

Healthcare Provider-Payment Mechanisms: A Review of Literature

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Abstract Providing cost-effective quality healthcare services have been of increasing interest to purchasers, providers, and patients in recent years, especially, for low – income economies. Recent discussions have focused on provider payment methods and how to restrict needless demand for healthcare services. The reason is that providers, patients, or payers face different kinds of incentives for efficiency, quality, and usage of healthcare services produced by payment methods. This paper presents a review of literature on healthcare provider payment mechanisms to enable purchasers and providers play a win-win game to protect patients.

Keywords: *capitation, fee-for-service, healthcare providers, costing, per-diems*

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1. Introduction

Providing cost-effective quality healthcare services have been of increasing interest to purchasers, providers, and patients in recent years, especially, for low – income economies [1,2], and usually, discussions have focused on provider payment methods and how to restrict needless demand for healthcare [1,3]. Providers, patients, and payers face different kinds of incentives for efficiency, quality, and usage of healthcare services produced by payment methods [1]. In any case, the payment method should endeavour to avoid waste, improve quality and accessibility, permit choice of physician by the patient, and should also be easy to implement [4].

In the healthcare market, physicians (who have information power) usually act as agents for patients, healthcare facilities, or insurers, and their performance (effort) as agents is very difficult to monitor if not impossible [1,5]. One important question is whether physicians are perfect agents for their patients by solely basing their treatment decisions on what is in the patient’s best interest, or whether physicians behave as rational economic agents acting in a profit maximizing manner. Usually, agents whose efforts cannot be observed may act in their own interest rather than that of the principal hence the need for payment methods that seeks to serve the interest of both the principal and the agent at any point in time [1,5].

Paying providers via capitation may constrain costs, but concerns about access, quality, and quantity of care which may affect health outcomes have been raised [6]. Apparently, providers may control costs by providing care more efficiently usually seen in fewer visits and

hospitalisation, but what is not clear is whether this implies greater efficiency or reduced access and quality of care [6,7]. If access to healthcare services and quality are reduced then patient health outcomes would be affected. The focus of this paper is to review theoretical literature on capitation, its incentives, framework for setting capitated rates, purpose and types of capitation.

Many researchers like Jegers et al [8], Park et al [2], Maceira [1] describe two reimbursement methods in healthcare system. These are retrospective and prospective payment systems. The former is where the provider’s costs are fully (or partially) paid after service provision, which to them motivates providers to decrease costs due to their profit maximising motive, but Eastaugh [9] argues that providers may have an incentive to increase costs under retrospective system. The reason is that healthcare cost would be recovered for the provider. The prospective payment system is where provider’s budgets are determined *ex ante* without any relationship with the provider’s actual costs. Thus whiles retrospective make use of “you deliver whiles I pay later” the prospective payments make use of “I pay you first and you deliver the services later”.

2. Healthcare Provider Payment Mechanisms

2.1. The Concept of Capitation

The Dictionary of Health Economics [10] defines capitation as a method of paying physicians or healthcare providers a fixed fee per period per patient registered (sometimes differentiated according to age or sex of patient) regardless of the amount of service provided or

consumed. Thus the amount of health service funds are assigned to a person (entity) with certain characteristics for the service in question, for the time period in question, subject to any overall budget constraints, and in effect, puts a 'price' on the head of every enrollee [11].

Thus, capitation is a fixed sum per person paid in advance of the coverage period to a healthcare entity in consideration of its providing, or arranging to provide, contracted healthcare services to the eligible person for the specified period. By this, the receiver (provider) agrees to provide healthcare services to all those insured in that health plan irrespective of what the actual cost of services would be. The actual cost may be higher or less than per capita rate collected, and this places a mini-insurance role on the provider as it receives a guaranteed "premium" to provide services whose actual cost and value is not initially known. Capitation payments are prospective and provide for stronger controls on the price and volume of services but may encourage under-provision or poor-quality care if the rates are too low [12,13].

The ILO [14] report on Thai UCS describes capitation as a poll tax. Thus, a direct uniform tax is imposed on each person — a uniform amount payable on a per capita basis (normally a year) to a defined health service provider (physician, hospital, etc.) for each eligible patient under a health plan.

Capitation may be partial or full (total or global) whether it applies to some or all types of services. Partial capitation implies that prospectively determined per capita rates and hence the budget only apply to some services (usually primary care) provided by a given medical facility or a network of facilities, and all other services (secondary or tertiary) are paid outside capitation where as full (total or global) capitation implies coverage of the entire package of services negotiated between a purchaser and a provider [1,15]. Most researchers suggest that the purchaser organizes all contracting providers to form referral networks for such provider network to cover all levels of care namely primary, secondary and tertiary level as this can facilitate the use of full capitation [15,16].

2.1.1. Types of Capitation

Usually in primary and preventive care, different forms of capitation are applied and are typically adjusted to the main socioeconomic and morbidity indicators in order to promote equity and/or encourage efficiency [17]. Other capitation types are based on factors such as the entity accepting the capitation payment and how the capitated entity financially relates to the entity actually providing care [16]. Below are examples of capitation types.

Area Capitation

This type of capitation involves paying a fixed per capita rate to provide care for enrollees in a specified geographic area, and the insurer then pays healthcare providers for services (to be) delivered to enrollees based on some payment schedule or contract [16]. The area insurer may use a DRG type of "average" cost schedule to set payment amounts for the providers in the area. For example, an insurer or intermediary might be paid a fixed rate per person to provide care for all of the eligible residents of a state, province or region. Under these circumstances, the insurer may attempt to restrict the beneficiaries' use of high-cost providers through closed panels or high co-payments and/or transfer some financial

risk to the providers in order to encourage them to be efficient [18]. The transfer of money to these geographic areas is usually based on the region's specific healthcare needs and disease burden [19].

The "Gatekeeper" Capitation Strategy

This also involves area-wide capitation and the strategy of "gatekeeper" adopts a triage role in addition to the financial role of the fund holder. Here, the gatekeeper refers the patient requiring services to a specialist appropriate to the patient's problem e.g. cancer cases are referred to oncologists. These specialists (direct providers) are paid on an "average case" basis similar to a DRG schedule. The insurer adopts a medical as well as a fiscal role though it is not a direct provider of healthcare, and therefore covers a smaller area or enrolls fewer individuals for capitation than under the area capitation model because of the triage role [16].

Direct Capitation

In this system, healthcare providers are paid directly and their healthcare expenditures are determined *ex ante*. It blends the insurer/provider roles in one organization and the per capita amount is constant with respect to disease diagnosis as agreed upon though may be reviewed [16]. In managed care plans, e.g. for renal disorder, facilities are provided with a prospective flat payment per patient per month and the provider then becomes responsible both for the patient's direct dialysis expenses and for a pre-specified set of dialysis complications requiring additional care [20].

In any capitation system, a fixed fee is paid to a healthcare provider/insurer at pre-arranged intervals for the healthcare services for an eligible individual, and places providers at risk to encourage more efficient styles of practice [21]. In any case, providers are paid, typically in advance, a pre-determined fixed rate to provide a defined set of services for each individual enrolled with the provider for a fixed period of time. In any form, typical capitation contains these crucial elements: 1) payment is tied to a defined patient group, i.e., the money follows the patient; 2) care is prepaid at a predetermined rate; and 3) the recipient of the capitated payments may be at financial risk if expenditures exceed payments [15].

The major reason of purchasers adopting capitation has been to control costs. Capitation, in any form, is to increase participation of general practitioners in determining clinical strategies, referral patterns, and allocation of resources among levels of care; improve coordination of services among the primary, secondary, and tertiary levels; broaden access to care and liberalize consumer choice of provider while, at the same time, restricting "doctor shopping" which results in too many visits, tests and prescriptions; encourage efficiency by way of aligning resource to priorities areas, and to offer incentives that promote technically efficient practices amongst providers and hence allow purchasers to implement an optimal allocation of funds to guarantee healthcare for those in need [3,15].

Under capitated pools physicians are induced to control cost, to prevent the possibility of depleting available funds, when making treatment decisions, and where provider networks exist, physicians within the network are more likely to coordinate and also pressure their colleagues to work within the capitated budget [15,22]. Perhaps, the most important issue of concern is access to (quality) care

by patients. Payments systems that are likely to negatively affect access to care should be decided on societal and humanitarian grounds, and physicians (providers) must play an important role in determining services to be covered and the amount payable for such services (all of which must be made known to the public before their enrolment) [22].

2.2. Setting Capitation Rates for Providers

Once the principle of capitation is to be adopted to pay healthcare providers, the most important issue is how to set the competitive fixed rates to be paid to providers since capitation has the potential of raising health risk of patients. Also, the ability of prepaid plans to reduce health expenditures however, rests importantly, on the level of the capitation rate given to the prepaid plans [23]. The capitation rates may be set using top-down costing, bottom-up costing, or minimal revenue requirement approaches [12,15], and fee-for-service caps with some adjustments [23].

2.2.1. Top-Down Costing Approach

This method disaggregates total expenditure to units of service such as patient visits or patient hospital days. Costs are allotted to “cost centres” (units of service activity e.g. laboratory centres), determining the quantity of service per cost centre, and finally allocating costs to units of service [24]. If service-specific data on cost and utilization does not exist, a monthly historical budget may be divided by the served population to yield a fairly accurate projection of per capita spending, and this gives the Per Member Per Month (PMPM) rate [15].

2.2.2. Bottom-Up Costing Approach

The approach aggregates the costs of each input used to provide a service. It focuses on each type of service included in prospective capitation system, and estimates the cost of service per member per month (PMPM) by multiplying the projected per capita utilization of that service by the service unit cost. The total of service-specific PMPM rates equals the aggregate PMPM rate. This rate is multiplied by the number of enrolled population to yield a cost-based monthly capitated budget (CB) for the provider [15].

2.2.3. Minimum or Minimal Revenue Requirement Approach

This is where the link between provider revenue and financial viability is thoroughly examined. To prevent shut-down, economic theory postulates that every producer including health care providers must recover costs of labour, utilities, facility maintenance, office supplies, and administrative overheads. These costs become the minimum revenue requirement for continuous operation. Some of this revenue will be generated from enrollees’ co-payments and fees from non-enrolled patients, and the remaining amount under prospective capitation. Dividing that remaining amount by the number of enrollees produces an estimated capitation rate. If administrative control or competitive pressure greatly affects pricing, the capitation rate may not be easily increased to make up for the lack of enrollees. This makes retention and increasing the enrolment base important strategy to leveraging

provider revenue and meeting the minimal revenue requirement [15].

Telyukov [15] suggests that, estimated capitation rates should ensure that each provider receives sufficient funding for contracted services but at competitive and/or affordable rates under available funds; and that enrolment sizes are sufficient to allow the provider to breakeven at competitive level.

In any of the above methods, [11] postulates that fundamental choices must be made based on the amount of finance to be distributed for the services in question; the factors to be incorporated into the capitation; and the weights to be placed on those factors but recounts that the amount of money available is solely a political decision. The capitation for a given individual can be thought of as his relative health care expenditure needs and some factors (needs factors) are taken into account in calculating the expected health care expenditure though such factors might be judgmental [11]. The method has been to identify the average expected healthcare expenditure for a citizen with certain characteristics (age, sex, ethnicity, income, residential area, etc) though Newhouse et al [25] estimate that it is possible to predict – at the very most – 20% of the variation in annual healthcare expenditure for individuals while 80% is the subject to random fluctuation and argues that demographic factors explain only a small fraction of the total variance amongst individuals (typically less than 1%). Kerr et al [26] suggest that measures of previous health care utilization or health status, in the form of professional diagnosis, self-reported morbidity, previous inpatient spells, previous healthcare expenditure or previous hospital diagnosis should be considered in setting capitation rates.

In all these, verifiable and timely data are very important but those that can be manipulated are not suitable in determining capitation rates and in the UK, for example, available personal characteristics are confined to age and sex [3,11]. Some countries, like Sweden, have a much larger set of data available on individual citizens, incorporating issues such as welfare and employment status, housing tenure and marital status while others have universal access to certain aspects of patients healthcare utilization records. Thus empirical data on utilization, age, health expenditure etc should be the basis for developing capitation systems. Also mortality and regional differences are important factors to consider when designing capitation rates [27].

A capitation can be very basic and simple by assigning an equal amount for each citizen, regardless of circumstances, i.e. no circumstances vector is required [28]. A rudimentary form is to vary the capitation on the basis of a single population characteristics, such as age and/or sex (e.g. as in health care capitation methods in Israel and Switzerland) [29,30]. It is important to note that the chosen vector of circumstances on which the capitation is to be based should incorporate only personal characteristics that are universally recorded (across all recipients of funds), consistent, verifiable, free from perverse incentives, not vulnerable to manipulation and consistent with confidentiality requirements and plausible determinants of service needs [28]. Thomas et al [31], and Waters and Hussey [12] suggest that capitation rates should be designed to offer providers more protection against the financial consequences of adverse selection

since if prices or rates are below the expected costs providers can be expected to cover the deficit by lowering expected costs via selection of lower risk patients or under-provide care. Therefore a mixed payment system i.e. capitation plus other forms of payment would mitigate providers' incentive to select healthier patients while not glossing over risk adjustment since it is a crucial component of any capitation model particularly for chronic patients [32,33].

In Thailand, for example, the determination of capitation rates for providers is based on outpatient (OP) and inpatient (IP) cost data. The average cost per enrollee is calculated by taking into account the unit costs u_i (e.g. unit OP cost per enrollee's visit to hospital) and the morbidity rate m_i (e.g. the average number of OP visits of enrollee per year) [14].

3. Other Provider Payment Mechanisms (PPMs)

There are other forms of arrangements through which healthcare providers are paid for the services they render. Some of these payment systems are briefly described below.

3.1. Fee-For-Service (FFS)

This is a method of remunerating professionals (especially medical doctors) according to an agreed fee-schedule specifying what is payable for each item of service supplied and may be used in conjunction with capitation [10]. The FFS system requires medical (diagnostic and therapeutic) activities and contacts to be separately identified since the price of each item is determined *ex-ante* and activities that are not on the list are not paid [8]. This is largely a variable system since providers increase their returns by producing more services. FFS has two principal benefits: access of care is guaranteed as well as provision of the best care available, at least if marginal payments compensate for the marginal cost of care [8]. Nevertheless, negative consequences are possible as providers may produce too much care, i.e. care which does not deliver any significant marginal health benefits, a phenomenon known as 'supplier induced demand' due to providers' information power. Prices are prospectively determined for each service e.g. drugs, diagnosis, etc and are paid for after the service. This payment mechanism has been the dominant payment method for out-patient specialist healthcare services in most Baltic States and EU countries [40].

3.2. Diagnosis Related Groupings (DRG)

This is a payment per case basis where healthcare providers are paid depending on the type of case or disease treated at an agreed fee, and is prospectively determined in that fees are determined *ex-ante* regardless of the actual costs (e.g. the length of stay) of the patient [8]. The system requires classification of cases, which is a complex and time consuming task, based on the homogeneity of the resource used and clinical characteristics (e.g. principal diagnosis, secondary diagnosis). Though the DRG-system was developed for hospital managers as a tool for quality improvement and

product management [34], it has helped in determining how providers are paid. Besides the principal diagnosis, DRGs take account of concomitant diseases and complications, the age of the patient, and the type of treatment. Therefore, they are not exclusively based on a diagnosis, causing them to be partially retrospective. While the diagnosis is the prospective component of payment, type of treatment and therefore costs actually incurred constitute a retrospective element. For example, payment for a caesarean section is higher than for a natural delivery. In addition, the payer reimburses very expensive cases ('outliers') separately, which serves to further reduce the prospective character of DRG-based payment. Many scholars argue that the information system requirements of case-based payments are substantial and complex which requires social insurance agencies to have the capacity to exercise a strong purchaser role [8,35]. These steps, in the view of Waters and Hussey [12] are vital in setting prices for diagnosis-based payments: (1) developing a diagnosis classification system; (2) determining the relative weights of the group; (3) determining the level of payment per relative unit; and (4) establish adjustments to the payment rate. Also Duckett [36] contends that fixed payments to providers for overhead costs should be separated from the diagnosis-based payments in order to circumvent the incentive of diagnosis-based payments to admit more patients.

3.3. Per-Diem Payments

Park et al [2] describe these as daily payments to hospitals for inpatients admissions. It gives a strong incentive to increase the number of admissions and to extend the length of stay, thereby enhancing health expenditure as evidenced in Germany. The OECD countries are gradually moving away from this daily payment as for e.g. Norway abandoned per diem payments at the beginning of the 1980s [2] due to the increasing length of stay.

3.4. Budget

Budgets allocate pre-determined fixed amounts of money to providers for a certain period [2]. The amount is usually based on previous levels, and adjusted by an inflation factor [37]. It usually forms the framework for the subsequent introduction of other provider payment schemes [2]. Budgets are of two types namely budgets for the whole healthcare sector (global budget), and budgets for parts of it (line – item budget) such as for ambulatory care, hospital care, pharmaceuticals etc and can be set for health facilities, and are commonly used reimbursement methods for hospitals in low- and middle-income countries [2,38,39]. Other provider payment methods, for example DRGs, may be used to remunerate specific hospital departments, while respecting a pre-determined budget for the hospital as a whole. Whether cost-containment can be achieved, depends on the type of budget and its rigidity. The degree of rigidity produces hard and soft budgets. Under hard budgets, providers are fully responsible for all profits and losses while soft budgets entail a fixed amount of spending but without penalty in case of excess expenditure [2]. The hard type is more effective for cost-containment but may reduce access and quality of services. For cost-containment

potential, hard global and sectoral budgets are mostly effective as the risk of overspending in a soft budget is large [2]. The disadvantage is that budgets provide no incentives to ensure quality of care and may encourage the under – provision of healthcare services [13].

4. Conclusion

This paper has reviewed literature on different mechanisms that exist for paying healthcare providers. Each of these mechanisms has its own incentives and disincentives. Purchasers should therefore consider a mixture of these payment systems to mitigate providers' incentive to select healthier patients or producing too much care. In situations where capitation is adopted, risk adjustment must be thoroughly considered to protect providers and patients. It is also important to disclose reimbursement mechanisms to enrollees. In all these, providers and purchasers must agree to the terms of the payment mechanisms and services to be provided to beneficiaries. By this, there should be a binding contract between the purchaser and the healthcare provider to help achieve a win-win game for all agents under the health insurance contract so as to protect patients.

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Competing Interest

The author declares to have no competing interest.

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