

# **An Optimal remuneration system for General Practitioners**



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## Preface

The paper “An optimal remuneration system for General Practitioners” is the fourth paper in the Research Paper Series by the Dutch Healthcare Authority (NZa). The Research Paper Series aims at the enhancement of knowledge and expertise in the regulation of and competition in health care markets. The papers in this series are written by invited authors and/or NZa staff.

The remuneration system of General Practitioners (GPs) in the Netherlands has recently been changed with the introduction of a new health care system that has abandoned the distinction between public and private insurance on which the old system was based. Previously a dual system was in place: GPs received capitation payments for their publicly insured patients and fee-for-service payments for privately insured patients. The new GP remuneration system combines capitation with fee-for-service: GPs receive capitation payments for every registered patient and fees for consultations, visits and repeated prescriptions. It has come about after negotiations between the Ministry of Health, Welfare and Sports, the Dutch Association of Health Insurers and the Dutch Association of Family Doctors (Landelijke Huisartsen Vereniging).

The paper discusses how an optimal GP remuneration system should look like and whether the current (or former) scheme resembles such a system.

GPs are important central actors of gatekeeping health care systems. If GPs react to the financial incentives embedded in different remuneration systems, this will not only influence the amount of health services provided by the GPs themselves but more importantly, by means of the GP's gatekeeper function, also the provision of the more expensive health care services further on in the health care chain (hospitals and medical specialists).

We argue that the current mechanism is optimal: a mixed remuneration system gives the optimal incentives to GPs to safeguard this gatekeeper function. Whether the current Dutch GP remuneration system also has the optimal mix of capitation and fee-for-service payments is not yet clear.

The paper suggests that exposing GPs to *strong* financial incentives is not the right way to attain the most desirable behaviour of GPs. Therefore, we do not advise the option of giving Dutch GPs budgets with which to manage the purchase of secondary care and medicine.

An optimal remuneration for General Practitioners is written by Nicole Smolders, employee of Rabobank, and Ingrid Seinen, NZa employee of the unit Economic Analysis. The paper is based on the master thesis that Nicole Smolders has written at the NZa under supervision of prof. Jan Boone of the University of Tilburg and Ingrid Seinen.

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## Samenvatting in het Nederlands

### **Een gemengd huisartsenbekostigingssysteem is optimaal**

*De wijze waarop de huisarts wordt bekostigd is van belang, omdat de huisarts een centrale rol heeft in de Nederlandse gezondheidszorg en mogelijk gevoelig is voor financiële prikkels. Het huidige gemengde huisartsenbekostigingssysteem blijkt optimaal te zijn: het houdt financiële prikkels in balans en minimaliseert het aantal perverse prikkels.*

De huisarts vervult vanwege zijn poortwachterfunctie een belangrijke coördinerende rol in de Nederlandse gezondheidszorg. Mensen met gezondheidsklachten kunnen ziekenhuizen en medisch specialisten alleen bezoeken (met uitzondering van spoedgevallen) wanneer zij zijn doorverwezen door hun huisarts. Vanwege de omvangrijke medische kennis die de huisarts bezit en het langdurige karakter van de relaties met patiënten, is hij beter in staat te beoordelen welke gezondheidszorg iemand nodig heeft dan de patiënt zelf. Op die manier kunnen onnodige zorgkosten worden voorkomen (zie Gerdtham et al., 1998).

Algemeen wordt verondersteld dat de beslissingen die een huisarts neemt gebaseerd zijn op de gezondheidstoestand- en klachten van een patiënt. Uit de empirische literatuur blijkt echter dat huisartsen zich in hun gedrag soms ook door financiële prikkels laten leiden (zie bijvoorbeeld Hickson et al., 1987; Hughes en Yule, 1992; Gosden, Pedersen et al., 1999; Iversen en Lurås, 2000; Gosden, Forland et al., 2000 en 2001). Dit maakt de wijze waarop huisartsen betaald worden belangrijk. Wanneer we er van uitgaan dat huisartsen reageren op financiële prikkels, dan heeft de manier waarop huisartsen worden bekostigd namelijk niet alleen gevolgen voor de hoeveelheid gezondheidszorg die wordt verleend in de huisartsenpraktijk maar ook, door middel van de poortwachterfunctie, op de hoeveelheid zorg die wordt verleend door ziekenhuizen.

Dit paper geeft weer hoe een optimaal huisartsenbekostigingssysteem, een systeem dat efficiënt is en tevens de kwaliteit, toegankelijkheid en betaalbaarheid van de gezondheidszorg waarborgt, er uit zou moeten zien. Het is belangrijk dat het bekostigingssysteem de poortwachterfunctie van de huisarts ondersteunt of tenminste niet belemmert. De poortwachterfunctie zou verder versterkt kunnen worden door huisartsen een budget te geven waarmee onder andere tweedelijnszorg moet worden ingekocht. De vraag of dit in de Nederlandse situatie wenselijk is, zal ook in dit artikel beantwoord worden.

## **Huisartsenbesteding**

In de agency theorie wordt de beloning van de agent (in dit geval de huisarts) vaak gerelateerd aan uitkomsten van zijn gedrag. Dit moet er voor zorgen dat de agent in het belang van de principaal handelt. In het opstellen van een contract voor huisartsen is zo'n koppeling echter problematisch.

Idealiter zouden we huisartsen willen belonen voor gezondheidsverbeteringen die tegen zo laag mogelijke kosten zijn gerealiseerd. Echter, het is vaak moeilijk te verifiëren of de gezondheid van de patiënt is verbeterd, of dat tegen zo laag mogelijk kosten is gebeurd en of de huisarts wel verantwoordelijk is voor de gezondheidsverbetering aangezien gezondheid door vele factoren wordt beïnvloed.

Anderzijds zijn er uitkomsten van huisartsengedrag die wel kwantificeerbaar zijn: het aantal consulten, visites en testen bijvoorbeeld. Het belonen van zulke uitkomsten kan echter leiden tot overproductie. In tegenstelling tot andere principaal-agent situaties waarin meer productie altijd wenselijk is vanuit het standpunt van de principaal, is dit niet het geval voor de gezondheidszorg. Als de sociale marginale opbrengst van een extra consult of visite niet opweegt tegen de sociale marginale kosten, dan is het verschaffen van zo'n gezondheidsdienst niet wenselijk. Hoogstwaarschijnlijk vindt deze productie toch plaats omdat de huisarts een prikkel ondervindt om zijn "productie" uit te breiden zelfs wanneer dit inefficiënt is. Een ander nadeel van het koppelen van betalingen aan het aantal consulten, visites en testen is dat dit ten koste kan gaan van de kwaliteit omdat er alleen beloond wordt voor volume en niet voor hoe dit volume tot stand komt. Wat er tijdens een consult wordt gedaan en dus welke kwaliteit wordt geleverd, is voor de besteding immers niet relevant. Echter, wanneer de huisarts een vaste beloning zou ontvangen voor zijn dienstverlening zoals een salaris of een vast bedrag per patiënt (abonnementstarief) dan zou dat ook ten koste kunnen gaan van kwaliteit omdat de huisarts dan een perverse prikkel zou hebben om zijn inzet te minimaliseren.

Omdat het opstellen van een ideaal contract onmogelijk is en het geven van financiële prikkels door middel van andere betalingsmethoden tot perverse prikkels leidt, is het beter om een bestedingssysteem te ontwerpen waarin financiële prikkels geneutraliseerd worden. Huisartsen staan dan bloot aan een minimaal aantal perverse prikkels en besteden daardoor de tijd en aandacht aan de zorg van hun patiënten die zij nodig achten. Verder wordt het risico dat de intrinsieke motivatie (werklust) van de huisarts door financiële prikkels wordt geërodeerd verkleind (zie Frey, 1997) en kan het de relatie tussen huisarts en patiënt verbeteren omdat de laatste zijn huisarts meer zal vertrouwen als hij weet dat deze in zijn besluitvorming en handelen niet of nauwelijks beïnvloed wordt door financiële prikkels.



## Een gemengd systeem

Een balans van financiële prikkels wordt het beste bereikt in een gemengd systeem van "capitation" (abonnementstarief) en "fee-for-service" (consulttarief). De perverse prikkels die ontstaan in een systeem dat alleen op capitation is gebaseerd, worden namelijk tegengegaan door het fee-for-service gedeelte van het bekostigingssysteem, en vice versa. Denemarken, Italië en Portugal zijn voorbeelden van landen met een gemengd huisartsen-bekostigingssysteem.

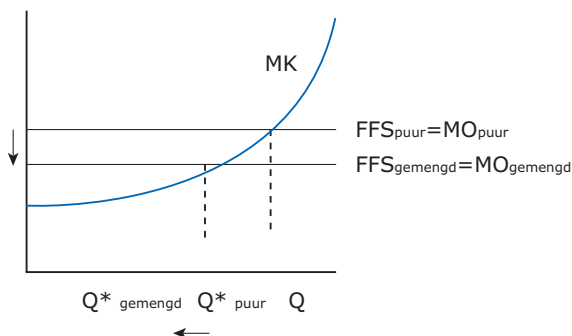
Een voordeel van abonnementstarieven is dat ze geassocieerd zijn met een lijststelsel waardoor waardevolle vertrouwensrelaties tussen huisarts en patiënten kunnen worden ontwikkeld. Verder ontvangt de huisarts in feite een vast budget (gegeven dat de patiëntenlijst op korte termijn vast ligt), waardoor hij ook een prikkel heeft om kosten te minimaliseren en bij te dragen aan efficiënte besluitvorming.

Abonnementstarieven kunnen echter ook nadelig zijn. Omdat de huisarts vooraf verzekerd is van een vast inkomen, verschaffen ze de huisarts een prikkel om inzet te minimaliseren. De huisarts kan bijvoorbeeld zijn patiënten zo min mogelijk zien (dus het aantal consulten en visites verlagen) of ze sneller doorverwijzen naar een ziekenhuis of medisch specialist. Het zijn juist deze perverse prikkels die worden gemitigeerd door een extra fee-for-service gedeelte in het bekostigingssysteem te introduceren. Fee-for-service beloont de huisarts met een vast bedrag per consult (of visite of herhalingsrecept) waardoor hij minder geneigd zal zijn om zijn inzet te minimaliseren (bijvoorbeeld door meer door te verwijzen) dan in een systeem dat alleen op capitation is gebaseerd.

Op dezelfde wijze kan het introduceren van een capitation gedeelte in een fee-for-service systeem de perverse prikkels die fee-for-service genereert tegengaan. Omdat fee-for-service de huisarts beloont voor elke productie-eenheid, heeft deze een prikkel om zijn productie uit te breiden (bijvoorbeeld door middel van aanbodgeïnduceerde vraag) totdat de marginale opbrengst (de "fee") niet langer opweegt tegen de marginale kosten. Als nu een gedeelte van het huisartseninkomen uit abonnementsinkomen bestaat, kan de "fee" omlaag en zal dit de huisarts motiveren om zijn productie minder uit te breiden (dit wordt afgebeeld in figuur 1). Bovendien geeft het capitation gedeelte zelf ook een prikkel om niet te veel te produceren.

Figuur 1 Productie is lager in een gemengd systeem

MK, MO



*Uitleg figuur: De twee horizontale lijnen geven de marginale opbrengstenfunctie (MO) van de huisarts weer in een puur fee-for-service systeem en in een gemengd systeem en is in beide systemen gelijk aan de "fee". De stijgende lijn stelt de marginale kostenfunctie (MK) van de huisarts voor. De marginale kosten zijn bij lage productie vrij constant maar stijgen naarmate de productie groter wordt omdat extra productie dan ten koste gaat van de vrije tijd van de huisarts. De optimale productie is daar waar MK en MO elkaar snijden en is dus kleiner in een gemengd systeem.*

Om de toegankelijkheid van de gezondheidszorg te waarborgen, is het wel belangrijk dat het abonnementstarief wordt gecorrigeerd voor verschillen in de gezondheid van patiënten. De huisarts moet hogere bedragen ontvangen voor patiënten die meer zorg nodig hebben (zoals de ouderen bijvoorbeeld) omdat er anders risicoselectie zou kunnen plaatsvinden met als gevolg dat mensen die de gezondheidszorg het hardst nodig hebben moeilijkheden zouden ondervinden in de toegang ertoe. Helaas zijn zulke correcties nooit perfect (zie Newhouse, 1994). Het fee-for-service gedeelte komt hier van pas: het ontmoedigt risicoselectie omdat de huisarts meer "fees" ontvangt voor patiënten die meer zorg nodig hebben.

Een gemengd systeem van consulttarieven en abonnementsbetalingen is ook gunstig omdat het financiële risico voor de huisarts wordt beperkt. De kosten van het dragen van risico, weergegeven door de zogenaamde risicopremie, kunnen beter worden gedragen door de verzekeraar: het verzekerdenbestand van zorgverzekeraars is groter dan de patiëntenlijst van een huisarts waardoor risico's meer worden gespreid, en daarnaast worden onvermijdbare risico's achteraf onderling verevend tussen alle zorgverzekeraars. Een hoog financieel risico voor de huisarts zou bovendien kunnen leiden tot een verminderde uitvoering van de poortwachterfunctie. Dit laatste risico zou kunnen worden verholpen door huisartsen juist meer risico te laten dragen; niet alleen over de eigen praktijkkosten, maar ook

die van de vervolgcosten. Een huisarts krijgt in die situatie een budget, van waaruit hij de totale ziektekosten financiert. Hij draagt dus zelf de lasten van het doorverwijzen naar een specialist, en medicijngebruik. Groot-Brittannië heeft een dergelijk systeem gekend. In box 1 wordt deze optie voor de Nederlandse situatie geëvalueerd.

*Box 1 Een budget voor de Nederlandse huisarts?*

Het verschaffen van budgetten aan Nederlandse huisartsen waarmee tweedelijnszorg en medicijnen moeten worden ingekocht en waarbij het budgetoverschot mag worden behouden, kan de efficiëntie van de gezondheidszorg mogelijk vergroten. De huisarts zou namelijk verantwoordelijk worden gesteld voor de financiële consequenties van zijn besluitvorming. Het Britse "GP fundholding systeem" (1991-1999) gaf huisartsen de mogelijkheid om voor een dergelijk budget te kiezen. Toch is, om onder andere de volgende redenen, zo'n systeem niet wenselijk in de Nederlandse situatie:

- Het stelt de risicoaverse Nederlandse huisarts bloot aan financieel risico. Deze zal daarom een compenserende risicopremie eisen waardoor het opstellen van een dergelijk contract erg duur wordt.
- In Nederland is de inkoop uitbesteed aan zorgverzekeraars. Indien de zorgverzekeringmarkt goed werkt, ondervinden concurrerende zorgverzekeraars voldoende prikkels om zorg efficiënt in te kopen. In het Verenigd Koninkrijk daarentegen werd zorg ingekocht door overheidsinstanties die alleen een prikkel hadden om niet (véél) meer dan hun budget te besteden.
- Het zou de vertrouwensrelatie tussen huisarts en patiënt aantasten. Een huisarts met een budget heeft bijvoorbeeld een prikkel om minder snel door te verwijzen waardoor de patiënt zich zou kunnen afvragen of zijn huisarts werkelijk alles doet om hem te helpen. In het Verenigd Koninkrijk was de tevredenheid onder patiënten van budgethoudende praktijken inderdaad lager dan in praktijken waarin de huisarts(en) geen budget beheerde (zie Dusheiko et al., 2004).
- Huisartsen zouden een budgetsysteem als te controlerend kunnen ervaren (omdat het ultieme doel is gezondheidskosten in de hand te houden) en niet als een erkenning van hun intrinsieke motivatie. In dit geval kunnen de financiële prikkels van het budgetsysteem intrinsieke prikkels verdringen (zie Frey, 1997).
- De positieve effecten van een budgetsysteem zijn te onzeker om zo'n drastisch stelsel in te voeren. Hoewel de empirische literatuur aangeeft dat Britse huisartsen gereageerd hebben op de financiële prikkels van het "fundholding systeem" (zie onder andere Croxson et al., 1998), is het onduidelijk of deze gedragsveranderingen efficiënt waren omdat de effecten ervan op de gezondheid van patiënten nooit zijn onderzocht. Patiënten waren in ieder geval minder tevreden (zie Dusheiko et al., 2004).

## **Het Nederlandse huisartsenbekostigingssysteem**

Vóór de invoering van het nieuwe zorgstelsel op 1 januari 2006 was het Nederlandse huisartsenbekostigingssysteem gebaseerd op het toenmalige onderscheid tussen publieke en particuliere verzekering (abonnements-tarieven voor ziekenfondsverzekerden en consulttarieven voor particulier verzekerden). Sinds 1 januari 2006 kennen huisartsen een gemengd bekostigingssysteem waarbij zij voor al hun patiënten zowel abonnements-tarieven als consulttarieven in rekening kunnen brengen. Deze verandering vormt wat betreft (financiële) prikkels dus een vooruitgang.

De vraag blijft echter wat de optimale mix van capitation en fee-for-service is. We zouden hier meer inzicht in kunnen krijgen door onderzoek te doen naar de invloed van het voormalige duale huisartsenbekostigingssysteem op de verschillen in zorgverlening aan particuliere en ziekenfonds-verzekerden. Dit onderzoek zou waardevolle informatie opleveren over hoe Nederlandse huisartsen op de verschillende financiële prikkels van een capitation en fee-for-service systeem reageren. Deze informatie kan dan in beschouwing worden genomen bij het bepalen van de optimale mix van het gemengde bekostigingssysteem. Verder zou ook onderzocht kunnen worden of er andere factoren zijn die beter zijn dan financiële prikkels in het ontlokken van gewenst huisartsengedrag en of deze eventueel versterkt kunnen worden bijvoorbeeld door het uitbreiden van bestaande protocollen.

## **Conclusie**

Het is niet wenselijk om huisartsen sterke financiële prikkels te geven. Zo is het onmogelijk om de huisarts te belonen voor efficiënte gezondheidsverbeteringen en het belonen van uitkomsten die wel kwantificeerbaar zijn, leidt mogelijk tot overproductie. Verder kunnen sterke "efficiëntieprikkels" (bijvoorbeeld door middel van abonnementstarieven) ten koste gaan van de poortwachterfunctie van de huisarts en de kwaliteit van de gezondheidszorg.

Het nieuwe gemengde Nederlandse huisartsenbekostigingssysteem vormt (in termen van prikkels) een verbetering ten opzichte van het oude systeem omdat het financiële prikkels in balans houdt en het aantal perverse prikkels minimaliseert.

## Abstract

The general practitioner (GP) has a central role in the Dutch healthcare system. Unless there is a case of emergency, patients can only consult secondary care providers (hospitals and medical specialists) when a referral has been made by the GP. Because the GP has extensive medical knowledge and (often) long-term relationships with his patients, he is more able to judge whether someone needs specialized medical care than the patient himself. In this way unnecessary health care costs are prevented and the rise in health care costs can potentially be constrained (see Gerdtham et al., 1998).

It is assumed that GP's make their decisions based on the patient's health status. However, from empirical literature we know that GPs are also guided by financial incentives. This makes the way GPs are paid important as this will not only influence the amount of health services provided by the GPs themselves but more importantly, by means of the GP's gatekeeper function, also the provision of the more expensive health care services further on in the health care chain (hospitals and medical specialists). This paper describes how an optimal payment system for general practitioners should look like.

Ideally, the remuneration of the GP is related to the outcome of his behaviour as this would ensure that he acts in the interest of the patient. However, it is often very difficult to measure the impact of the GP in the health improvement of the patient and whether this has happened against minimal costs. Measures that we can quantify at the other hand, such as the number of visits and consults, do not have a direct relation with health improvement. Rewarding these type of outcomes could lead to more consults than desirable and less quality per outcome: Actual behaviour and quality level are not relevant for the remuneration and thus not explicitly rewarded. However, when a GP receives a fixed reward for his service, such as a salary or capitation fee per patient, it could stimulate the GP to minimise effort. This would also lead to lower quality.

Because it is not possible to design a contract based on health outcomes, the remuneration system should neutralise financial incentives to minimise the perverse incentives. This will also strengthen the intrinsic motivation of the GP and improve the trust relation between GP and patient.

A mixed system of capitation and fee-for service balances financial incentives and is therefore the optimal type of remuneration system for GPs. Such a system will also reduce the financial risks for the GP and therefore lowers the risk premium.

The gate-keeperfunction could further be strengthened by offering GPs a budget for purchasing secondary care. The British fundholding system gave

GPs the possibility to choose for such a budget. This does not seem to be a good option for the Dutch GP:

- It is not necessary as in the Netherlands secondary care is purchased by competing health insurance companies who have much stronger incentives to buy health care of high quality and low cost than the British health authorities.
- GPs would ask a higher risk premium as they cannot spread the risk over as much patients as insurers can for their insured.
- It might impair the relationship of trust between GP and patient. A budget holding GP would have an incentive to refer less patients since this would lead to higher accumulated savings.
- GPs have less market power and would probably pay higher prices than insurers.
- Financial incentives might impair the intrinsic motivation of GPs.

The current Dutch GP remuneration system is therefore optimal in terms of financial incentives. Stronger financial incentives are not desirable.

# 1 Introduction

Today many countries in the Western world are faced with the problem of sharply increasing health care costs. Over the last two decades, health expenditure has grown in real terms by around 3% per year on average across OECD countries (OECD, 2006). One way to control the health care costs that arise from a growing health care demand is by letting general practitioners (GPs), or so-called family doctors, act as gatekeepers of the health care system. In "gatekeeping countries", such as the Netherlands and the United Kingdom, the GP is the first point of contact when someone is faced with a certain health problem. Unless there is a case of emergency, secondary care providers (hospitals and medical specialists) can only be consulted when a referral is made by the GP. Because the GP has extensive medical knowledge and (often) long-term relationships with his patients, he is more able to judge whether someone needs specialized medical care than the patient himself. In this way unnecessary health care costs are prevented and the rise in health care costs can potentially be constrained (see Gerdtham et al., 1998).

In this policy paper the focus will be on the type of remuneration of these important central actors of gatekeeping health care systems. If GPs react to the financial incentives embedded in different remuneration systems, this will not only influence the amount of health services provided by the GPs themselves but more importantly, by means of the GP's gatekeeper function, also the provision of the more expensive health care services further on in the health care chain (hospitals and medical specialists).

In the Netherlands, since the 1<sup>st</sup> of January 2006 a new GP remuneration system has been in place as the introduction of a new health care system abandoned the distinction between public and private insurance on which the old system was based. Previously a dual system had been in place: GPs received capitation payments for their publicly insured patients and fee-for-service payments for privately insured patients. The new GP remuneration system combines capitation with fee-for-service: GPs receive capitation payments for every registered patient and fees for consultations, visits and repeated prescriptions. It has come about after negotiations between the Ministry of Health, Welfare and Sports (Ministerie van Volksgezondheid, Welzijn en Sport), the Dutch Association of Health Insurers (Zorgverzekeraars Nederland) and the Dutch Association of Family Doctors (Landelijke Huisartsen Vereniging). In this policy paper The Dutch Health-care Authority wants to address the question of what an optimal GP remuneration system should look like and whether the current (or former) scheme resembles such a system.

Therefore this policy paper will give an overview of the financial incentives GPs are exposed to and a review of the (empirical) evidence on whether GPs respond to such incentives. Subsequently, the aim is to evaluate the current Dutch GP remuneration system and to make a suggestion for an optimal GP remuneration system in which total health care costs are minimized (*efficiency*) and the *quality* and *accessibility* (*equity*) of health care services are safeguarded. Because Dutch GPs act as filters to secondary care it is important that the GP remuneration system does not provide incentives which impede this gatekeeper function. Furthermore, because of the GP's gatekeeper function, we should not (only) focus on the minimization of costs of health services provided by GPs but on the minimization of total health care costs.

In addition to proposing the optimal type of GP remuneration, we will also consider whether GPs should be exposed to extra financial incentives in the form of a budget with which they have to purchase secondary care and/or medicine. An evaluation of the British GP fundholding system (1991-1999) will underlie this contemplation.

The structure of this policy paper is as follows.

Section 2 applies principal-agent theory in discussing the GP-patient relationship. The third section describes the financial incentives that are embedded in different remuneration systems and budget schemes and also mentions some other factors that might influence the GP's decision making. In the fourth section the old and current Dutch GP remuneration system and the British GP fundholding scheme (1991-1999) are presented. Then, by referring to empirical literature a conclusion about whether GPs really respond to the financial incentives embedded in remuneration systems and budget schemes will be drawn. Finally, drawing on theory and the conclusions of section 5, the sixth section shows what an optimal GP remuneration system looks like and whether the Dutch scheme resembles this. The question of whether Dutch GPs should be given a budget with which to purchase secondary health services and/or medicine will also be answered. Section 8 ends the policy paper with conclusions and recommendations.



## 2 The GP-patient relationship: application of principal-agent theory

### 2.1 Agency theory

The standard theory of agency defines an agency relationship by the interaction between an ill informed person (the principal) and an informed individual (the agent). The principal wants the agent to act on his behalf. However, the agent is maximizing his own utility function and the asymmetry of information further strengthens the need for the principal to devise a contract to ensure that the agent acts in his interest.

The contract must satisfy an *individual rationality constraint*: it must offer the agent at least as much utility as his best outside-option. The contract must also be *incentive compatible*: it must be in the agent's interest to act in a way that benefits the principal. The principal-agent literature suggests that the payment to the agent will be a function of the outcome if this is the only source of information available to the principal.<sup>1</sup> To what extent the agent's payment will depend on the outcome depends on whether the agent is risk neutral or risk averse (Mooney and Ryan, 1993). If the agent is risk averse there will be a trade off between risk sharing and the provision of incentives because a risk-averse agent does not like the variable income that results from his income being highly dependent on the outcome.<sup>2</sup> If income cannot (or only to a certain extent) be based on outcome, low-powered incentives will result.

### 2.2 The GP-patient relationship: problems of information asymmetry

The GP-patient relationship is most often seen as one of agency because the GP is assumed to have more information about the relationship between health care and health status than the patient. However, problems of information asymmetry actually run in two ways. The patient has more

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<sup>1</sup> Ideally, the principal would want to reward the agent for his effort. As effort is often not (completely) observable, outcome is used as a proxy for effort. However, because "outcome" is the result of both effort and noise, a payment based on outcome introduces risk for the agent; his income cannot be totally controlled by his own actions.

<sup>2</sup> Here we assume that the agent's income is based on a performance measure ("outcome") that contains a stochastic component. As a result the agent's income can fluctuate in a way that cannot be controlled by him.

information than the GP about his or her preferences, values and circumstances that could influence treatment options (Scott, 2000). This can lead to imperfect agency<sup>3</sup> when the GP does not have a correct perception about the contents of the patient's utility function and of the value attached to its arguments (Scott and Vick, 1999). In the majority of cases, however, the GP-patient relationship is characterized with the patient as the principal and the GP as his agent. Information asymmetry can lead to moral hazard from the side of the GP. McGuire (2000) has made a distinction between moral hazard with hidden information and moral hazard with hidden action. The first concerns the GP's private information about the outcome of a diagnosis, the benefits of a given treatment or the convenience of referring the patient to the specialist. Moral hazard with hidden action refers to actions undertaken by a health care provider such as quality setting, cost-reducing effort or actions necessary to identify the patient's condition (diagnosis effort).

Here it is important to observe that information asymmetry makes it possible for the GP to respond to financial incentives. Because the patient does not exactly know his health care demand or the health service he is looking for and because he has difficulties in judging the quality of care because of his limited medical knowledge, the GP is able to react to the incentives embedded in the remuneration system.

For example, if the financial regime is such that additional care reduces the doctor's income, a GP might underprovide effort or care by referring patients more often than is (socially) optimal. As Mariñoso and Jelovac (2003:618) state: "It is the special feature of the health services as expert services that allows a GP to adjust his referral strategy to the incentives she faces".

On the other hand, the GP could also induce patients to consume more health care than is necessary (so-called *supplier-induced demand*)<sup>4</sup>. Such situations can occur when the GP is paid per consultation. He will then have an incentive to be consulted as often as possible and will probably be reluctant in referring patients to specialists.

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<sup>3</sup> The "perfect" agent has often been defined as "one who makes the same decisions that the patient would have made if the patient possessed the same information and expertise as the agent" (Evans, 1984). It is however impossible to test whether a GP is a perfect agent using this definition, since patients will never have the same information and knowledge as doctors (Scott and Vick, 1999).

<sup>4</sup> Or more precise: "the doctor induces the patient to consume more health care than patients would if they had the same information as the doctor" (Scott, 2000:1178).

However, moral hazard not only represents the GP's behaviour but also arises from the side of the patient. Irreducible uncertainty about initial health status or the effects of treatment imposes a risk on the patient. He may want to offset this risk by consuming more health care (McGuire, 2000). Moreover, the fact that the insurance system leads to low or zero money prices at the point of consumption may also result in patients visiting their specialists too often. This type of moral hazard is widely recognized. Countries like the Netherlands and the United Kingdom deal with the problem of unnecessary and expensive visits to medical specialists by letting their GPs act as gatekeepers. Consumers can then only visit medical specialists when their GPs have referred them. Finally, moral hazard by patients may also result if the event against which insurance is taken out is *not* out of the control of the individual (Arrow, 1963). For health insurance this means that clients may become somewhat more careless in preventing health problems because they know that the health insurer will pay if they need medical treatment.

### 2.3 The GP-patient relationship: deviations from standard agency theory

Although the interaction between the GP and the patient is often defined as a principal-agent relationship, some elements of the relationship are different from standard agency theory. First of all, the remuneration contract of the agent (the GP) is not set by the principal but by some third party (government or insurance companies) (Mooney and Ryan, 1993). In the Netherlands the Dutch Healthcare Authority (Nederlandse Zorgautoriteit) determines (after it has negotiated with the Dutch Association of Health Insurers (Zorgverzekeraars Nederland) and the Dutch Association of Family Doctors (Landelijke Huisartsen Vereniging)) the prices GPs can charge to their patients' health insurers for the provision of health services. Secondly, the relationship deviates from the standard principal-agent model because of the inability to contract on outcome. There is a problem in defining and measuring health adequately. Moreover, even if outcomes (of medical care) were observable there would be the additional problem of establishing the input of the agent in achieving these outcomes (Mooney and Ryan, 1993). This is hard because of information asymmetry: the GP will have an incentive to overstate the difficulty in treating patients and in improving their health in order to increase the payment (Folland et al., 2004). Thirdly, the standard agency theory assumes that the utility functions of principal and agent are independent. However, the utility functions of the GP and patient are generally recognized to be interdependent to a certain extent (Mooney and Ryan, 1993). In their professional role as a doctor,

GPs attempt to act at least partly in the patient's interests. What is also distinctive about the GP-patient relationship is that it is characterized by *trust*. According to Arrow (1963) trust is a social institution that arises as a sort of substitute guarantee in the absence of ideal insurance<sup>5</sup>. In this case the patient wants some guarantee that at least the GP is using his knowledge to the best advantage. Because the patient cannot measure the GP's performance (because of his lack of knowledge), he replaces direct observation by generalized belief in the ability of the GP. As Arrow (1963:965) puts it: "The social obligation for best practice is part of the commodity the physician sells, even though it is a part that is not subject to thorough inspection by the buyer".

## **2.4 Utility functions**

The literature has suggested that GPs and patients value multiple aspects of the GP-patient relationship; the patient's and the GP's utility function contain more than one argument. Obviously, health is an important argument in the patient's utility function. Furthermore, the process of treatment and not just the outcome of the treatment may be valued (McGuire et al., 1988; Mooney and Lange, 1991 and Mooney, 1991). What is also very important to patients, as has emerged from the research of Scott and Vick (1999), is "being able to talk to the doctor". In addition, information is essential, of which the quality (being able to understand the doctor's explanations and information) is higher valued than its quantity. The fact that patients value information corresponds to the view that patients get higher utility from less uncertainty and are therefore somewhat risk-averse.

Before anything useful can be said about the design of incentives to ensure that the GP acts in the patient's (and society's) best interest, it is also important to know the nature of the GP's utility function. Most models have included income and leisure as the main arguments (Scott, 2000). Obviously, a trade-off exists between these two arguments. With a fixed number of hours available, a higher income can only be achieved by spending more time at work. This, however, automatically leads to less leisure time. Workload (the intensity of work), has also been included as an argument.

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<sup>5</sup> Ideal insurance would involve not only insurance against illness but would also include insurance against a failure to benefit from medical care, whether through recovery, relief of pain or arrest of further deterioration. One form would be a system in which the physician is paid according to the degree of benefit a patient has received from medical treatment (Arrow, 1963).

This is likely to have arisen directly from principal-agent theory in which higher effort is associated with lower utility.

Though income may be an important factor in determining the GP's behaviour, it is generally recognized that doctors' behaviour is in some way constrained by ethical considerations. Therefore some models have included an "ethical" argument which has been used to represent the doctor's regard for not only professional codes of conduct but also for a more altruistic concern for patient's welfare (Scott, 2000). Sometimes the patient's utility is included in the GP's utility function to illustrate the benevolent nature of the GP.

Other arguments that have been put forward to be in the GP's utility function are reputation (a GP might find it important to be valued by the community in which he acts) and status (the prestige associated to for example success in new types of care, teaching and research) (Dionne and Contandriopoulos, 1985). Furthermore, practice characteristics, intellectual satisfaction and autonomy have been mentioned.

A GP might also be averse of carrying risks. Risk or uncertainty is then one of the (negative) arguments in the GP's utility function. As a consequence, providing incentives becomes expensive. Consider for example a general practitioner who is paid a fixed amount per patient.<sup>6</sup> Such a contract would be incentive-compatible as it transfers the financial risk of treatment entirely to the GP who would have an incentive to minimize costs.

However, a risk-averse person dislikes financial risk and will only accept the contract if he is compensated for carrying the risk. He will have to be paid a risk premium which is a measure of the costs of risk-averseness and comprises the difference between the expected payment of the 'risky' contract and the certain payment (the certainty equivalence) which gives the agent, in this case the GP, the same utility (Bogetoft and Olesen, 2004). Obviously the higher the GP's risk averseness, the higher this risk premium will have to be.

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<sup>6</sup> A payment per patient is called capitation.



## 3 Financial incentives and other factors influencing GPS' behaviour

### 3.1 Incentives arising from remuneration systems and budgets

In general, GPs can be compensated according to four different systems (or according to a mix of them): capitation, fee-for-service, salary and target payments. Below these systems and the incentives that they provide will be discussed and potential advantages and disadvantages will also be mentioned (see appendix for a summarizing overview).

#### 3.1.1 Capitation

Capitation comprises an (annual) fixed amount per patient and therefore requires a listing system of patients or that the GP is responsible for a defined population. GPs receive a fixed income, given their number of patients, and will therefore have an incentive to minimize costs. Capitation also encourages GPs to provide the best possible preventive and long-term care because in that way future costs can be reduced. In addition, capitation gives an incentive to expand the patient list because every new patient brings in extra income. This can be positive if it leads to competition between GPs concerning the quality of care offered (Gosden, Forland et al., 2001).

However, capitation can also lead to less desirable outcomes. First of all, the GP's cost containing function might go too far if valuable care is withheld from patients and under-treatment is the result. Moreover, because payment comes irrespective of the quantity of care provided, the GP has an incentive to reduce effort and costs, for example by seeing his patients as little as possible (e.g. not letting patients get back for check-ups or minimizing the time length of consultations and visits). A second way is by referring patients to specialists and hospital more often than is necessary. Therefore, capitation has the potential of working against the GP's gatekeeper role and consequently narrowing the GP's scope of practice through which his role as a primary care provider diminishes. Another negative incentive associated with capitation is cream skimming. Because the GP receives a fixed amount per patient, he has an incentive to avoid high usage groups (e.g. the elderly or the chronically ill). For if GPs are allowed to reject patients, they can maximize their net income by selecting low-risk patients or by actively discouraging high-risk patients. This incentive can (partly) be mitigated by adjusting the capitation payment by for example age and gender. However, as Newhouse (1994)

argues, risk adjustment technology is primitive and therefore using observable characteristics such as age only slightly ameliorates the flawed incentives of not adjusting at all.

Finally, capitation payments may also be disadvantageous when GPs are quite risk averse. A capitation contract will then be expensive because the GP is exposed to the financial risk of treatment and will therefore demand a significantly higher payment in order to participate.

### **3.1.2 Fee-for-service**

Fee-for-service is a remuneration system in which GPs are paid per unit of care delivered (e.g. consultations, visits, prescriptions of medicine).

In contrast to a capitation system, total expenditures of GP payments are not known in advance and the risk of over usage of medical expenditures now rests with the financier instead of the GP.

Because fee-for-service links payment to output, the GP has an incentive to maximize output by carrying out extra treatments, consultations and visits as long as the marginal cost of providing an extra unit of service is less than the additional marginal revenue (the fee). According to the theory of supplier-induced demand, because of the existence of information asymmetry GPs are able to induce patients to consume more health services than they would have consumed if they were fully informed. Output can also be increased by attracting additional patients, working longer hours or concentrating on fee paying services only (Gosden, Forland et al., 2001).

By minimizing the time length of consultations, the GP can increase the number of fees per hour. This, however, might come at the expense of the quality of care.

A GP who is paid in a fee-for-service manner might also be reluctant in referring patients to specialists as he has an incentive to maximize the quantity of health services provided by himself. Although this seems to intensify the gatekeeper role of the GP it can be undesirable if patients as a result do not get adequate medical treatment.

Fee-for-service also creates a culture where new technologies require new fees. If new treatments are not yet classified by the fee-for-service system, extrinsically motivated GPs will have no incentive to carry them out even when there is a clear benefit to patients. Another disadvantage of fee-for-service is that it requires a monitoring system. Without a control mechanism it is quite simple for a GP to declare procedures he has not carried out. Moreover there would be an incentive for "upcoding": procedures which can be categorized in several ways would then be assigned to the more lucrative billing codes (Rosen, 1989).

While fee-for-service is often seen as an inefficient system because there is an incentive for overproduction, there are also some advantages to it. Fee-for-service does encourage GPs to contain costs (per unit) so as to



maximize the difference between revenue (fee) and costs per unit (Gosden, Forland et al., 2001). It could also increase productivity as the GP has an incentive to manage his time efficiently (Brennan et al., 2000). Furthermore, fee-for-service tends to reward those GPs who are efficient, hardworking and attractive to patients (Rosen, 1989). Some (Brennan et al., 2000) argue that fee-for-service also gives the GP an incentive to improve the quality of services provided, as the consumer may be discouraged to attend his GP if he feels the service is inadequate. Whether this is true is debatable for there is also an incentive to do as much as possible in a given time, which might come at the expense of quality. Finally, fee-for-service systems have an informational advantage: they generate a great deal of information about the contents of medical care, its distribution and the efficiency of its provision (Rosen, 1989).

### 3.1.3 Salary

In a salary system a GP is paid a fixed amount of money per hour he has worked. Salary payment has some advantages. It is administratively simple, offers the GP a fixed income and does not contain incentives for deliberate cost-generating behaviour (Rosen, 1989). On the other hand, because the GP does not bear the financial risk of treatment he also has no incentive to contain costs, attract patients or be sensitive to their needs (Gosden, Forland et al., 2001). Because his income is generally fixed the GP does have an incentive to minimize his personal costs such as his effort. He might select low-risk patients who do not need much health services (cream skimming), shorten consultations (for example by prescribing pharmaceuticals straightaway) or limit the number of consultations (Gosden, Forland et al., 2001). He could also reduce his effort by referring to specialists more often. The GP's gatekeeper role is therefore not supported by a salary system. And finally, GPs could reduce their effort by producing only a limited amount of information about the content of care or by slowing down the pace of work (Rosen et al., 1989). A deterioration of quality and waiting lists could be the result. If overtime payments are available, salaried GPs will also have an incentive to work overtime hours.

### 3.1.4 Target payment

Under a target payment system, the GP's compensation is in some way linked to targets that are set by the financier as being desirable. For example, the GP is paid an amount of money when a certain percentage of the population has been immunized against a certain disease. Target payments are often used as supplements to a capitation or fee-for-service system.

Because the target payment is fixed, the GP has an incentive to minimize costs thereby maximizing his net income. However, because the GP is paid as soon as he has met the target, he has no incentive to provide more than

the target level of care. This perverse incentive can be mitigated by paying the GP an amount per case when he has met the target. For example, in the case of vaccination, the GP could receive a payment per person he has vaccinated as soon he has met the target (e.g. 80% of his patients should be vaccinated). In this case there is not only an incentive to meet the target but also an incentive to provide more than the target level of care. Target payments are disadvantageous when it becomes very unlikely that the target will be met. The incentive of the target will then disappear as it is no longer valuable for the GP to put in effort to meet the target.

### **3.1.5 Budget**

Financial incentives are not only embedded in the remuneration system but also arise when GPs are given budgets with which they have to purchase health care services (e.g. secondary care, medicine). If the GP is allowed to retain any budget surpluses or use them in a way that benefits him, he will have an incentive to "shop around" for the most cost-effective care because in that way he will end up with the largest budget surplus. Therefore "budget holding" is often thought of as efficient. Additional incentives result if there is a sanction on overspending the budget. A GP will then even try harder to retain costs because he will be punished when he fails.

There is also an incentive to maximize the provision of care at the practice. On the one hand this is desirable as it keeps patients at the lowest level of care possible, but on the other hand it can become disadvantageous. If GPs delay referrals of patients to specialists in order to avoid spending the budget the patient's health might deteriorate. In general, however, budget holding supports the GP's gatekeeper role as it encourages GPs to consider the necessity of referring.

On the other hand, because budget holding encourages the GP to retain his costs it raises the risk of cream skimming. Although budgets can be adjusted according to age, sex and mortality to capture the health status of the GP's patient population, risk adjustment will never be perfect. Yet, the risk can be further mitigated by "stop-loss provisions". In that case health care costs of expensive patients (costs which exceed an amount  $x$  per year) do not have to be met from the GP's budget.

Perverse incentives can occur when secondary services that do not have to be purchased with budget money can act as substitutes for the secondary care services that do have to be met from the budget. GPs could feel encouraged to replace the latter by the former.

There are also some incentives associated with setting the budget and with the beginning and ending of a budget scheme. If the size of the budget is

based on historical activity and this is known to the GPs who will become fundholders, these doctors will have an incentive to raise their activity (e.g. referrals and medicine prescriptions) in the preparatory year. Moreover, when GPs are free to enter the scheme, historical budget setting will encourage those GPs who expect an exogenous decline in their activity in future years to join because they are expected to save on the budget. Such selection bias should be taken into account when studying the effects of a budget scheme.

Another practice that might take place when a budget scheme is introduced, is that GPs contract themselves as providers of some services covered by the budget, “refer” to themselves and therefore receive money from the budget. And finally, there can be perverse incentives involved with the ending of a budget scheme. If this is announced and the GPs are allowed to retain their accumulated surpluses, they will have an incentive to reduce referrals and prescriptions in the final year(s) in order to accumulate their savings (Dusheiko et al., 2004a).

### 3.2 Other factors influencing GPs’ behaviour

The incentives discussed above would give an accurate description of GPs’ behaviour if physicians were completely free in choosing their actions and would only care about income. However, it is likely that GPs’ utility functions contain more arguments than income alone and that their behaviour is influenced by external factors. Here, I will mention some of these issues.

It is for example fair to say that GPs feel limited in their income-maximizing behaviour because of ethical considerations. This implies that GPs care about their patients’ well being and that they will act in a way that satisfies the patient’s interest. The presence of ethical considerations in the GP’s utility function is important because they can counteract the negative incentives that may arise from GP remuneration systems. Another important factor influencing the GP’s behaviour is the existence of clinical guidelines. These protocols specify how a general practitioner should act when faced with certain health problems or symptoms. More than 80% of Dutch GPs value the guidelines that are set up by the Dutch College of Family Physicians (Nederlandse Huisartsen Genootschap, NHG). With respect to prescribing medicine in the period May 2000 – April 2002 a sample of 104 general practices followed the NHG standards in roughly 68% of all cases and in 89% of all cases referrals took place according to the NHG guidelines (Braspenning et al., 2004).

Pressure exerted by patients can also influence the GP’s decision making behaviour. Cardol et al. (2004) remark that in recent years there has been a social-cultural change towards emancipation and individualization.

Patients feel less constrained in expressing their views. The rise of Internet has also played a part in this as patients have learnt about the availability of more sophisticated treatments and technology.

Intrinsic motivation, which exists when people engage in an activity for its own sake and not because of some external incentive such as a financial reward, can (just like ethical considerations) lead the GP to act in the patient's best interest. Here it is important to note that financial incentives might harm this intrinsic motivation. Frey (1997:428) expresses this view: "The use of extrinsic incentives may crowd out intrinsic motivation under identifiable conditions". The agent must, for example, have a high intrinsic motivation at the outset.<sup>7</sup> Crowding-out effects take place when an external intervention is perceived to be "controlling". In contrast, intrinsic motivation is increased the more strongly an external intervention implies an acknowledgement of the agent's high intrinsic motivation. Such considerations are important to take into account when designing a GP remuneration system. For if GPs perceive the payment system as (too) controlling or not acknowledging their intrinsic motivation, their work morale may decrease and that would be undesirable as GPs play a very important role in (gatekeeping) health care systems.

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<sup>7</sup> An agent has a higher intrinsic motivation to perform well the more interesting the task, the more personal relations with principals exist and the more extensive the participation possibilities in decision making are. GPs seem to satisfy these three points and it is therefore likely that they have high intrinsic motivation.

## 4 The dutch GP remuneration system and the british fundholding scheme

### 4.1 The Dutch GP remuneration system before 1 January 2006

The prices or “tariffs” that Dutch GPs receive for their provision of health services are regulated: they are set by the Dutch Healthcare Authority. The tariffs are calculated by using a simple formula. The sum of the GP’s normative practice costs and normative income are divided by workload.<sup>8</sup> Workload can be defined in different ways. It can for example be the average number of consultations in a year or the average number of registered patients of a Dutch GP.

Before a new health care system was introduced in the Netherlands on the 1st of January 2006 a distinction between private and public insurance existed<sup>9</sup>. This distinction was a factor in how GPs were reimbursed; there was a dual GP remuneration system.

People who were publicly insured could visit their GPs free of charge<sup>10</sup>; Sickness Funds paid GPs an annual amount of money per registered patient regardless of whether the patient decided to consult the GP (*capitation*). On the other hand, the privately insured had to pay per visit or consultation (fee-for-service) and could then reclaim (part of) the cost from their insurers.

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<sup>8</sup> On top of the calculated tariff post-calculations of the former year and an “economy contribution” (in Dutch: *ombuigingsbijdrage*) are added. The latter refers to the structural rebate on the tariffs that has been in place since the 1st of January 2004 as a way of economizing on health care costs.

<sup>9</sup> A proportion of 65% of the population whose income fell below a certain threshold qualified for a publicly funded Sickness Fund (Grol, 2006). The rest of the population purchased private insurance.

<sup>10</sup> Although publicly insured patients did not have to pay for general practitioner care, they did have to pay an insurance premium to their Sickness Fund.

In 2005 the maximum *capitation tariffs* GPs could charge to Sickness funds for their publicly insured patients ranged from 77 euros to 98,60 euros a year.<sup>11</sup> On top of the basic capitation tariff module tariffs (ranging from 0,20 to 9,30 euros a year per patient) could be charged when GPs satisfied certain conditions and an agreement about it was made with the patient's insurer.

To *privately insured* patients GPs could charge *fee-for-service tariffs*.<sup>12</sup> There were tariffs for every short and long (more than 20 minutes) consultation (24,80 and 49,60 euros), short and long visit (37,20 and 62,00 euros), consultation by telephone (12,40 euros), repeated prescription (12,40 euros) and vaccination (12,40). GPs who had agreements with Sickness funds on the base of which they could charge the module "practice support" for publicly insured patients could add an extra amount (module tariffs ranging from 1 to 5 euros) to these fee-for-service tariffs.

In addition, for both publicly and privately insured patients there were some extra tariffs GPs could charge (e.g. for ultrasounds, cervical smears and certain materials). And finally, for the provision of health services in the evening, night and weekend by independent GPs or GPs in primary care cooperatives a separate remuneration system was in place (CTG/ZAio, 2004a, b and c).

## **4.2 The Dutch GP remuneration system after 1 January 2006**

Since the 1st of January 2006 a new GP remuneration system has been in place. It has come about after negotiations between the Ministry of Health, Welfare and Sports (Ministerie van Volksgezondheid, Welzijn en Sport), the Dutch Association of Health Insurers (Zorgverzekeraars Nederland) and the Dutch Association of Family Doctors (Landelijke Huisartsen Vereniging) and has become known as the "Vogelaar agreement" because all parties agreed with the final proposal of independent chairwoman Ella Vogelaar.

The new GP remuneration system is a mix of capitation and fee-for-service. The negotiations have led to an agreement of a capitation tariff of 52 euros a year and a consultation tariff of 9 euros. The capitation tariff is charged in every quarter of the year (13 euros) and is higher for older patients

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<sup>11</sup> The capitation tariff was higher when a patient was 65 years or older and/or living in a deprived neighbourhood. This mitigated the risk of cream skimming as such patients, on average, represent higher health care costs.

<sup>12</sup> Small surgical operations and the reading and production of ECGs were (and are still) included in the general fee-for-service tariffs.

(between 65-75 and over 75 years old) and for patients living in deprived neighbourhoods.<sup>13</sup> Moreover, when a GP delivers his declarations digitally 25 cents can be added to the tariff.

In addition to the basic capitation fees three modules that take care of extra compensation were established and can only be charged if there is an agreement with the relevant insurer: "Population background related compensation" (maximum of 1,50 euros per patient), "Practice support GPs" (maximum of 1,50 euros per patient) and "Modernization and innovation". The latter is intended for the realization of the policy agenda made by the Ministry of Health, Welfare and Sports, the Dutch Association of Health Insurers and the Dutch Association of Family Doctors.<sup>14</sup>

In addition, fee-for-service tariffs are in place for every short and long consultation (9 and 18 euros), short and long visit (13,50 and 22,50 euros), consultation by telephone (4,50 euros), repeated prescription (4,50 euros), vaccination (4,50 euros) and consultation by e-mail (4,50 euros). Similar to the old remuneration system there are some extra tariffs GPs can charge (e.g. for cervical smears, the provision of prenatal, natal and postnatal care and certain materials used in practice). The separate remuneration system for the provision of health services in the evening, night and weekend has only changed slightly: compared to 2005 the tariffs have increased a bit (CTG/ZAio, 2005).

### 4.3 The British GP fundholding scheme

While the NHS reforms in the UK in April 1991<sup>15</sup> offered health care providers the opportunity to become self-governing trusts, British GPs could choose to become fundholders. When a GP was allowed to become a fundholder he received a budget, calculated on the basis of historical activity, with which to purchase health services for his patients and cover

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<sup>13</sup> Thus, the highest capitation tariff of 17,45 euros per quarter is for patients who are over 75 years of age and living in a deprived neighbourhood.

<sup>14</sup> It can for example be used to stimulate cooperation between GPs and other primary care providers, to further develop the programme approach of chronic diseases, for quality improvement of general practice care, for the finance of other initiatives that increase the efficiency of general practice or for patients that live in areas that are difficult to access.

<sup>15</sup> The underlying principle of the (Thatcher) reforms was the establishment of an "internal market" through the "purchaser-provider split". The latter drew a distinction between those who provided health care and those who purchased it. Providers (e.g. hospitals) no longer received monies as of right but had to compete with other providers to obtain contracts from purchasers (i.e. the District Health Authorities and fundholding GPs).

prescribing, staffing and management costs. The budget was determined by the Regional Health Authority and was adjusted for age, sex and mortality of the patient population (Brennan et al., 2000). There were several reasons why GP fundholding was thought to be efficient. First of all, it would make GPs responsible for the financial cost of their health care decisions. A second reasoning was that GPs were thought to be more efficient purchasers than third party purchasers because of their informational advantages. Because GPs have close and long-term relationships with their patients they would have detailed knowledge about their patients' needs. Moreover, they would know where waiting lists were shortest, how efficient hospitals were at sending them test or other results, and in hearing first hand about the experiences of the patient (Greengross et al., 1999).

The services fundholding GPs bought from their budgets amounted to approximately one quarter of the total hospital and community health care costs of their patients (Coulter, 1995). They included hospital outpatient services, admissions for elective surgery, diagnostic tests and investigations, community health services and paramedical services. The costs of "expensive patients"<sup>16</sup> and of accident and emergency services were born by District Health Authorities which also purchased (all) health services on behalf of non-fundholding GPs.

British fundholding GPs were allowed to retain any budget surplus that resulted from their purchasing role (but were punished if they overspend the budget<sup>17</sup>), on the condition that it was used for spending on additional services to patients or for improving the facilities in their practice (Dusheiko et al., 2004a).<sup>18</sup> If practice characteristics and/or patient satisfaction are included in the GP's utility function, fundholding can therefore raise a GP's utility.

Furthermore, it was argued that fundholders were able to raise their income by attending the scheme. First of all, there was little monitoring of the requirement to spend budget surpluses on improving services for patients. Second, because GPs owned their own practices, improvements to the practices could be translated into future income (Croxson et al., 1998). Finally, GPs could engage in "creative bookkeeping" which could take place in the following way. Without a fund, a practice had to maintain,

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<sup>16</sup> This feature is known as "stop-loss insurance". DHAs paid any costs incurred on a single patient in a year that exceeded 6000 pounds.

<sup>17</sup> Budget overspends of up to 5% were deducted from next year's budget and overspends of more than 5% could result in the withdrawal of a GP's fundholder status (Rogers, 2000).

<sup>18</sup> For example, many used their budget savings to develop new practice-based services such as physiotherapy, counseling or specialist outreach clinics which were very popular with patients (Coulter, 1995).



upgrade or replace its equipment out of the total practice income. Therefore an individual GP salary was (a partnership share of) the money left over when the costs of "Staffing, equipment and capital" had been subtracted from the total practice income. Fundholding GPs were able to charge a proportion of these costs to their budgets. Because practice income remained the same, they therefore must have received more money (Rogers, 2000).

Although there was some opposition to the fundholding scheme in the beginning, in 1995 the scheme already covered more than one third of the population (Coulter, 1995). Towards the end of the scheme approximately 50% of all GP practices had a fundholder status (Dusheiko et al., 2004a). However, the Labour Party won the elections in 1997 and a change of government took place which led to the abolishment of the GP fundholding scheme in 1999.



## 5 Do general practitioners respond to financial incentives?

### 5.1 Empirical evidence on the influence of the remuneration system on GPs' behaviour

"There is little evidence about the effect of different methods of payment on doctors' performance", Donaldson and Gerard concluded in their 1989 review article. However, since then more research has been done on the subject of the influence of remuneration systems on GPs' (or more generally, physicians') behaviour.<sup>19</sup>

Although the available literature is nuanced and not always unanimous in its conclusions, some general patterns do emerge from this literature. For example, theory predicts that GPs who are paid according to a fee-for-service system will provide a relatively high amount of health services (compared to salaried or capitated GPs). This hypothesis is confirmed by the literature as it is repeatedly found that GPs (or primary care physicians) who are paid in a fee-for-service manner do more visits and consultations and provide more diagnostic and curative services than GPs who are remunerated in a different way (see Krasnik et al., 1990; Kristiansen and Holtedahl, 1993; Gosden, Pedersen et al., 1999; Gosden, Forland et al., 2000; Hickson et al., 1987<sup>20</sup>; Ransom et al., 1996 and Boerma, 2003).

In contrast to fee-for-service, capitation payment gives GPs incentives to minimize effort (costs). One way to achieve this is by increasing the referral rate to hospital and specialists. Evidence of such practice is provided by Iversen and Lurås (2000). After a considerable capitation component had been introduced in the Norwegian GP remuneration system, referrals to privately practising specialists and outpatient clinics in hospitals increased significantly. The authors remarked that the latter could also be due to the parallel decrease in the fee-for-service component (fee-for-service gives GPs an incentive to maximize the quantity of health services provided by themselves and to be reluctant in referring patients to specialists).

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<sup>19</sup> As the remuneration system is not the only factor that influences a GP's output (e.g. the number of consultations or the amount of services provided), good methodological studies take such factors into account. The research papers that will be mentioned in this section all tried to control, to a higher or lesser degree, for the effects of GP and patient characteristics on outcome.

<sup>20</sup> Hickson et al. (1987) is not an empirical but an experimental study.

Indeed, Krasnik et al. (1990) found that an increase in the fee-for-service component in the remuneration system of GPs in Copenhagen led to a significant decline in the rates of referrals to hospitals and specialists. The empirical literature also provides some support for salaried GPs' "effort minimizing incentive"; it has been found that these GPs have a lower level of activity (e.g. consultations, visits, ordering of tests) than GPs paid by fee-for-service or (even) capitation (see Gosden, Pedersen et al., 1999 and Hickson et al., 1989). Hughes and Yule (1992) have shown that the introduction of target payment with respect to cervical cytology (and vaccinations) in the UK in 1990 led to a dramatic rise of close to 50% in smear tests performed per GP.

In addition several studies have found some support for the target income hypothesis (see Rice, 1983; Krasnik et al., 1990 and Baker et al., 1994). That is, a GP does not maximize income, rather he tries to maintain a target income. For example, when fees for certain services were lowered or frozen GPs consequently increased the quantity of these services provided, most probably to maintain their target income.

Finally, some studies have shown that GPs respond clearly to financial incentives once there has been a change in the remuneration system (see Krasnik et al., 1990 and Iversen and Lurås, 2000). It is possible that such changes are associated with attention in the media and that GPs as a result become more aware of the way in which they receive income and subsequently respond more strongly to financial incentives. This would also explain why one British study (Hughes and Yule, 1992) was not able to find effects of changes in the level of per-item fees over time on the level of services provided.

While some broad patterns have emerged from the empirical literature, still, however, the picture is not totally clear: there remain some contradictory (and insignificant) results. For example, while some studies have concluded that fee-for-service GPs provide longer consultations than salaried GPs (Kristiansen and Mooney, 1993b, reviewed studies in Gosden et al., 1999), another found that salaried GPs provide relatively shorter consultations (Gosden et al., 2003)<sup>21</sup>. Similarly, while the majority of reviewed studies observed that fee-for-service leads to a higher level of GP activity, Hughes and Yule (1992) were not able to find a significant effect of changing per-item fees over time on the levels of services provided.

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<sup>21</sup> The results Gosden et al. (2003) have found are, however, small and statistically insignificant.

The simplest explanation for such unexpected or insignificant results is that GPs value their patients' health status as the most important factor in making decisions and as a consequence the provision of health services is more related to, for example, patient demand than to financial incentives.<sup>22</sup> It is also possible that the methodology of some studies does not adequately control for other factors influencing GP's decision making after all. It would also be plausible to assume that some GPs are more responsive to financial incentives than others, as GPs differ at the individual level, between countries and over time. Finally, some GPs might not even react to financial incentives at all, for example because they feel constrained by ethical considerations.

Despite such uncertainty, on the whole the empirical literature has given a strong indication that GPs are sensitive to financial incentives and respond to them. Although it is not clear to what extent these empirical results can be extrapolated to the Dutch situation, we do have to take such considerations into account when designing a GP remuneration system.

## 5.2 Empirical evidence on the influence of the British fundholding scheme on GPs' behaviour

This section will summarize the findings of studies that have investigated the effects of fundholding on GPs' *referral and prescribing behaviour*. Because fundholding GPs, in contrast to non-fundholding GPs, felt the financial consequences of their decision making part of the expectation was that, *ceteris paribus*, fundholding GPs would prescribe and refer less than non-fundholding GPs. Moreover, for fundholding GPs a *decline in prescription costs and the number of referrals* with regard to the previous year (in which they were not yet fundholders and thus not subject to budgetary incentives) was expected.

A good methodological study recognizes that fundholders may differ from non-fundholders in other ways than fundholder status (selection bias problem) and that simply comparing fundholders' behaviour with that of non-fundholders will not adequately capture the impact of the fundholding scheme. The outcomes of GPs' behaviour are also influenced by GP, practice and patient characteristics (e.g. a healthier patient population needs less health care) and it is possible that these differed between the two groups. Empirical studies should control for such differences.

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<sup>22</sup> This has been argued by (amongst others): Hughes and Yule (1992), Kristiansen and Mooney (1993) and Grignon et al. (2002).

### **5.2.1 Is GP fundholding associated with a (relatively) lower number of referrals?**

A part of the literature has concluded that fundholding had not changed referral behaviour, either because the absolute number of referrals by fundholding GPs had not declined (Coulter and Bradlow, 1993) or because of the finding that fundholders seemed to be insensitive to differences in providers' prices (Spoor and Munro, 2003).<sup>23</sup> In addition, no evidence was found of GPs substituting emergency admissions not covered by the scheme for expensive elective care (see Croxson et al., 1998 and Dusheiko et al., 2004a).

The majority of studies, however, have indicated that GPs did respond to budgetary incentives.

For example, it was found that some GPs had tried to game the system by deliberately increasing the number of referrals in the preparatory year in order to get a larger budget and make savings more easily (see Surender et al., 1995 and Croxson et al., 1998).

Furthermore, while decreases in fundholders' referral rates were not always found (Surender et al., 1995 and some studies mentioned in the review of Gosden and Torgerson (1997) did find such effect), increases in referral rates were frequently bigger for non-fundholders than for fundholders (see for example Coulter and Bradlow, 1993 and Surender et al., 1995). Moreover, it has been concluded that hospital admission rates had declined because of the fundholding scheme (Dusheiko et al., 2004a and Croxson et al., 1998) and that being a patient of a fundholder lowered the chance of admission in hospital with one third (Gravelle et al., 2000). As admission rates originate from GPs' referrals, this also presents some evidence of fundholding having a negative effect on the number of referrals.

With regard to methodological quality the results of Croxson et al. (1998), Gravelle et al. (2000) and Dusheiko (2004a) are probably most reliable as all three studies have (adequately) controlled for differences in GP and patient characteristics between fundholding and non-fundholding practices and have also used large datasets. As these studies have shown that fundholding was negatively related to admission rates, there is enough evidence to support the supposition that fundholding GPs tried harder to contain the number of referrals than non-fundholding GPs.

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<sup>23</sup> Spoor and Munro (2003) have concluded that fundholding practices did not refer more often to low-priced providers than non-fundholding practices.

### 5.2.2 Is GP fundholding associated with (relatively) lower drug prescription costs?

Similar to whether fundholding has lowered the number of referrals, there is also some discord in the literature on whether fundholding has led to a lower *level* of prescription costs. Some studies have found that fundholders' prescribing costs (per patient or prescribing unit) were indeed lower than those of non-fundholders (see Audit Commission, 1994; Dowell et al., 1995; Harris and Scrivener, 1996; Wilson, Hatcher et al., 1996 and Whynes et al., 1997), while other studies have observed the opposite (see Burr et al., 1992; Wilson, Buchan et al., 1995 and Stewart-Brown et al., 1995). There seems to be more agreement on the belief that fundholding has reduced the *increase* in prescription costs; repeatedly it was found that prescribing costs had risen for both groups but to a larger extent for non-fundholders than for fundholders (see Bradlow and Coulter, 1993; Audit Commission, 1994; Wilson, Buchan et al., 1995; Whynes et al., 1995; Wilson, Hatcher et al., 1996; Harris and Scrivener, 1996 and Gosden and Torgerson, 1997) Another result that is ever-recurring in the literature is the tendency of fundholders to have a higher generic prescription rate or to increase their generic prescription rate more than non-fundholders (see Bradlow and Coulter, 1993; Stewart-Brown et al., 1995; Wilson, Buchan et al., 1995; Whynes et al., 1997 and Burr et al., 1992). This substitution of expensive medicine for less costly versions by fundholding GPs is probably one of the reasons why the literature has found that fundholders' prescribing costs have risen more slowly than those of non-fundholders. Opposite to expectations no evidence has been found of GPs deliberately inflating their prescribing costs prior to fundholding (see Wilson, Buchan et al., 1995; Harris and Scrivener, 1996; Healey and Reid, 1994 and Dowell et al., 1995). Finally, some studies found that the disciplining impact of fundholding on GPs' prescribing behaviour was most apparent in the first year of the scheme and tended to disappear or wither away in subsequent years (Stewart-Brown et al., 1995 and Harris and Scrivener, 1996). Again some studies are of higher (methodological) quality than others. Wilson, Hatcher et al. (1996) and Whynes et al. (1997) did take differences in practice and patient characteristics into account as well as Bradlow and Coulter (1993) and Stewart-Brown et al. (1995) (but their results rely on small samples of fundholding and non-fundholding practices). All these studies found a (small) negative effect of fundholding on the level or increase in fundholders' prescribing costs compared to non-fundholding practices. This suggests that British GPs have reacted to some extent to the "financial prescribing incentives" embedded in the fundholding scheme.





## 6 The design of a GP remuneration system

The preceding section has shown that there are quite a few indications that GPs are sensitive to financial incentives. Consequently the design of the GP remuneration system is important, as it can influence the amount and type of health services provided.

This section will argue what an optimal GP remuneration system should look like and to what extent the Dutch remuneration system resembles this. In addition, we will consider whether Dutch GPs should be exposed to budgetary incentives similar to the GPs in the British GP fundholding scheme (1991-1999).

### 6.1 Objectives

A good GP remuneration system should stimulate a GP to maximize patients' health at lowest possible cost. Mariñoso and Jelovac (2003) describe this as the "cost containment/quality achievement objective" which is widely recognized as one of the main objectives for any health system. Furthermore, Brennan et al. (2000) argue: "An obvious objective of a financing system of primary health care is that it provides an incentive for care to be carried out in the most cost-effective setting (...)". In other words: because hospital/specialist care is often more expensive than general practitioner care the remuneration system should motivate a GP to treat, whenever this is possible, the patient by himself and to only refer a patient to a hospital or specialist when he is not able to resolve the patient's health problem.

Finally, a remuneration system should stimulate equity. Primary care should be available to everyone and it should therefore be made sure that the payment system does not provide incentives to the GP to exclude certain (groups of) people from his practice.

Summarizing, a "good" GP remuneration system should satisfy a triplet of goals: efficiency, quality and equity.

In order to reach these goals the "goal hierarchy for contract design" developed by Bogetoft and Olesen (2004) can be applied. This goal hierarchy provides a practical way of designing a contract (see appendix). The overall goal of a contract, which can be defined as maximizing integrated profit (i.e. maximizing the sum of profits of all the contracting parties) or, in our case, maximizing consumer welfare, can be attained when the contract satisfies the three goals of coordination, motivation and transaction costs. In the case of health care, this is accomplished when the

question "Do all consumers receive the right quantity of the right quality at the right time and place and at lowest possible cost?" is answered in the affirmative.<sup>24</sup>

*Box 2 Three goals for contract design: the case of general practitioners*

- *Coordination*

Coordination of production can be achieved in several ways, for example by hierarchical planning or by the market approach. In the Netherlands, production of health care is coordinated by contracting the GP as the gatekeeper of the health care system. As GPs are endowed with a high degree of medical knowledge they are more able to judge what kind of health care is appropriate than people themselves. Letting GPs act as filters to secondary care therefore makes sure that production, in this case the provision of health services, is coordinated in the right way. A good remuneration system should support or at least not impair this important function.

*Coordination of risk* is achieved in two ways: *risk sharing* must take place in such a way that makes the total cost of risk bearing (the risk premium) as low as possible. This requires that the least risk averse party carries most of the risk (although incentives will then decrease). Secondly, there should be *minimization of total risk*. Both these aspects will be taken into account in section 5.2.

- *Motivation*

The contract must motivate parties to make decisions which maximize consumer welfare. In the first place, the parties must be willing to sign the contract (*participation*). This means that the contract must offer GPs at least as much utility as their best outside option (*individual rationality constraint*). In addition, the contract should stimulate GPs to provide effort in the right way. The GP has *multiple tasks* as he must provide both volume and quality. The remuneration system must provide incentives to provide both.

- *Transaction costs*

An efficient contract should minimize transaction costs: the costs of planning, monitoring and motivating production. One way to reduce the transaction costs associated with *entering a contract* is by using a standard contract for all providers. This can also be done for GPs and is actually done in the case of Dutch GPs because the Dutch Healthcare Authority

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<sup>24</sup> Notice that the three objectives efficiency, quality and equity are embedded in this question and thus in the goal hierarchy of Bogetoft and Olesen (2004).

(NZa) sets up one contract which holds for all GPs. If the Dutch Healthcare Authority would abandon this regulation, transactions costs would be much higher as all GPs and health insurers would then have to negotiate contracts with each other.

*Monitoring costs* may differ between different remuneration systems. Fee-for-service, for example might require more monitoring of GPs' actions than salary or capitation as this system gives GPs an incentive to declare production to insurance companies that has not taken place.

*Influence costs* arise when one party tries to increase his utility by influencing the decisions made by another party. In the case of Dutch GP remuneration, influence costs arise from the Dutch Association of Family Doctors (LHV) and the Dutch Association of Health Insurers (ZN) trying to influence the Dutch Healthcare Authority (NZa) in designing a system and setting tariffs. These costs will not differ much between different remuneration systems as they arise whenever a new system or tariff is developed. However, these costs can be minimized by laying down the remuneration system for a fixed number of years and adjusting the height of the tariffs according to an inflation indicator.

## 6.2 GP remuneration: a special case

By determining a remuneration system for GPs (the agent) government acts as a delegated principal of patients. In principal-agent contracts, incentives to the agent are often provided by (partly) relating the agent's payment to some output variable which is related to the principal's objective and on which the agent's effort is of great influence.

Ideally, we would like a GP to maximize his patients' health at lowest possible cost and to reward him whenever he achieves this. As Scott (2005) puts it: "A "fee-per-health improvement" would be the ideal payment system. However, in many cases it is very hard to verify whether a patient's health has actually improved (or at least has not deteriorated) and whether or not treatment has occurred at lowest possible cost. Moreover, even if such health improvements could be measured, it would be hard to attribute these to the GP's actions for there are many other factors that influence a person's health. In this case, risk averse GPs would also require a high risk premium in order to compensate them for the resulting randomness in income.

On the other hand, there are some outcome measures of GPs' behaviour which are quantifiable: for example the number of consultations, visits or tests taken. However, using such information as outcome measures also tends to create a problem. In contrast to many other principal-agent situations where more output is always desirable from the principal's point

of view (e.g. selling more cars, picking more fruit), this does not hold for GPs' actions. It is not always better for a GP to do more consultations and visits and to take more tests. If the marginal benefit of an extra consultation, visit or test does not outweigh its marginal costs, providing such a service is inefficient. However, if we relate the GP's payment to such outcome measures, this inefficient "production" will most likely occur as the GP has an incentive to expand the number of services (output) even when that is inefficient. Another disadvantage of linking payment to output measures such as consultations or visits, is that this might come at the expense of quality. While both quality and volume of the GP's services are important, the GP is only rewarded for the volume of services provided. Theory predicts that in such a "multitasking situation" effort will be directed towards the task that receives the highest reward, in this case volume.

These problems show that setting a GP remuneration system is different from many other contract setting problems. In contrast to other situations application of contract theory as described in, for example, Milgrom and Roberts (1992) is therefore more difficult in the case of GP remuneration. Because setting an ideal contract which motivates the GP to only undertake socially efficient behaviour is impossible and because providing financial incentives by using other payment methods is imperfect as it gives rise to undesirable side effects, we argue that we should actually design a remuneration system which balances/neutralizes financial incentives. In this way GPs are exposed to a minimal amount of perverse incentives and will devote more attention to the care and cure of their patients. Limiting GPs' exposure to extreme incentives (which are present in a pure capitation or fee-for-service scheme) also limits the risk of erosion of GPs' intrinsic motivation. And finally, balancing incentives might improve the GP-patient relationship, as patients will probably trust their GP to a greater extent if they know that the doctor's decision-making is not (or only to a limited scale) influenced by financial incentives. In the next section we will argue that such a balance of financial incentives is best achieved in a mixed remuneration system of capitation and fee-for-service.

### **6.3 A "good" remuneration system is mixed**

A mixed system of capitation and fee-for-service can achieve a balance of financial incentives since the perverse incentives that arise from a pure capitation system are mitigated by the incentives the fee-for-service part generates, and vice versa.

An advantage of capitation reimbursement is that it is associated with a list system, which allows valuable long-term relationships between the GP and

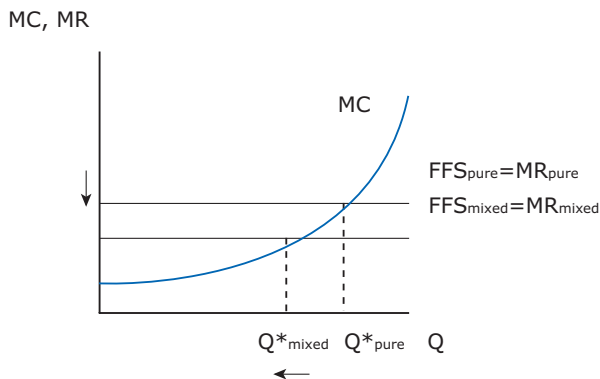
patient to be developed. Moreover, given that the practice size is fixed in the short run, the GP actually receives a fixed budget which provides an incentive to minimize costs and therefore contributes to efficient decision making. However, capitation also possesses less desirable incentives. Because the GP is assured of his income in advance, there is an incentive to minimize effort. This can be done in several ways. The GP could for example try to see his patients as little as possible (thus limiting the number of consultations and visits) or refer them more often to hospital or specialist (even when it is not necessary).

It are just these perverse incentives that can be mitigated by introducing a supplemental fee-for-service part in the remuneration system. Because fee-for-service rewards the GP with a fixed amount per consultation and visit, he will have less incentive to minimize his effort than in a pure capitation system in which consultations and visits are not separately rewarded.

Similarly, introducing a capitation part in a fee-for-service remuneration system can mitigate the perverse incentives that fee-for-service generates. Because fee-for-service remunerates the GP with a fee for every unit of output, the GP has an incentive to expand his production until the fee no longer outweighs his marginal cost of output. In contrast to a fee-for-service system consider now the situation in which part of the GP's income is paid by means of capitation. This allows the fee to be lowered and will motivate the GP to expand his production to a lesser extent.

This is illustrated in figure 1 below.<sup>25</sup>

Figure 1 Lowering the fee leads to less output



The intuition is that the fee and thus the GP's marginal revenue is lower in a mixed remuneration system as part of the income is captured by capitation payments. Moreover, the capitation part itself also gives an incentive to not overproduce.

To satisfy the goal of equity it is important that the capitation payment is corrected for differences in patients' health and background. Otherwise cream skimming would become attractive with the consequence that people who need health care the most would have difficulties in finding access to GPs' services. Unfortunately the adjustment of the capitation payment will never be perfect. Here the fee-for-service part of the remuneration system comes in very useful: in addition to adjusted capitation payment it discourages cream skimming (to a certain extent) as the GP receives more fees for patients who make an appeal to the GP more often.

The mixed system of capitation and fee-for-service and the adjustment of capitation payments is also beneficial as it minimizes the GP's financial risk of treatment. This is good for if the GP carries a high financial risk of

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<sup>25</sup> The upwards sloping line represents the GP's marginal cost function. It is plausible to assume that the GP's marginal costs stay rather constant in the beginning and begin to rise after the GP has already produced some output (e.g. consultations, visits). For after reaching a certain threshold of output the GP will realize that extra production will come at the expense of his leisure time. As a consequence marginal costs will increase.

treatment (e.g. when he receives unadjusted capitation payments), it would probably harm the coordinating gatekeeper function as he would have an incentive to refer more often to hospital/specialist in order to avoid costs. Furthermore, minimizing the GP's financial risk reduces the costs of risk bearing (see box 2). While both GPs and health insurance companies are risk averse, it is probably cheaper to put more financial risk on insurance companies as they are more able to deal with this risk. First of all, health insurers can diversify the risk much better as they have a much higher number of clients than GPs have patients. In addition, health insurers that have a relatively high number of "high-risk" patients" due to the acceptance obligation for Dutch base insurance, are compensated out of a "risk equalization fund" for this extra risk.

The international literature has also recognized that a mixed payment system for health care providers is beneficial in balancing financial incentives (see for example Scott, 2005; Robinson, 2001; Lurås, 2004; Mariñoso and Jelovac, 2001 and Eggleston, 2005). Furthermore, the economic literature on incentive contracting outside medicine highlights methods of payment that blend elements of prospective and retrospective payment (such as base salary with performance bonuses or the two-part structure of contracts between firms).

## 6.4 Evaluation of the Dutch GP remuneration system

The change to a mixed GP remuneration system (of capitation and fee-for-service) on the 1<sup>st</sup> of January 2006 has been a positive one since GPs are now no longer subject to the potentially perverse incentives the former pure systems of capitation and fee-for-service provided. Hence, in terms of incentives, the Dutch GP remuneration is currently of the most desirable type. What remains a question is what the division of income between capitation and fee-for-service should be. Based on theory, the more we move to fee-for-service the higher the risk of *overproduction* but the stronger the GP's gatekeeper function. On the other hand, the more we move to capitation the higher the risk of *underproduction* and the weaker the GP's gatekeeper function.

Perhaps the biggest part of GP's income should consist of adjusted capitation payments. First of all, it would be fair to say that it is more likely that a GP will overproduce than underproduce, as GPs have ethical feelings and will realize that denying patients health services might harm them while this probably does not hold for an extra initiated consultation. Secondly, while in theory capitation might give the GP an incentive to refer to hospital or specialists more often, Dutch GPs have a history of relatively low referral rates (see Cardol et al., 2004) and a high compliance with

referral guidelines (see section 3.2). Therefore an increase in the number of unnecessary referrals, when a larger part of GP's income is made up from capitation, will most likely be negligible. In the current Dutch GP remuneration system capitation indeed makes up the largest part of GP's income.<sup>26</sup>

Research on the effect of the former dual Dutch GP remuneration system (of capitation for publicly insured patients and fee-for-service for privately insured patients) on differences in health care provision to these two groups, would also be helpful in deciding on the optimal mix of capitation and fee-for-service. While there are separate data available for publicly and privately insured patients on the amount of health services provided (consultations, visits) and the number of referrals made by GPs, it is striking that no research has yet been done which filters out the effect of the remuneration system. This would provide valuable information as it would show how *Dutch* GPs react to the different financial incentives of a capitation and fee-for-service system. Such information could then be taken into account when deciding on the optimal capitation and fee-for-service mix.

What is remarkable about the current Dutch GP remuneration system is that a lot of effort has been made to protect GPs against risk. For example, Dutch GPs receive higher capitation payments for older patients and patients from deprived areas<sup>27</sup>, can get extra fees for special services which cost extra money (e.g. laboratory costs, vaccines, ultrasound scans, cervical smears etcetera) and higher fees (than the basic consultation and visit fees) for the provision of incidental care to non-registered patients not living in the GP's place of residence and the provision of care during evening, night and weekend. Because GPs have had some influence on the contents of the new remuneration system (the Dutch Association of Family Doctors (LHV) has taken part in the negotiations about a new system), these features point out that Dutch GPs are quite risk averse and have probably claimed for tariffs that compensate them for extra costs. However, most of these tariffs make sense as they stimulate the GP to carry out certain health services (e.g. cervical smears) or prevent the GP from not carrying out certain activities (e.g. laboratory work, ultrasound scans). So in addition to a general consultation/visit tariff supplementary fee-for-service tariffs can be used to stimulate GPs to perform certain services.

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<sup>26</sup> A Dutch GP's average capitation income is € 122200 (2350 times € 52) and his average fee-for-service income is € 74664 (8296 times € 9). Extra fees from special activities are not included in the average fee-for-service income (see chapter 3).

<sup>27</sup> On the condition that an agreement has been made with the patient's insurer.



In particular, they should be used to reward GPs who initiate actions to keep the provision of health services in practice and who consequently burden hospitals and medical specialist much less (e.g. carrying out ultrasound scans). In the current Dutch GP remuneration system such initiatives are also rewarded by means of the module Modernization and Innovation (see section 4.2).

In contrast, additional fee-for-service tariffs should not be used to reward GPs for additional services almost every GP carries out. As the rewards of such services are already included in the general capitation or fee-for-service tariff GPs would, in effect, be rewarded twice and this would result in unnecessary health care costs.

Instead of rewarding GPs with extra fees for the provision of particular health services, the use of protocols/guidelines in which the activities GPs undertake are documented, could be encouraged.

## 6.5 Should we give budgets to Dutch GPs?

Budget or fundholding mainly interferes with the goals of coordination of production and coordination of risk a contract should satisfy (see box 2 and the appendix). By making GPs responsible for the purchase of secondary care and medicine and allowing them to retain surpluses, they *share* in the risk bearing of financial treatments by health authorities/insurers. As a result, the *coordination of production* can be improved as GPs would feel encouraged to shop around for high quality secondary care at low cost and health care providers would have to compete with each other to find the favour with GPs.

In this section we will discuss whether it is desirable to introduce such budgetary incentives with respect to secondary care and medicine for Dutch GPs.

### 6.5.1 A budget for secondary care?

While giving budgets to GPs with which they have to buy secondary care has the potential of increasing the efficiency of the health care system, there are several reasons why we should not introduce such a scheme for Dutch GPs.

- A budget with which to buy secondary care will expose GPs to the financial risk of treatment. However, because Dutch GPs are quite risk averse, in order for them to accept a budget holding contract a high risk premium will have to be paid. As a consequence, giving GPs incentives by means of a budget will be (very) expensive. As was explained earlier, exposing insurance companies to the financial risk of treatment is probably much cheaper.

- The Dutch situation is different from the British one. In the United Kingdom secondary care was, at that time, purchased by government agencies ((district) health authorities) whose only clear financial incentive was to not overspend the budget received from the government (too much). On the other hand, in the Netherlands secondary care is purchased by competing health insurance companies who have much stronger incentives to buy health care of high quality and low cost since otherwise they would lose clients and profits. Therefore GP fundholding was understandable in the British case but is unnecessary for Dutch GPs as health insurers already face strong incentives to buy secondary care of a high quality-cost ratio.
- Giving budgets to GPs with which to buy secondary care might impair the relationship of trust between GP and patient. A budget holding GP would have an incentive to refer less patients since this would lead to higher accumulated savings. As a consequence patients might become distrustful as they would wonder whether their GPs were really doing everything in their power to help them. Dusheiko et al. (2004b) have found, after controlling for observable patient and practice level characteristics and allowing for selection bias, that GP fundholding in the United Kingdom was indeed associated with lower patient satisfaction.
- As (Dutch) health care providers have considerable market power, a single GP would face high prices when contracting with hospitals for the provision of hospital care. To obtain an appropriate bargaining position GPs would probably organize themselves as a collective who would then negotiate with health care providers. However, it would be better if GPs spend the time and energy devoted to the organization of such a collective to the care and cure of their patients, and leave the purchase of secondary care to parties (such as health insurers) that have already obtained a strong bargaining position and have experience with negotiating.
- GPs might perceive budget or fundholding as too controlling, as its ultimate goal is to control health care costs, and not acknowledging their intrinsic motivation. In this case the extrinsic incentives budget holding generates crowd out the GP's intrinsic motivation.
- The positive effects of budget holding are too uncertain for such a drastic scheme to be introduced. In general, the literature on the British GP fundholding scheme has shown that fundholding GPs did react to budgetary incentives; they referred less often (or increased their number of referrals at a smaller rate) than non-fundholders. However, it is not clear whether this was efficient as the consequences of this changed referral behaviour on patients' health have not been examined. Therefore we might wonder whether the introduction of budget holding scheme (for secondary care), which is often associated

with a lot of commotion and of which the positive effects are uncertain, is really worth it.

- Finally, a fundholding scheme might be in conflict with the goal of equity. For example, in the UK there was a lot of fuss about signs which indicated that a “two-tier” service was developing, with fundholders’ patients being given preferential “fast-track” access to elective hospital treatment (Hardy, 1993). Because health authorities, which purchased secondary care for non-fundholding GPs, were large buyers and tended to use lump sum payments for a total amount of activity (block contracts) and fundholding GPs tended to use cost per case reimbursement (at least in the first years of the scheme), providers (hospitals) had an incentive to admit fundholders’ patients as elective cases (Croxson et al., 1998). Though it is not sure whether such a two-tier service would develop in the Netherlands if we would introduce GP fundholding, equity is something we should take into account when considering introducing a fundholding scheme. Especially because switching GPs is not that simple.<sup>28</sup>

### 6.5.2 A budget for medicine?

In our view, giving budgets to GPs with which they have to cover their prescribing costs is not worth considering either. Many of the arguments that have been mentioned in section 5.5.1 above also hold in this case. Introducing GPs to strong financial incentives by giving them budgets for medicine would make patients distrustful, require high risk premiums, damage the GP’s intrinsic motivation and above all its effects on patients’ health would not be clear.

Moreover, there are less controversial ways to reduce GPs’ prescribing costs. It is somewhat less complicated to give GPs incentives to constrain prescribing costs than to give them incentives, which, for example, reinforce the gatekeeper function or try to limit potential overproduction of health services. That is because in the case of medicine quality differences are observable and quantifiable, whereas for other cases quality is much harder to determine (i.e. whether a referral was appropriate or whether the provision of a certain health service was relevant).

Instead of giving GPs budgets prescribing costs could for example be constrained by only reimbursing GPs if they prescribe the cheapest variant of a particular medicine. Since 1 July 2006 five Dutch health insurers (VGZ, CZ, Agis, Menzis and Univé) only reimburse doctors for the cheapest

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<sup>28</sup> The possibilities of switching are reduced as the “15 minutes rule” (see chapter 1) requires that people choose a GP who is near their place of residence. Switching is also not that easy because it would involve giving up the long-term relationship of trust with the GP. Finally, it is possible that a GP has no time for an extra patient.

heartburn drugs (antacids) and cholesterol reducing drugs (statins). The more expensive versions are only reimbursed when the GP thinks it is necessary, in medical sense, to prescribe a more expensive version (De Telegraaf, 2006).

Another way of limiting GPs' prescribing costs is to stimulate the prescription of generic medicine. Generic medicine are medicine which contain the same active ingredient and have the same medical effectiveness (thus the same quality) as the more expensive patented variants, but are often much cheaper (Postbus 51, 2006). GPs could be (or are already) encouraged to prescribe more of these medicine, for example by the provision of a bonus payment every time they prescribe the generic medicine instead of the more expensive version or a target payment when they have prescribed a certain percentage of generic medicine.

To make such prescribing schemes successfully it is probably necessary to take the following into account. As it is sometimes argued that generic variants are not exactly the same as the more expensive patented versions, it should be made sure that the generic medicine is really similar to the more expensive version. When the generic medicine is really a perfect substitute of the more expensive version in terms of chemical composition, medical effectiveness and side-effects, bonus or target payment can then be given whenever a GP prescribes the cheapest version (i.e. also when he changes the patient's medicine).

When cheaper and more expensive medicine are similar in their medical effectiveness but not perfectly substitutable (e.g. because of a somewhat different chemical composition or side-effects), a bonus payment should only be given for new prescriptions. For if a patient has already been using the more expensive medicine for a considerable amount of time, then changing the patient's medicine to a non-perfect substitute might lead to incomprehension from the patient's side (e.g. switching to non-perfect substitutes requires time and effort from patients as they have to get accustomed to the new medicine and might also lead to (extra) side-effects) and therefore to an impairment of the GP-patient relationship.

These schemes probably do not entail a big role for government as health insurers, which have an incentive to reduce prescribing costs as they pay a large part of medicine bills, are already introducing such schemes themselves. On the other hand, government could have a role in setting some essential (legal) preconditions for the provision of such incentives (e.g. such as the ones that have been mentioned above) and in monitoring whether insurance companies adhere to these. It could also make sure that methods for efficient prescribing are included in GPs' protocols. In the Netherlands Dutch GPs are also helped in their prescribing practices by an electronic prescribing system (Postbus 51, 2006).

## 7 Conclusion and recommendations

The change in the Netherlands from a dual GP remuneration system of capitation and fee-for-service to a single mixed GP remuneration system on the 1<sup>st</sup> of January 2006 has been an improvement in terms of the financial incentives it provides to GPs. While the Dutch GP remuneration system is now of the desirable type (a mix of capitation and fee-for-service), it is not yet clear what is the optimal mix of capitation and fee-for-service payments.

While we argued that capitation should probably make up the largest part of a GP's income, it would be better if we had more information concerning the optimal mix. One way in which we could get more insight is by investigating the former dual system and the impact of the GP's remuneration on the differences in health provision to publicly and privately insured patients. This would show how Dutch GPs react to the different financial incentives of a capitation and fee-for-service system.

It is remarkable that such research has not yet been done and we recommend that it should take place in the future. To acquire more information of the functioning of a mixed GP remuneration system it is also important that the new Dutch GP remuneration system is monitored. The Dutch Healthcare Authority has indeed received such a request from the Ministry of Health, Welfare and Sports.

In addition to the recommendation of a mixed GP remuneration system of capitation and fee-for-service, we argued that extra fee-for-service tariffs could be used to stimulate GPs to take certain (preventive) actions (e.g. cervical smears) or to reward GPs who initiate actions to keep the provision of certain health services in practice (instead of in hospital).

Extra fee-for-service tariffs should not be used to separately reward GPs for health services almost every GP carries out. As the rewards for such services are already included in the general capitation or fee-for-service tariff GPs would, in effect, be rewarded twice which would result in unnecessary health care costs.

Furthermore, we rejected the option of giving Dutch GPs budgets with which to manage the purchase of secondary care and medicine.

This policy paper thus suggests that exposing GPs to *strong* financial incentives is probably not the right way to attain the most desirable behaviour of GPs.<sup>29</sup> Therefore, future research should try to investigate whether other factors (such as clinical guidelines and medical ethics) are better in achieving optimal GP performance and whether the influence of those factors on GPs' behaviour could be strengthened. As Dutch GPs adhere quite strongly to protocols there is some potential in reinforcing guidelines as a way of eliciting desired GP behaviour. In carrying out such research interviews with a representative sample of Dutch GPs would probably be helpful.

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<sup>29</sup> We have argued that ideal financial incentives which reward GPs for efficient health improvements are not possible and that pure remuneration systems expose the GPs to perverse financial incentives. Consequently the optimal GP remuneration system is mixed; financial incentives are kept in balance and the GP is exposed to a minimal number of perverse incentives. Furthermore, we rejected budgets as a form of exposing GPs to strong financial incentives.

## Appendix

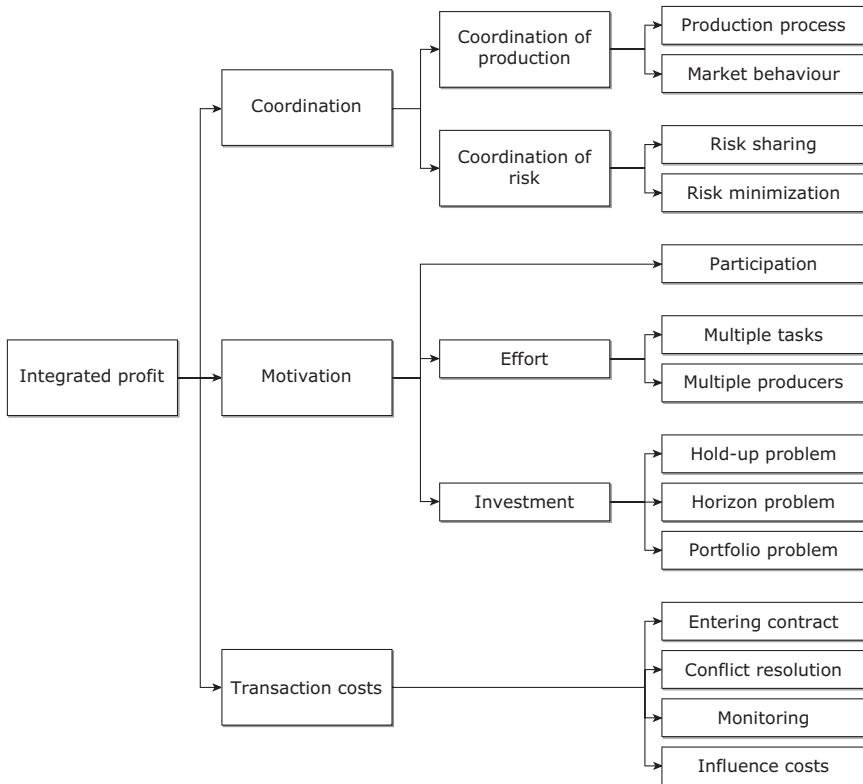
Table I: Summary of (potential) incentives associated with different GP remuneration systems and GP fundholding

System	contains incentives to
<b>capitation</b>	<p>minimize costs and effort by</p> <ul style="list-style-type: none"> <li>- withholding care</li> <li>- seeing patients as little and as shortly as possible</li> <li>- referring to specialists more often</li> <li>- selecting low-risk patients (cream skimming)</li> </ul> <p>provide preventive care and long-term curative care</p> <p>expand the list of patients</p>
<b>fee-for-service</b>	<p>maximize output (consultations, visits, treatments) by:</p> <ul style="list-style-type: none"> <li>- inducing demand (SID)</li> <li>- attracting additional patients (e.g. by increasing quality)</li> <li>- working longer hours</li> <li>- concentrating on fee-paying services only</li> <li>- minimizing consultation times (€decrease in quality?)</li> <li>- being reluctant in referring to specialists</li> <li>- declare procedures not carried out</li> <li>- "upcoding"</li> </ul> <p>contain costs per unit</p> <p>manage time efficiently (€increase in productivity)</p>

<p><b>salary</b></p>	<p>no incentive(s)</p> <ul style="list-style-type: none"> <li>- for deliberate cost-generating behaviour</li> <li>- to contain costs</li> <li>- to attract patients</li> <li>- to be sensitive to the patient's needs</li> </ul> <p>minimize effort by</p> <ul style="list-style-type: none"> <li>- selecting low-risk patients (cream skimming)</li> <li>- shortening the length of consultations and visits</li> <li>- limiting the number of consultations and visits</li> <li>- referring to specialists more often</li> <li>- producing a limited amount of information about the content of care</li> <li>- slowing down the pace of work</li> </ul> <p>work overtime hours if overtime payments are available</p>
<p><b>target</b></p>	<p>minimize costs</p> <p>only provide the target level of care (not more)</p> <p>not put in effort to achieve the target if it is very unlikely that the target will be met</p>
<p><b>budget</b></p>	<p>shop around for cost-effective care</p> <p>maximize provision of medical care at practice</p> <p>delay referrals of patients to specialists</p> <p>increase activity in the year that acts as the base for the size of the budget</p> <p>select low-risk patients (cream skimming)</p> <p>substitute chargeable services for non-chargeable services</p> <p>contract themselves as providers of health services</p> <p>join the scheme if exogenous decline in activity is expected</p> <p>reduce activity when budget scheme will be abolished and accumulated budget surpluses can be contained</p>



Figure 2: Hierarchy of goals for contract design (Source: Bogetoft and Olesen, 2004)





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