



**NEW ZEALAND INSTITUTE FOR THE STUDY
OF COMPETITION AND REGULATION INC.**

Contractual Pitfalls in Capitated Primary Health Care: Sharing Random Demand Risk in New Zealand's Strategy

May 2007

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***Acknowledgement:** The author wishes to acknowledge the helpful comments provided by Lewis Evans, the support of Glenn Boyle and the New Zealand Institute for the Study of Competition and Regulation, whilst undertaking research into New Zealand primary health care markets and the Deane Endowment Trust for financial support during the preparation of this paper. Any errors or omissions remain the responsibility of the author.*

Abstract

This paper uses the literature on the likely outcomes of the use of capitation contracts in primary health care to critique the arrangements in the New Zealand Primary Health Care Strategy (NZPHCS) introduced in 2002. The New Zealand arrangements provide significant challenges to achieving the desired goals of increased equity in the allocation of available resources according to health need, behavioural changes towards more collaborative models of care delivery and an increased focus upon prevention and patient wellness instead of instances of illness. The single capitation instrument chosen to deliver the objectives is unusual in that the capitation funder does not meet the full costs of the commissioned care, the independent, private sector practitioners receiving capitation payments are able to charge the patient for any costs not met by the funder, and the capitation incentive becomes increasingly sharp over time as the funder selectively prioritises different population groups to receive greater proportions of its subsidies.

The discussion concludes that the NZPHCS use of capitation is unlikely to be helpful in achieving the desired objectives, but is far more likely to lead to substantial increases in the cost of care relative to the previous system, and distortions in sector interactions that will result in distributional outcomes diametrically opposed to the articulated objectives. If the desired behavioural changes amongst practitioners do occur, this is far more likely to be as a consequence of non-price mechanisms in the NZPHCS than financial incentives.

Introduction

“There are many mechanisms for paying physicians; some are good and some are bad. The three worst are fee-for-service, capitation and salary”. (Robinson, 2001:149)

Recent years have seen the emergence of many health care policies employing risk-sharing tools aimed at aligning the activities of service providers with the objectives of purchasers and funders. An example is managed care, where responsibility for managing all aspects of the financing and delivery of health care for a defined set of patients is assigned to specific care management entities (Robinson, 2004; Rivers and Tsai, 2003). Whilst managed care models involve the use of many non-price elements (e.g. utilisation review), a common characteristic is some element of financial risk-sharing (‘supply-side cost-sharing’ – Ellis and McGuire, 1986).

The agency theory rationale for supply-side cost-sharing is that by contractually linking the care manager’s financial returns to a proxy for the achievement of some desired characteristics, or by decoupling financial returns from undesirable characteristics, the desired activities will be pursued and the undesirable ones eschewed. Effort exerted by the practitioner, which is unobserved and unobservable by the policy-maker or insurance purchaser setting the contract terms, will be redirected towards the pursuit of desirable, rather than undesirable, activities (Holmstrom and Milgrom, 1991; Robinson, 2001). Commonly-used supply side cost-sharing contracts are price-and-volume, partial and full capitation (Danzon, 1997).

In a partial capitation contract, the remunerated party’s income comprises a fixed component f and a variable component v for each unit of output x produced at a cost c (profit = $f-x(c-v)$). In a full capitation contract ($v = 0$), the recipient’s income is invariant to the number of units of output produced. By decoupling remuneration from cost drivers, the higher is f and the lower is v , and the greater the recipient’s reliance upon income from capitation than upon the number of units of output produced. The recipient now faces incentives to reduce costs in order to increase profitability – for example, producing fewer outputs or finding cheaper ways of producing them. Behavioural change ensues because the undesirable behaviour is no longer rewarded, or because the rewards will accrue only by engaging in the desired behaviours. However, if the recipient has little ability to reduce costs or cannot easily control the demand for outputs, then exerting effort on the desired activities will have minimal effect on income. The likelihood of the desired activities being pursued is small. Rather, the

recipient will invest effort instead in activities that maintain or increase income at the expense of the desired activities.

Partial or full capitation contracts have become common in primary health care remuneration as they reduce the over-consumption externality of subsidised health care by financially penalising practitioners who deliver ‘too many’ consultations. Capitation is the principal form of government-funded remuneration for England’s Primary Care Trusts (Keen, Light and Mays, 1999), is common in insurance-funded remuneration of primary care physicians in the United States (Robinson, 2004; Hagen, 1999) and is the basis of New Zealand’s partially tax-funded primary health care strategy (King, 2001). They are also extensively used in public sector ‘outcomes-based’ (Honore, *et. al*, 2004) and ‘performance-based’ (Martin, 2002) contracting. Reduced emphasis on the consultation as the primary payment determinant is attributed with a shift in primary care delivery focus away from interventions in the event of illness towards the promotion and maintenance of wellness (Coster and Gribben, 1999; Cumming, 1999; Malcolm, 1997). They are also attributed with being stimuli for increased equity, targeting of high health need, encouraging a team approach to primary health care, and a change in focus towards a care management model as opposed to a model of episodic intervention with a focus on illness (Crampton, Sutton and Foley, 2001).

However, capitation contracts have limitations. Robinson (2001:4) identifies that capitation is inferior to fee-for-service in that it does not recognise the extent of practitioner effort exerted: “its payment is determined prospectively without regard to the number of services provided, overpaying physicians who stint on care and underpaying those who provide many complex services”. Capitation also performs poorly in regard to risk management, as it is “imperfectly adjusted for the severity of illness of each covered patient. Even a well-adjusted capitation payment rate fails to compensate physicians who treat patients whose condition deteriorates, leading to greater utilization and cost, for reasons independent of the physician’s own actions” (*ibid*). Howell (2007) suggests that a high dependence of practitioners’ incomes on unpredictable variations in individuals’ demand for services poses particular challenges for the use of the instrument in health care markets generally, and primary health care markets in particular, that are not present in many other markets.

This paper uses the literature on the likely outcomes of the use of capitation contracts in primary health care to critique the arrangements in the New Zealand Primary Health Care Strategy (NZPHCS) introduced in 2002. The New Zealand arrangements provide significant challenges to achieving the goals of increased equity in the allocation of available resources according to health need, behavioural changes towards more collaborative models of care

delivery and an increased focus upon prevention and patient wellness instead of instances of illness. The single capitation instrument chosen to deliver the objectives is unusual in that the capitation funder does not meet the full costs of the commissioned care, the independent, private sector practitioners receiving capitation payments are able to charge the patient for any costs not met by the funder, and the capitation incentive becomes increasingly sharp over time as the funder selectively prioritises different population groups to receive greater proportions of its funding. The discussion concludes that the NZPHCS use of capitation is unlikely to be helpful in achieving the desired objectives, but is far more likely to lead to substantial increases in the cost of care relative to the previous system, and distortions in sector interactions that will result in distributional outcomes diametrically opposed to the articulated objectives. If the desired behavioural changes amongst practitioners do occur, this is far more likely to be as a consequence of non-price mechanisms in the NZPHCS than financial incentives.

The paper proceeds as follows. Section one further explores the literature on the role of financial risk management in health care markets, taking as its base the discussion in Howell (2007). This section summarises the seven predictions made in that paper of the likely outcomes in health care markets when capitation contracts with over-strong capitation incentives are applied. Section two then outlines the context of the New Zealand primary health care market, the stated NZPHCS policy objectives, and the capitation instruments implemented to deliver them. Section three then critiques the New Zealand strategy. This section examines the specific features of the New Zealand strategy, and then tests its specific and general capitation mechanisms against its objectives using the predictions made in Howell (2007) and outcomes observed to date. Section four concludes.

1. Capitation in Primary Care Markets

Much of the literature on capitation contracting in health care focuses specifically on the ways in which the contracts deal with undesirable effects arising from the presence of insurance – supplier-induced demand (Zeckhauser, 1970) and over-consumption by the ‘worried well’ (Pauly, 1968). Capitation is well-suited to this objective as it places a ‘cap’ on the number of consultations a practitioner will deliver (Newhouse, 1996; Danzon, 1997). Practitioners will deliver no more than the number of consultations at which their profits cease to be positive (i.e. $x=f(c-v)$), noting that c includes a fair return on the practitioner’s time and investment in human capital).

The extensive use of such contracts would suggest that their use is demonstrably positive, yet Robinson (2001) cautions that they are less successful than fee-for-service contracts in incentivising practitioners to exert effort (e.g. delivering more consultations in response to increases in patient need) and in their management of demand uncertainty (e.g. random ‘shocks’ such as an epidemic). They have also been associated with changes in sector organisation, including the rise of ‘corporate medical care’ (both investor-owned and nonprofit and charity provision) with a commensurate shift away from widespread practitioner ownership of care delivery firms towards more practitioners becoming salaried employees (Dranove, Simon and White, 2002). This has implications for sector output given consistent evidence that self-employed practitioners work longer hours and deliver more consultations than their salaried counterparts (Newhouse, 1973; RNZCGP, 2005). One explanation offered for this observation is a change in practitioner lifestyle aspirations in a profession that is rapidly ‘feminising’ (RNZCGP, 2005). However, it is also consistent with observations of the sharing of over-much risk via capitation contracts, the financial consequences of which practitioners cannot easily control (Howell, 2007). United States evidence suggests that substantial changes in practitioner behaviour have been achieved using incentive contracts with very low power (Ma and Riordan, 2002).

If the balance between the strength of the capitation incentive and the ability of the practitioner to affect outcomes is ill-judged, then there might be systemic effects that influence both the actions of practitioner-owners investing effort to maximise profits or minimise losses, and the allocation of consultation numbers and quality amongst the patients for whose care they are responsible as a consequence of natural variations in the care demands of those patients. Despite the prevalence of capitation in the sector, few papers explicitly discuss the systemic effects upon patients and sector structure of sharing the latter of these risks (known as ‘random demand risk’) with practitioners via capitation. This is surprising, given that United States evidence suggests that only around 20% to 25% of patient demand variation is predictable *ex ante* using characteristics such as patient age gender, income, ethnicity or past consumption (Newhouse, 1996). These are the factors most commonly used to set incentive strengths in capitation contracts (Robinson, 2004).

In addressing the gap, Howell (2007) focuses specifically on the effects in primary care markets. Primary care providers are characterised by (predominantly sole) practitioner ownership, very low levels of financial capital (the most important asset is the human capital of the practitioner and other clinical and administrative staff) and therefore high susceptibility to the effects of financial risk-sharing. The paper posits that health care markets differ fundamentally from other markets in their approach to random risk management. Third-party

purchasers (governments, insurers) are in a position to participate in capitation contracts because they aggregate the financial risks of demand variation of the large number of individuals and manage them more efficiently than the individuals can themselves (Arrow, 1963). The economic justification for their existence is thus predicated upon random risk management. When they share financial risk with providers via capitation contracts in order to reduce the costs of 'predictable' risk controllable by practitioners (i.e. reduction in supplier-induced demand), they also share the costs of the very 'random' risks (e.g. unpredictable variation in individual's demand for health care, and exogenous shocks such as an epidemic) that give rise to their existence. Health care capitation contracts therefore result in the fragmenting of large, more efficient third party (insurer and government) risk-bearing pools into very much smaller, less efficient provider-based ones.

Optimal health care capitation contracts thus require the very careful balancing of the savings from 'predictable' risk reduction against the increases in cost of less efficient 'random' risk management arrangements. Whilst trade-offs between random and predictable risk occur in other capitation contracts, such as the remuneration agreement between an employer and an employee where the effects of random events (e.g. business cycle volatility) are shared, they are less problematic in these circumstances as there is no other explicit agreement in the contractual nexus conferring explicit responsibility for the management of random factors by either of the parties to the capitation contract. Howell (2007) suggests that the additional complexity of health care random risk-sharing arising from the explicit bundling of insurance and health care in capitation contracts offers a plausible answer to Robinson's (2001) puzzle of why fee-for-service contracts have obdurately prevailed in health sector remuneration agreements, whereas incentive contracts are far more routinely observed in typical employee remuneration agreements.

Moreover, Howell argues that, unlike hospital and specialist care, primary care is characterised by repeated interactions between the same patients and primary care providers across time that further increase exposure to random risk factors relative to other health care providers. Repeated transacting results in serial correlation between unknown cost-causing patient characteristics not captured in the compensation agreement (e.g. unknown genetic predisposition in a given individual), and the financial returns of the provider managing the care of those patients. Primary care is also susceptible to geographically-related demand correlation (e.g. localised infections) as individual providers cannot diversify their risk portfolios by assuming responsibility for patients in locations remote from the one in which their current patients reside. These factors lead to the systematic creation of habitually profitable ('lucky') practices where patient demand is lower than the population average (i.e.

patients are ‘healthier than average’) and therefore receive ‘windfall’ profits irrespective of the effort exerted, and habitually loss-making (‘unlucky’) practices where patient demand is higher than the population average (‘sicker than average’) and where the practitioner must either bear the additional costs financially (e.g. interest on loans, lower returns per hour worked) or exit the business.

Howell (2007) concludes that unless primary care capitation contracts have quite low-strength financial incentives, or the pools with which the financial risk is shared are very large, the financial effects of sharing ‘random’ risks can quickly come to ‘crowd out’ the benefits of sharing ‘predictable’ risks. This has significant effects upon the quality and quantity of care provided. The willingness of providers to invest their human capital in businesses subject to capitation contracts, and the characteristics of the businesses they will choose to invest in, is thus critically dependent upon the degree of random risk shared. If financial returns become over-dependent on luck, then there will necessarily be changes in incentives for practice ownership, changes in the nature of sector interactions, reduction in supply of services, inequitable allocation of care based upon patient health need and substantially higher costs of consultation delivery than in systems with limited financial risk-sharing. These probable outcomes suggest that extreme caution is required in the use of capitation contracts let in primary care markets by government policymakers and private insurers.

Specifically the paper proposes seven likely consequences that will arise in primary health care markets if the capitation incentive strength does not appropriately balance the two competing effects. The sharper the contract incentive (i.e. the higher is f , the lower is v), and the smaller the risk pools to which the capitation agreements apply, the more likely it is that these effects will be evident, and the greater the costs of the negative consequences to the sector.

1. The systemic effect of capitation leads to sicker-than-average patient populations being served by loss-making practices, who must (all other things being equal) lower service quality in order to remain financially viable. Thus, capitation systems by their very nature result in sicker-than-average individuals receiving lower-quality care than healthier-than-average individuals. Capitation contracts are hence antithetic to equitable allocation of available resources on the basis of health need regardless of the capitation strength, but the degree of disparity is greater the stronger the incentive and the smaller the patient pools.
2. The supply of consultations in a capitated system will be less than the number of consultations under a fee-for-service system remunerated at the same average consultation cost. This occurs because loss-making practices facing higher-than-

average demand must reduce consultation numbers to the capitated average in order to remain financially viable, whilst profit-making practices face reductions in profit if they provide more consultations than the number (less than the capitated average) that luck has allocated them, so cap output at a number less than the capitated average.

3. Cream-skimming of patients is associated with capitation as the system requires providers to become insurers. Whilst traditional cream-skimming to avoid bad risks by utilising private knowledge of patient health states is feasible, the mere creation of habitually profitable practices encourages a form of cream-skimming simply by abstaining from registering new patients in order to safeguard existing profits or mitigate potential losses. The greater the level of uncertainty about patient health states, the more stable the practice patient list and the stronger the capitation incentive, the greater the likelihood of this strategic response occurring.
4. Capitation contracts unequivocally raise the average cost of care delivery relative to fee-for-service not just by the additional costs of risk management and profits extracted by profitable practitioners, but also by increasing capital costs in the financial structure of profitable practices. This occurs because of the capitalising of 'luck' into the 'goodwill' of profitable practices when they are sold to second and subsequent owners.
5. Capitation contracts inevitably lead to changes in ownership patterns in primary care markets due to the persistence of loss-making amongst some practices. A bifurcation will occur between small, 'lucky' profitable practitioner-owned practices and large, 'unlucky' habitually unprofitable practices run by nonprofit and charity providers, hiring practitioners as salaried employees. Again, the sharper the capitation incentive and the smaller the initial risk pools, the more likely it is that this outcome will emerge, and the faster it will become evident.
6. From finding 1, all else being equal, the bifurcation of ownership will also be associated with discernable quality differences. The sicker-than-average patients of the large, unprofitable, nonprofit and charity providers will receive, on average, lower quality care (e.g. shorter consultations, longer waits for appointments) than the healthier-than-average patients of the small, profitable, practitioner-owned providers.
7. Where competition exists between different remuneration forms in the market for practitioners, practitioners will self-select according to their willingness to work hard and accumulate human capital. Hard-working practitioners of all ages seeking to be well-rewarded for their efforts will self-select away from capitation-remunerated systems. In the long-run, capitated systems will have a disproportionately larger number of less hard-working practitioners with lower human capital than the systems into which the hard-working practitioners self-select than their 'risk-free' rivals. This has particular ramifications for young practitioners, who seek to accumulate human

capital rapidly and be well-rewarded for their efforts. Relative to a fee-for-service system, the capitation system with its restricted consultation numbers will extend the time it takes to accumulate the same amount of experience, even for those who opt to work as salaried employees in ‘unlucky’ practices. In an open market for practitioners, capitated systems will struggle to recruit and retain hard-working early-career practitioners. Those practitioners who do select into it are likely looking for less arduous working conditions (e.g. as a mid-career choice after working long hours in a fee-for-service environment) or are risk-averse and prefer working as an employee for a salary. This has long-term implications for sector structure and health outcomes as well as the quality and quantity of care offered in each system.

The paper concludes with the caution that capitated contracting of primary care appears indicated only where there is strong evidence of significant over-supply or where there are very large risk pools, and that even then the incentive should be weak given the necessarily higher costs of capitated systems and the very significant consequences of getting the balance of risk-sharing wrong and distorting sector resource allocation, investment and health state outcomes. Unless these characteristics are present, it will likely be far less costly and the outcomes more certain when non-financial instruments are used to alter provider behaviour.

2. *The New Zealand Primary Care Strategy*

The New Zealand Primary Health Care Strategy (NZPHCS) was implemented in July 2002 (King, 2001). The stated policy objective was to realign provider behaviour to a new vision of how care should be delivered. New nonprofit management entities, Primary Health Organisations (PHOs), were established to register patients, receive payments and enter into treatment provision contracts with service providers. PHOs are charged with co-ordinating a range of primary health care services provided to their registered members, and replacing the “old, isolated ways of working” of the previous system with “new, collaborative models” emphasising the promotion of wellness rather than a focus on interventions for sickness (King, 2001:18). There are no obligations placed upon PHOs regarding the contract forms used to remunerate providers. However, their patient coverage is confined to individuals residing within the geographical confines of a government-owned and mandated District Health Board (DHBs) (of which there are twenty-one). The relevant DHB is the entity which registers the PHO and, for contractual purposes, is the party disbursing government capitation payments to the PHO and is responsible for monitoring and enforcing the PHO’s contractual obligations (including having the ability to scrutinise PHO contracts with their providers and the prices charged by those providers, to both the PHO and patients).

2.1 Institutional Changes

In practice, however, as they are new nonprofit entities with no financial reserves with which to manage financial risk, PHOs simply ‘pass on’ the service delivery capitation payments to providers under a ‘back-to-back’ contract promulgated by the Ministry of Health (MoH). Thus, primary care service providers, the vast majority of whom have patient pools of between 1200 and 2000 patients, become the entities responsible for managing demand variation, whilst the PHO retains responsibility for service co-ordination (Howell, 2005; McAvoy and Coster, 2005). Government, via the MoH and the DHBs bears no financial risks of individual demand variation, although the DHBs, via their hospital services, become the deliverer of last resort for individuals unable to obtain community-based primary care (Howell, 2005).

The vast majority of PHOs have derived their patient membership, and hence funding, via exclusive agreements with service providers. Providers ‘supply’ the patients for whom the PHO receives capitation funding (separated between management fees and service delivery fees), and the PHO passes the care delivery portion on to the provider. Many PHOs have been formed around pre-existing provider collectives, predominantly Independent Practitioner Associations (IPAs) (over 90% of registered individuals belong to a PHO that either originated from an IPA or is managed under contract by a company that had its genesis in an IPA - Howell, 2006a). Patients of practitioners who do not join PHOs continue to receive government subsidies at the pre-2002 rates, therefore accessing none of the additional government funding applied to the sector since 2002.

The use of nonprofit PHOs was motivated by a policy objective to “chart a course for primary care that draws on the experience of the community-governed non-profit sector” which was seen to be delivering “co-ordinated and intermeshed” services (Crampton, Davis and Lay-Yee, 2005:235) and which, between the mid 1990s and 2002, had been funded principally on a capitation basis (although a small number of general practices had experimented with capitation) (Crampton, Sutton and Foley, 2001; Coster and Gribben, 1999). There was also a strong desire to increase the range of service providers remunerated by government subsidies, as prior to the 1990s government primary care funds had been applied almost exclusively to services provided by general practitioners, the majority of whom were self-employed sole practitioners (NHC, 2000).

2.2 Practitioner Organisation

Crampton, Davis and Lay-Yee (2005) record that in the 2001/2 National Primary Medical Care survey, 91% of general practitioners were self-employed, and only 3% worked as salaried employees of nonprofit and charity providers. Only 11.4% of the general practitioner workforce was remunerated by salary, including locums and those who owned practices in conjunction with other practitioners, but were remunerated by salary. The authors also note an uneven allocation of practitioners to patients (rural areas typically exhibit shortages of practitioners), and concerns about the ability of the profession to continue to supply the needs of a growing and aging population, given that the workforce is aging and struggling to recruit new members in the face of many other New Zealand and international opportunities for medical practitioners.

Practitioner surveys confirm physician supply difficulties in New Zealand (RNZCGP, 2005). They also confirm that full-time self-employed practitioners work 1.2 times the number of hours of their full-time salaried colleagues, and earn commensurately higher incomes as a consequence. This supports the contention that income, practice ownership and exertion of effort are linked, as would be expected in a profession where return for effort exerted (i.e. profit) is a significant motivating factor for the majority of practitioners.

2.3 Pre-NZPHCS Practitioner Payment Arrangements

Prior to 2002, the majority of primary care practices were remunerated by fee-for-service, either fully patient-funded, or part government-subsidised by for some individuals based on age, family income and demand frequency (Ashton, 2005). Approximately 47% of the population qualified for government subsidies, although not all of those eligible made use of them (Hefford, Crampton and Foley, 2005). The balance of the population self-insured (i.e. met the total costs of primary care themselves). By the late 1990s, government funding accounted for between only 30% (Austin, 2004) and 40% (King, 2001) of sector spending, with the balance coming from patient out-of-pocket expenditure.

During the 1990s, changes in MoH funding processes enabled a number of new providers with different organisational forms to receive partial or full government funding for new service delivery models specifically targeting the needs of marginalised communities. Many of these evolved in the form of consumer-owned co-operatives, such as Iwi (Maori tribal) health providers serving members of existing Maori groups (either family-based or in urban areas), and community health groups in localities (e.g. rural) where recruiting and retaining general practitioners was problematic (Crampton, Davis and Lay-Yee, 2005). The widened

scope of the 1990s funding arrangements also enabled many IPAs to develop new service delivery models with alternative funding arrangements. These included budget-holding for pharmaceutical and laboratory spending (Malcolm, 1997), and services increasing access for specific populations (e.g. WIPA in Wellington had contracts for diabetes management, immunisation and school-based education programmes – Howell, 2006a). Although having some community representation in their governance, these services were to all practical purposes practitioner-governed supplier-owned co-operatives, albeit with the apparent absence of an overt profit motive, complementing rather than competing with, the services provided at general practitioner clinics (Howell, 2006a). Whilst many of these programmes continue to be separately funded, their co-ordination has largely been folded into PHO operations.

2.4 NZPHCS Funding Arrangements

An explicit objective of the NZPHCS is to substantially increase the share of government spending in the sector to position New Zealand closer to comparator OECD nations (King, 2001). Whilst no expectation of the share of government funding at the end of the NZPHCS rollout has been stated, it is generally believed that the target is in the vicinity of 80%, consistent with the share in other OECD countries and exhibited in New Zealand's predominantly government-funded secondary and tertiary sectors. In the three years following the introduction of the policy, government funding for primary care increased by 43% (Hefford, Crampton and Foley, 2005). However, the government's share of total expenditure did not increase as much as the Minister had expected given the substantial additional injection of government funding (King, 2004).

The ability for general practitioners to charge patients directly for any difference between the government contribution and the costs of service provision has been enshrined in the sector since 1938. This agreement was a compromise between the government of the day, that wished to nationalise the funding and provision of all health care, and medical practitioners, who wished to maintain their professional and commercial autonomy. The compromise resulted in government funding and provision of hospital, mental health and maternity services, government subsidy of primary care, and general practitioners and specialists maintaining their status as independent practitioners with the right to charge patients for any costs not met by government contributions (Ashton, 1999). The right to charge patients is unchanged by the NZPHCS. General practitioners are still free to set their own fees to patients in order to fully recover costs, albeit with the relevant PHO-registering DHB having

the power to review fees and refuse the right for a practitioner-contractor to a PHO to increase prices if the increases are deemed unreasonable (Ministry of Health, 2002; DHBNZ, 2006).

In practice, consistent with the theories of monopolistic competition presumed to prevail in primary health care markets (Gaynor and Vogt, 2000), there has historically been a wide variation in practitioner fees charged to patients, both under fee-for-service and capitation. Fees in urban areas, where practitioner choice is large, are higher than those in provincial centres and rural areas where practitioner choice is much more limited (Consumer, 2005). To date, only one practice has had its proposed fee increases rejected by its DHB. Typical practices have been able to increase fees in the vicinity of around 4.5% per annum, nearly twice the compound annual inflation rate of 2.5%¹, without attracting DHB fees review scrutiny (Cameron, 2007).

2.5 The Capitation Contract

Capitation payments are made to PHOs in three components – a management fee per head based on the number of individuals registered in the PHO, and treatment (GMS/Nurse) and access (Services to Improve Access) payments based on patient age, gender, ethnicity and past consumption. The largest, payment, the GMS/Nurse payment, is ‘passed through’ via the ‘back to back’ contract between PHOs and service providers.

The capitation formula is a ‘mixed’ one, in that the government funds only part of the cost of care via capitation payments per individual registered (adjusted for patient age and gender, and by practice service area ethnicity and economic deprivation characteristics). As per the 1938 agreement, the shortfall is levied to patients when consuming care. The share of government funding increased in a stepwise manner each year following the strategy’s introduction, with different groups of the population becoming eligible for higher subsidies on the basis of age and other patient characteristics. The first beneficiaries were individuals aged over 65 and under 5, and those patients registered in PHOs where more than 50% of the registered individuals were in the lowest income deciles or of Maori or Polynesian ethnicity (“Access Practices” – the remainder are termed “Interim Practices”). Over subsequent years, higher subsidies were extended to 5-14 year olds, 15-24 year olds and 45-64 year olds. The final group, 26-44 year olds, will receive higher subsidies from 1 July 2007, by which stage it is anticipated that most differences in the funding of Access and Interim practices will be eliminated.

¹ Using Statistics New Zealand’s New Zealand CPI Inflation Calculator quarter 2 2002 to quarter 1 2007 <http://www.rbnz.govt.nz/statistics/0135595.html>

Each capitation increase has been associated with political expectations that any increase in government payments will be directly matched by corresponding reductions in the fees charged by practitioners for the subsidy class receiving the more generous government assistance. For example, the Prime Minister stated that the July 1 2006 capitation increases meant that “700,000 people aged between 45 and 64 would now pay \$27 less for doctor visits and \$3 for prescriptions – instead of \$15 – if they enrolled with a primary health organisation”². Despite more groups becoming higher-capitated, there is still an expectation that some groups will continue to pay different patient payments based on class membership – for example, there is strong pressure for practitioners not to charge a fee for consultations delivered to children under 5 years old. This group commands the highest capitation payments, but generates the greatest demand. DHB and MoH policy material supports the contention that this approach to fee setting is expected for price monitoring and if necessary, price regulation (DHB, 2006).

2.6 Motivation for Funding Reform: Equity and Access Objectives

The policy rationale for the NZPHCS appears to be encapsulated in a paper released by the advisory body the National Health Committee (NHC) in December 2000, some six months before the announcement of the NZPHCS. As the NZPHCS appears to adopt most of the NHC recommendations, it is presumed that the rationale underlying them is the justification in the NZPHCS. A key theme of NHC (2000) is the recommendation to move to a ‘population-based’ model of care delivery. The operationalisation of ‘population-based’ care via ‘population-based funding’ appears to manifest itself as ‘capitation payments’ in the NZPHCS.

Notably, NHC (2000) does not define ‘population-based funding’ – i.e. how ‘population-based care’ will be funded. Thus it does not address how the allocation of individuals of varying, unpredictable, demand propensities to the groups that will receive funding (i.e. allocation of ‘random’ risk) will affect the choice of remuneration method for both those managing the purchasing of, and those delivering, ‘population-based care’. Neither does it address how population-based funding might work counterproductively for high-need individuals (Robinson, 2001). It simply concludes that “capitation funding for PHC³ is more likely than FFS⁴ to encourage population-based approaches, enhance a team approach and

² <http://www.stuff.co.nz/stuff/0,2106,3719646a7144,00.html>

³ primary health care

⁴ fee-for-service

improve accountability for team-based outcomes. While change in practice, e.g. towards a population-based approach may take time, at the very least capitation should lead to better distribution of resources towards those population groups that currently have low rates of primary care utilisation (and expenditure) but often have higher needs” (p25).

NHC (2000) thus proposed a ‘population-based’ model of care delivery (care delivered to groups rather than individuals) (p16) as it was deemed to allocate both funding (p25) and practitioner (p13) resources more equitably and lead to greater provider co-operation and teamwork (p22). However, the central role of the patient consultation was reinforced as the principal output of primary care: “population-based approaches do not replace but rather complement high quality care for individual patients” (p15). A clear distinction was made between ‘universal’ (as opposed to ‘targeted’) service provision and population-based approaches.

The justification for a move to capitation thus appears to be twofold: that patient payments in the pre-2002 regime, despite government subsidies being applied on the basis of family income, age and health need, were deemed to be creating access barriers for low-income individuals and individuals of specific ethnicities over-represented in the low income populations (Barnett and Barnett, 2004; NHC, 2000); and that the medically-based culture of general practice that was favoured by the historic fee-for-service payment method was deemed to be posing barriers to low-income individuals of non-European ethnicity with poor health states accessing government-subsidised care (Crampton, Davis and Lay-Yee, 2005; Scott, Marwick and Crampton, 2003).

NHC (2000) also supports a single payment mechanism for all health care, based upon the government funding for secondary and tertiary (DHB) services. The multiplicity of care models that had emerged over the 1990s was deemed to have led to a fragmentation of both funding and service provision, co-ordination problems and higher administration costs (NHC, 2000:22). It was also considered that multiple funding methods were sending mixed messages to both patients and practitioners (p21, 25). A single delivery mechanism - community-based providers – was also preferred. These providers were deemed to be better at addressing the requirements for practitioner co-ordination and the health care needs of at-risk communities than either private providers or governments (Crampton, 1999; Crampton and Starfield, 2004), even though they had historically served only a very small percentage of the population.

NHC (2000) does not make any suggestions about how progression towards the proposed strategy would be managed, given the wide variety, organisation and ownership forms of existing providers. An overriding characteristic of the document, along with the conspicuous absence of any discussion of the financial implications of its recommendations for any of the government, patients or service providers, is its apparent lack of distinction between the mechanisms for managing and allocating funding and the mechanisms for allocating and delivering care. These appear to be treated synonymously, with care providers rather than patients being the recipients of government funding, despite the historic fee-for-service payments being effectively welfare benefits topping up the incomes of the targeted individuals consuming health care, albeit for transaction cost purposes being paid direct to service providers. Funding form appears to be a simple choice between fee-for-service and capitation remuneration of care providers, as if by allocating the government funding on a population basis to care providers of the desired institutional form, improvements in equity would naturally ensue, even if the changes in practitioner behaviour might take some time to become apparent.

Thus, capitation appears to have become the preferred remuneration form not because its specific risk-sharing features are directly aligned with achievement of the strategy's objectives, but because it is deemed to pose fewer barriers to the achievement of the access and service delivery culture goals of 'population-based care' than the pre-2002 fee-for-service instrument.

3. Critique of the NZPHCS

The NZPHCS has introduced a universal system of capitation subsidies for which the entire population is eligible. The government share of sector spending has increased substantially. The overriding political objective appears to be a reduction in patient payments, but only for those individuals (and by extension, their providers) participating in the NZPHCS system. The allocation of health care funds, along with a change in the locus of responsibility for paying for the services and changes in the identity and behaviour of the practitioners delivering primary care are policy priorities. The policy is also clear about its desired outcomes of increased equity in access to health care. The principal non-price instrument is the formation of nonprofit PHOs with some element of community governance. The single financial instrument is the capitation payment, with the GMS/Nurse component being 'passed through' to service providers. All PHOs are funded according to the same contract, even though they vary in size from 3,000 to 330,000 registered individuals (Howell, 2005). Most primary care practices are funded via the standard 'back-to-back' contract.

As Howell (2007) identifies, all health care capitation schemes involve delegation of the insurance function from the capitation payer to the capitated entity. However, the NZPHCS makes no acknowledgement of any insurance or financial risk-bearing implications in its design or implementation. There is no distinction made between the change in locus of government payments from targeted ill individuals receiving welfare benefits to population-based funding paid to risk managers (service providers) in respect of a defined population, irrespective of the actual demand for services. Neither is there any distinction made between the patient payment pre-2002, which topped up a fee charged equally to all patients irrespective of subsidy class, and the NZPHCS payment, which must be contingent upon the demand made for services by other individuals within the same group, so necessarily includes payment for factors other than the provider's time and skills. Indeed, the NZPHCS arrangements result in PHOs being paid as if they are risk managers, but by passing on the payments to practitioners they bear no financial risk, whilst practitioners receive the population-based funding as de facto risk managers, but are required to charge their patients as if the payments they are receiving are 'notional averaged treatment subsidies' for patients of different classes, and so are presumed to bear no responsibility for financial risk management as they can collect all costs not met by government payments from patient payments, just as they did pre-2002.

These arrangements appear to arise as a consequence of a lack of clarity in NHC (2000) about the difference between 'population-based funding' of risk managers and 'capitation contracting' (i.e. supply-side risk-sharing) with service providers. Whereas the contracts may have similar structures, in that both may have a fixed and a variable remuneration component, the effects of the incentive strength in each case is crucially dependent upon the characteristics of the recipient and the desired objectives. It is also crucially important to be aware of the locus of collection of costs not borne by the subsidiser. If the subsidy is a risk management (i.e. insurance premium) subsidy paid in respect of all individuals ex ante, then presumably the unmet costs should be paid by all beneficiaries of the subsidy (i.e. all individuals ex ante, in the form of an insurance premium top-up, as occurs when all employees top up the premiums paid by employers in United States subsidised insurance schemes or New Zealand's Accident Compensation (ACC) scheme). However, if the subsidy is a treatment subsidy in order to assist an individual to pay a service provider's fee, and the subsidy does not meet the full cost of that fee, then it is appropriate for the beneficiary (in this case, the ill patient) to meet the difference.

To subsidise on the first assumption but to charge on the second raises the question about who will pay the costs of any difference between anticipated and actual demand (i.e. the costs of risk management). Treating a premium subsidy and a 'notional averaged treatment subsidy' interchangeably, even though at the average expectations, they can be mathematically equated, fails to address the fact that a variation between the anticipated 'average' demand for which the risk manager is remunerated ex ante and the actual demand for which financial responsibility is incurred ex post is inevitable. The costs of variation must be met by someone. In the NZPHCS, on the one hand, PHOs and service providers are paid via capitation contracts that require them to bear financial risk, but on the other hand, the ability for service providers to charge patient fees is governed by the expectations prevailing pre-2002, meaning only patients falling ill and consuming services pay the costs not met by government. Under the New Zealand arrangements, any costs of variation between the anticipated demand for which PHOs and service providers are funded and actual demand is paid only by that subset of patients falling ill and consuming primary health care services. However, the risk management cost is not paid equally by equally ill individuals. Patient payments are required to vary according to the patient's capitation subsidy class, as if the government payment is a 'notional averaged treatment subsidy'.

The consequence is a set of payment arrangements unique amongst healthcare systems. On the one hand, the arrangements result in sharply increasing service provider capitation incentives over time. Increased government payments result in a greater share of the provider's income becoming fixed as the patient payments must decrease at each stage. On the other hand, as service providers rather than the government set the variable payments and they are paid by patients rather than the government. The government bears no responsibility for financial risk management at all, despite being the third party purchaser aggregating risk management for individuals in the first place. Risk management and 'practitioner fee top-ups' become bundled into a single payment, paid by the patient. The government is not actually setting a capitation incentive for providers at all under this system. Instead, it relies upon price monitoring and regulation by DHBs to ensure service providers to 'pass through' the capitation subsidies for all patients to ill patients as if they are 'notional averaged treatment subsidies'. This restricts the ability for providers to pass on the risk management costs to patients, but ultimately the costs must be recouped if providers are to remain financially viable. Whilst 'lucky' practices can extract 'windfall' profits, 'unlucky' ones must either charge patients, reduce quality or go out of business. The allocation of the risk management costs are hence unequal, as patient payments now depend upon the 'luck' (health state) of other patients at the same practice. Moreover, under the NZPHCS, the risk management costs are paid only by those individuals unlucky enough to fall ill. Well

individuals, who receive premium subsidies from government, but who do not consume any primary care services, pay none of these costs.

Not surprisingly, the result is a substantially confused set of arrangements that is patently unable to deliver either increased equity or induce the desired behavioural changes. Rather, as is shown in the first two parts of this subsection, the unique New Zealand arrangements will simply result in a very costly, inequitable system as predicted from Howell (2007). Evidence is already emerging of the consequences of over-strong incentives crowding out other benefits, and the peculiar arrangements actually invalidate the use of financial incentives to induce any behavioural change by service providers. Moreover, even if the a standard set of managed care arrangements was applied, the equity and provider behaviour outcomes desired by the NZPHCS are quite unlikely to be achieved in a capitated system, as such systems are inequitable by nature and the ability of primary care providers to manage patient demand by the use of preventative tools is likely to be small. Rather, such objectives are more likely to be achieved using non-price instruments.

3.1 Very Strong Incentives Increasing Over Time

Under the NZPHCS institutional design, the PHOs, who are best placed to undertake risk management and to design balanced contracts to remunerate providers, based upon the actual demand each provider faces and the extent to which behavioural changes by providers can be realistically incentivised using financial risk-sharing, simply pass the financial risk on to service providers via the 'back-to-back' contracts. The government's funding schedule whereby it ramps up the share of the sector expenses it anticipates meeting as budgets permit thus sets the strength of the financial incentive contract faced by service providers, and at each stage the government increases its share of funding, the incentive becomes sharper. Political priorities, not information about practitioner demand management abilities, now set the contract incentive strength.

The initial incentive strength faced by providers at the beginning of the NZPHCS was moderate. However, the incentive strength - and the share of both random and predictable risk shared with the practitioner - increases over time with each successive rollout to a new population group, as the corresponding patient charge must reduce. That is, each time a new capitation class becomes eligible for higher government funding, the share of a practitioner's income that is fixed – i.e. f - increases, and average v charged to patients decreases.

3.1.1 Likely Consequences

If, as it is expected, government contributions are ultimately 80% of sector spending, then ultimately 80% of practitioner income will become invariant to effort. NHC (2000) does not suggest that the NZPHCS should eliminate the focus on the consultation as the primary output. Rather, it contends that the consultation remains the main means of primary care delivery even in a population-based care system. Yet, under the NZPHCS, the marginal return ultimately received by a practitioner for the effort of delivering an additional consultation will be on average only 20% of the cost of delivering it. This is an extremely strong incentive that appears quite out of proportion to the ability of practitioners to manage via clinical processes alone. There will likely be substantial distortions in the market as the effects of over-much random risk shared with practitioners rapidly crowd out any benefits from alteration in practitioner behaviour. Not only does the capitation strength increase with each rollout, but the pools within which the risks are shared extremely small, geographically focused practices generally with only 1200-2000 individuals. Demand risk is highly correlated amongst small pools. Variations between extreme profitability and financial failure from luck will be considerable. The likely consequences of predictions 1 to 7 will emerge rapidly, and they will be extreme. Moreover, the extent of the inequities generated, both financially and in service quality received, will likely be very large.

Indeed, it is extremely puzzling that a tool whose primary direct consequence is a restriction in the supply of consultations would be adopted at all in a market where there were already significant concerns about the ability to supply anticipated demand, let alone a capitation contract with such intense incentive strength. There is negligible evidence of pre-existing over-consumption arising from extensive subsidies in the New Zealand market (indeed, over half the population has historically paid the full cost of primary health care) – rather the predominant effect observed in NHC (2000) and which capitation has been introduced purportedly to address (NHC, 2000) is *under*-consumption, specifically by those previously eligible for subsidies on the basis of income, age and health need. By Howell's predictions 2 and 7, and Robinson (2001) it would seem that given the specific circumstances of the New Zealand market, a remuneration instrument favouring increased output by hard-working practitioners – i.e. fee-for-service or one with very low incentive strength - would be preferable. Instead, by prediction 2, the NZPHCS risks invoking a very substantial decrease in the number of consultations provided compared to the pre-2002 counterfactual. Whilst it is possible that a restriction in supply may be deemed necessary to curb anticipated excessive over-consumption by the 53% of newly-subsidised individuals (Shen and McFeeters, 2005), this is not articulated as a capitation objective.

Under the NZPHCS, ‘unlucky’ practices, with their restricted ability to bear the very large costs of random demand variation, would be expected to rapidly move to stop their losses by restricting consultation quantities whilst ‘lucky’ practices will do so to cement in their ‘windfall’ profits. Both practice types will likely ‘close the books’ (predictions 2 and 3), reducing the supply of consultations. However, this will not be enough for severely unlucky practices who still receive more demand than they can afford to service. They must respond by reducing average costs per consultation by restricting quality (e.g. shorter consultations, longer waiting lists for appointments – prediction 1). This will lead to uneven distribution of care quality across the wider population, with the lowest quality care⁵ being systematically provided by practices where health state is lower than average (prediction 1 – this is the characteristic that leads to higher-than-average demand in the first place).

Meanwhile, the financial consequences of the distribution of patients will lead to higher valuations for ‘lucky’ practices making habitual profits, higher overall prices for all patients (prediction 4) and a missing market for ownership of habitually loss-making practices as practitioner-owners walk away and nonprofit and charity owners move in to take them over. The consequence is an ownership and quality bifurcation (predictions 5 and 6), with large, nonprofit and charity providers serving sicker-than-average populations with lower-quality consultations, whilst healthier-than-average populations receiving higher-quality care from smaller, private practitioner-owned practices. Ultimately, this will reflect in practitioner selection, both within the capitated system and out of it, as hard-working practitioner-owners look for better returns than the effective 80% tax on their efforts and investments in human capital that NZPHCS extracts.

3.1.2 Evidence

Whilst it is difficult within a ‘live experiment’ in uncontrolled conditions to attribute a cause to specific observations, it is possible to match patterns in the observations to a theory that provides a possible explanation. The greater the number of individual observations that are consistent with the theory, the more likely it is that the theory offers a credible explanation for observed outcomes. There are many observations already that suggest the above predictions are coming to pass.

⁵ This is not to suggest that the care quality consciously provided by any individual practitioner is different – it simply reflects the reality of more consultations having to be provided for a given level of resourcing – e.g. patients wait longer (endure the symptoms of illness longer) for an appointment. The alternative is for the practitioner to accept a lower return for each consultation (i.e. same remuneration, more appointments). However, this eventually reflects in practitioner choices (e.g. salaried employment limiting time worked at a fixed remuneration per hour).

The staged way in which the capitation payments were rolled out means that those practices with higher proportions of higher-capitated patients initially would face stronger incentives in the early stages than practices with lower proportions. Thus they would be more likely to exhibit behaviour consistent with over-much financial risk-bearing earlier than their counterparts facing less strong incentives. The first evidence of strategic ‘closing the books’ directly associated with the NZPHCS emerges in early 2005, in two areas where initially higher-capitated populations are disproportionately represented in the population mix – one with one of the highest proportions of elderly people in the country and one with a very high proportion of low income Maori and Polynesian individuals (Stevenson, 2005). PHOs were established in these areas in 2004 and 2003 respectively. Subsequently, as the higher capitation payments have been rolled out, anecdotal evidence has emerged that ‘closing the books’ has become a far more widespread practice.

Whether ‘closing the books’ is due to cementing in profits, minimising losses, or as has been claimed, a practitioner shortage, the effect is the same – it limits the number of consultations provided by the practitioners at substantially less than cost. As an example, a practitioner employed at a nonprofit Iwi provider was requested in early 2006 to reduce the number of consultations delivered in order to reduce costs (personal communication). It is a moot point whether a co-incidental practitioner shortage in initially highly-capitated areas is an underlying environmental factor or a consequence of the capitation policy. Higher levels of financial risk indicated by the area demographics would render such areas as less desirable places in which to establish a new practice under capitation in the first place. That existing practitioners have likely already distorted patient supply by ‘closing the books’ simply decreases the appeal of such areas even further for new practitioners, exacerbating the effect of a practitioner supply shortage of any origin. Thus, even if there was not a practitioner shortage in such an area initially, capitation funding would be consistent with creation of such shortages where there are concentrations of higher-capitated populations. Thus, contrary to NHC (2000), capitation is highly unlikely to be associated with a more equitable allocation of practitioners (including in historically under-served areas). If a more equitable allocation does arise, it will most likely be as a consequence of salaried providers being directed to supply services there by the (largely) nonprofit and charity providers who, by Howell’s predictions, will be left filling the ‘missing market’ for practitioners that capitation precipitates in areas of high demand and therefore high financial risk.

The effects on the practitioner workforce already being observed are consistent with the predictions. The Royal New Zealand College of General Practitioners reports that between its 2003 and 2005 surveys, the number of member-practitioners owning their own practices has

fallen to slightly over one half. This is a marked decrease. Moreover the number employed as salaried employees has doubled (RNZCGP, 2005)⁶. Furthermore, approximately 30% of its membership intends to change their work arrangements in the next five years, and 47% of those intending to change their arrangements are currently self-employed. Only 4% (i.e. 1.2% of membership) intends to move into full time, self-employed general practice compared to 27.2% of respondents in 2003. This will have a significant effect on the number of consultations offered, given that full-time practice-owning practitioners work on average 20% more hours than full-time salaried practitioners (RNZGCP, 2005). This suggests a substantial decrease in the willingness of practitioners to exert effort, commensurate with their anticipation of the effect on their incomes as capitation incentives become sharper, as predicted.

3.1.3 Practitioner Work Habits

The surveys also reveal a substantial increase in the number of members indicating an intention to move into salaried or locum work (23.2% in 2005, 16.8% in 2003). A further 10.7% (up from 1.5% in 2003) indicate an intention to move into non-GP medical work, taking up the opportunity to move into salaried positions within PHOs and DHBs. These individuals cite both income security and higher levels of remuneration as principal reasons underpinning this decision. That such a high percentage of practitioners far from retirement age is planning such moves suggests that either in anticipation or actuality, altered financial risk-bearing associated with the NZPHCS is changing the nature of the profession. The altered risk management arrangements may also be a factor in the rise in the number planning to retire from 7.5% in 2003 to 17.9% in 2005. Notably, declining income in general practice was cited as the third most important primary reason (10% of respondents) for changing work practices, after retirement (19.2%) and family (15%), with a 7% citing increasing regulation of general practice as a factor.

Whilst there are still many practitioners happy to remain in self-employment under capitation, Howell's predictions 1 and 7 would suggest that these are likely the owners of the 'lucky' practices. McAvoy and Coster's (2005:11) survey reveals that "many GPs have already benefited, reporting improved incomes and financial benefits from joining the PHOs". This is quite consistent with the accrual of windfall profits available to the 50% of practices delivering fewer than the average number of consultations.

⁶ It is noted that these figures are not directly comparable to the ones of Crampton, Davis and Lay-Yee (2005) cited above, as they come from surveys with different bases – Crampton, Davis and Lay-Yee's figures measure practitioners working at a given time, whilst RNZCGP polled its members holding a current practising certificate, even if they were not currently working at the time of the survey. Nonetheless, the trends noted are significant.

Evidence of a ‘missing market’ for practice ownership is also emerging. In 2003 the number of practitioners intending to move into self-employment exceeded the number planning to retire by some 35%, suggesting a viable market for practice ownership as established practitioners retiring sold practices to new owners. In 2005 the retiring percent exceeded the practice-seekers by over 2%, without even considering the additional 10.7% of practitioners intending to seek employment outside of the profession. If there are no potential buyers for some of these practices, then who will assume responsibility for the patients? There seems to be no other option but for nonprofit and charity providers to step in and fill the void.

3.2 The Practitioner Sets, and the Patient Pays, v

The second defining feature of the NZPHCS is that, whilst the government sets f , the practitioner sets v in order to recover costs. This has some particularly perverse effects in regard to inequitable allocation of the financial burden of the system based upon health need, as ill individuals pay a premium covering risk management costs associated with the allocation of individuals to patient pools, but well individuals in the same pool do not. Furthermore, the more times an individual consumes care, the more times a contribution towards the risk management costs is made. In effect, the risk management payment becomes a ‘tax’ on falling ill. Sicker individuals of sicker-than-average practices are taxed more than either their sicker-than-average counterparts at healthier-than-average practices (via higher fees or lower service quality) or their well counterparts at the same practice. This is far from the desire to share costs more equitably.

The NZPHCS is thus neither equitable in resource allocation nor capable of altering provider behaviour in the manner anticipated by NHC (2000). The most tangible result of the NZPHCS capitation arrangements is rather to increase the costs of delivering care inequitably, relative to the pre-2002 counterfactual.

3.2.1 An Impotent Incentive Contract

The NZPHCS payment arrangements are extraordinary in any capitation contract, as typically the objective of such a contract is for the purchaser to alter practitioner behaviour by controlling practitioner income. The purchaser sets and pays both f and v in order to ensure that the financial incentive will bite. If the practitioner can set v , and the patient, not the purchasing entity, makes the payment, then the purchaser cannot control practitioner income. The NZPHCS renders the Government, DHBs and PHOs all impotent in altering practitioner behaviour using financial incentives. The practitioner can simply pass on the costs of undesirable behaviour, in addition to the costs of ‘luck’ – good or bad - to the patients. The

NZPHCS rationale of capitation as a tool to alter practitioner behaviour is therefore woefully misguided given these payment arrangements.

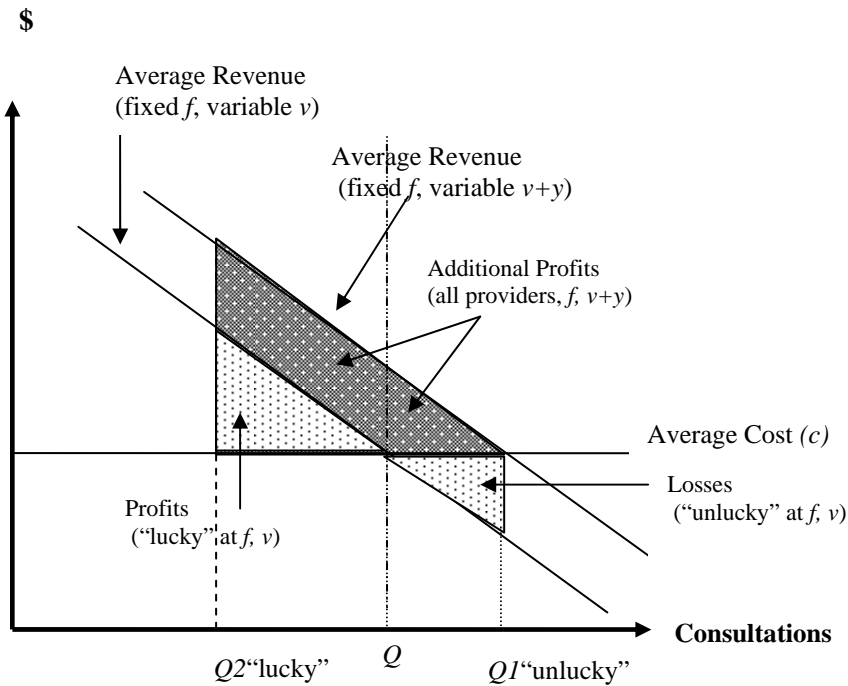
Whilst the purchaser can endeavour to use price monitoring and regulation to try and prevent practitioner price pass-throughs occurring as a means of attempting to reinstate the financial incentive, this is extremely difficult and costly to implement and enforce. Moreover, it substantially defeats the purpose of using financial incentives in the first place. The very reason for using incentives is that they are cost-effective ways of achieving the desired behavioural changes *without* having to incur costly monitoring, especially in cases, such as third party purchase, where the purchasing party cannot observe the actual behaviour that it wishes to change or incentivise (Milgrom and Roberts, 1992). If monitoring must be employed in order to overcome the design deficits of the imperfect incentive contract, it might be more cost-effective to use the additional resources that will inevitably be spent under the NZPHCS arrangements (albeit by patients) to encourage desired behaviour using non-financial instruments (e.g. targeted practitioner education).

3.2.2 With Higher Total Costs

Nonetheless, separate setting of the fixed and variable payments without any overt price controls will likely slow down the rate at which the bifurcation on quality and practice ownership will emerge relative to the counterfactual of an effective purchaser-controlled capitation contract. This occurs because the costs of loss-making 'unlucky' practices can be converted from patient costs in the form of lower service quality to financial costs. This results in the rate at which consultation numbers are restricted being retarded and quality differences may not be so great. However, the total financial costs expended will be higher, for the patients of both 'unlucky' and 'lucky' practices. Figure 1 illustrates.

Assume that the government sets the fixed capitation payment assuming Q consultations will be provided at an average cost c by a practitioner at an anticipated patient co-payment v , but that an 'unlucky' provider is required to provide $Q1$ consultations when charging v . The practitioner makes losses at this price, so increases the patient charge per consultation to $v+y$, in which case he breaks even delivering $Q1$ consultations (in effect, he shifts his average revenue curve to the right by raising the patient payment). However, a 'lucky' practitioner who delivered only $Q2$ consultations at f and v can now raise his price to $v+y$ as well (i.e. shift his average revenue curve to the right as per the 'unlucky' provider). The 'lucky' practitioner is now even more profitable than before.

Figure 1. Average Revenue Per Consultation



Moreover, 'unlucky' practitioners delivering between Q and $Q1$ consultations now move from making losses to making profits. Lucky' practitioners are therefore likely to be quite supportive of the ability for their 'unlucky' colleagues to raise prices in this manner (e.g. by suggesting that all practices are facing financial pressure at the current anticipated rates of f and v). If the price regulators allow the most 'unlucky' provider to set his prices in order to remain financially viable, and then use this amount as a benchmark for the price increases allowed by all other providers, then all but the 'unluckiest' provider makes profits in excess of costs. However, it is the patients, rather than the Government, who will bear the additional costs, as it is the patient charge, v , that is raised.

3.2.3 The Evidence

The monopolistically competitive nature of the sector suggests that many New Zealand practices would be able to raise prices to some extent in this manner without losing patients. That all practitioners are now made aware of their colleagues' price increases via PHO membership increases the ability for 'lucky' practices to respond strategically (and costlessly) to price-raising actions by their 'unlucky' counterparts (previously they would have had to expend effort to discover their colleagues' prices). In a fee survey undertaken very shortly after the implementation of the NZPHCS, CBG (2004:7) reports that even low-capitated 'Interim' practices were charging patients higher fees than their uncapped non-PHO counterparts for population groups for whom no government capitation subsidies were paid. This suggests that the higher costs of financial risk-bearing under the NZPHCS were already

noticeable in cost pass-throughs to patients even in the early days of the strategy, when capitation incentives were weak and the extent of losses comparatively small. Such pass-throughs are now likely to be much larger in size, but much harder to detect, as most patients are now PHO members and few practices aside from after-hours services exist specifically to serve non-PHO patients, meaning that it is very difficult to find a comparison 'consultation price' against which to benchmark the costs of risk-bearing via pass-throughs.

As noted in section 2, New Zealand practitioners have been able to raise prices by nearly twice the rate of inflation during the time of the NZPHCS, whilst capitation incentives were still relatively weak. The Minister has also observed that the Government's share of sector expenditure has not increased as fast as had been anticipated for the amount of additional funding provided. Both of these observations would be consistent with widespread price rises to cover both losses from bad luck and opportunistic increases by practice owners. Indeed, an absence of widespread evidence of practice financial failure, combined with McAvoy and Coster's (2005) observation that many practitioners are enjoying improved financial circumstances under the NZPHCS, suggests that to date, prices have been allowed to increase so that very few practices are facing severe financial stress. If this is the case, then more than the average number of practices must be making 'windfall' profits substantially in excess of costs. The attempts by the MoH to impose price controls in conjunction with the rollout of increased capitation funding in 2006 and subsequently more rigorous price monitoring by DHBs appears to confirm that the regulators wish to constrain the widespread passing-through of additional costs. Such action would be unnecessary if such behaviour was not occurring.

That there has already been significant alteration in practice ownership behaviour and expression of future intentions to leave the sector are not inconsistent with the observed ability of many practitioners to make profits in the short run via the widespread ability to raise prices. Firstly, not all practitioners will have the ability to raise prices, meaning there will already be some localised evidence of financial stress governing practitioner decisions. Secondly, 'closing the books' locking in existing profits now, and making decisions to leave the profession in the near future ('exiting while still 'ahead' or leaving for greener pastures when the going gets tougher) are both consistent with practitioners factoring the likely effects of future higher-strength capitation contracts and more rigorous future scrutiny on prices into their personal decision-making. Indeed, the best time for lucky practitioners to exit would be after the final round of capitation increases occurs, as at that point, both the additional practice profits from luck plus the higher practice 'goodwill' bounty can be realised by the current owner.

So far, there has also been limited evidence of a bifurcation in the sector based upon ownership and quality. If few practices are facing financial stress as they have been able to raise prices, then this does not invalidate the predictions. However, the total cost and average cost of delivering the larger-than-anticipated number of consultations provided will be considerably higher than anticipated when the ‘capitated average’ was set. The only issue is whether the even higher average prices are being paid by patients in cash or in forfeited quality (e.g. the Iwi provider cited above, where quantity was restricted and waiting lists instituted). More rigorous price monitoring by DHBs suggests that cost pass-throughs via price increases may in future be more limited, with the consequent increase in pace towards a bifurcated system based upon ownership and quality, as in predictions 1 to 5, rather than patient willingness and/or ability to pay. However, the distributional effects remain unchanged. As per prediction 1, the effects are more marked for patients of ‘unlucky’ providers.

3.2.4 Implications for Industry Structure

Combining the evidence to date of changes in anticipated practitioner behaviours with the evidence of likely increased price monitoring suggests that the pressure on loss-making practice owners will start becoming more acute. Howell (2007) predicts the growth of nonprofit and charity provision in loss-making practices. This begs the question of who the nonprofit and charity providers taking over practice ownership under the NZPHCS might be.

It is noted that PHOs were constructed under the NZPHCS as ‘nonprofit community-governed’ organisations in the form strongly favoured in NHC (2000) as providers of primary care. To date, they are co-ordinating care provision, but in most instances are not providing care directly to patients. It is unclear if they will have any contractual liability for the provision of care to the patients of practitioners who walk away. Nonetheless, there may be some moral or political obligation for PHOs to assume responsibility (e.g. by hiring salaried providers to staff some practices – it is noted that many PHOs already operate locum schemes, so potentially have processes in place to manage the supply of salaried practitioners to ‘unowned’ practices).

However, if PHOs do come to dominate care delivery by assuming responsibility for failed practices, ironically the NHC (2000) objective of community-provided care may be achieved, but not as a consequence of the firms’ superior ability to deliver care to marginalised populations, as suggested by Crampton and Starfield (2004) and Crampton, Davis and Lay-Yee (2005). Rather, it will be as a consequence of one the most cogent economic reasons for

nonprofit presence in any sector – to address a market failure (James and Rose-Ackerman, 1986). Notably, many of the pre-2002 nonprofit organisations providing the model for the preferred care delivery form also emerged as a consequence of market failures – the failure of practitioner-owners to provide care delivery of a designated type for a specific population.

That new care provider forms were able to emerge in the 1990s was a consequence of a plurality of funding forms. Returning to a single funding form will likely contribute to an increased probability of localised market failures again occurring, and a diminution of incentives for privately-owned practitioners to fill the gaps. However, if nonprofit PHOs move to ‘fill the missing market’, they will do so from a very different institutional basis than that of the organisations championed by the NHC. The ‘community governance’ of the NHC-preferred pre-2002 nonprofit providers has emerged principally from their origins as consumer-owned and governed co-operatives. As the majority of PHOs have emerged from provider-owned co-operatives, even though they have consumer representation, in practice, their decision-making and control lies predominantly with practitioners, often via the IPA-origin management companies (Howell, 2006a). It is debatable whether these ‘community-governed nonprofit’ organisations, many formed largely out of pragmatism in order to ensure privately-owned general practices remained financially viable given the distortions in government subsidies that so strongly favoured patients served by PHO-aligned practitioners under the NZPHCS (Howell, 2006a), will have the same focus on alternative delivery methods and sensitivity to individual consumer needs as the ones formed by consumers in the interests of consumers (i.e. community-owned co-operatives versus supplier-owned co-operatives - Hansmann, 1996).

3.3 Alignment of Motivations and Capitation in the NZPHCS

The specific characteristics of the New Zealand policy analysed so far are sufficient to suggest that the NZPHCS capitation instrument as implemented is costly, flawed and unable to deliver the articulated equity and practitioner behaviour objectives. If the desired changes do occur, it will be as a consequence of the non-financial instruments of the strategy. It is apposite at this point to consider whether it is the specific idiosyncrasies of the New Zealand system – the strong incentives and the ability for practitioners to set charges – that lead to this outcome, or whether capitation *per se* results in contrary outcomes to the policy’s objectives.

Taking in turn each of increased equity and the targeting of high health need, encouraging a team approach to primary health care, and a change in emphasis towards a prevention-focused

care management model as opposed to a model of episodic intervention based on illness, this subsection finds that few of the NZPHCS objectives could have been achieved using a single capitation contract. Rather, the discussion suggests that the confusion about what the capitation contract is intended to achieve, and is capable of achieving, results in a single instrument endeavouring to achieve multiple conflicting tasks with the consequent creation of contradictory equity and targeting signals. Moreover, the nexus between capitation and increased teamwork and preventative care is also quite weak, with any positive effects likely to take a long time to occur, if they can occur at all. Once again, the non-price elements of the strategy are more likely to achieve the desired outcomes, with fewer distortions in resource allocation and sector investment.

3.3.1. Capitation, Equity and Targeting of High Health Need

Whilst the NZPHCS is equitable in its allocation of capitation subsidies based on ex ante assessments of registered individuals' likely demands for care, all capitated systems are inherently inequitable in their allocation of resources (i.e. consultations, practitioner time) based upon ex post realised demand, due to the random effects of patient allocation to practices, combined with serial correlation of patient demands across time. If the capitation incentive is weak, and the patient pools are very large, then the effects of the inequities may be small enough that the benefits from reduced 'predictable risk' are not crowded out. But if the pools are small and the incentives strong, then the inequities will be large, and strongly biased against the interests of those with the greatest health needs.

Furthermore, the strategic behaviours of providers in capitated systems to manage their exposure to financial risks (prediction 3) leads to additional inequities associated with the introduction of capitation in environments (such as New Zealand's) where some patients have established relationships with providers and others do not. By prediction 2, capitated systems limit consultations. This favours those already 'on a provider's books' when capitation is implemented and providers strategically 'close the books'. If the unregistered population is presumed to be of 'average' health state, then unregistered individuals will have difficulty gaining registration at 'lucky' providers. They may, however, be able to enrol at an 'unlucky' provider as an 'average' unregistered health state individual will, on average, raise the average health state of an 'unhealthier than average' patient pool. However, if there is a widespread expectation that unregistered individuals have on average higher health needs than registered individuals (as occurs on the NZPHCS), then registering a previously-unregistered individual becomes undesirable even for 'unlucky' practices. If an individual with 'lower-than-average' health state is registered at an 'unlucky' practice, then the additional demand that the individual brings will increase the extent of the practice loss,

increasing practice financial pressure. Registering such individuals results in even further cuts in care quality (e.g. shorter consultation, waiting lists for appointments) supplied to the ‘unlucky’ individuals at the practice, who are most in need of care. The net effect is an acceleration of the changes in practice ownership and the emergence of a two-tier system based on quality, as in predictions 4 to 7.

Furthermore, paying higher capitation fees for those perceived to have higher need does not address the increases in random risk arising from variations between predicted and actual costs and their allocation across practices, as the higher capitation rates actually increase the capitation incentive strength and thus the amount of random risk borne by the providers receiving them. The effect is instead to accelerate the accrual of perverse consequences of over-high risk-sharing. The ‘lucky’ practices simply become more profitable, and the ‘loss-making ones have to reduce quality even more, and bifurcation happens faster. It is noted that in typical managed care systems, higher payments for individuals of higher need are in fact ‘risk-rated insurance premiums’ paid to risk managers, reflecting higher demand expectation for that individual. Such systems generally do not discriminate between the premium paid to a care provider for the individual and the variable price paid for each consultation delivered, irrespective of the identity of the individual receiving the care. That is, f is determined by the individual characteristics of all individuals for whom the manager is responsible, but v is identical for all consultations provided.

Whilst ‘unlucky’ practitioners may endeavour to account for lower care quality by allocating their time disproportionately to the sickest of their ‘sicker-than-average’ patients, this simply lowers the care quality even more for their ‘less frequently ill’ patients, relative to that received by the patients of identical health need at ‘lucky’ practices. Patient practice selection based upon care quality (easily observable via shorter waiting times, longer consultations etc.) now becomes an issue further exacerbating the bifurcation. Healthier patients able to verify their lower care demands (e.g. via patient records), will be highly desirable at other, more lucky practices, and may move to receive higher quality care⁷, taking their capitation payments with them. This exposes the ‘unlucky’ practices to further financial pressure as they now become even more concentrated upon the delivery of care to the sickest members of the population, who demand more consultations, but bring only a very small fraction of their additional costs into the practice by way of variable payments.

⁷ If the care quality differential is sufficiently large and easily discernable (e.g. being able to guarantee getting an appointment at a given time), the uncertainty cost of switching practitioners may be outweighed, thereby overcoming some of the problems normally associated with an information asymmetry about practitioner quality that characterises practitioner market power in monopolistically competitive markets.

Capitation systems are thus inherently antithetic to equitable allocation of care based upon health need. Contrary to the claims made by NHC (2000), fee-for-service payment systems are the most equitable (least distorting) form of remuneration in this dimension, as they reward practitioners fairly for the costs of treating all sick individuals. There are no financial risks for practitioners of registering sicker-than-average patients ‘on the books’, or in providing more treatments to such individuals (Robinson, 2001).

3.3.2 Variable Capitation Payments and Equity

NHC (2000) appears to make no distinction between two different tasks for a primary health care system in New Zealand – identifying and registering at-risk populations not already receiving care, and the allocation of available resources amongst identified individuals. Consequently, the paper appears to treat ‘access’ (registration) and ‘usage’ (consultations) interchangeably, when in fact they are distinct tasks. A single contract bundling the two tasks together and remunerating both with the same incentive will achieve neither perfectly. However, the one that receives greatest attention is the one that has the greatest effect on the individual’s returns from the contract (i.e. the one that leads to higher profits/smaller losses) (Holmstrom and Milgrom, 1991). It is now crucial to know whether the primary purpose of strong capitation incentives in the New Zealand policy is primarily to reward practitioners who identify and sign up at-risk individuals (a ‘bounty’) or primarily a financial risk-sharing agreement whereby the provider becomes the individual’s insurer in order to allocate available care amongst registered individuals.

The content of NHC (2000) appears to suggest that under-registration is the principal reason for under-usage in New Zealand. However, in the NZPHCS design, it is service providers who are charged with both identifying and registering individuals, and delivering services to them. The single capitation payment by which they are rewarded must induce them to undertake both of these activities. On the one hand, capitation payments with strong incentives for the delivery of care lead to higher costs from the risks of arising from the likely higher effort these previously unregistered high-risk individuals will incur. Providers are thus averse to exerting effort in identifying and signing on such individuals as they bring too much financial risk. On the other hand, a strong financial incentive rewarding the registration of at risk individuals, independent of the financial risk of meeting these individuals’ higher demands would have the effect of inducing providers to expend effort identifying and signing up at-risk individuals.

The optimal capitation strength will vary for these two tasks, depending upon a number of characteristics. They are also diametrically opposed in the direction of capitation strength.

For example, if the service provider is small, with limited ability to bear financial risk, and risk-management is the primary objective, then a weak capitation incentive is desirable, no matter how important it may be to sign up unregistered individuals with high health needs, as a strong incentive with limited recourse to cost recovery for the additional costs such individuals engender will simply encourage providers to become more active cream-skimmers in order to avoid financial risk. However, if the same practitioner is rewarded separately, with one contract for sign-up having a strong 'bounty' incentive, and a second contract for service provision with a weak capitation incentive, the financial consequences of unexpected demand increases from higher-need individuals are minimal, and the provider may be prepared to more actively engage in the exertion of effort to identify and register at risk individuals.

The desire for single remuneration agreement for providers in the NZPHCS appears to have resulted in a contract structure highly unlikely to address the registration inequity, as it fails to recognise the differences between registration rewards and financial risk management costs under population-based funding. This appears to have been exacerbated by the widespread creation of PHOs as extensions of existing providers as a consequence of legacy relationships, rather than PHOs being established first as risk-bearing entities and then contracting with service providers for a defined PHO (as opposed to practitioner) patient base. The PHO formation process has bundled insurance and care delivery so that the apparently most important objective to promote access to care for at-risk individuals (registration) is being crowded out by the perverse effects of random risk-sharing with a high capitation incentive via care delivery contracts, because service providers are required to do both tasks. Separating the contracts and the remuneration streams between the two different entities would have allowed for contract-setting more sensitive to the size of each entity's pools (i.e. large pool for a PHO, small pool for a service provider; strong incentives for the PHO, weaker ones for the service provider)⁸.

3.3.3 Variable Patient Payments and Equity

Clarity regarding the contractual objectives of PHOs and service providers would also have helped separate out a further objective of the NZPHCS that is bundled in with the single payment – socially-motivated wealth transfers. In a capitated health care system, it should not matter what payment is made in respect of an individual ex ante to the risk manager in anticipation of likely demand when setting the variable remuneration. All individuals who

⁸ It is noted that PHOs are paid a 'Services to Increase Access' fee. However in practice, all individuals are registered at a serviced provider in the first instance, not the PHO. The practitioner 'owns' the patient list and patient choices of practitioner determine the PHO, not the other way around.

have fallen equally ill are ex post equally unlucky and therefore should pay the same patient payments (or have the same variable payments made on their behalf) to the care provider. For example, under England's NHS ($v=0$) or a standard indemnity insurance arrangement (e.g. New Zealand's Accident Compensation Corporation) the ex ante premium subsidy paid does not alter the patient payment charged (e.g. a forester for whom a high ex ante employer premium is paid because of higher risk pays the same co-payment as a clerk, for whom a lower ex ante employer premium commensurate with lower risk is paid, when each is treated for the same type of injury).

Under the NZPHCS, however, the consumer's' identity (more precisely, the size of the ex ante premium paid by government) determines v and it is paid by the patient. For example, a practitioner is expected to receive less for a consultation delivered to an under-five year old relative to an older patient, not because the consultation takes less effort, but because the policy expectations prevent averaging the costs of care for all patients across all classes by charging a single rate. The primary health care system is thus still required to carry out discriminatory wealth transfers between classes of individuals via differential payments based upon ex ante patient characteristics rather than ex post health states. This effect occurs not just during the transition to the capitated system, but is expected to persist once all population groups are eligible for higher capitation subsidies, at least in respect of children under 5.

It appears that such expectations are occurring as a result of the confusion about what the capitation payment is to achieve, and who is responsible for each activity. Such treatment-based payment differentials 'hang over' from the pre-2002 system where government payments were 'treatment subsidy' welfare benefits to defray the costs of care for eligible individuals, but in order to reduce transaction costs were paid to service providers rather than the ill individual. They were not part of the treatment remuneration contract, which was between the patient and the provider. Under capitation, however, the treatment remuneration contract is between the PHO and the provider, and should be independent of the identity of the individual receiving the care. This enables the PHO to customise the treatment contract to alter provider behaviour, but without crowding out desirable behaviour with over-much financial risk responsibility. The risk management contract is between the government and the PHO, and the identity of the individual receiving an insurance subsidy is material, as it determines the government's share of the premium paid. If there is a wealth transfer to occur, this is a matter between the government, the PHO and the individual, and should be resolved by a 'top-up payment' being made by the subsidised individual at the point of subsidy (e.g. the individual ex ante qualifies for a higher ex ante premium subsidy, so makes a lower ex ante premium top-up to the PHO, rather than only ill individuals paying top-ups ex post).

It is in this respect that the treatment of the government capitation payment under the NZPHCS as a ‘notional averaged treatment subsidy’ in setting patient payments is most anomalous. Patient payments will be unequal simply because of the luck of patient allocation to practices, but with the less well subsidised patients paying more of the risk costs than the higher-subsidised, and with consultation consumers paying more than non-consumers, each in proportion to the number of consultations consumed. In the ACC (New Zealand’s state-owned compulsory accident insurance scheme) analogy, if the costs incurred by a provider to treat injured foresters exceed those anticipated by the contract, then the provider must bill injured clerks more to pay for the higher costs of injured foresters (a wealth transfer from clerks to foresters). Moreover, the uninjured clerks pay none of the additional costs of the injured foresters, as they haven’t been injured yet (an implicit wealth transfer (via costs foregone) from all injured individuals to all uninjured individuals). The wealth transfer is effected, but with only ill individuals paying the ‘tax’. Once again, clarity from separation of the respective responsibilities would have avoided this additional inequity.

3.3.4 Team-Based Approach

Whilst capitation “offers the potential for stimulating attention to epidemiological patterns of illness and care, of being buttressed by clinical protocols defining which form of care is expected in which context, and of encouraging resource-conserving practice innovations” (Robinson, 2001), in essence the one-to-one nature of primary health care consultations does not predispose the sector towards teamwork in the sense of many individuals working together to deliver a single consultation (Newhouse, 1973). Strong financial incentives may lead to new service delivery methods such as reducing costs by allocating some consultations to lower-cost nurses, but these outcomes are more consistent with increasing specialisation than increasing teamwork – e.g. nurses provide vaccinations, dressings, education etc., whilst general practitioners specialise in diagnoses and procedures that necessitate their different human capital. Indeed, increasing specialisation may lead to increases in the cost of service delivery, as it adds a co-ordination overhead not present when one individual undertakes all activities. United States research into the effects of increased specialisation within primary practice suggests that the co-ordination costs are substantial and may affect practice profits and productivity negatively, despite benefits accruing from increased collegiality (Reinhardt, Pauly and Held, 1989; Dobson, Pinker and Van Horn, 2005).

Rather, it is predominantly the activity of developing purchasing contracts to meet an individual’s overall health needs (case management) that enables the co-ordination of a team of different provider types to service an individual’s many primary health care needs over an

extended time period. It is unclear how paying primary care providers by capitation will advance this objective, except where the service provider also holds the budget for the purchase of these additional services for registered individuals (e.g. as in the United Kingdom – Majeed and Malcolm, 1999). In the New Zealand context, it is the PHOs that are contracted in the first instance to undertake this responsibility. General practitioners are just one of the many services with which PHOs will enter into contracts. Whilst it may be appropriate to remunerate PHOs via capitation to encourage co-ordination activity, there would appear to be few further benefits in rewarding general practices via this instrument solely for the purpose of co-ordination and teamwork.

3.3.5 Promotion of Wellness Replacing Illness-based Intervention

The most cogent reason for the New Zealand use of capitation appears to be the objective to change the sector culture to one based on the promotion of wellness. Payment by fee-for-service rewards consultations delivered. In a traditional view, remunerating practitioners for a consultation prompted by a patient presenting with a symptom links service delivery with instances of illness, leading to the view that fee-for-service incentivises an intervention-based culture of care delivery. As consultations are the primary care provider's principal cost-driver, capitation payments theoretically incentivise providers to invest more in preventative actions in order to reduce the number of consultations demanded by the registered population when income is decoupled from the primary cost-driver.

However, delivery of preventative treatments is also achieved predominantly via consultations, and is not costless. It takes time to analyse records, deliver education, measure blood pressure and test urine samples for glucose, vaccinate etc. as well as deal with the patient's presenting symptoms. If additional preventative care is to be delivered, in the initial stages at least, this workload is incurred in addition to the normal volume of episodic treatments demanded by patients. There are some economies of scale available in dealing with the preventative issues at the same time as a patient presents with a need for an episodic intervention. Indeed, the requirement for education may be motivated by the diagnosis made during intervention. But unequivocally, the costs of a shift to a wellness-promoting model are initially higher than under the counterfactual.

Yet capitation incentivises reduction of consultation numbers and costs. The more rapidly a capitation incentive is applied and the sharper the incentive strength is, the more likely the response of a practitioner will be to skimp on or even ignore prevention, unless it is remunerated under a separate contract. As many preventative activities are standardised, easily monitored, and easily counted, transaction cost economics (as per Williamson, 1986)

suggests that they lend themselves well to fee-for-service remuneration. Thus, many preventative treatments (e.g. vaccinations, asthma education and well child health checks) are not covered under the standard New Zealand primary care capitation contract, but are remunerated under separate fee-for-service or price-and-volume contracts. Often, the same practices have multiple contracts for all of these services. It is thus unclear what additional prevention activities it is anticipated the capitation contract will incentivise.

Moreover, the benefits of additional preventative activities may take many years to accrue and are hard to quantify. Whilst for specific interventions (e.g. influenza vaccinations) the payback is potentially large and immediate, for others, the payback may be small in total and take a long time to accrue. The practitioner investing the preventative effort will not necessarily be the one reaping the financial returns, as both patients and practitioners move between practices. It is also very hard to target preventative care effectively (e.g. a lot of general education may be dispensed to many people, but only a few are actually go on to develop a condition) and preventative efforts such as education have substantial economies of scale that render individual practitioners with small patient bases at a disadvantage in delivering a service that is more cost-effectively delivered using population-based campaigns based around other delivery mechanisms (e.g. television, magazines). At the very least, higher initial costs and long time delays in accruing the benefits suggest that, in the early stages of a system culture change, capitation is incompatible with an increased emphasis on prevention. If it is used at all, it would appear apposite for purchasers to begin with either no or very low-power incentives, increasing the power very slowly over a very extended time period (up to 20 years or more may be necessary, given the long times to accrue paybacks), bearing in mind that each increase in strength will result in more random risk being shared with practitioners. The commencing and concluding strength will also need to be lower the smaller the provider's risk pool. To do otherwise will risk a backlash against the very objective that the strategy sets out to achieve.

The very strong incentives in the NZPHCS, and the rapidity with which they are increased, suggest that, despite the theoretical potential for a system prioritising prevention, the most likely outcome will be that the costs of risk management will rapidly crowd out any positive effects. Once again, if there are changes in sectoral behaviour consistent with the strategy's objectives, these are far more likely to be a function of the non-price elements of the strategy than the financial incentives of the capitation contracts implemented.

3.3.6 Reduction of Patient Moral Hazard or Increased Costs of Negligence?

Whilst it is not explicitly stated as an objective of the strategy or a reason for the use of capitation, it is possible that capitation contracts may be applied as a means of inducing practitioners to take a more pro-active role in discouraging the anticipated increase in patient-induced over-consumption as the number of subsidised individuals increases (Shen and McFeeters, 2005). Each additional 'worried well' consultation provided will erode practitioner profits, so practitioners will presumably face incentives to identify habitual 'well worriers' and endeavour to alter their cost-causing behaviour.

However, it is impossible for a practitioner to ascertain without first conducting a consultation whether a patient's presenting condition is 'well worrying' or a more tangible illness. Even habitually well worriers may sometimes present with tangible illnesses. If the practitioner screens out habitual 'well worriers' (e.g. shorter consultations, delegating them to the nurse), then the practitioner runs the risk of overlooking a tangible illness. The risk to the practitioner's reputation from such an outcome is costly, so the practitioner must take this into account when deciding whether to discriminate between patients. This makes the use of capitation contracts to induce practitioner control of consumer over-consumption problematic. Very strong incentives in the contract may induce over-much screening out, and higher flow-on costs of practitioner liability for negligence. It is also noted that the same effect may also ensue from lower quality in a highly-capitated system with very small pools and no ability for the practitioner to recoup costs.

4. Conclusion

In summary, it appears highly unlikely that the objectives of the NZPHCS will be delivered by a capitation instrument in the form that it has been applied since 2002. The very strong incentives in the contract, the very small risk pools managing demand variation, and the highly unusual way in which practitioners can set the variable component mean that it is almost certain that the behavioural changes desired will not be induced. If they do occur, it will almost certainly be as a consequence of the non-financial tools of the strategy rather than capitation funding. Moreover, even if the incentive strengths had been lower, the time taken to implement the system longer, and a more equitable way of levying the costs not met by government funding devised, it is unlikely that the desired equity outcomes would have been achieved, given that capitation is systematically contrary to increased equity. There is a slight possibility that capitation may have been able to play a small role in increasing the emphasis on prevention and increasing teamwork, but only if managed very carefully. On balance, these objectives appear to be much more appropriately addressed by non-financial

instruments, and then only if it is quite clear where the locus of responsibility for the incentivised activity lies. It is not at all clear that the current system, with the focus of capitation funding on end suppliers, will achieve the objective.

Rather, the tools as implemented are far more likely to induce a very high cost, inequitable system with significant distortions in patient equity and significant implications for the allocation of human and physical capital in the sector. The most likely outcome will be a rapid progression towards a bifurcated system with quality type and ownership form based upon patient health state. It will also be substantially more costly to deliver each consultation provided, relative to the pre-2002 system, given the opportunities for windfall profits to be extracted. The unusual arrangements with respect to individuals paying the variable component and the strength of the capitation incentives, will ensure that the inequities will emerge much sooner, and will be much more extreme, than if the incentives had been softer, a single payer controlled both the fixed and variable components of the capitation payment, and specific attention was given to the role of risk management in the system's design. Evidence of such discrepancies are already emerging, with practitioners being bifurcated upon the basis of profitability and risk aversion, patients finding it increasingly difficult to find a practitioner willing to assume financial responsibility for their demand variation and quality differences emerging between providers prepared, and able, to raise patient prices and those who cannot.

That such a system could have emerged appears due to the lack of clarity in the system design between the role of population-based funding as an insurance/risk management instrument and capitation contracts as a means of incentivising providers to change behaviours. Indeed, the nature of insurance/risk management in population-based funding is conspicuous by its absence from discussion in any of NHC (2000), the papers commissioned by the National Health Committee for the preparation of the document, and the NZPHCS itself. Also conspicuous by its absence is a discussion about the nature of supply-side risk-sharing in capitation contracts. The simple interchangeability of each of budget-based funding of DHBs, budget-based funding of PHOs (both population-based risk management instruments) and capitated funding of service providers appears to be taken for granted, as is the interchangeability of patient payments under the pre-2002 system and patient payments under the NZPHCS.

It does not appear that in the design of the policy the subtlety in the change of the individual receiving government subsidies from a sick individual receiving a treatment subsidy for ex post demonstrated demand to a well individual receiving an ex ante premium subsidy in respect of anticipated demand was identified. Thus the change in the role of practitioners

from service providers pre-2002 to risk managers under the NZPHCS was neither understood nor fully appreciated. Whilst the system design allowed for the creation of PHOs to assume the risk management role, and for PHOs to enter into customised contracts with service providers, which could have been of any form including fee-for-service or capitation, it is possible that the creation of the majority of PHOs as extensions of service providers made it conceptually difficult for either policy-makers or service providers to separate out the distinctive roles of risk management and service provision. That neither the MoH nor the DHBs has experience in either managing, or purchasing risk management from, insurance companies probably did not assist in making the distinctions clear.

Ironically, the ACC model probably provided the best template for the NZPHCS, in that it is (for worker payments at least) a partially subsidised population-based insurance and risk management system, collecting premium top-ups (worker contributions paid via payroll taxes) to meet costs, providing care co-ordination and management, and purchasing care from the same providers as the primary health care system. If ACC was managed like the NZPHCS, partial premiums would be paid by employers for all employees, but the balance of the financial liability for care commissioned by ACC not covered by the employers would be collected only from those individuals unlucky enough to have an accident. The more unlucky an individual was, and the more accidents he had, the more payments that individual would make. Lucky individuals, however, would pay nothing. Moreover, the payments made would depend upon the luck of the other individuals registered at a particular practitioner. If more of them were unlucky and had accidents, then the payments made would be higher than at another practitioner who had fewer unlucky individuals 'on the books'. This would be considered an extremely inequitable design for ACC, as it punishes the very individuals that the system sets out to assist – those facing uncertain costs from having an accident - yet it is the design adopted for the NZPHCS, which is charged with managing the cost uncertainties for those who do not know what their demand for primary care will be. The discussion in this paper reveals just how inequitable it can be, and moreover how significantly the management design can result in distortions in costs, system structures and incentives for practitioners.

The analysis in this paper begs the question of whether there is room for the current system to be modified, so that it supports the objectives of increased government funding and increased (but not perfect) equity without the extreme distortions suggested in this paper as likely outcomes. A first requirement must be that the system recognises that the current capitation payment is being required to undertake three very distinct tasks that need to be separated. Politically-motivated wealth redistributions are rightly part of the taxation and welfare system, and should be managed in that system and not be allowed to distort the allocation of

resources and outcomes in health care provision. PHOs are the logical recruiters and registrars, as well as being the recipients of population-based budgets, and managers of the first levels of financial risk, but their operations should reflect this activity. They need access to risk management resources and expertise. They cannot continue to be treated as simply operational extensions of care providers, with boards comprised of provider representatives letting contracts to themselves (a significant conflict of interest), and with no requirement for financial or risk management representation (Howell, 2006a). They are first and foremost insurers and care managers, so must be able to recoup costs directly from all insured individuals, as per the employee contribution of ACC, rather than just from those falling ill and receiving treatment from a care provider. They are also care purchasers, so must exercise independence and sensitivity to individual practice circumstances when entering into contracts with providers. This may include the ability to use fee-for-service contracts if this is appropriate. It must be abundantly clear in the system which entities are responsible for risk management, and these tasks must be scrutinised with the same skills and purpose as those of other risk managers (e.g. insurance companies, pension funds).

A robust population-based funding model is, unfortunately, not synonymous with a single capitation contract. Rather, in the funding of both PHOs and service providers, it must be recognised that there is no one 'ideal' contractual model that will meet all needs. As James Robinson identifies in the quote that opens this paper, if there is a single theme that this paper reveals, it is that remuneration systems are complex and interactive, and they involve multiple contracts. When a nexus of contracts is required to deliver multiple goals, then multiple remuneration methods may be required. This was James Robinson's recommendation in 2001. The New Zealand Primary Health Care Strategy in operation appears to bear out, unfortunately through negative examples, the wisdom of this advice.

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