatisfaction that a citizen feels with his or her PHC is the largest cost to the customer. It is likely to be more important than the costs to understand how to enroll and switch doctors and the cost of time and travel costs to enroll and to switch.

According to current law, the PHC doctor chosen by the patient will be in force for a year except in certain circumstances. Private doctors may be changed just by asking. Changing public health organization doctors, requires the agreement of the director of the health organization. Directors should be encouraged to make it easy for reasonable requests for change to be granted. This will increase the responsiveness of the doctors to their patients, and it will increase patient satisfaction.

Salary for Physicians Employed by the Health Organizations

The capitation payment covers all the costs of the covered services, including nursing costs, supplies, heating and utilities, clerical work, etc. The health organizations will need to divide this payment between the doctor's salary and the health organization's part which will cover all the other expenses. This could be done at the health organization level, although civil service or trade union agreements may require that this be done at the national level. In any case, there is no need to set the salary portion of capitation for private doctors.

The Health organization's part of the capitation payment must be large enough to make the facility a place where patients want to come. It must be enough to guarantee that materials and supplies are available as needed. Otherwise, the best doctors will leave the health organization and go into private practice in order to attract patients.

Another important issue is whether there should be a minimum salary for health organization PHC doctors. It is not unreasonable to provide a minimum salary at the beginning of a doctor's career in order to allow him or her to build up a clientele. A more problematic situation concerns doctors who don't enroll enough patients to make a living wage. In this case, whether there is a minimum salary and the amount of the minimum salary is a trade off between taking care of doctors who don't enroll enough patients and taxing those who do. The extra money for the minimum salary as well as all the fixed costs of running the health organization will have to come out of the health organization part of the capitation payment. This will make the health organization part higher, and the salary of the doctors with a lot of patients lower than if the minimum wage didn't exist or was lower.

Macedonia should consider regulations to force doctors who don't enroll enough patients to transfer to locations where there is a doctor shortage. This will make maximum use of existing employees and increase the availability of PHC in rural areas. An alternative would be to

encourage doctors to relocate through a very low minimum salary as well as ensuring that adequate information is available about where additional doctors are wanted.

Dealing with the Uninsured and Those Who Do Not Contribute to the HIF

There is no reason for the capitation system to affect care available to the uninsured. Currently, these persons get treatment from a health organization or a private doctor's office and pay for such services out of pocket. This procedure can continue under capitation. One change necessary is that the health organization should be able to give a portion of the user fee to the PHC doctor as part of his compensation. This portion should be in the same proportion as the salary part is to the whole capitation payment.

The data now maintained for each individual includes the source of HIF contributions, so when blue stamps are not issued to a firm, it will be possible to update the enrollment list for each doctor so that he will not be paid a capitation payment. This will occur with the same regularity as it occurs now – i.e., the HIF will provide capitation payments for exactly the same set of patients for whom it now covers health care. Examining this list of patients on a monthly basis may reveal opportunities to enhance premium collection.

There may be circumstances in which the collection rules are waived. These rules should be formalized, and then applied to the capitation payment just as they are applied to specialist and hospital services.

SUMMARY AND RECOMMENDATIONS

Below, we summarize the recommendations for the design of a capitation system which we believe will accomplish the aims of the capitation system. It is designed to provide improved incentives for quality and efficiency while at the same time building on the existing physician manpower of the country. For many of these elements, alternatives are identified in the text along with pros and cons. Thus supporting sections of text need to be examined in evaluating these recommendations.

Recommendations for the MOH

- The MOH should appoint a group of local counterparts to work with the RAND team and the International Project Unit (IPU). The local counterparts should consist of primary care and internal medicine physicians, medical faculty members who are in a policy position, health organization directors and HIF managers from Ohrid, Prilep and central office.
- The working group on Basic Benefits package should define primary care services that will be covered under capitation. A service should be included in the capitation payment if and only if it should be provided by the PHC doctor rather than referred to specialist care. This will reduce the financial risk to PHC doctors. The capitation should cover all services now provided in departments labeled as Primary in Table 1. The MOH Technical Committee in Finance and Management should appoint a physician group to determine if additional services should be included in the list of primary care.
- The MOH working group on Basic Benefits Package should develop doctrines for appropriate referral practice. Based on these doctrines, they should recommend guidelines for regulations and incentives to ensure that the referral system for secondary, tertiary and hospital services is effective.

- The Technical Committee and working group on capitation should consider regulations to force health organization doctors who don't enroll enough patients to make a living wage to transfer to locations where there is a doctor shortage. This will make maximum use of existing employees and increase the availability of PHC in rural areas. An alternative would be to encourage doctors to relocate through a very low (or no) minimum salary while ensuring that adequate information is available about where additional doctors are wanted.
- The Technical Committee should consider whether a woman should be allowed to choose both a gynecologist and another PHC doctor. The capitation system should not be restricted to family doctors in the short run. It should be possible to designate a different doctor for each person in a family, as well as a dentist.
- The Technical Committee should consider if doctors assigned by the government to rural areas (where the population is very small), should be excluded from the capitation system and paid a salary instead.
- The MOH International Project Unit (IPU) should make regular presentations to physicians groups to introduce capitation as an innovation for provider payments, and to receive feedback from these major stakeholders on how to improve the implementation of this new system.

Recommendations for the HIF

- The HIF should establish the enrollment process. Enrollment must be completed before capitation payment starts in any area in order to determine the monthly capitation amount for each doctor. Enrollment entails procedures for choosing doctors and for switching among doctors. This process will require collection of data on distribution of physicians (by specialty, years experience) per population (by age and sex).
- In order to improve the estimates of the costs of PHC, the HIF should develop systems to estimate the cost of different types of visits including dentist visits and PHC visits.
- Paying capitation requires examining, on a monthly basis, the entire list of patients enrolled in the HIF. The HIF should consider linking this examination to procedures to enforce HIF revenue collection in a way which would enhance premium collection.
- The HIF should collect individual-level better for enrollment and utilization.
- The HIF should consider a different capitation for a small number (4 categories) of age and sex groups. This recommendation is conditional on allowing different doctors for each person in a family.
- The HIF should establish an incentive payment and penalty system to encourage physicians to deliver needed care rather than referring patients to specialists.
- The HIF should consider setting a maximum capitation payment per doctor set at 2 or more times the average payment.

Recommendations for the Faculty of Medicine

- The Faculty of Medicine should examine medical education and the internship year in order to encourage the generation of family doctors in the long run. Medical education and the internship year should be restructured to enhance the ability of doctors to cover the range of problems required by a family doctor. The Faculty of Medicine should consider a policy goal that all PHC will be family doctors in a fixed time (say 7 to 10 years.)
- The Faculty of Medicine should work with the Macedonia Chamber of Physicians and the MOH to develop and institute certification programs and continuing medical education curriculum for primary care doctors.

Recommendations for Health Organizations

- Health organizations should make it easy for reasonable requests for a change in the designated personal primary health care physician to be granted. This will increase the responsiveness of the doctors to their patients, and it will increase patient satisfaction.
- Health organizations should monitor referral practices within the health organization, and enforce the proposed incentive and penalty system to minimize over-referral to specialists and to hospital care.

These recommendations hope to launch substantive discussion, information gathering, data improvement and cooperative organization in preparation for a follow-up RAND mission. The follow-up mission will result in a design of the capitation payment mechanism tailored for implementation in the two pilot districts of Ohrid and Prilep.

Recommendations for Future RAND Work

- Provide a methodology on calculating appropriate capitation rate(s). The method should be flexible enough so it can be adjusted for changes in HIF revenues, disease and utilization patterns and the reform effects on both provider and consumer behavior.
- Describe the rules for exemptions (if any) of primary care providers from capitation (e.g. in rural areas).
- Outline administrative mechanisms (e.g. accounting requirements for monitoring the expenditures in primary health care) necessary to efficiently manage the system.
- In the future, as data from the pilot testing on capitation comes in, revise specific recommendations about rates, incentives, disincentives and exemptions.
- Prepare a preliminary strategy on issues, data requirements, options, and recommendations on provider payment mechanisms for specialist and hospital services. Outline the data requirements for structuring a new pricing policy that will lead to the future design of specialist payment mechanisms.

Individuals Contacted During This Work*

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*Included Friday meetings with staff in Ohrid