Implementing a Capitation System for Primary Care in Macedonia

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OVERVIEW

This report discusses the proposed implementation of a capitation payment system for primary health care in the Republic of Macedonia. Under this capitation system, a primary health care (PHC) doctor will be paid a fixed amount for each person who enrolls in his practice. In return, the doctor will provide all PHC the enrollee requires, including personal preventive care. In an agreement with the World Bank, Macedonia has agreed to use such a system in a pilot project in two Macedonian municipalities, Ohrid and Prilep.

The report describes the scope of the capitation system including exemptions of doctors from the capitation system, formulas for calculating the amount of the capitation payment, and regulations and procedures required to implement such a system in a way that will promote efficiency. Although this report tries to have tried to be as specific as possible in designing these system elements, there are several areas where Macedonian officials must make policy decisions. The report discusses the pros and cons of alternative decisions in these areas and makes recommendations as to which options appear most likely to accomplish the stated goals of health finance reform in Macedonia.

The section immediately below describes the goals of a capitation system for primary health care (PHC). Although it repeats some of the information found in the my earlier report on considerations for capitating primary care, it provides necessary background for understanding the rest of this paper. The following sections discuss:

- exemptions to the capitation system,
- procedures for calculating payment amounts,
- measures to ensure efficiency and quality of care, and
- administrative mechanisms and regulations, and.
- The final section of the report covers the data necessary for system implementation. (The list of persons whom I spoke with on this trip should be found in the Appendix, but it will be incomplete in this draft).

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—say a month. 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.

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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 in the earlier capitation report.

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.

As we have said, 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 order to ensure that the amount of risk is not so great that doctors face financial ruin, the capitation payment covers only the care delivered directly by the PHC physician and his/her team of nurses and technicians. It does not cover the cost of prescription drugs, specialist consultations, or hospital care. These will continue to be paid by the HIF using current mechanisms.

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.

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. System implementation must include measures to counteract these dangers. The measures should include: (1) education and improved equipment so doctors can provide appropriate care, (2) financial incentives, i.e., increased payment for the doctor who does the right thing, and (3) regulations which prevent fraud and abuse and which allow the capitation payment be used to efficiently produce PHC.

**DOCTORS COVERED BY THE CAPITATED SYSTEM FOR PHC**

The capitated system will cover all primary care services delivered by doctors who are "selected doctors" under the Health Care Law. This includes general medicine, medicine of labor, pediatrics, school medicine or gynecology. Although it may be desirable to move toward family physicians in the long run, each of the physicians who can be a selected doctor is now in a position to provide all primary care to his or her own subset of patients (or could do so after a relatively brief refresher course.) By becoming responsible for all primary care, they will be more knowledgeable about their patient's problems which should improve diagnoses and the effectiveness of prescribed treatment.

The capitated system will also cover dentists. Under draft guidelines, most persons will select one doctor and one dentist. There could be 2 exceptions: A woman may select both a gynecologist and a doctor and a dentist. A student who lives away from home part of the year may select a doctor both at home and at school.
Doctors providing emergency care must be excluded from the capitation system. Patients in need of emergency care must go to whatever physician is available at the time of the emergency and cannot wait to see their selected physician. The HIF (or government) must continue to supply emergency care when needed. Therefore, emergency care doctors must be paid a salary and the additional staff and resources required for this care must be provided. However, an emergency care doctor could be eligible for capitation if he elects to practice part time as a primary care (non-emergency) doctor. The selected doctor who works part of the time in an emergency room would be paid a salary proportional to the amount of time spent in an emergency room.

Doctors in TBC units will also be excluded. These units provide very specialized services which apparently are provided more efficiently than they would be if distributed among each selected doctor.

It will also be necessary to exempt doctors working in small rural areas from the capitation system if they do not enroll enough patients and the medical center believes that the clinic must be staffed by a full time doctor. In the first year of the demonstration, we I would recommend that rural physicians who enroll fewer patients than are required to obtain an average salary be paid the average salary instead of the capitated amount. In subsequent years, if it is difficult to retain rural physicians, then the salary amount might be raised.

There will actually be few doctors who qualify for this exemption. Table 1 shows the population of the towns served by each rural clinic in Prilep. (Similar data are being gathered in Ohrid). Although some persons in the population will not be covered by the HIF and other rural persons may enroll with a doctor in the city, we can use population counts to get a rough estimate of the relative number of persons who will enroll in different areas.\(^2\) On average throughout Prilep, there are approximately 1000 persons per capitated doctor. So that one would need a population of about 1000 to obtain an average capitated salary. As the exhibit shows, there are only 2 rural clinics with fewer than this number. On the other hand, there are several areas where the population per physician is more than twice as large as average. It may be possible for an additional physician to make a good salary by serving each such area.

<table>
<thead>
<tr>
<th>Outpatient Station (Ambulanta)</th>
<th>Population (Naseleine)</th>
<th>PHC Doctor (PZZ Lekari)</th>
<th>Population/Doctor (Lica/Lekari)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krivogashhtani</td>
<td>3561</td>
<td>2</td>
<td>1781</td>
</tr>
<tr>
<td>Dolneni</td>
<td>3798</td>
<td>1</td>
<td>3798</td>
</tr>
<tr>
<td>Topolchani</td>
<td>1421</td>
<td>1</td>
<td>1421</td>
</tr>
<tr>
<td>Vogyani</td>
<td>2751</td>
<td>1</td>
<td>2751</td>
</tr>
<tr>
<td>Ropotovo</td>
<td>653</td>
<td>1</td>
<td>653</td>
</tr>
<tr>
<td>Lashani</td>
<td>1827</td>
<td>1</td>
<td>1827</td>
</tr>
<tr>
<td>Devrishtë</td>
<td>2454</td>
<td>1</td>
<td>2454</td>
</tr>
<tr>
<td>Kostinci</td>
<td>2973</td>
<td>1</td>
<td>2973</td>
</tr>
<tr>
<td>Kanatlarci</td>
<td>1991</td>
<td>1</td>
<td>1991</td>
</tr>
<tr>
<td>Vitolishtë</td>
<td>882</td>
<td>1</td>
<td>882</td>
</tr>
</tbody>
</table>

\(^2\) Formally, we assume that the fraction of persons who enroll is about the same in each area.
CAPITATION FORMULAS

It is well known that the elderly and small children require substantially more care than a healthy adult or older child. Further, women may choose to select both a gynecologist and another doctor (either a general practitioner or a specialist of labor.) Consequently, payment amounts will be calculated for the 5 categories of services shown in Table 2:

Table 2
5 Categories of Primary Care Services

<table>
<thead>
<tr>
<th>Category</th>
<th>Age, Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PHC for pre-school children</td>
<td>Children under 5 years old</td>
</tr>
<tr>
<td>2. Primary gynecological services</td>
<td>Women 15 to 49 years old</td>
</tr>
<tr>
<td>3. PHC for adult (and school children) non-gynecological care</td>
<td>Children, youths, adults 6 to 64 years old</td>
</tr>
<tr>
<td>4. PHC for the elderly</td>
<td>Adults 65 years or older</td>
</tr>
<tr>
<td>5. Preventive and primary dental care for children</td>
<td>Children under 14 years old</td>
</tr>
</tbody>
</table>

The methodology for calculating the capitation payment amount must be flexible enough to be adjusted for changes in HIF revenues, disease prevalence, and utilization patterns and other effects of reform on provider and consumer behavior. The method to be suggested here meets this criteria by beginning with a policy judgment about the amount of money to spend on the aspects of primary health care covered by capitation and with a policy judgment about the extent to which the capitation payment will be uniform across municipalities. These policy judgments are then combined with information about utilization in order to generate per capita payment amounts.

The section immediately below describes the parameters that govern the capitated payment. The following section will include detailed instructions for estimating payment amount.

1. Determining $P$, the Capitation Payment Amount

The capitation payment calculation will be divided into two parts. The first part is $T$, the budget target for PHC care for a period of time, say a year, for a particular municipality. $T$ is to be determined by policy and can be adjusted to account for available HIF revenues. Over time $T$ can be adjusted in response to changes in provider and consumer behavior. In particular, the policy intent is for there to be a shift from secondary-tertiary services to primary care services and this would free up funds to increase $T$. Further, $T$ can be adjusted to move payment toward a national standard.

The second part of the calculation is $w$, the relative weight for each of the 5 categories of service, indexed by $i$, the category of service (PHC for pre-school children, primary gynecological services, etc.). These relative weights are determined technically rather than by policy. One would like $w$ to reflect the relative cost of efficiently providing care in each category. Unfortunately, one cannot hope to measure the efficient cost of care for all possible situations. Instead, we set $w$ equal to the average relative current cost to provide care in the category. The value of the weights can be adjusted over time to reflect changes in disease and utilization patterns.

Let:

$$T = \text{budget target for PHC care in the year for a particular municipality}$$

$$n = \text{number of insured persons expected to enroll in the municipality}$$
\[ p_i = \text{monthly capitation payment for person in category } i \]
\[ w_i = \text{relative weight for category } i. \]
\[ B = \text{standardization factor to account for the relative costliness of the population of the site} \]

Then: \[ p_i = \left[ \frac{T}{12nB} \right] w_i \]

where

\[ B = \frac{\left( \sum_i n_i w_i \right)/n}{n_i} \]

In the absence of policy changes concerning insurance coverage, the number of insured persons, \( n \), can be estimated by analyzing the fraction of persons in the municipality who were insured during a recent time interval. It would be worthwhile to examine whether this number fluctuated very much during the last year or so. If it does indeed fluctuate substantially, then it may be necessary to change the payment amount more frequently than once a year—perhaps once every 3 months. It would be strongly desirable, however, to have the average payment remain close to constant for as long a time as possible so that the health centers and doctors can plan their budgets to use the funds most efficiently. In what follows, we assume that payments are set for a full year. The changes required for quarterly changes in the capitation rate are very straightforward.

Let:

\[ C_s = \text{annual HIF cost for PHC per insured person in municipality site } s \]
\[ n_{ts} = \text{estimate for the insured population in site } s \text{ during year } t \]
\[ A = \text{average annual cost for PHC per insured person in Macedonia (or in just Prilep and Ohrid for the demonstration).} \]
\[ B_s = \text{standardization factor site} \]

Then:
\[ T_{ts} = F_{ts} n_{ts} \left[ X_s C_s + (1 - X_s) A B_s \right] \]

where \( F \) and \( X \) are policy parameters, and \( C_s, n_{ts} \) \( A \) are variables derived from current cost and coverage data from the HIF.

\( F \) is a multiplier for the PHC budget. In the first year, of the demonstration, \( F \) could account for the expected increase in PHC services due to capitation, new equipment, and the improved environment for PHC. It is expected that this increase in PHC will result in a decrease in specialty care which would free up HIF funds. It would also increase efficiency if payment included an amount to cover the costs of maintenance and replacement of PHC equipment and environment. Of course, the policy factor can reflect whatever policy considerations are needed. However, if the commitment to improving PHC is serious, during the first year of the demonstration, \( F \) will be set at a value greater than 1.0. It does not have to be large—a value of 1.05 would increase the availability of supplies and materials so that doctors could improve PHC. In subsequent years of capitation, \( F \) should be chosen to account for the expected availability of HIF funds, changes in the insured population, and the observed amount of the shift from secondary to primary care.
$X_1$ is the policy factor which can move PHC toward a national standard. It is always between 0 and 1. When $X_i$ is 1, the budget target is based on the municipality's pre-capitation level of spending per insuree for PHC. When $X_i$ is 0, the budget target is based on the national level of spending per insuree for PHC. In order to avoid disruption of services and inefficiency, $X_i$ should start close to 1, (influenced by a locally determined budget) and then move towards 0 (influenced by a nationally determined budget).

\[
\begin{align*}
X_1 &= 0.95 \\
X_2 &= 0.75 \\
X_3 &= 0.50 \\
X_4 &= 0.25 \\
X_5 &= 0.00
\end{align*}
\]

2. Calculating $C_s$ the Average HIF Cost Of PHC per Insured Person

The $C_s$ refers to the HIF cost of PHC site in the year immediately preceding the start of capitation. In subsequent years, it should be updated to account for inflation using a national inflation rate.

If capitation is extended to all of Macedonia after the new information system is in place, then it will be easy to develop the information as most items will be in place. For the demonstration, it may be necessary to use some approximations—perhaps even mixing data from different time periods.

The data elements and sources required for calculating $C_s$, the municipality's average annual HIF cost of PHC per insured person, are included in the data specification below (which also includes data for administration and monitoring.) Here are the steps for calculating $C_s$:

- Gather primary care department data from Ohrid and Prilep.

The starting point for the calculations for each municipality is the total expenditures and revenues for each primary care department according to the categories of departments defined in Table 3. These departments are routinely used by the RIHP for reporting utilization. Such data have already been obtained from Prilep for 1996 and for the first quarter of 1997. The year covered by the accounting data should be the most recently completed year before the start of the demonstration. This may be 1996, but it would be better if cost data could be assembled for the period from July 1, 1996 to June 30, 1997 (or later if the start date of the demonstration is postponed beyond the fall of 1997.)

<table>
<thead>
<tr>
<th>Table 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Care Departments For Which Expenditures Must Be Analyzed</td>
</tr>
<tr>
<td>1. General outpatient clinics</td>
</tr>
<tr>
<td>2. Pre-school outpatient clinics</td>
</tr>
<tr>
<td>3. Clinic for school children</td>
</tr>
<tr>
<td>4. Medicine of Labor, including all factory clinics</td>
</tr>
<tr>
<td>5. Gynecology primary care clinic</td>
</tr>
<tr>
<td>6. All rural clinics</td>
</tr>
<tr>
<td>7. Regional Clinics (if any)</td>
</tr>
<tr>
<td>8. Total dental</td>
</tr>
</tbody>
</table>

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3 As discussed earlier, we omit doctors providing emergency care and TBC control.
• **Estimate the public share of total HIF cost for PHC.**

The HIF share of total cost for PHC in the public sector, *public cost*, could be estimated from the HIF revenues for each department. However, if HIF revenues have fluctuated with time and the availability of funds, it will be more accurate to use the following procedure. For each department $k$, let $D_{kt}$ be the total cost of primary health care in department $k$ during whichever year $t$ is chosen.

From invoice data for each PHC department $k$, estimate

\[ f_{kt} = \text{the fraction of visits in department } k \text{ paid by the HIF, and} \]
\[ P_{kt} = \text{the total amount paid annually for participation by HIF insurees in department } k \]

It may be necessary that these calculations come from a different time period than that of $D_{kt}$ or that they are estimated from a sample of invoices.

The total annual cost of primary health care in the public sector which is paid for by the HIF is then calculated as the sum over all departments of:

\[ public \ cost = \sum (f_{kt} D_{kt} - P_{kt}) \]

• **Tabulate the private sector share of total HIF cost for PHC.**

The total annual cost of PHC in the private sector, *private cost*, is merely the sum of the amount that the HIF actually paid private doctors in primary care during the period of either the revenues or $D_{kt}$ that were used to estimate public cost. This is easily available in current HIF files in the regional offices. (We received samples of this data from Ohrid regional office.)

\[ private \ cost = \sum (\text{Private physician invoices}) \]

• **From existing HIF files, estimate the number of persons in the municipality who were insured.**

If the current HIF funds allow one to obtain these data historically, this should be done for the same period as was used to estimate cost. If this is not possible, the estimate will have to be made from the baseline period discussed below.

Let: \[ n_{st} = \text{the estimate for the insured population in municipality site } s. \]

Then: \[ C_{st} = \text{annual HIF cost for PHC per insured person in site}, \]
\[ C_{st} = \frac{\text{public cost} + \text{private cost}}{n_{st}} \]

• **Determine relative weights**

The relative weight for each category, $w_i$, is merely the ratio of the average cost of services per person in category $i$ to the overall per capita cost of services. During the demonstration there are only 2 sites, so that the average annual per capita cost for each service category, $c_i$, is merely the person weighted average of $C_s$ for these two sites. To calculate $c_i$, we begin with the same departmental costs defined in the preceding subsection.
For each department \( k \), \( D_{kt} \) is the total cost of primary health care in department \( k \) during whichever year, \( t \), is chosen. Based on the invoices for the baseline period calculate \( V_{ki} \), the fraction of visits in department \( k \) that are for services in category \( i \). For many departments, this fraction is obvious. For example, when \( k = \) pre-school children department, \( V_{ki} = 1 \) for \( i = \text{PHC} \) for preschool children, and \( V_{ki} = 0 \) for other values of \( i \). However, it is necessary to use the invoice data to divide the general practice clinic and rural clinic visits among categories.

Then:  
\[
c_i = \sum_k \left[ \frac{D_k V_{ki}}{\sum_i V_{ki} N_i} \right]
\]

where the outer sum is over departments \( k \), and the inner sum is over categories \( i \). \( N_i \) is the number of persons in the total population that may receive services in category \( i \), not just the insured population. Finally, \( w_i = \) relative weight for category \( i \) is given by:

\[
w_i = c_i / c
\]

3. Maximum Capitated Salary

A maximum capitated salary should be set to prevent physicians from enrolling more patients than they can reasonably handle. Based on an estimate of a maximum of 35 visits per day, I would recommend that the demonstration not pay for more than 2000 patients per physician in the first year. (See the earlier RAND capitation report for details of the calculation.) The services actually provided by doctors should be analyzed to see if this number can be increased.

The maximum salary applies equally to private and public physicians. For selected private physicians, this maximum should replace the existing limit on the number of visits per day.

4. Minimum Salary

Another important issue is what to do about public sector doctors who enroll very few patients. These doctors could be:

   1. forced to leave the health organization or move to an area where more doctors are needed,
   2. given a minimum salary, or
   3. allowed to continue with their very small capitated salary.

Whether there is a minimum salary or a minimum number of patients is a tradeoff 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 share higher, and the salary of the doctors with a lot of patients lower than if the minimum wage didn't exist or was lower.

The minimum enrollment could partly be the result of prior poor equipment and training. Also it may improve over time as people find out this doctor is always available for care. Consequently, we recommend that the demonstration begin without a minimum number or a minimum salary (if possible to get an agreement from the labor union.) If the problem is large or gets worse over time, this decision can be revisited.
ENSURING EFFICIENCY AND QUALITY OF CARE

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. Thus, system implementation must include the following measures to counteract these dangers.

1. Regulations

Regulations are necessary to prevent fraud and abuse of the capitation system by a doctor referring a patient to himself for secondary care or by collusion among doctors who would refer patients to each other. Many countries have such regulations whether they pay by capitation or fee-for-service (FFS).

Two alternatives should be considered. First is a very minimal regulation that a doctor may never refer a capitated patient to himself. Under this regulation, a doctor would not be paid both capitation and for secondary care for the same person. A second, more effective, regulation would mandate that a doctor must decide for a period (say a year) whether he will provide primary care or secondary care to HIF insurees. If he chooses primary care, then the HIF will not pay FFS invoices; if he chooses secondary care, then the HIF will not allow him to be selected or pay a capitation payment.

2. Changing Patient Incentives

A substantial program of patient education is planned for the enrollment period. In addition to items related to selection and enrollment, the education plan should stress that the patient should expect to get care from the PHC doctor and the advantage of not needing to go from one office to another.

Patient incentives to seek referral to specialist and hospital care will be greatly affected by the participation provisions in the new benefits package. Although details of the new benefit package will be determined based on many policy issues including considerations of equity and affordability, there is one decision which is important for a successful capitation payment system. Higher participation per episode for care by a specialist than by a PHC doctor will improve the patient’s incentive to seek adequate care from the PHC doctor.

Because of the interaction effects between patient incentives and physician incentives, at the time of implementing the capitation payment, the basic benefits package should be in place. This may require passage of legislation, because it changes the amount that citizens must pay for their health care through participation. Although implementation of payment by capitation requires the basic benefits package, enrollment should begin as soon as possible and need not wait for the basic benefits package.

3. Changing Physician Behavior

A three part approach to changing existing physician behavior is necessary in order to control referrals under the capitation payment system: adequate supplies and equipment, education, and financial incentives

- Adequate supplies and equipment

First, doctors must have the supplies and equipment that will enable them to provide all the required PHC. If they do not have supplies and equipment they will refer in ways that ultimately waste resources. Therefore, the payment amount must be adequate to cover the cost of all needed supplies and provide funds
to cover replacement costs for the small items of equipment necessary for PHC as these wear out or become obsolete. Doctors in private practice should be able to secure these items if the payment amount is sufficient. Doctors in the public sector must have some means of insuring that the additional funds go to the items that they need for their practice. We will return to this subject below.

- **Education**

Education is the second necessary part of the approach to changing physician referral behavior. The basic benefits package will define PHC and this is the first educational initiative because it shows the doctor what he or she is required to provide in return for receiving the capitation payment. Referral guidelines will also help to educate the doctors about when it is correct to refer patients to specialist care. Guidelines, of course, will never replace physician judgment. Some medical cases will always be so unusual that they do not fall within any particular set of guidelines. Nevertheless, guidelines will cover the great majority of cases and provide help in educating physicians about what is expected. Continuing medical education programs are necessary for PHC doctors who are expanding their practice into new areas of PHC, including those who are providing more care to the same subset of patients.

- **Financial Incentives**

The third necessary ingredient for changing physician referral behavior is a system of financial incentives. An incentive payment or penalty will encourage physicians to deliver needed care rather than referring patients to specialists. The payment should be calculated based on a comparison of the frequency with which the doctor refers his patients to a specialist during a particular time period. Each person who is referred would be counted once, no matter how many times the same patient is referred.

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 or 6 months are reasonable and will allow measurement of their effect during the pilot.

In order to calculate a penalty amount, let:

\[ r_j = \text{referrals per person from doctor } j = \frac{\text{persons referred}}{\text{enrollees}}. \]

\[ R = \text{threshold (set at 80th percentile of } r_j, \text{ for example)} \]

Then the penalty amount would be:

\[ \text{penalty} = A(r_j - R) \]

where A is chosen so that the penalty amount is reasonable. Say the average amount of the penalty would be no more than 10 percent of income. The actual amount of the penalty would then be subtracted from the doctor’s future capitation payments.

In order to calculate an incentive payment, a slightly different method should be used because we do not want to reward doctors for not providing needed referrals. Rather than having a sliding amount that increases with fewer referrals, a bonus could be distributed equally to all persons who referred fewer than X percent of their patients within the time period. X could be the 20th percentile of \( r_j \). The amount of the incentive payment would be in proportion to the number of patients the doctor had enrolled.
The financial incentive should be integrated with additional educational initiatives. For example, doctors who have many more referrals than average could have their medical records audited by a team of other PHC doctors. The audit would compare the doctors cases to referral guidelines. The results of the audit could then be used to educate the doctor about which patients he should have cared for himself and which patients he should have referred. Also, the audit will prevent penalizing a doctor who just happened to have a lot of extremely ill patients who meet referral guidelines. Similarly, it would be useful to audit those who had referred a small percentage of their patients to ensure that their patients are receiving appropriate care.

ADMINISTRATIVE MECHANISMS AND REGULATIONS

1. Organizing The Public Sector

Some administrative mechanisms are required to ensure that doctors who are in the public sector receive the full incentive benefits of the capitation payment system and have the ability to use the resources provided by capitation to improve the care they deliver. At the MOH and at both pilot sites three alternative organizational arrangements that could be used to accomplish these ends were discussed:

Option 1: The HIF could contract directly with each public health organization PHC doctor and then let the doctor contract with the medical center(MC) to purchase supplies, equipment, space, and the other personnel that he or she needs to perform PHC.

Option 2: The HIF could contract only with the MC who would then hire doctors and other employees as needed.

Option 3: The MOH could separate the health center (i.e. the PHC portion of the MC) from the MC and then directly contract with the health center.

The first option has the major benefit that it puts the PHC doctor in central control of PHC operations. However, it may be very difficult to negotiate the terms of the contract between the MC and doctors. Thus this option risks causing severe organizational disruption. Further, if each doctor reached separate terms with the MC, it might be highly unfair to doctors who have fewer negotiating skills. If instead the same set of terms is used for each contract, then this would remove much of the doctor’s control over the delivery of care. Thus this option does not appear to offer a realistic method that will put the doctor in control.

Under the second option, the MC may be under pressure to spend funds for secondary or tertiary care. This will be particularly true if the capitation system succeeds in shifting resources out of secondary and tertiary care. The third option solves this problem, though we are not in a position to evaluate its organizational feasibility.

Whether option 2 or 3 is finally chosen, strong regulations from the MOH will be needed to ensure that the public sector doctors are able to compete with private doctors and improve their care under the capitation payment system. We turn to these regulations next.

2. Regulations From MOH About Public Sector PHC

The MOH must issue regulations that govern the circumstances under which public doctors can enter private practice. Citizens who choose a public doctor, are choosing the entire PHC organization as well as the doctor and therefore are entitled to some guarantee that the circumstances of the care will be unchanged. At the same time, the regulations must allow the orderly movement of doctors into private practice if the system is to succeed in its goal of allowing competition between both a public and a private sector.
The elements of regulations on how public doctors can enter private practice would include:

1. a contractual period—say a year—during which a PHC doctor who is employed by a public organization at the beginning of the period must remain with the public organization,

2. a notification time—say 3 months prior to the end of the contractual period—at which a PHC doctor employed by a public organization must notify both the health organization and enrolled patients that he or she plans to move into private practice, and

3. provisions describing how private physicians might purchase or rent services, space, and equipment from public health organizations.

The regulations must also cover the payment of a capitated salary to each PHC who can be selected.

Regulations must also describe a process for determining other expenditures for PHC and other details of the delivery of PHC, such as the use of substitutes for the selected physician. It is important that the regulations not include actual expenditures or even the division of the capitated payment into the percent to be spent in various categories. There is no way that bureaucrats at the MOH or HIF can know what is needed in each clinic throughout the country. Rather the regulations should describe a process that will allow PHC public doctors in each clinic to increase the efficiency of their operations.

One example of a process that could be used to govern PHC public expenditures and procedures would be to create a committee of PHC doctors at each public facility or group of rural facilities. The regulations would include some constraints on the membership on the committee — e.g. it might require at least one doctor from each department and specify a rotating membership. It might specify the length of the term of appointment (say 2 year terms, with half of the first group appointed for only 1 year so that, after the first year, the committee would always contain some experienced members). The committee would then set priorities for expenditures for equipment, maintenance, bonuses for nursing staff, etc. The committee might also deal with disputes about office space, staff, equipment, etc.

3. Monitoring

In addition to setting up a good system, the MOH and HIF must be prepared to monitor the outcomes of the capitation system. Particularly during the pilot projects, the MOH must be prepared to change the rules when problems occur to ensure that the system operates as intended.

Among the items that need to be monitored are:

1. Enrollment of the insured population. Full enrollment is necessary so that PHC expenditures remain as planned. It also will be necessary to ensure that there are no duplicate enrollments or other false enrollments that might inappropriately increase physician revenues

2. Utilization of PHC services

3. Utilization of secondary and tertiary services

4. Patient satisfaction (RAND is developing a set of survey questions which may be suitable for this purpose.)

5. Satisfaction of PHC doctors with the payment system and, for doctors employed in public health organizations, with the availability of supplies and services

6. Plans for doctors employed in public health organizations to move to private practice

7. Quality of care for chronic diseases. In the long run this will be an important item for monitoring — probably the most important. During the pilot, RAND's research effort will concentrate on this area. If we can develop practical, low cost procedures for monitoring quality of care, they could be adopted for routine use.
DATA REQUIREMENTS FOR IMPLEMENTING CAPITATION

In this section, we specify the data required for calculating payment amounts and for monitoring system performance. The process of data collection will be embedded as a routine part of the new information system. However, the demonstration projects will begin roughly a year before the implementation of the information system. In this interim period, data collection and processing will require ad hoc procedures and, therefore, substantial manpower for data entry and programming. The manpower should be hired on a temporary basis because they may not be needed after the new information system is in place.

Data collection in the pilot districts should begin as soon as possible for several reasons:

1. to create a baseline file,
2. to develop data needed for the start of the demonstration including a complete enrollment file and the capitation payment amount, and
3. to smooth out the data collection process so that difficulties can be corrected before the start of the actual demonstration.

A minimum period of 3 months is required between the start of data collection and six months is preferable. (Some of the data on invoices could be processed historically. However, the enrollment process will require at least 3 months.) The following lists the types of high volume data collection required for implementation of the capitation system in the pilot districts.

1. **Enrollment File**

   From the form for selecting a physician, enter:
   
   - the person identifier (ID),
   - physician ID,
   - date of birth,
   - sex,
   - purpose of selection—include codes for:
     - personal physician,
     - gynecologist,
     - personal physician and gynecologist,
     - student selection of doctor while at home,
     - student selection of doctor while away,
   - date of selection.

   The file must contain a status indicator for whether this selection is current or has ended or changed. There also must be a pointer or some other way to link to the record for the next selection. This lets us determine when and why the selection ended or changed.

   The enrollment file must also contain 12 monthly payment flags (binary indicators) that show whether the enrollee had HIF coverage in the month. (This part of the file should be duplicated each year so that one can maintain an historical record.) The data now maintained for each individual includes the source of HIF contributions and this will be used at the beginning of each month to create the value of the payment flag. The rules for calculating the payment flag are conceptually the same as the rules for issuing blue
stamps⁴; if the HIF would issue blue stamps for the person than the flag will be 1, otherwise the flag will be 0.⁵ 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 in order to create the monthly payment flag may reveal opportunities to enhance premium collection.

2. Primary Care Invoice

From the invoice enter:

- person ID,
- physician ID,
- MKB-10 code (ICD-10),
- first date of service,
- last date of service,
- total points,
- whether or not the invoice is paid by HIF, and
- participation amount.

The specification of services provided needs to allow counting visits by the RIHP classification of type of visit (e.g., first visit or not, preventive vs. curative.) For analyses, the HIF will need to pick up information from enrollment file (age, sex, purpose of selection [note we need a new code for “not a selected doctor”]).

3. Specialist Outpatient Service Invoice

From the invoice enter:

- person ID,
- physician ID,
- referring physician ID,
- MKB-10 code (ICD-10),
- first date of service,
- last date of service,
- total points,
- whether or not the invoice is paid by HIF, and
- German service codes.

It would be useful to evaluate alternative systems for specifying the services provided, such as the Current Procedural Terminology (CPT) codes. However, in the short run the German codes have the advantage of

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⁴ After the final information system is in place, the computerized system will replace the need for issuing blue stamps. Because the electronic communication part of the system will not be ready for the demonstration, doctors will not have access to the HIF enrollment file during the demonstration and blue stamps will still be needed.

⁵ Determining whether or not the person is covered may not be equivalent to whether the premium is actually paid. For example, the fund currently allows a 60 day grace period. After the grace period, the person is not covered, but coverage can be restored after specific payment rules are met.
familiarity and of acceptance as a means of paying for care. In addition to the German code, the specification of services provided needs to allow counting visits by the RIHP classification of type of visit. For analyses, the HIF will need to pick up information from enrollment file (age, sex, identification for the selected personal physician)

4. Hospital Stay File

The information on the current file is fine. As for specialist invoices, it might pay to evaluate alternative coding systems for services provided. The changes planned for the information system are not necessary for the demonstration, although they might be useful.

5. Patient Satisfaction Survey

RAND has developed a short (1 page) satisfaction survey instrument for use in Macedonia. It should be administered to a sample of patients in all capitated PHC departments throughout the first year of the demonstration. For example, one might give the survey to all persons who arrive for treatment on the first Tuesday and Wednesday of each month. If more convenient, it could be administered to a 10 percent random sample of each day’s patients. After capitation has been implemented for a period of time, the survey sample could be a smaller percentage and there could be a longer time between survey administration.

OTHER DATA

The following small data sets will need to be collected and entered:

1. **Financial data.** HIF and the IPU will need to collect financial data on monthly (quarterly) expenditures by accounting categories (salaries, drugs, supplies, equipment, etc.) for primary care for each department within health center. The departments are shown in Table 2. The accounting categories in the data prepared by the medical center in Prilep were particularly suitable (See Table 4).

<table>
<thead>
<tr>
<th>Accounting Categories Used For Primary Care Expenses In Prilep.</th>
</tr>
</thead>
<tbody>
<tr>
<td>gross salary with personal tax</td>
</tr>
<tr>
<td>reimbursement for travel</td>
</tr>
<tr>
<td>sick leave</td>
</tr>
<tr>
<td>live separate from the family</td>
</tr>
<tr>
<td>daily fees for field trips</td>
</tr>
<tr>
<td>electricity, water, post</td>
</tr>
<tr>
<td>office material</td>
</tr>
<tr>
<td>other consumables</td>
</tr>
<tr>
<td>material for personal hygiene</td>
</tr>
<tr>
<td>small items of furniture</td>
</tr>
<tr>
<td>maintenance</td>
</tr>
<tr>
<td>heat-oil</td>
</tr>
<tr>
<td>rent</td>
</tr>
<tr>
<td>drugs-health center</td>
</tr>
<tr>
<td>amortization</td>
</tr>
<tr>
<td>indirect expenditures</td>
</tr>
<tr>
<td>non-medical costs</td>
</tr>
<tr>
<td>other material costs</td>
</tr>
</tbody>
</table>
2. **Physician Satisfaction Surveys.** HIF and the IPU will need to conduct periodic interviews with PHC doctors covering their satisfaction with the system, problems they have identified, and whether they believe they will move to the private sector. This may not be necessary after the demonstration has ended.

3. **PHC Physician Profile.** HIF and the IPU will need to build a file where there is one record for each PHC physician who has received capitation at any time during the year. It will contain summaries of data found in other files, such as the number of persons who have selected him or her, monthly capitation payment, monthly capitated salary, the number of visits he or she provided, the number of selected patients that saw a specialist in a specified time period, etc.
SUMMARY AND RECOMMENDATIONS

Further steps to implement the system require both policy decisions and technical determinations guided by this report. Necessary tasks include (1) assembling complete data for the capitation payment formula, (2) calculating the payment, and (3) writing programs for monitoring the demonstration.

These will be carried out by Macedonian staff at the Ministry of Health (MOH), the Health Insurance Fund (HIF), and the International Project Unit (IPU). The discussions in this report should help with this work.

Below, we summarize recommendations for implementation of capitation in the pilot districts. We will repeat some of the recommendations made in the earlier RAND report on capitation that we consider essential for the demonstration to take place.

Recommendations for the MOH

- The MOH International Project Unit (IPU) should begin a publicity campaign for doctors and patients at least 3 months prior to the start of the demonstration.
- The MOH/IPU should accelerate the progress of the Basic Benefits working group on defining primary care services covered under capitation. This list should be finalized 3 months before the start of capitation in the pilot districts.
- The MOH/IPU should arrange a short-term, intensive refresher training course in primary care for doctors in the pilot districts that will receive capitation. The training should be conducted at least 1 month before capitation, therefore contractual arrangements for this training component should be executed immediately. This will not only allow for upgrading of primary care skills, but also will provide an opportunity to describe capitation and allow providers to give feedback and express their perspective.

Recommendations for the HIF

- The HIF should establish the enrollment process 3 months prior to start of capitation. 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 (roster) on each physicians’ industry, specialty, vocation, etc., and data on expected enrollee (by age and sex).
- The HIF should take responsibility in ensuring that the ad-hoc data requirements described in this report be implemented in the pilot districts. This is particularly important since the information systems will not be in place in time for the proposed start of the demonstration.
- The HIF should provide data and information to support the policy decisions that need to be made by the MOH. Most of these policy decisions are represented as policy parameters described in the section CAPITATION FORMULAS.
APPENDIX

List of Persons Met

Petar Ilievski, M.D., PhD Minister of Health
International Project Unit Staff
Mr. Jovan Filevski, HIF Attorney
Basic Benefits Working Group

Site Visit Prilep: 27 May 1997
   Branch Health Insurance Fund
   Medical Center Administrative Staff
   Medical Center Clinical Staff

Site Visit Ohrid: 2 June 1997
   Branch Health Insurance Fund
   Medical Center Administrative Staff
   Medical Center Clinical Staff