



NEW ZEALAND INSTITUTE FOR THE STUDY
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**Health Sector Failures in NZ:
Act of God, Act of Man or Inadequacies in Contract Design?**

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Introduction

The recent history of the New Zealand health sector is littered with examples of the failure of individual health care providers to supply to patients a quality of care that meets acceptable professional standards. High profile exposures include the 1987 Royal Commission into the Treatment of Invasive Cancer at National Women's Hospital¹ (the Cartwright Inquiry), the 2000 Ministerial Inquiry into the Under-Reporting of Cervical Smear Abnormalities in the Gisborne Region² (The Duffy Inquiry) and the 2001 trial of Dr Graham Parry in respect of his treatment of cancer patient Colleen Poutsma³ (the Poutsma case and the contemporary Cull⁴ Inquiry into Medical Misadventure).

Several key elements link these cases. All involved practitioners acting as contracted agents of the publicly-funded health system, and public attention was drawn to the poor standard of care by individual patients ('whistleblowers') of the practitioners concerned only after all attempts to have the problem addressed within the health and legal system mechanisms designed to oversee service quality⁵ were frustrated. In each case, politically instigated public inquiries were required to investigate the problems (the Cartwright and Duffy Inquiries, and the Poutsma case). These subsequent inquiries all found that the standards of care that prompted the action of the 'whistleblowing' patients were widespread, involving not just individual practitioner failures, but significant system failures that had enabled inadequate treatment to be perpetuated until such time as one patient had sufficient motivation to incur the substantial personal costs of public exposure.

Despite the implementation of the Cartwright Inquiry recommendations, including the establishment of a medical ethics process and the Office of the Health and Disability Commissioner (HDC) to protect patients from practitioners who are not acting with appropriate care or with the patient's best interests in mind, both the Duffy Inquiry and the Poutsma case reveal that the publicly-funded health service environment in New Zealand is still unable to sufficiently self-monitor in order to minimise the costly consequences of inadequate or substandard service provision. The integrity of the system has been shown to hinge upon the actions of individual 'whistleblowers'. This inevitably raises the question: how many other instances of poor quality go undetected because dissatisfied patients are neither able to, nor prepared to, incur the substantial personal costs required to initiate

¹ Cartwright, S.R. 1988. *The report of the committee of inquiry into allegations concerning the treatment of cervical cancer at National Women's Hospital and into other related matters*. Auckland: Government Printing Office.

² Duffy, A.P., D.K. Barrett and M.A. Duggan. 2001. Report of the Ministerial Inquiry into the Under-Reporting of Cervical Smear Abnormalities in the Gisborne Region. www.moh.govt.nz

³ Decision No 129/00/62D before the Medical Practitioners Disciplinary Tribunal

⁴ Cull, Helen. 2001. Review of Processes Concerning Adverse Medical Events. www.moh.govt.nz

⁵ For example, the Medical Practitioners' Disciplinary Tribunal, the Office of the Health and Disability Commissioner, and even the civil court process.

public and political proceedings, when the system has failed to correct the inadequacies they have endured⁶?

While the Cartwright, Duffy and Cull inquiries investigated in some detail the health system processes that led to the specific instances of malpractice that prejudiced the health states of the main ‘whistleblowers’, a key element of these processes – the design, incentives and monitoring of the contracts, both explicit and implicit that make up these processes - has been consistently overlooked. New insights can be found in a systematic exploration of both the individual contracts and the nexus of contracts that makes up the publicly funded health system in New Zealand. This paper utilises the economic theory of contracts to examine the ways in which contracts between patients and their practitioners for the delivery of services, and between the public and their political agents, politicians and public servants, and public servants and health practitioners for the funding of services, interact. In particular, the paper examines ways in which these contracts, and the information asymmetries that are associated with them, both facilitate and frustrate the flows of information required to monitor and enforce performance of the myriad of contracts involved. The paper also analyses the incentives associated with monitoring and enforcing contract performance in an environment where there may be considerable distancing of the incentives to monitor and enforce the contract from the information necessary to do so.

Evidence from the Duffy Inquiry is used to show how failure to address the systemic interrelationships between contracts, both implicit and explicit, in the design of the New Zealand National Cervical Screening Programme (NCSP) resulted in the creation of obstacles that actively prevented the nexus of contracts from performing either efficiently or effectively in the interests of the patients concerned. Further, this example illustrates that the use of a contracting model reliant upon practitioner and public servant monitoring and enforcement of service provision processes inside a public funding model reliant upon monitoring and enforcement of political process performance, without due consideration given to the information necessary for adequate monitoring and enforcement, led to a system where patients were left with few avenues via which to discipline their errant agents, irrespective of whether it was the political agent or the medical agent who had erred. Thus, the ‘problem’ is found to lie not in the corporate contracting model of the 1990s, but within the inconsistent alignment of incentives, monitoring and enforcement within the publicly-funded model.

Using lessons and evidence from the NCSP example, the paper concludes that unless these issues of contract design, and in particular the alignment of incentives associated with monitoring and enforcement of performance are addressed, it is inevitable that further

⁶ For a discussion of the economics of whistleblowing, see Marriott (2001).

failures in the New Zealand publicly-funded health system will occur. The paper proposes two independent means via which incentives may be better aligned within a publicly funded health system and improve outcomes for patients. Improvements may be achieved in incentive alignment and monitoring if property rights to the information contained in medical diagnoses are vested in the originating principal, the patient. I argue that while this improves the quality of monitoring, and hence patient outcomes, it does not address the fundamental separation of agent incentives from the ability of patient principals to share risks with these agents. This cannot be addressed via the political environment. Hence, the only recourse appears to be a legal process. However, this rationale is contrary to the current New Zealand legal environment, where the rights of patients to seek recovery of exemplary damages from erring agents, be they medical, bureaucratic or political, are waived by the provisions of the Accident Compensation Corporation Act and Crown immunity from prosecution. If incentive alignment and risk-sharing are to be used as tools to ensure efficiency of the publicly-funded health system, then the ability of patients to seek legal redress must be restored.

Contract Theory

The New Zealand Health System Context

Considerable attention has been given in New Zealand to the role of contracting in health service provision, as a result of the Green and White Paper in 1991, and the subsequent development of a quasi-market for public health service purchasing and provision (Ashton (1999)). The separation of purchasing and provision, and the establishment of the Regional Health Authorities and their successors the Health Funding Authority and the District Health Boards has focused public attention upon explicit contracts between third party purchasing bodies and providers of services. However, the health system is also comprised of many other contracts, both implicit and explicit, that characterise its operation, quite independent of contracts for purchase and provision, and ownership forms⁷ of the parties to the contracts. These include (amongst others) contracts between:

- the voting public of New Zealand and politicians, to create policies and legislation that act in the collective health interests of the population, and with respect to the wise use of taxation revenues devoted to health care;
- politicians and public servants (including the Ministry of Health, the various purchasing authorities and agencies such as the Office of the Health and Disability Commissioner), to oversee the operation of the publicly-funded health system;
- public servants and health practitioner registering bodies, to set standards for practitioners;
- health practitioners and their registering bodies, to license practitioners and maintain standards of ethics; and
- patients and health practitioners, to deliver specific services, even though the patient does not pay directly .

These contracts exist irrespective of the mode of purchasing or providing health care, or the ownership of the bodies carrying out these tasks. They are principally a factor of third-party involvement in the health system, and arise irrespective of whether the third party is an insurance company or a state agency. In the New Zealand context, the need to address the issues raised by these implicit contracts existed both prior and subsequent to the establishment of the contracting market in 1993. An understanding of the role of third-party contracts is as equally important as an understanding of the contracts for purchase and provision of services in the design of efficient and effective processes within a publicly funded health system. Indeed, the emphasis on the design and implementation of purchasing and provision contracts following the introduction of the quasi-market may have resulted in a neglect in due consideration of the role of third-party contracts, and the

⁷ That is, public ownership, private ownership, or non-profit ownership forms.

integration of them with purchasing and provision contracts, to the detriment of the performance of the health system.

Theory of Efficient Contracts

A contract is a legally enforceable promise, either written or oral, detailing the obligations of each party to the contract – for example, to provide a good or service on the one hand, and to pay for it on the other (Milgrom and Roberts (1992): 597). An efficient contract is one that enables each party to execute their rights and responsibilities via a process that (Boyd, Evans and Quigley (2000)):

- minimises transaction costs;
- limits opportunistic behaviour through the use of incentive mechanisms and effective performance monitoring;
- allocates contract risks so that the risk is borne by the party that can best absorb the costs of that risk eventuating;
- allocates property rights to the party that can best utilise that property; and
- facilitates investment in any specific assets required to carry out the contract.

A contracting process typically comprises five distinct steps:

- search, where potential partners undertake investigations to determine the set of parties with whom they can contract;
- negotiation, where the terms of the contract are negotiated, written and agreed;
- performance, where the agreed contract is carried out;
- monitoring, where the parties check that the contract has been performed as agreed; and
- enforcement, where a party whose expectations of the contract have not been met seeks either performance of the contract or redress from the defecting party.

In order to ensure that the contract is performed according to the intentions of both parties, careful attention must be given to each of these stages in the contract process.

Transaction costs that reduce the efficiency of the exchange arise from the need to engage in search, negotiation, monitoring and enforcement, and the costs of co-ordination and motivation of the parties. Incentives that align the interests of the parties may reduce the costs of monitoring and enforcement, and contribute towards minimising the costs of opportunistic behaviour. Thus, contracts typically contain a balance of incentives and

provisions for monitoring. The more incentives in place, the lower the expected transaction costs incurred from monitoring (Boyd, Evans and Quigley (2000)).

Transaction costs of monitoring typically rise when information asymmetries result in one party to the contract having more information about their ability to perform the contract requirements than the other party has. In order to minimise losses from opportunistic behaviour as a result of the information asymmetry, the less-informed party is required to undertake more extensive monitoring of the more-informed party. Mechanisms such as allocation of a greater share of the risks of the contract to the more-informed party, and allocation of property rights via the contract so that the less-informed party may more easily monitor the performance of the more-informed party, offer ways in which the transaction costs resulting from asymmetric information may be minimised (Carlton and Perloff (2000): 420-423).

Principal-Agent Contracts

A principal-agent contract occurs when one party (the principal) uses a contract to allocate rights and responsibilities to another party (the agent) to carry out a duty for which the principal would otherwise be responsible. Typical principal-agent contracts include the delegation of control and management of a company by the shareholders to a board of directors and management, and the delegation of political decision-making power by the citizens of a country to their elected representatives. Likewise, political principals delegate the responsibility for carrying out execution of their decisions, made as agents of their constituents, to agents – public servants.

Typical principal-agent contracts are characterised by a principal (an ill-informed individual) and agent (an informed individual), both of whom are attempting to act in their own interests. Because of the diversity of interests between principal and agent, and the presence of an information asymmetry, the principal has to devise a contract or method of remuneration to ensure that the agent does not cheat (Ryan (1992)). In the absence of such a contract, there will be no incentive for the agent to act in the interests of the principal, so the principal has to motivate the agent to choose his/her activities in a way that benefits the principal, using compensation rules or incentive compatibility constraints (McDonald (1984), Arrow (1986)).

If the outcome of the contract is the only source of information available to the principal of the agent's performance, then the agent's payment will be a function of that outcome. However, the optimal fee paid will depend upon the risk-bearing propensity of the agent. While a risk-neutral agent would bear all risks and receive a fixed payment from the

principal, making the information asymmetry immaterial, when the agent is risk-averse, the principal's incentives can be preserved only by assigning the risks of agent failure to the agent (Arrow (1986)). The optimal fee schedule where both the principal and the agent are risk-averse will be one that is a function of the outcome, and where both actors share the risk (Ryan (1992)).

If the principal seeks to reduce the information asymmetry by monitoring, then providing the monitoring yields additional information on the agent's performance, the fee schedule will reflect the additional costs of monitoring. However, incentives to align behaviours may prove more effective than direct monitoring if the desired behaviour can be induced for less cost. Shavell (1979) shows that information asymmetry yields the first-best, full information solution unachievable, leaving only the second-best solution of trading off risk-sharing and incentives. The relative efficiency of any principal-agent contract thus relies upon a mixture of incentives, monitoring and risk-sharing. This requires a balance between the costs and benefits of overt monitoring and enforcement and the costs and benefits of using incentives.

Where there are multiple agents acting for one principal, and the output is unobservable, then some inefficient free-riding amongst the agents is inevitable (Holmstrom (1982)). Efficiency can be improved in such circumstances by additional monitoring of the agents by the principal (Alchian and Demsetz (1972)), but if the principal is not in a position to monitor, imposing group incentives remains the only feasible option (Holmstrom (1982)). An efficient outcome in this case will rely upon a trade-off of individual and group incentives, risk-sharing and monitoring. If the outcomes of the agents are related, then this may be assisted by the use of mechanisms such as competition between agents and peer review, in order to share the risks of failure among the multiple agents (Ryan (1992)).

Agency Problems, Incentive Alignment and Third Parties

Prendergast (2001) illustrates that third parties who contract independently with an agent have a role to play in the efficient revelation of information required by the principal for monitoring and enforcement of the principal-agent contract. For example, a supermarket owner (principal) relies upon information from a customer (third party) to reveal information about the opportunistic behaviour of an employee (agent), such as overcharging and appropriating the proceeds. However, the willingness of the third party to disclose such information (e.g. by complaining to the principal about the agent's opportunistic actions), and thereby increase the efficiency of the agency contract, is dependent upon the alignment of preferences between the third party and the principal. Where the third party has different preferences to those of the principal, or where the

third party stands to gain as a result of the agent's opportunistic actions, then information revelation is unlikely to occur. The principal can, however, increase the likelihood of reporting by offering incentives to the third party that exceed those offered by the agent to conceal (e.g. 'double refund' provided by supermarket management to customers where overcharging by checkout staff is identified).

Prendergast's analysis is consistent with that of Wilson (1989), who finds that the willingness of bureaucrats as third parties to report agents' opportunism is dependent upon how such reporting impacts upon their wages and future career prospects.

Nested Principal-Agent Contracts in the Medical Environment

It has long been recognised that medical practitioners, and doctors in particular, hold a strong informational advantage over their non-medically trained patients (Arrow (1963)). While it is often assumed that a doctor (or other medical practitioner) will act in good faith as agent of the patient⁸, when a patient enters into a contract with a medical practitioner, the risk exists that the practitioner may act opportunistically. Such behaviour may include recommending unnecessary costly additional treatments (supplier-induced demand (Coyte (1984)), providing a less than adequate standard of care, thereby reducing the costs of the contract to the agent, but impacting upon the quality of the product received by the patient (e.g. by refraining from providing specific costly treatments) or even withholding treatment as part of an experiment in which patients are unaware that they are participating (as in the extreme case of Dr Herbert Green at the National Women's Hospital in Auckland⁹). Without specific skills and knowledge, the patient is in a poor position to assess the standard of treatment offered against the range of potential treatments, or to judge the standard of skill applied in deriving and delivering any diagnosis offered.

The traditional ways of overcoming this principal-agent problem have been by means of mechanisms such as:

- repeated contracting with the same agent (Williamson (1993) – the building of trust, reputation and relational contracting along with the promise of income streams into the future);
- implicit guarantees via practitioner registration and peer review (Scott (1996));

⁸ Most health economics literature recognises that the doctor's utility function contains a component of the patient's utility (Evans (1984)).

⁹ Cartwright, S.R. 1988. *The report of the committee of inquiry into allegations concerning the treatment of cervical cancer at National Women's Hospital and into other related matters*. Auckland: Government Printing Office.

- overt monitoring by a more qualified independent agent¹⁰ (Scott (1996));
- ready access to a second opinion¹¹ (Vick and Scott (1995)); and
- principal risk-sharing via pooled purchasing mechanisms such as insurance schemes where more highly-informed agents make the purchasing decision on the principal's behalf¹² (Scott (1996)).

These mechanisms tie the medical practitioner's income to patient treatment by either limiting the right to practice, withdrawing custom or damaging reputation and hence future income streams. However, all of these mechanisms, except the first, transfer the responsibility for monitoring and enforcing doctor performance from the patient to another agent, whose behaviour must then be managed by yet another set of principal-agent contracts. Efficiency of the nested system of contracts requires the individual efficiency of each of a succession of contracts in the longer principal-agent chain. Failure of any one of the contracts jeopardises the outcome of the inter-related system (Yang and Ng (1993)). Group incentives in addition to individual incentives are important in order to achieve an outcome that meets the originating principal's objectives. As interaction between agents has a bearing upon the principal's outcome, a more complex contract is required (Blomqvist (1991)).

Nests of principal-agent relationships necessitate that each agent in the chain, that subsequently acts as principal in another contract, must know the preferences of the originating principal in order for an effective contract to be designed. In addition to the risks of agent opportunism, there is a risk that such an agent-principal may impose his/her

¹⁰ For example, New Zealand's Health and Disability Commissioner.

¹¹ The mechanisms most commonly used are registration of practitioners by colleagues (often supported by government legislation preventing unregistered personnel from practising) and the custom of making medical notes available to patients. As an 'act of good professional faith', medical practitioners have commonly made their records of consultations available to the patient, either for referral to another practitioner for a 'second opinion', or in order to seek subsequent treatment. The exposure of their assessments to peer review that this disclosure enables provides a strong incentive for practitioners not to act opportunistically. Fear of exposure by a colleague of such behaviour (especially where it breaches established professional ethics and hence risks deregistration from a professional body) and the consequent damage to professional reputation and future earnings, weakens the incentive to exploit the informational advantage, thereby lowering the risks of exploitation faced by the patient.

¹² Patients may delegate the task of assuring the competence of a medical practitioner to a trusted and respected third party with sufficient knowledge to judge the competency of that professional. For example, by subscribing to a medical insurance scheme, and seeking treatment only from medical professionals recommended by that scheme, the patient is delegating the responsibility for monitoring competency to an agent in another principal-agent contract. In this case, it is assumed that the medical insurance company will not be subject to the same levels of information asymmetry as the patient and will not recommend a practitioner whose standard of care has been adjudged to be inappropriate. The incentives for the practitioner to act opportunistically are further reduced, as detection of such behaviour in one instance jeopardises the future revenues not just from the prejudiced patient, but from all others belonging to the same insurance scheme. However, in this case, the patient has a responsibility to monitor and enforce the performance of the insurance company in carrying out this agency, and that the insurance company itself requires information to make its assessment of practitioners and their behaviour. Unless the patient-insurance company contract adequately addresses the information asymmetries that this additional agency relationship introduces, further inefficiencies may result. The patient stands to gain by delegating the responsibility for a hard-to-monitor contract and replacing it with one that is more straightforward to monitor. However, there are additional monitoring costs incurred as a consequence. As long as the increase in transaction costs is less than the expected costs of opportunistic behaviour from both contracts, such an arrangement will be more efficient than the single information-asymmetric contract between the patient and the medical practitioner.

perception of the principal's wishes rather than those actually held or required by the principal. This is particularly relevant in the delivery of medical services, where the altruistic externality of 'doing good' based upon medical ethics may result in a less than satisfactory result for the principal who desires a different outcome (Scott (1996)). Excellent information flows are required between the principal and such an agent if these additional asymmetries are to be avoided (McGuire et al (1988)). Yet all too often, these relationships are also subject to equally large information asymmetries (Labelle et al (1994)). Furthermore, the more principal-agent links there are in the chain, the greater the dilution of information about the originating principal's actual wishes, due to multiple filtering via the multiple agents' perceptions (Brynjolfsson (1994), Jensen and Meckling (1976)).

Health Services and Third Party Political Contracting

Despite the potential additional costs of information asymmetry and opportunism, the use of third party contracting has been shown to reduce total health care costs by pooling patient risks and spending (Milgrom and Roberts (1992): 206-214). In practice, this has resulted in the growth of insurance company purchasing (e.g. United States of America), state-funded care (e.g. United Kingdom) and a mixture of the two (e.g. New Zealand). While the transaction costs of the purchasing component of the contract (search, negotiating, risk management, monitoring, etc.) may be minimised via the pooling mechanism, the performance of the overall contract may not be optimal from the perspective of the originating principal if the information asymmetries introduced by additional agency contracts result in a contract that does not meet the originating principal's objectives. Thus, the efficiency of third party contracting relies upon a trade-off between the transaction cost savings of joint purchasing and the transaction cost increases due to introduction of additional information asymmetries (Vaithianathan (1999), Ashton (1998)).

Delegation of health contracting to a generic political agent inevitably creates additional information asymmetries and risks of opportunism that may result in an even greater divergence of outcomes from originating principal intentions. Notwithstanding the difficulties of establishing the health preferences of the median voter, a political agent must also ascertain the weight given by the median voter to health preferences amongst all other political agency responsibilities, thereby increasing the scope for information asymmetry to result in distorted outcomes (Buchanan (1989)). Further, the ability for a principal to discipline a poorly performing political agent in respect of the health component alone is fraught with complications given the wide range of political agencies bundled into the one vote (e.g. health, defence, education, social welfare, taxation, etc.) (Cangialose, Howell and

Kavanagh (2000)). Hence, the scope for opportunistic behaviour by the agent (e.g. politician's personal preferences overriding those of the voter, or resolution of conflict between the various political agencies being decided on political grounds rather than voter preference) is greater than in a commercial agency focused on the provision of a sole product (Scott (1996)).

The scope for agent opportunism is even greater given the constraints of the political process. The principal's ability to signal satisfaction or dissatisfaction with performance in relation to the health agency (via voting) is diluted amongst the information required to signal satisfaction with all other agencies, and the times at which this signal can be unequivocally sent are strictly limited by election timings. This is in direct contrast to a commercial agency, where principal discontent can be signalled at any time simply by withdrawing from the agency contract. Withdrawal from participation in a state agency contract is impossible, except by renouncing citizenship. The effect of no exit capability is the perpetuation of the negative effects of an information asymmetry for longer periods, and hence at greater cumulative costs of both the asymmetry and opportunism (Howell (2000)). These costs can only be reduced by additional monitoring (Alchian and Demsetz (1972)) as the originating principal is unable to directly alter the mix of incentives offered to the multiple political agents, which Holstrom (1982) shows is the more cost-effective course of action. As any additional monitoring costs are incurred by the principal, who already bears the direct costs of the agent's opportunism and poor performance, there are few incentives for the principal to increase individual monitoring effort.

As with multiple agents, there is a tendency for multiple principals to free-ride off any additional monitoring efforts exerted by a specific principal (for example, on the monitoring efforts of the media, or lobby groups (Carlton and Perloff (2000))). Rochaix (1989), for example, claims that all that is required for doctors to behave in the interests of patients is for small numbers of patients to be better informed about the optimal treatment. Their efforts are deemed to raise the standard of care enjoyed by all patients, but their very existence creates the risk of free-riding. Free-riding will be avoided only if efficient contracts can be created between the uninformed principals and the informed, monitoring principals, who then act as the uninformed principals' agents. Market-based solutions to this problem include creation of non-profit patient advocacy groups, where informed principals provide a monitoring service bound by their fiduciary duties to the organisation (Howell (1999)), and the actions of individual patient whistle-blowers (Marriott (2001)). However, even the actions of these motivated patient principals are subject to opportunistic behaviour (for example, whistle-blowers acting from motivations of paybacks in personal fame rather than improvements in practitioner performance), which is unable

to be controlled by patient principals, as there is no explicit contract between these actors via which incentives and risks can be traded off.

While it has been argued (Scott (1996)) that political agents like medical agents, may assess their actions to be undertaken 'in the best interests' of their constituent principals, the political agent's perception of principal desires is itself subject to information asymmetry, magnified by each of the agencies bundled into the vote. Furthermore, it is interpolated from an amalgam of responses (dogged by the limitations of Arrow's Impossibility Theorem¹³), often without the benefit of an individual expression of views, making it potentially more asymmetric than that of (say) a doctor, who assesses his interpretation of a single principal's intentions on the basis of a consultation.

The Economics of Screening Programmes

Screening programmes provide perhaps one of the least information-asymmetric of health contracting processes. Screening programmes tend to be introduced for health states where historical research has resulted in a large body of specific knowledge, much of which is in the public arena, and hence available to patients as well as health practitioners. Indeed, high levels of public awareness of the consequences of such health states are required to encourage individuals to consent to participation. Hence, publicity about the benefits of such programmes and the risks of not partaking is usually widespread.

Screening programmes generally require a practitioner taking a sample (blood, body cells etc.) from a patient, analysis of the sample by a pathologist using specific scientific analyses with evaluated and documented error rates, the conveying of results to the patient, and storage of the results on a database for the purpose of tracking both individual and population statistics of health states. These databases can then be evaluated against internationally developed benchmarks for the occurrence of specific health states to determine individuals or demographic groupings with greater than normal propensities to develop health states that differ from these benchmarks. Specific interventions (e.g. education of patients, additional preventive programmes, increased study to determine causes of deviations) can then be implemented. Screening programmes are generally implemented to facilitate early detection of changes in health state that are asymptomatic, enabling early intervention and treatment, thereby improving health outcomes for individuals and savings for society¹⁴ (Bethwaite, J. (1995)).

¹³ For further information see Denis, Andy. 1996. *Collective and Individual Rationality in Economics: Arrow's Impossibility Theorem*. City University, London, Department of Economics and Applied Econometrics Research Unit Discussion Paper No 54. <http://www.city.ac.uk/andy/research/54.html>

¹⁴ In the form of lives saved, and in some instances, the higher costs of later intervention, including more costly treatment and costs of lost working capacity, income, taxation etc.

Screening programmes can be analysed as a nexus of contracts between individuals, medical practitioners, and third party purchasing agencies. If all of these contracts are operating as efficiently as possible, then the outcomes desired by the principals will be achieved, at a minimum level of transaction costs. This will be achieved by a trade-off between risks, incentives that align behaviours, and costs of monitoring and enforcement. The economics of screening programmes in general, and cervical screening programmes in particular, are outlined in Cairns and Shackley (1992), Cairns, Shackley and Hundley (1994), Gerard, Turnbull, Lange and Mooney (1992) and Meldrum and Johnson (1992). The New Zealand perspective on the economics of cervical screening is contained in Bethwaite, Rayner and Bethwaite (1986) and Bethwaite, P. (1995).

Screening programmes, however, can also be viewed as an investment that yields additional information (Cairns and Shackley (1992)). That is, the key product of a screening programme is information. This information may be valued for either its decision-making value (its contribution in determining a course of treatment) or for its own sake (Berwick and Weinstein (1985)). While Phelps (1978) argues that the information is not valued *per se*, but only for its contribution to securing better outcomes for patients, Meldrum and Johnson (1992) and Gerard, Turnbull, Lange and Mooney (1992) argue that the information has value in itself for the patient principal, as it reduces the uncertainty surrounding whether the patient has a specific condition (that is, it yields with very high probability information of the existence (or absence of) of a specific health state in an individual). Given that most screening programmes involve asymptomatic patients, *a priori* doctors have no greater knowledge than the patient of the likelihood of the patient having the condition. However, screening generates additional information, thereby creating an information asymmetry, as the doctor has access to information about the patient that the patient cannot interpret. The act of screening brings forward the moment at which the doctor knows more about a specific patient than the patient concerned, and the consequences of information asymmetries associated with treatment potentially ensue.

Screening programmes provide information about a particular health state of an individual at a particular time, and where repeated screenings are undertaken, about the progression of an individual's state of health. Screening programmes also enable amalgamation of individuals' data to identify patterns on a population basis (epidemiological data). Collation and analysis of this 'public health externality' emanating from individuals' information can be used to enhance medical learning, and to devise population-based programmes such as education and preventive treatments. Both of these will ultimately benefit the patient-principals whose information contributes to the pool, in addition to the wider population.

As with all medical interventions, the patient is at a disadvantage in determining how well the various agents in the chain have performed their tasks. The principal information asymmetry risk for the majority of participants in screening programmes lies in the skill of practitioners in taking samples and conducting the testing processes. If these agents do not perform their agency tasks adequately, then false information will be generated. Healthy patients will undergo unnecessary costly and inconvenient interventions, while patients with the asymptomatic condition will be falsely reassured. Further, the body of population-based information collected as a result of the programme is compromised, and the interventions based upon it will also be less than effective.

If patients cannot assess agent performance by monitoring (Alchian and Demsetz (1972)), then incentives are required (Holmstrom (1982)) to share the risk of agent underperformance and opportunism between the principal (who bears the costs of wrong analysis, either directly and personally from incorrect reading, or indirectly from inappropriate public health programmes developed from inadequate information) and the agent.

Third party purchasing, or at least partial contributions from government funding, have traditionally been used in screening programmes as mechanisms to encourage the sharing of individuals' information in order to incentivise the leveraging of 'public good' externalities from pooled data. Central co-ordination and funding are generally necessary to overcome the risk of a missing market for the creation of population-based statistics, as no single individual has sufficiently large a payback and hence an incentive to collect and analyse the data on behalf of all other individuals (Cairns and Shackley (1992)). In some instances, legislation also requires the sharing of data revealed from privately funded tests (for example, the New Zealand legislation requiring cancer diagnoses to be provided by medical practitioners to the Cancer Database¹⁵). These components of screening programmes ensure that the complicated agency contract relationships that result from third party purchasing in general, and government purchasing in particular, are almost always present in such programmes. These contracts must control not only for the information asymmetries between patient and medical practitioner, but also those attendant in the agency contracts between constituent and politician, politician and public servant, and public servant and practitioner.

Information and Screening Programmes

While information on the health state of the screened individual is clearly the primary product of any screening programme, the process of obtaining this information relies upon

¹⁵ Cancer Register Regulations 1994

the execution of a number of contracts, both related to the screening process and, where third party purchasing is involved, in relation to purchasing. In most of these contracts, the skills of the contracted practitioner-agent are greater than the commissioning principal, and thus the principal, through ignorance, is at a disadvantage in assessing the performance of the agent. This is a classic principal-agent information asymmetry.

In order to limit the cost consequences of information asymmetries, information on the performance of the agent in each contract is required by the principal. This can be obtained either by direct monitoring, or by the use of incentives. As Ryan (1992) shows, the optimal fee where both the principal and the agent are risk-averse will be a function of the outcome, where both actors share the risk. In the case of screening contracts, these fees should ideally incorporate a component of the quality of the information provided, with the risks shared between actors being a combination of the financial, health status, political and reputational risks faced by the participants (McNamee (1997)).

As information generated by the screening process also plays an integral role in agent performance measurement, and hence the remuneration and risk-sharing becomes a component of the performance measurement process, it is important that the analysis of screening programmes clearly distinguishes between the roles this information is playing at each stage of the contract. While the properties of information enable the same item to be used for multiple purposes, an economic analysis requires clarity as to what purpose the information is being used: as a product of the contract, or as a component of performance measurement, remuneration, risk-sharing and efficiency-enhancement.

NZ's Cervical Screening Programme: a Nexus of Contracts

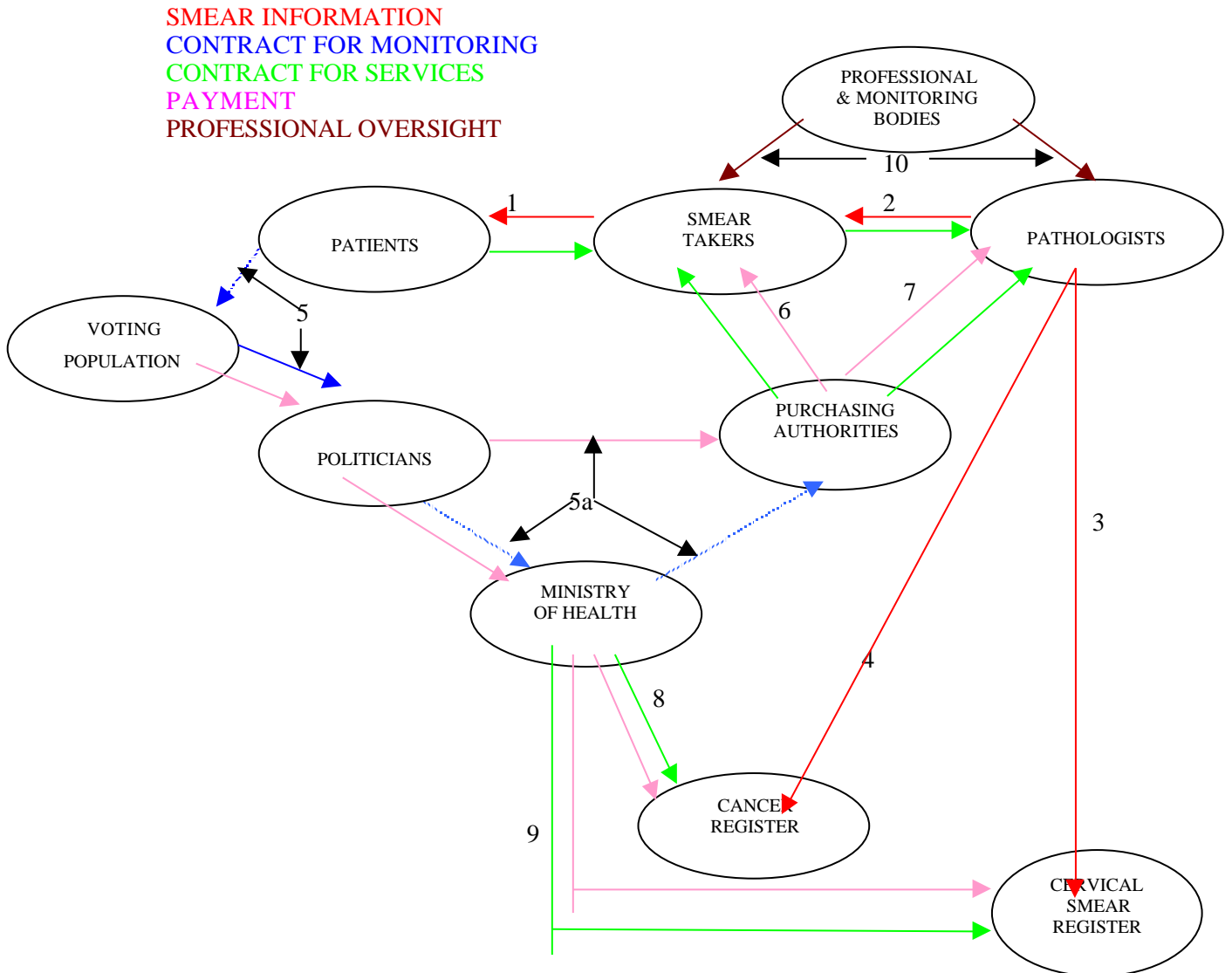
The New Zealand Government created the National Cervical Screening Programme (NCSP) in 1990 in accordance with the recommendations of the Cartwright Inquiry. It was intended to be a systematic and co-ordinated programme designed to encompass all eligible women in New Zealand and encourage them to undergo periodic testing for the precursor of cervical cancer. Results have proved that the cancer, when detected, diagnosed and treated in the early stages is fully curable¹⁶. The programme is funded from taxation revenues via Vote:Health, and was originally intended to be administered nationally, as a function of the Ministry of Health.

Administration of the programme was, in 1990, coordinated via the Ministry of Health, with day-to-day operation delegated to fourteen regional registers based upon the Area Health Boards operating at that time. Following restructuring of the publicly-funded health sector in 1993, administration of the programme remained a function of the Ministry of Health and the fourteen local registers, but contracts for the provision of services were administered on their behalf via firstly the four Regional Health Authorities, and subsequently their single national successor the Health Funding Authority (HFA). As a consequence of inadequacies in this structure, identified by the HFA and highlighted in the Duffy Inquiry, responsibility for the entire programme was centralised in 199X into a national programme administered within the Ministry of Health, but with purchasing contracts still administered by the HFA. Further restructuring in 2000 saw the responsibility for purchasing transferred back to the Ministry of Health. At the current point of time, it is unclear whether responsibility for purchasing services lies with the NCSP or a contracting division within the Ministry. For the purposes of this analysis, the latter is assumed.

In its simplest construction, the Programme can be seen as a collection of contracts as illustrated in Figure 1.

¹⁶ S3.4 Report of the Ministerial Inquiry into the Under-Reporting of Cervical Smear Abnormalities in the Gisborne Region
ISCR 23/11/01

Figure 1 – Contractual Relationships in the National Cervical Smear Programme



Contractual Relationships

Contract 1

The originating contract occurs between a woman patient and her chosen smear-taker¹⁷. This may be either her regular medical or nurse practitioner, or any other registered smear-taker. The smear-taker undertakes to extract the cells for testing, and to forward the results to the woman following reading. The primary product of the contract is the result of the reading, which is conveyed to the woman. If the smear-taker is a registered medical practitioner, this person may be responsible for recommending and/or performing and co-

¹⁷ In this paper, the term ‘smear-taker’ is used to refer to any health professional or practice that is contracted by the state funding authority to perform the extraction of cells for the smear test. This may be a general practice, a community-based health scheme (e.g. Iwi Health Authority), the Family Planning Association or an individual nurse or medical practitioner. The term is distinguished from the term ‘smear-taker’ used as a reference to (usually) a nurse practitioner who is registered to physically perform the test, but may be employed by the contracted agency.

ordinating treatment in the event of the test showing that the woman has a cervical abnormality. The woman is the principal in this contract, and the smear-taker the agent.

The woman has the ability to choose a smear-taker from among competing agents. However, as she is not paying directly herself for the service, the choice may be limited. While she does not negotiate the payment (it is covered by the terms of Contract 6, via Contracts 5 and 5a), she must incur search, some negotiation, and monitoring costs with respect to the performance of this contract. The woman has the strongest incentives of any participant in this nexus to ensure that the professionals taking the test and reading the smear are of an adequate professional standard, as she carries the risks of incurring very high costs – her future state of health and ultimately her life – if the smear-taker and pathologist do not perform appropriately. However, due to information asymmetries, she is in a very poor position to assess the performance of these professionals. The smear-taker bears some risk to income from poor performance if the woman chooses another smear-taker, but only if payment via the third party contract (Contract 6) is on a fee for service basis¹⁸.

The principal information asymmetry arising from this contract is that the woman cannot easily assess all the aspects of the quality of the smear-taking and subsequent reading. While she can assess issues such as comfort, pain, empathy, surroundings, timeliness of information transfer etc., she cannot easily ensure that the smear-taker has extracted either enough cells, the correct cells, or cells from the appropriate location. For this, she has to rely upon other mechanisms, such as levels of professional competency required for professional registration (Contract 10) and the fact that the smear-taker has met an quality standards imposed in order to meet requirements for third-party payment (Contract 6).

Contract 2.

The smear-taker, acting as agent for the woman, becomes principal in the contract with the pathologist for reading the smear. The pathologist is the agent in this contract. The primary product of this contract is the information containing the smear results. The smear-taker must undertake the search, some negotiation, and some monitoring costs of this contract on behalf of the principal. Yet, the terms of the third-party purchasing contract severely limit the incentives the woman can use to align the behaviour of the smear-taker in this contract.

The originating principal, the woman, must rely upon either the skills, advice and preferences of the smear-taker in respect of which pathologist is contracted to read the

¹⁸ Most general practices are remunerated on a fee for service basis, although in some cases (e.g. some youth and Iwi-based health services) population-based funding has been used.

smear test (where there is choice available), or upon third-party mechanisms such as registration (Contract 10) and meeting qualifications for third-party payment (Contract 7). Where the choice of a pathologist exists, unless she can specify the pathologist herself, or the terms of the third-party payment agreement specify the pathologist, she may be subject to the opportunistic behaviour of the smear-taker. The smear-taker may either in ignorance choose a substandard pathologist, or may indulge in opportunistic behaviour in selecting a substandard pathologist who (perhaps) rewards smear-takers for patronising his/her business¹⁹.

Further, the smear-taker may also be subject to an information asymmetry with respect to monitoring the performance of the pathologist. If the third-party payment agreement for pathology services (Contract 7) specifies all the terms and conditions of the contract with the pathologist, and the terms of the third-party funding agreement with the smear-taker (Contract 6) do not explicitly specify the monitoring requirements of Contract 2, then not only has the smear-taker no ability to choose the pathologist and no ability to use incentives to align the interests of the pathologist either with his/her own or the originating principal's interests, there is no incentive for the smear-taker to undertake any additional monitoring of the pathologist. The smear-taker will quite likely free-ride upon the monitoring activities of other agents (Contracts 7 and 10), avoiding the costs of additional monitoring and thereby maximising his/her individual returns. If Contracts 1 and 2 combined with Contracts 6 and 7 contain no ability for the smear-taker to share risk of the pathologist's poor performance ultimately carried by the originating principal, then additional monitoring is unlikely to occur. Additional monitoring by the smear-taker will be undertaken only if the smear-taker's individual increase in utility from the non-monetary rewards of patient benefit with respect to Contract 1 outweighs the disutility of additional time and expense in conducting the monitoring. Otherwise, free-riding is the optimal monitoring choice. The originating principal continues to bear all the risks of free-riding, while the smear-taker enjoys the benefits.

The pathologist as agent bears none of the originating principal's risks. The only risks borne by the pathologist as a result of this contract are those related to a drop in income when smear-takers choose another pathologist, and then only in circumstances where such a choice is feasible and payment (Contract 7) is on a fee-for-service basis.

Contracts 3 and 4

In order to meet the requirements of population-based monitoring, the pathologist reading the smear is required to submit the results of the test to the Cervical Smear Register (or one

¹⁹ This may be as simple as patronising the 'old boys' network', or as overt as receiving 'kickbacks' for the volume of business transacted with a specific laboratory.

of the fourteen individual registers prior to amalgamation). If the test reveals a cancerous condition, the provisions of the Cancer Register Act (1993) also require submission of the details to the Cancer Register (Cancer Registry Regulations 1994). Further, if in the course of any other treatment, any other practitioner identifies the presence of a cancerous cervical lesion in a woman, this must also be notified to the Cancer Register.

Prior to the Duffy Inquiry, the provisions of the Privacy Act (or at least, the Ministry of Health's interpretation of the Privacy Act) precluded matching of data from the Cervical Smear Register and the Cancer Register (Section 6.81 of the Duffy Report). Hence, there was no legal ability to match the poor performance of specific pathologists against the subsequent development of cervical cancer amongst women whose smears had been read by that pathologist. The consequences of this will be discussed subsequently in this report.

Contracts 5 and 5a, 8 and 9

As the NCSP is a publicly funded service, all contracts for the purchase and provision of services associated with the programme are subject to decision making via the political process. Patients (and all other members of the voting population) vote triennially for a parliament (Contracts 5) of politicians that administers all aspects of the purchase and provision of the NCSP on their behalf. Parliament administers contracts with bureaucrats in the Ministry of Health and the Purchasing Authorities (Contracts 5a). Individual voters are principals in these contracts, and politicians are the agents. Politicians become agent-principals on behalf of their voting constituents in respect of the contracts with the bureaucrat agents. The bureaucrats then become agent-principals in the contracts with smear-takers and pathologists (Contracts 6 and 7). However, in all cases, the voters remain the originating principals.

In delegating these responsibilities to political agents, voters have an obligation to undertake search, voting and monitoring costs to ensure that their interests are being adequately catered for by their agents. This requires access to information via which such performance can be assessed. The amount of information released by politician agents to voter principals is crucial to the ability of informationally disadvantaged voters to assess the actions of their informationally advantaged political agents in respect of the political agency. However, as in all cases of multiple principals, the optimal individual investment in monitoring is free-riding. This results in information required by voter principals in order to monitor politician agents being collected only by a limited number of individuals whose utility functions justify investment in such activities (e.g. the press and lobby groups), with the majority of voters free-riding off these efforts. Voting principals are subject to politicians, as multiple agent-principals, also finding free-riding an optimal monitoring strategy in respect of contracts with their bureaucrat agents. The personal motivations of

the responsible Minister become paramount in determining what is monitored, how extensively, and for what purpose. Scope for politician opportunism at the expense of voter desires and preferences is therefore extensive (Buchanan (1989)).

Further, the specific signals of patient-principal preferences in respect of the NCSP contracts are diluted, as all registered voters may elect a parliament, while women using the NCSP make up only a small fraction of eligible voters. Thus, the preferences of voters who do not participate in the programme can overwhelm the preferences of those directly involved who personally bear the costs and risks of programme failure. Unless patient-principals can influence the opinions of voter-principals, the preference signals transmitted to politician-agents cannot be assumed to be those of patients. Thus, the ability of consumers of the NCSP to enforce performance by politicians in representing their interests is extremely limited. In order to engender even a small change through the political process, they have to convince sufficient potential voters of the need for a change, and ensure that these voters weight the change with like priority amongst all other political agencies. Discipline of a poorly performing political, public servant or medical practitioner agent via this process is virtually impossible. Indeed, any change in structure and terms of contracts at the public servant and medical practitioner level is almost solely reliant upon capture of political opportunism – namely capturing the attention and support of a politician who can benefit in terms of political (power) advantage from exposure and publicity as an advocate for changing the contracts with bureaucrats and practitioners.

Thus, it is evident that ownership and communication of information relevant to the performance of political agency contracts is critical to contract monitoring and hence contract efficiency. This is equally as important in the political principal-agent contract process as it is in the health practitioner-patient process. The absence of any ability to use incentives to directly share risks across this agency makes the role of information even more important for efficiency across the nexus of contracts. Yet the political process places significant impediments in the way of information transfers that facilitate the objectives of contract efficiency.

Effectively, by delegating all contracts for the purchasing and provision of services via the political process, women on the NCSP surrender all opportunity to share any of the personal risks they bear of medical practitioner agent poor performance directly with their medical practitioners via a payment and financial reward system. They are entirely dependent upon their political agents to design contracts that align their interests with those of their agents at every step of the process, with no mechanism other than a vote every three years to record satisfaction or dissatisfaction. Further, they have no way of managing politician and public servant agent behaviour by sharing personal risks through

anything other than converting personal costs and risks into political costs and risks. However, amongst the raft of other agencies that politicians carry, the ability of any constituent to share any personal cost or risk politically is negligible. Thus there are few brakes on politician and public servant opportunism either. Women are entirely dependent upon the goodwill of agents, over whose behaviour they have no control and negligible influence, to protect their interests at every step of the process.

As Wilson (1989) identifies, the interests of the originating patient principals very quickly become lost amongst the opportunistic behaviour of politicians and bureaucrats seeking to optimise their own positions. The more links there are in the principal-agent chain, the greater the dilution of the originating principal's intentions. Hence, contracts involving the Ministry of Health and the Purchasing Authorities (Contracts 5 and 5a) and the Cancer and Cervical Smear Registers (Contracts 8 and 9) are much more likely to trade off the incentives, costs and risks of the agent-principals and their direct agents than they are those of originating principals and the duty-performing agents. The ultimate costs are borne by the originating principals, who have no direct ability to respond to the consequences.

Public servants are traditionally paid by salary. As their employment contracts provide no ability to share the risks of patients whose agency they hold, patient concerns can very easily be subjugated to the factors on which public servant performance is measured and paid – adherence to process and minimisation of risk to the state and political principals, with rewards being continuation of employment and promotion (Buchanan (1989)). Further, such agents are highly unlikely to share information with originating principals, even if it is in the interests of those principals, if in doing so they will jeopardise an individual maximising position with respect to contracts with other agents (Prendergast (2001)). Hence, there is no incentive for any of the agent-principals in Contracts 5, 5a, 6, 7, 8 or 9 to actively or even voluntarily report any detected failings of the agents with whom they contract to the originating principals unless they are specifically incentivised to do so. Yet Contract 5 specifically precludes the originating principals from entering into such an incentivising agreement, and all other agents are unlikely to desire such a contract as it impinges on individual earnings. So rather than providing incentives to share information for the benefit of originating principals, the entire nexus of contracts provides active disincentives to sharing information with the principal, who stands to lose most from poor agent performance, is already disadvantaged with respect to information asymmetry, and has trusted an agent embroiled within this mesh of conflicting interests to administer contracts on their behalf!

Contract 10

This leaves Contract 10 as (apparently) the sole ‘independent’ process via which patient principals can access information necessary to ascertain (on a generic level) the performance and service quality of agents selected by other agents, to act on their behalf. The agencies responsible for registering medical practitioners (for example, the Nurses Council, the Medical Association and the Royal Australasian College of Pathologists) have both ethical and legal obligations to ensure that all practitioners registered under their jurisdiction meet and maintain minimum levels of competence and a duty of care to their patients (the Hippocratic Oath). While these fiduciary obligations promise to provide a base level under which acceptable standards cannot fall, they neither protect individuals from specific instances of poor care by a professional, nor the population generally from the effects of base level standards of membership which are either too low or inadequately monitored.

As the patient principals have no explicit contract with these registering bodies, they have no ability to directly influence the content of such standards. They cannot specify requirements, provide incentives or share risks, even though they bear the costs of inadequate performance. Indeed, most base levels of competence set by professional bodies are agreed between the professional body and the Ministry of Health, are enabled via legislation enacted by politicians, and are monitored, and enforced by the profession, so once again, patient influence is confined to, and limited by, the entire process. Further, as incomes of members are almost exclusively sourced through third-party publicly-funded (political) contracts, remuneration is governed by trading risks and incentives of agent-principals and agents, without recourse to include the risks and incentives which reflect the interests of the originating principal. In addition, the presence of the information asymmetry between political and public servant agent-principals and the professional bodies almost always results in the profession effectively setting its own standards, and self-monitoring. As agents, these bodies have few incentives to reveal information of poor performance to principals (Prendergast (2001)) Thus, when poor performance occurs, there is a strong incentive to ‘close ranks’ or cover it up, in the hope that less-informed principals will not discover it. Political and public servant agents thus become subject to both an information asymmetry and deliberate withholding of information necessary for enforcing contract performance by the professional registration bodies. This information asymmetry leads to a strengthening of the position of the professional bodies, and they continue to set standards of care, self-monitor and self-regulate. When remuneration is also dependent upon maintaining this veneer of performance quality (e.g. when all remuneration comes from public funds), the incentives to cover up and prevent information of poor performance from escaping are even greater.

The Bottrill Case

A Short Chronology

On March 1999, Gisborne pathologist Dr Michael Bottrill was found by the New Zealand High Court to have acted negligently in relation to his multiple failures to detect abnormalities in the cervical smear tests of Witness A, and that were it not for the provisions of the Accident Rehabilitation and Compensation Act 1992 (ACC), which prohibits the awarding of compensatory damages for personal injury, including medical misadventure, Witness A would have been awarded substantial compensatory damages²⁰. As a result of the publicity surrounding this case, circumstantial evidence began emerging that the extent of Dr Bottrill's negligence may not have been restricted to Witness A, and that the cervical smears of a significant number of Gisborne women had not been correctly read. Further, suspicions were raised that others, including the Health Funding Authority and New Zealand-based members of the Royal Australasian College of Pathologists had known of Dr Bottrill's substandard performance as early as 1996²¹, and either failed to act on this information, or even worse, conspired to cover it up²². This raised concerns that Dr Bottrill may not be the only pathologist contracted to read smear tests under the New Zealand National Cervical Screening Programme, set up in the wake of the 1988 Cartwright Inquiry²³ into cervical cancer treatment at National Women's Hospital, whose error rate was unacceptably high.

Amidst a considerable public outcry, the Minister of Health ordered an Inquiry²⁴, headed by Ailsa Duffy QC, to (amongst other terms):

- determine whether there had been unacceptable levels of under-reporting by Dr Bottrill in Gisborne (Term of Reference (i));
- identify the factors leading to any such under-reporting (Term of Reference (ii));
- determine whether any under-reporting had been isolated, or evidence of wider systemic issues for the National Cervical Screening Programme (Term of Reference (iii));
- consider all relevant proposals that could ameliorate any risks of under-reporting in the future (Term of Reference (vi)); and

²⁰ Court of Appeal. 2001. Judgment between Michael Bernard Bottrill (Appellant) and Witness A (Respondent). 13 June 2001.

²¹ Indeed, it is possible that the Ministry of Health and the Minister of Health had indications as early as 1989 that Dr Bottrill may have been performing in a substandard capacity.

²² Miriyana Alexander (Sunday Star Times 26/09/99) writes of members of the College "closing ranks" around Dr Bottrill by testifying in the High Court that his level of reading errors fell within an acceptable margin for competent cytopathologists, when an Australian review indicated that this was not the case.

²³ Ibid n 1

²⁴ The Ministerial Inquiry into the Under-Reporting of Cervical Smear Abnormalities in the Gisborne Region.

- make recommendations as to any further action the Government or its agencies should consider taking (Terms of Reference (viii)).

The Report of this Inquiry found not only that Dr Bottrill had under-reported abnormalities, but that this had gone undetected for an extended period due to a combination of inadequate monitoring at his laboratory, an absence of agreed performance standards for all New Zealand laboratories, and an absence of monitoring and evaluation of laboratory performance by both the Health Funding Authority and the Royal Australasian College of Pathologists. The report found that these omissions were “indicative of a failure to design and deliver a soundly based cervical screening programme” (Duffy et al (2001):9). Specifically, split responsibilities between the Health Funding Authority and the Ministry of Health were found to have resulted in “confusion and consequent failure to discharge responsibilities” (Duffy et al (2001), *ibid*). Further, the absence of centralised computer systems, the presence of legislative restrictions on the use of information collected, and the failure to gather adequate and reliable statistical information were found to have contributed to significant delays in the detection of Dr Bottrill’s substandard performance, and frustrated efforts to conduct an investigation once attention was drawn to the lapses.

Although noting the political pressures under which the programme was established (Duffy et al (2001):term of reference two), the Inquiry Report stops short of any evaluation of the New Zealand political and institutional health service environment, and any contributions these may have had to shortcomings in the programme’s design.

Analysis

Given the above analysis of the contractual relationships between principals and agents in the NCSP, it should be neither unexpected nor surprising that the poor performance of Dr Michael Bottrill both occurred, and persisted undetected for as long as it did. Neither should it be surprising that none of the mechanisms of the political, legal, medical and professional systems were able to ‘blow the whistle’ and inform patient principals of the problems. The effective disenfranchisement of patient rights through the political purchasing process meant that only a patient (Witness A) with a high degree of personal payback in her individual utility function gained from preventing other women from having to incur the same personal costs as she had, possessed the mix of incentives necessary to ‘blow the whistle’ and inform the public by instigating legal proceedings against Dr Bottrill²⁵. It is also significant to note that not even legal proceedings could gain redress for Witness A – only intervention in the form of the Ministerial Inquiry enabled Witness A, and other similarly disenfranchised patients, to have their concerns heard. Even then, political

²⁵ For an analysis of the economics of whistle-blowing, see Marriott (2001).

intervention came only after publicity following the failure of the ACC medical misadventure process, an appeal to the Health and Disability Commissioner and the High Court process to result in any changes to the NCSP. Without the persistence of Witness A, the failings of the NCSP may never have ever been revealed to patient and voting principals, or addressed by the political system.

While the consequences of Dr Bottrill's professional inadequacies were the primary cause of the failure of the programme, and the Duffy Inquiry reveals fundamental structural design elements which contributed to delays in detection (the 14 regional databases rather than one, confusion about whether it was the HFA or the Ministry of Health that had responsibility for monitoring performance of laboratories, misunderstandings of the legal position regarding the ability to match data between the Cervical Screening Register and the Cancer Register, legal impediments to enabling contracted external expert analysis of the error rate of all pathologists participating in the programme), other evidence revealed in both the Duffy Inquiry and the High Court proceedings against Dr Bottrill show that incentive-related contract issues as previously identified also contributed. Specifically:

- the absence of any mechanism within the system to either share patient risk or replicate the mechanisms of risk-sharing in rewards with any agent beyond the confines of Contract 1, reveals a fundamental lack of understanding of the roles of principals and agents and the extent of the information asymmetry under which patient principals operate in this system (the report indicates consideration was given only to the role of overt monitoring in performance evaluation and quality assurance – nowhere in the Duffy report is the role of incentives examined or even raised in the evidence presented);
- the extreme delays in public servants reacting or responding to the identification of failings of Dr Bottrill²⁶, in establishing responsibilities between agencies for monitoring practitioners²⁷, and the lack of urgency in passing legislation to enable expert evaluation²⁸ all reflect the absence of incentives for agents to act as though they were principals, the absence of risk bearing as though they were principals, and self-interested individual considerations taking precedence over the interests of principals;
- the rushed initial implementation of the system under political duress despite expert advice that further planning was required is indicative of the overriding of patient principal interests in favour of political jostling for favour;
- the absence of any incentives for smear-takers to be involved in the monitoring of pathologists via Contract 2 shows failure to recognize the important role of smear-takers (and in particular, practitioners with an ongoing relationship with the

²⁶ Bottrill's competence was first raised as an issue in 1989 – the HFA did not act until 1999 – **JUDY**

²⁷ As detailed in Section 5.68 of the Duffy Report

patient, such as Practice Nurses, General Practitioners and Gynaecologists) as informed agents of the informationally-disadvantaged patient principals, who, positioned close to the patient principals, are in the best position to observe and act upon preferences as expressed by these principals, and act in response to principal-based incentives, unfettered by any of the opportunism and dilution of incentives associated with political and bureaucratic agencies;

- the absence of any overt requirements for smear-takers to participate in any monitoring of either pathologists or the NCSP indicates a lack of understanding of the importance of conveying information about performance of the system directly to patient principals in order to facilitate their monitoring functions;
- the failure in any part of the process to enable information assembled as a consequence of the monitoring of contracts to be made available to patient principals, or their informed initial agents (i.e. smear-takers), especially when poor performance was detected, is indicative of the suppression of information from principals by agents who stand to gain (or stand to lose less) from the fruits of their contractual relationships with other agents if the principal is kept uninformed;
- the actions of public servants (HFA and Ministry of Health officials – Duffy Inquiry) and allegations of members of the Royal Australasian College of Pathologists in ‘closing ranks’ around their fellows (Alexander (1999)) in order to prevent information being revealed to principals at both the Ministerial Inquiry and the High Court trial²⁹ are consistent with opportunistic exploitation of an information asymmetry – not only are informed agents likely to ‘shirk, subvert and steal’ as a result of the information asymmetry, they also likely to actively ‘suppress’ evidence of their opportunism;
- the inability of any of the standard methods of complaint by Witness A (ACC, HDC, High Court) to effect changes to the NCSP, or to prevent similar costs being borne by other patient principals, is symptomatic of the absence of discipline patient principals have over public servant agents; that political intervention came only after media publicity (Alexander (1999)) reinforces that patients are impotent to effect change via the political agency unless their health risks and costs can be translated into costs that impact materially upon the individual politically-grounded utilities of their political agents;
- the length of time taken before any patient took action against Dr Bottrill is consistent with free-riding by all principals upon the monitoring actions of others; this was compounded by the free-riding by all other monitoring agent-principals, as reflected by none of the Ministry of Health, the Purchasing Agencies, the RACP or Smear-takers undertaking any monitoring of laboratories or other medical

²⁸ As detailed in Section 6.74 of the Duffy Report

professionals involved in the NCSP, or active reviews of the Cervical Smear Register and the Cancer Register – each relied upon the monitoring efforts of others, and in the end, no active monitoring was undertaken.

While the Duffy Inquiry finds problems in the design of the systems of the NCSP, inasmuch as the agency contracts put in place by political and public servant agents (that is, Contracts 5a, 6, 7, 8 and 9) did not have sufficient overt monitoring requirements in place to safeguard the interests of patient principals, and makes recommendations to overcome these deficiencies, it does not address any of the incentive issues related to the severe information asymmetries and the inability of any of the contracts 2 to 10 to adequately align the incentives of any agent with those of the patient principals. Even with the recommendations made to improve the role of overt monitoring of pathologists, and to improve the quality of the information held on both the Cervical Screening Register and the Cancer Register, there is no guarantee that the remaining contracts in the NCSP, which are not subject to overt monitoring, will be efficient, effective, or aligned with the interests of patient principals.

While the Duffy Inquiry recommendations address specific issues related to the NCSP, the same information asymmetries associated with contracts 1, 2, 5, 5a, 6, 7 and 10 attend the provision of all services in the publicly funded health system in New Zealand. Indeed, the NCSP is probably one of the systems most likely to be effectively self-monitoring in this environment, as the existence of the Cervical Smear Register and the Cancer Register provides an unique source of information which with which to monitor contracted provider performance. These registers generate information that enable relatively easy benchmarking against international indicators. Such information on practitioner performance is not readily available for the majority of other public purchasing and provision contracts (for example, the quality of provision of treatment for patients diagnosed with invasive cervical cancer). Yet, even then the design of the NCSP failed to include provisions to overcome the effects of information asymmetry, and contained no overt mechanisms to ensure information required for monitoring was transferred to the appropriate participant at the appropriate time. If such fundamental flaws occur in the design and implementation of a system that is essentially effectively self-monitoring, such as the NCSP, with the costs borne by a very large number of patients of whom Witness A was the only one to ‘whistle-blow’, the state of all other systems of inter-related contracts in the New Zealand health sector must be suspect.

²⁹ Evidence given by New Zealand-based members of the RACP of acceptable error rates at the High Court trial of Dr Bottrill varied significantly from that of both Australian and British experts at the Duffy Inquiry.

The Poutsma case demonstrates this state. The publicly funded health system was similarly unable to detect and correct the poor performance of Dr Graham Parry without the ‘whistle-blowing’ of Colleen Poutsma. Again, free-riding amongst principals meant that only Mrs Poutsma had the necessary gain in utility to ‘go public’ with her grievance. Belatedly, once Mrs Poutsma had incurred the fixed costs of laying a formal complaint and the costs of publicity and media exposure, many other aggrieved patients ‘joined the bandwagon’. Colleagues of Dr Parry had expressed concerns about his practice, but none acted³⁰. Even when Mrs Poutsma laid a complaint, bureaucratic delays from agent free-riding resulted in no satisfaction via the processes of the civil court and the office of the Health and Disability Commissioner. By the time that the Medical Council came to hear Mrs Poutsma’s case, she was already terminally ill. Retrospective punishment of the malfeasant practitioner is no consolation for Mrs Poutsma and her family. Further, while the patient and practitioner are forced to bear the costs of this case, the registration bodies, public servants, and politicians responsible for the design and operation of the system of contracts that gave rise to this combination of circumstances bear none of the risks but benefit from individual opportunism along the way, while the free-riding principals gain the benefits of one person’s apparently selfless actions.

Substandard health practitioner service cannot even be totally prevented. However, a well-designed system should minimise the costs that arise when such substandard service is provided. The lengths to which Witness A and Colleen Poutsma had to go to even get a public and political hearing are evidence of deep-seated inadequacies in a publicly-funded health system that fails to recognise the need for principal-based incentive alignment such as that which makes a significant contribution towards securing both the efficiency and effective outcomes of contracts in the presence of information asymmetries in other markets. That there are not more Bottrill and Poutsma cases cannot be seen as an absence of problems – rather, given the inherent contract failures of the system, the fact that nearly all medical interventions contain severe information asymmetries, the absence of other cases is more probably a factor of the high costs of ‘whistle-blowing’ and the very small number of patients for whom the cost of ‘blowing the whistle’ is less than the personal satisfaction of preventing more patients from being disadvantaged. Indeed, a successful system would see more, rather than less, information about practitioner, public servant and politician actions – both good and poor – being readily available to patient and voter principals. Unless these incentive issues are addressed, then many, many patients will continue to suffer the costs and risks of both poor performance and agent opportunism in silence, while negligent and malfeasant practitioners, and self-interested politicians and

³⁰ It has been suggested – Lisa a reference – that colleagues failed to report his behaviour as they feared that they would be forced to undertake some of Dr Parry’s not inconsiderable workload in undesirable semi-rural Northland (North and South)

public servants fail to be called to account for significant faults in the systems they have designed and promoted.

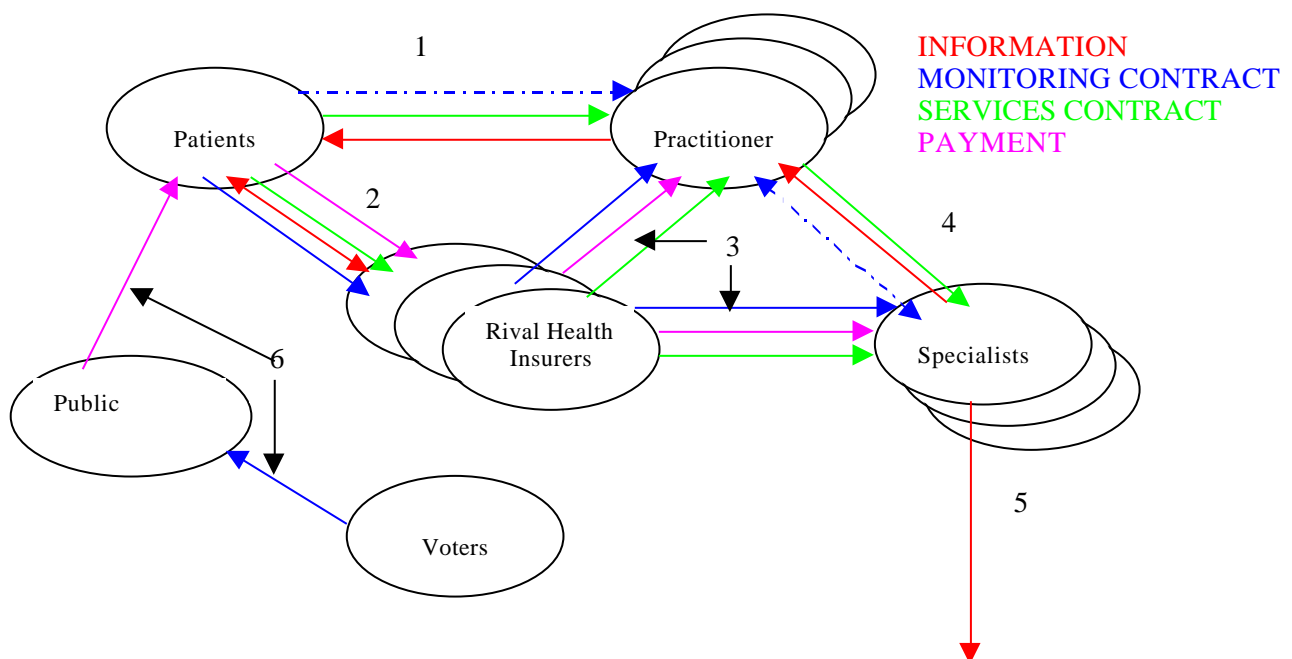
Is there a solution?

While the simple answer to this question would be the abolition of political involvement in the purchasing and provision of health services, it is recognized that the benefits of third party funding (e.g. health insurance) in achieving greater efficiency in the management of health funding risk must not be overlooked. If third-party involvement is deemed necessary for reasons of purchasing efficiency or political ideology, then the key to greater efficiency lies in balancing the costs of managing information-asymmetric principal-agent contracts against the benefits of third-party health expense risk management. This may be achieved by means of a private insurance model, or changes to contracts in the publicly-funded nexus. The Bottrill case and the above analysis shows that there may still be significant gains to be made in public health sector efficiency by examining both the costs and benefits of overt monitoring and the costs and benefits of mechanisms that enable the costs of patient risks to be shared not just amongst medical practitioners, but also among the political and bureaucratic agents who administer contracts purportedly on patient behalf. This discussion offers a framework for thinking on solutions based upon the pivotal issue of principal-agent contracts: information and risk-sharing.

The Insurance Model

The nexus of publicly-funded contracts of Figure 1 can be replaced by a third-party contracting arrangement as in Figure 2. Indeed, this was the model of health purchasing proposed by the Green and White Paper in 1991.

Figure 2. The Insurance Model.



The key features of this model are the separation of health sector purchasing and provision decisions from the general political processes encompassing all other political agencies, the introduction of competition between agencies acting on behalf of patients in purchasing services, and direct, contractual relationships between patients and their purchasing agents. This is in direct contrast to the publicly-funded and politically-managed nexus, where health signaling is bundled with all other political decisionmaking, patients lack direct contractual relationships with the agents charged with purchasing on their behalf, and exit to a rival purchaser is prohibited.

Contract 1.

This contract effectively replicates Contract 1 in the public system. The information asymmetry between patient and health professional remains the key issue with respect to ensuring the efficiency of this contract. However, this is the pivotal contract for principal-agent relationships in health service provision. All other subsequent principal-agent contracts should support efficiency in this transaction.

Contract 2.

For purposes of efficiency, the patient can contract with an insurance company, a more informed agent, to assist in reducing the effects of the information asymmetry in contract 1. The patient can enter into an explicit contract with the insurance company to both manage individual health risk expenditure (by pooling risk premia) and to explicitly monitor performance of health professionals with whom they contract (Milgrom and Roberts (1992)). The patient is principal, and the insurance company the agent in this contract. The patient may rely upon the insurance company to either select the professional, or provide a list of 'approved' professionals, whom the patient has confidence that the more informed insurance company believes are capable of providing service of an adequate standard.

The patient is still subject to an information asymmetry, as the insurance company knows more about the practitioner's performance than the patient, so the efficiency of the contract relies upon the information passed by the agent to the principal. The company may act opportunistically by not actively monitoring providers, relying upon the reputations and registrations of practitioners via contract 10 of the public funding system (which is assumed to be in force also in this model), or failing to forward to patient principals information about the performance of practitioners. However, the principal can share the risks of poor practitioner service and overcome the effects of this free-riding directly by exiting to another (rival) insurance company if poor service is received from an 'approved' practitioner, or if the employees of the insurance company fail to act upon advice of poor service. The insurance company loses revenue from the patient who exits, threatening both its financial viability and very existence, and hence the future

employment prospects of the employees of the company who as agents may also seek to free-ride or conceal adverse information (Prendergast (2001)).

It is noted also that signal of exit is information itself for the insurance company that the contract is not functioning efficiently for the patient. This information is potentially of agent failure within the nexus – for example, a poorly-performing practitioner or specialist, false information in the recommendations, or an opportunistic employee. It is recognized that efficiency across the nexus of contracts also requires the transfer of information to address the information asymmetries faced by the insurance company in respect of even more informed practitioner agents. While direct sources of information (e.g. customer satisfaction surveys) provide some information, they are sample-based³¹ and hence subject to sample and timing biases, and opportunistic intervention. Exits, on the other hand are real-time, population-based, and less likely to be subject to opportunistic manipulation.

Such contractual risk-sharing as offered in contract 2 mitigates against the patient's costs of agent opportunism by making the insurance company and its agents bear costs and risks directly, and hence provides an incentive for the company to both actively monitor all 'approved' agents, and to communicate relevant information, both positive and negative, about these agents to the patient principals. Neither of these mechanisms can be utilized in the publicly-funded system, where both politicians and public servants are protected from any cost or risk-bearing by legislation governing Accident Compensation, parliamentary privilege and crown immunity from bearing the consequences of their actions.

Contracts 3 and 4.

In these contracts, the insurance company acts as agent-principal on behalf of the patient in contracting with agent practitioners and specialists (Contracts 3). It is also noted that practitioners may also be contractually bound by their agency to patients from contract 1 to also act as agent-principals in contracting with agent specialists (Contract 4).

Just as contract 2 provides for patients to share risks associated with information asymmetry directly with the insurance company, the insurance company, as agent-principal, can further share these risks via its contracts with its own agents (practitioners and specialists). Likewise, the practitioner can contractually share risks with specialist-agents. The incentives for monitoring attendant in contract 2 are likewise present in contracts 3 and 4, reducing the extent of the effect of any information asymmetry

³¹ The emphasis on voluntary participation in customer satisfaction surveys undertaken by agencies such as the Health Funding Authority necessarily results in a distorted sample, as typically, highly motivated (i.e. extremely satisfied or extremely dissatisfied) clients are more likely to respond than equivocal ones,

comparative with the publicly-funded model. It is noted that there is a ‘closure’ of the loop of monitoring contracts in this model as patients can contract for monitoring either directly or indirectly with all of their all agents (blue arrows) and expect information in return (red arrows). The complete separation of the path of the blue and red arrows in Figure 1 is symptomatic of a separation of the contracts for monitoring and enforcement of service performance from the information necessary to do so, indicative of the misalignment of the incentives associated with performing an efficient principal-agent contract.

Contracts 5 and 6

The insurance model is neutral as to both the source of funding for health service provision, and ownership of the insurance and health service providers. This model still enables public funding for the insurance premium, as long as it is ‘attached’ to an individual who can voice their own choice of insurance provider, and shift the funding in the event of lowered efficiency due to opportunism or poor service (Contract 6). The key to this autonomy, though, is the complete separation of the signals associated with the political mechanisms other than health, from those associated with the operation and delivery of health services. Efficient operation relies upon health-related decisions remaining the preserve of those directly affected by the operation of that system, with information relating to its operation being communicated to all interested parties undiluted by signals pertaining to the operation of all other politically-managed systems. This reduces the potential for opportunistic behaviour resulting from outcomes in other systems interfering with the efficiency of operation of the health system, and makes any attempts to intervene as a result of such motivations more transparent. In turn, this contributes to better quality information available to voters to monitor and enforce the performance of their political agents for political agency tasks.

Further, the source of funding should have no impact upon the provision of information for public health programmes, such as the Cervical Smear or the Cancer Registers (contract 5), as provision to furnish this information is contained in legislation and binds all providers, irrespective of funding source or ownership.

Summary

Insurance-based models of third-party health funding thus appear to be less subject to the problems of bureaucratic delay in response to practitioner negligence or malpractice than public-funded ones for one principal reason – the incentives of the company and the

distorting the outcomes of such surveys. Exits, on the other hand, allow a measure of the ‘unmotivated’ to be captured in the number that choose not to exit.

patient are aligned via the contract for provision of services (Evans, Grimes, Teece and Wilkinson (1996)), which also facilitate the transfer of information between principal and agent in order for performance to be assessed. The patient delegates decisions such as the choice of practitioner to the company, and can voluntarily terminate the contract if that practitioner proves less than satisfactory. The insurance company has an incentive to monitor practitioner performance in order to maintain customers. The risk of poor practitioner performance is partially borne by the company if patients depart as a consequence of it occurring. Likewise, the risks borne by the patient are also partially carried by the company, as the company's profits are impacted if a practitioner's failed diagnosis results in higher costs of treatment in the future. While private insurance companies are subject to the same risks of agents concealing information as public ones, in the event of information of any kind enabling assessment of performance reaches the patient-customer, a decision that impacts on the financial future of the company can be made. A signal (information) is sent to the company immediately (e.g. withdrawn custom) by the customer, undiluted by the opinions of all other citizens who may or may not be customers of the company. Failing to act on such signals will result in the demise of the company, and the end of employment for all agents (management, staff, etc.) working for the company, thereby transferring some of the risks of individual opportunistic behaviour onto the individuals who choose to act in this manner. By sharing risks and costs in this way, the insurance company has a much greater incentive to engage in both active monitoring and speedy reaction to diagnosed failure.

Alternative Public Models

The public system, in contrast, while it shares the costs of misdiagnosis with the patient (in the form of higher treatment costs), cannot share the risks of practitioner failure in the same ways as the insurance company, as the patient has no ability to either exit the system in the event of failure (i.e. renounce citizenship), or send an unequivocal and undiluted signal of dissatisfaction to the system of its failure (voting signals are diluted amongst all other agencies). Further, the soft budget constraint inherent in public funding means that, no matter how dissatisfied patients are, failure of the system, and hence loss of politician and public servant jobs, is highly unlikely (Buchanan (1989)). Risks cannot be shared in the same way via the political agency as they can via direct contracting. This results in significantly weaker incentives, and much less personal risk, for political and public servant agents compared to their private sector counterparts (members of the board, staff and management). Further, the incentives for politicians to hide information concerning their actions as agents in health service delivery from their patient principals (Prendergast (2001)) conflict with their duties as political agents to oversee regulation of the health

industry in the interests of voter principals, and adds yet one more layer to the chain of principal-agent relationships via which information may be lost, diluted or misconstrued.

If a publicly-funded, third party model is to be pursued, then there is a critical need to address issues associated with information and risk-sharing, in order to make the nexus of contracts function more efficiently. Two possible avenues are to:

1. design contracts that replicate the ability to share patient costs and risks of practitioner failure with individual public servant and political agents (rather than just with the “ownerless’ system), thereby mitigating against the risks of individual agent opportunism when practitioner failure eventuates; and
2. design contracts that facilitate the direct sharing of relevant information by agents who would otherwise be incentivised to suppress it, thereby increasing both the quality and quantity of monitoring undertaken, and the range of agents who are able to monitor each other.

Contract Incentives for Politicians and Public Servants

The implementation of the quasi-market in New Zealand was intended, to some extent, to address issues raised by the first avenue. However, while its implementation has resulted in attempts to link aspects of risk-sharing between practitioners and management within provider organisations owned by the state (Howell (2000)), there is little evidence of risk-sharing involving politicians and public servants. That it was the actions (and inactions) of politicians and bureaucrats that contributed to significant increases in costs to patients long after the detection of poor performance in both the Bottrill and Poutsma cases is evidence of this.

The issue of extending patient and practitioner (including service delivery management) risk-sharing to include public servants does not appear to have been adequately addressed within the health sector although it is noted that in other sectors endeavours to provide incentive-based bonuses to senior public servants have been implemented, but with mixed political reaction³². Whether it is even feasible to extend such risk-sharing to include politicians is highly debatable, given the broad range of agencies each politician carries³³. While the establishment of District Health Boards (DHBs) in 2001 has enabled isolation of some of the issues of health politics from the general political arena, the areas over which DHBs have jurisdiction is extremely limited, as they are confined principally to the

³² e.g. bonuses paid to WINZ CEO Christine Rankine, based upon beneficiary service level criteria (e.g. turnaround time in processing beneficiary applications) were deemed politically unacceptable

³³ Holstrom and Milgrom (1991) identifies that, in the case of multiple agencies with incentives attached, the agent will prioritise his/her activities in accordance with the strength of the incentives – strongest incentives will be given priority over weaker ones. If all incentives are equal, then attention will be at best arbitrary, or at

administration of purchasing and provision in accordance to policy priorities and budgets established by national politicians (Howell (2000)). So while there may be some ability to isolate a limited number of health issues from the generic political mix, the benefits of this isolation must be tempered against the costs of the additional agency relationships (voter-health politician, national politician-health politician and public servant-health politician) and the inherent conflicts of interest and dilution of information that these bring.

Nonetheless, there may still be some areas where public servant remuneration can be linked to some indicators of patient cost and risk-bearing, thereby incentivising speedier resolution of identified poor practitioner performance. It is significant that no Ministry of Health or HFA staff were overtly disciplined as a consequence of the Duffy Inquiry, despite the significant evidence of delay and potential cover-up. Such disciplining may have sent a strong signal that future delays and cover-ups would have been costly, thereby incentivising speedier resolution of future detected performance inadequacies. However, the nature of the politician-public servant contract enabled blame and risk shifting back from public servants onto politicians³⁴ and contractors. The inability to incentivise politicians combined with bureaucratic risk-shifting effectively frustrates this as a credible avenue of reducing costs to patients³⁵.

Incentives for Information Revelation

If use of risk-sharing and incentives for politicians and public servants is too difficult or too risky, this leaves the second avenue, facilitating the direct sharing of relevant information by agents who would otherwise be incentivised to suppress it, as perhaps the only feasible way of enabling more efficient contracts within a third-party funding environment. However, even here, available avenues may be limited by the information asymmetry that leaves principals unable to determine firstly what information is relevant to, or required for, performance measurement, and secondly, even if that information is available, what that information actually means. Effective use of this mechanism would require predetermined information to be specified as a requirement of the contract – that is, overt monitoring – and availability of the necessary expertise to evaluate it and enforce performance.

The Duffy Inquiry and Poutsma cases both reveal that the extent of understanding of contract efficiency-enhancing processes within the design of NCSP and the health system generally is confined almost exclusively to processes of overt monitoring, rather than the

worst, in accordance with personal preferences. For politicians, the presence of incentives may either skew attentions inappropriately if unequal, or merely replicate the existing situation if equal.

³⁴ Government told of Gisborne cancer fears in 1989. *Evening Post* 18/4/00.

utilisation of incentives and allocation of risks. The solutions recommended in each case have been to increase the amount of direct monitoring that occurs – in the Duffy case in respect of data matching in the Cervical and Cancer Registers, and in the Poutsma case and the contemporaneous Cull Inquiry, strengthening the monitoring and enforcement powers of the Office of the Health and Disability Commissioner and the Medical Association. None of these recommendations include any indication that incentives have a role to play. Yet even here, patient principals are exposed to the risks associated with yet another set of principal-agent relationships – those between bureaucrats and supposedly independent evaluation bodies, such as the professional bodies (including the HDC) exposed also as self-interested parties, unable to be made to share the risks of patient principals, in the analysis of Contract 10 above. Unless the agents in these bodies can be held directly to account by some chain of principal-agent relationships for patient interests, independent of political and fiduciary processes and their inherent incentives discouraging disclosure (or encouraging cover-up), there can be little confidence that even these avenues will be effective. Legislative requirements for disclosure may provide some level of compulsion to share information, but similar problems of information asymmetry attend the enforcement of such disclosure, even where regulatory bodies exist to oversee such provisions (Carlton and Perloff (2000): 651-657).

Further, limitations imposed by the provisions of the Privacy Act and bureaucratic interpretations of it in relation to the ability to actually monitor provision of an information production process were shown by the Duffy Inquiry to have provided additional obstacles to the ability of public servants to further the interests of patient principals in monitoring the NCSP. Disclosure of information to monitor the contract was required on the one hand, to further patient health objectives, but withheld on the other as to release it was deemed to be a violation of societal privacy objectives. For patients, the incentives to undertake informed monitoring are perfectly aligned with the incentives to release the information to informed independent agents to undertake such monitoring, as had there been no information asymmetry in the first place, patients would have performed such agent monitoring themselves. Yet, via the political process, the determination of other principals (the voting public, public servants, and politicians), who lacked the incentives of themselves being patients, overrode those of the patient principals and resulted in a determination that non-disclosure was the appropriate action³⁶. This anomaly could only be corrected by legislative intervention permitting the release of personal medical information from the Cervical and Cancer Registers to third-party experts for evaluation.

³⁵ And clearly does not enable a direct contractual relationship between patients and politicians, as enabled by the separation of Contract 2 of Figure 2 from political subjugation.

Information Ownership as an Incentive

If the incentives facing none of the agents in the third-party political contracting environment are consistent with yielding sufficient information to adequately monitor and enforce agent performance from the patient principal perspective, then another avenue for enforcement must be found. As information is the key to this process, then the incentives associated with the residual property rights to information become crucial determinants of contract efficiency. If the party at greatest risk of exposure to opportunistic behaviour in relation to the use of an asset either owns or controls the asset, then the costs of opportunistic behaviour are shown to be reduced (Libecap (1989)). This argument may have some relevance for the ownership of information products generated as a result of third-party contracting.

In the case of the NCSP, information is the product of the contracts between the patient and the pathologist, and the Cervical Register and the pathologist. All other information created in the process of administering the system is a requirement of the need to monitor and enforce the behaviour of participants in this process. All information paid for in performing the contractual requirements of the NCSP is treated as the property of the agent commissioning payment – that is, the State - irrespective of whether it is used by the woman, the pathologist or any other agent in the process.

The primary benefits of the principal product of the NCSP (diagnostic information) are accrued by the patient – either in the form of her own personal diagnosis or in subsidiary products developed from subsequent uses of the information (e.g. education programmes, medical learning etc.). Yet the patient has no property right in the information generated – this is held by the State in the Cervical and Cancer Registers, with copies perhaps held by medical practitioners. The only rights vested in the woman relate to prevention of disclosure to third parties via the Privacy Act.

Other uses of this information – e.g. population-based statistics, practitioner performance monitoring – are essentially secondary products (externalities) emanating from the creation of the primary product. Other agencies (i.e. the Ministry of Health, the Cancer Register and the Cervical Register) have an interest in using this information, and hence have acquired the property rights to it. If information was a non-reproducible asset, with diminishing returns on use, the granting of a property right enables one party to use it to the exclusion of any other, and ownership of it would end up with the party who could create the greatest value from it (Coase (1937)). Information does not have this characteristic, however, as multiple copies of information can be made available at negligible cost, and using information for one purpose does not preclude its use for another,

³⁶ Other such conflicts in the use of information are espoused in Epstein (1996).
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nor does it result in degradation of value with use (Shapiro and Varian (1999)). Indeed, it is mechanisms that prevent the disclosure and copying of information that become more important for wealth generation (e.g. the use of patents and copyrights). Preventing duplication and free flow of information facilitates the creation of value for specific individuals, thus creating the incentives for agents to enhance their individual earning power in situations of information asymmetry by deliberately withholding information. Thus, it is the prevention of free flow of information from agents to principals that enables agents to prosper at the cost of principals (Epstein (1996)). However, if defined property rights to specific information created as a product of the contract can be vested in principals rather than remaining in the agents, then there may be potential for the costs of such opportunistic behaviour to be significantly reduced.

In the case of the NCSP, the full content of the smear test (including pathological details) is legally the property of the party that paid for it – the State, where it resides in the registers – with the woman being given only a summary of its key outcomes (i.e. presence or absence of a cancerous lesion). While this allocation of information property rights has been justified by its contribution to the creation of a population-based public health programme (Skegg’s evidence to the Duffy Inquiry), from the perspective of the woman, this locus of ownership may not be optimal in respect of the incentives to monitor and enforce individual practitioner performance. An agent who has been shown to have few incentives to monitor and enforce performance has ownership and control of the product of the contract, and hence all of the information (evidence) associated with that contract performance.

If there is clear separation between the use of the information contained on the Cervical and Cancer Registers between the diagnostic information pertaining to an individual woman’s health state, and the use of this information as a tool in monitoring performance of agents, then the distinction in property rights becomes clear. If the product of third party purchasing was a physical object purchased for a beneficiary (e.g. a state-subsidised house) then a property right transfers to the beneficiary with the performance of the benefit-giving service (e.g. the beneficiary has a lease granting sole use of the house under agreed terms). Yet when the product is information, there is no transfer of property right in the information to the beneficiary, even though the information about that patient’s health state specific to that beneficiary. Rather, it is retained as the property of the state.

If women had been granted a property right to the information on the NCSP and the Cancer Register as part of the system design, then bureaucratic delays associated with passing legislation may have been avoided as permission could have been sought directly from the women to match data. Indeed, if the incentives of women as owners of the

information had been considered in the design of the NCSP, then the need to even seek permission ex post could have been avoided simply by recognising that the need to monitor performance in the presence of an information asymmetry made such a matching of the data completely incentive-compatible with the delegation of purchasing to a third-party political agency.

The property right associated with matching the data for contract performance purposes could have been directly assigned by the property-owning woman to her political/public servant agent in the contract when joining the programme. Explicit terms specifying the use of the information for monitoring purposes (as distinct from diagnostic and public good externality purposes) could have been included, thereby binding the agent to use the data for this purpose. However, ownership and control of the information would remain with the woman. In effect, access to information to monitor the performance of subsequent agents, given to the political agent, equates to the 'price' or 'risk premium' paid by the woman for the political agent (more informed, as all women similarly grant access to their information) managing the risk of subsequent agent performance on her behalf. Specification of the agency contract with the third-party purchaser could have also included a property right to other information gathered in relation to the performance of the agency contract, thereby enabling more effective patient monitoring and, where the potential existed, choice. For example, such a contract could also include mandatory disclosure publicly of specific monitoring information of direct interest to women, such as performance statistics of individual practitioners, as well as summary information from the programme.

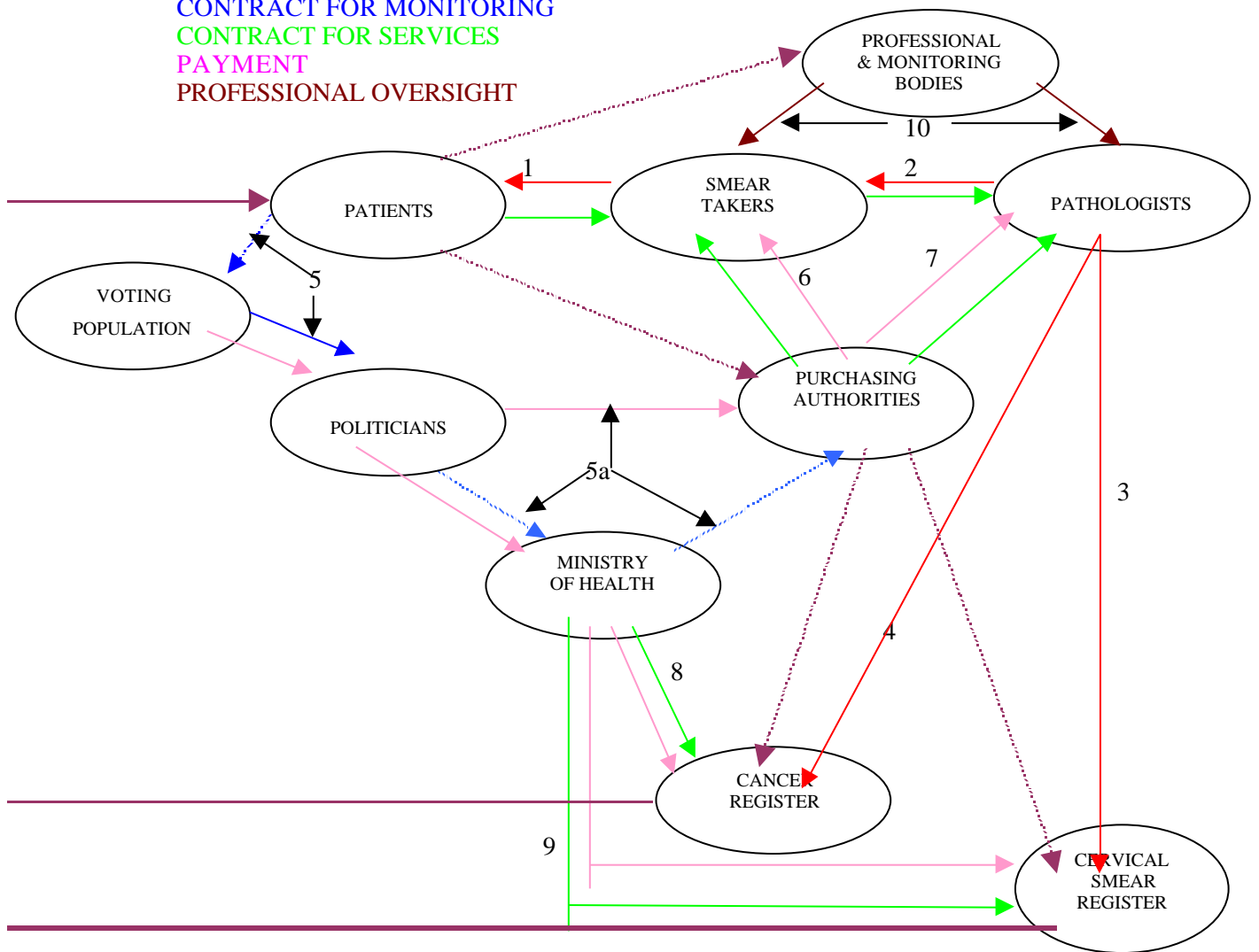
Furthermore, a direct property right to individual information would also enable sufficiently motivated women (e.g. whistleblowers) to commission other agencies to engage in active performance monitoring of all agents, both medical and political, outside of the political process. For example, a second opinion could be directly sought on the reading of an individual smear, or an agency (e.g. the Cancer Society) could be commissioned by a group of women to verify agent performance on the basis of collective information. That is, both the information product and contract monitoring information could be recreated for contract performance evaluation, reducing the incentives for agents to act opportunistically and to conceal evidence.

Such assignment of a property right would have 'closed the information loop' in Figure 1, as shown in Figure 3.

Figure 3 – Modified Property Right to Information

SMEAR INFORMATION

PROPERTY RIGHT TO INFORMATION
CONTRACT FOR MONITORING
CONTRACT FOR SERVICES
PAYMENT
PROFESSIONAL OVERSIGHT



Access to such information would make it easier for motivated individuals to monitor all of their agents, and to make such information publicly available, thereby benefiting all women on the programme, minimizing losses from poor performance, and enhancing the efficiency of the programme. However, it is noted that while this may enable exposure of poor performance, and indirect punishment of errant medical practitioners (via removal of patients from their care and hence income from the practitioner), it does not overcome the difficulties of directly disciplining erring agents, beyond the embarrassment of public exposure. It deals with the information asymmetry only by changing the balance of access to contract performance information. It does not address any of the issues associated with incentives to act upon that information. Indeed, the availability of such information may even increase the cost of ‘blowing the whistle’ for some women, as more expensive evaluation may be required to ascertain sufficient evidence, and the costs of making sufficient information available to change the opinions of the voting public are not inconsiderable.

Incentives to Discipline Using the Civil Court

The leaves the incentives associated with ‘blowing the whistle’ as the only other avenue whereby women can discipline erring agents. However, the costs of blowing the whistle are large, and only a few are sufficiently motivated to incur these costs. Further, few have sufficient information for a full exposition of the problem with respect to the costs borne by other patients, and must incur additional costs to obtain it. The waiver of any ability to seek punitive damages from errant medical practitioners and any other culpable public servant or political³⁷ agents for medical misadventure under the ACC legislation not only weakens the incentives of wronged patients to seek retribution via the civil court process (as shown in the case of Witness A, even if the practitioner is found guilty of negligence, no penalty can be awarded), it also weakens the incentive for patients to undertake any monitoring of agents in the first place. As monitoring increases costs to the patient, but there is very limited ability to achieve change via either the political or the legal systems, then why bother to monitor in the first place? The result will be an environment with much less monitoring either undertaken or commissioned by the principal, and hence one where it is even easier for substandard (or worse, opportunistic) agent practice to go undetected, with even greater efficiency losses in the form of costs borne by disadvantaged patients.

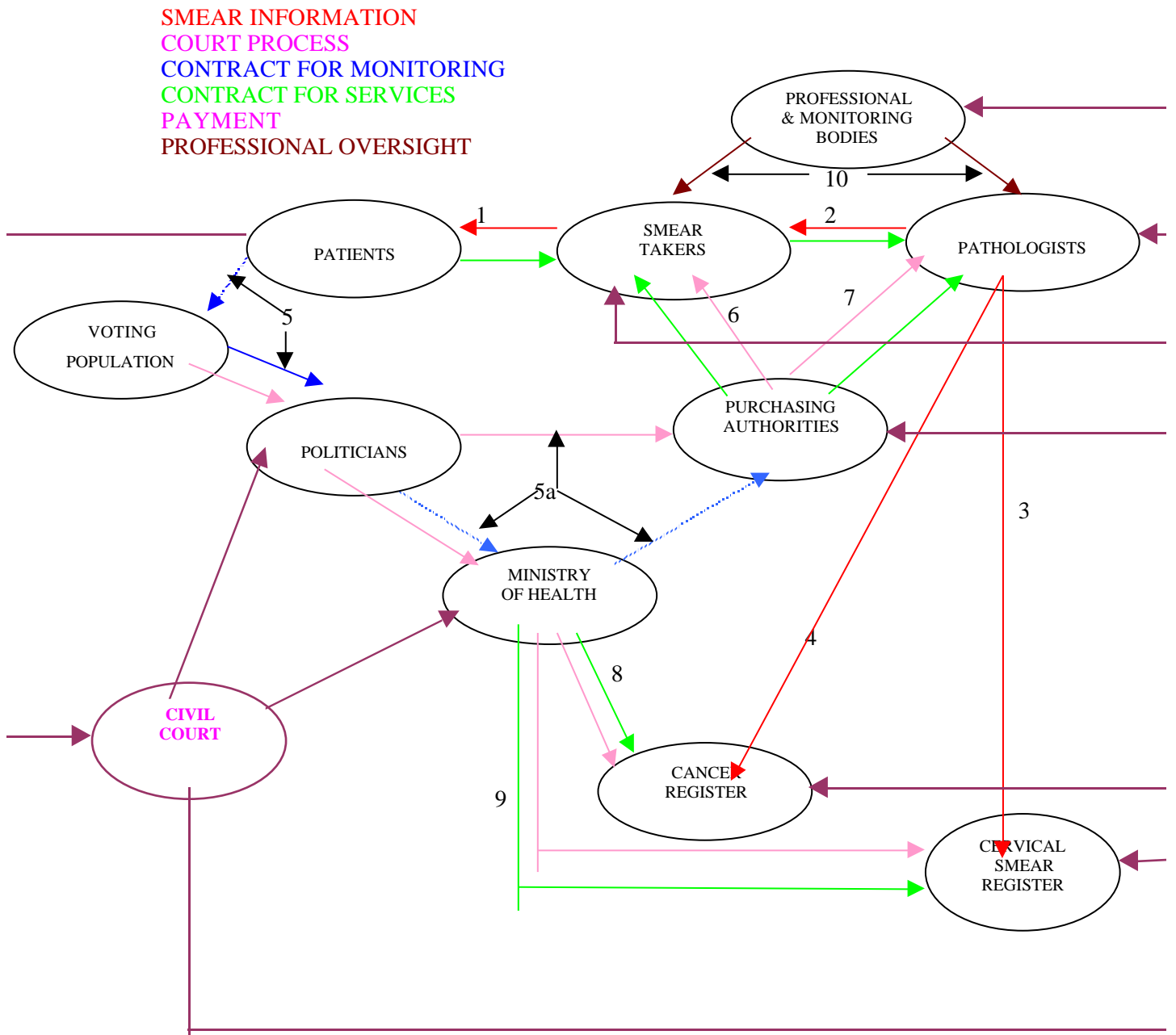
³⁷ The Crown Proceedings Act 1950 insulates politicians (i.e. Ministers of the Crown), as agents of the Crown, from personally bearing the costs of their deliberately opportunistic actions. Any liability found against individual Ministers is underwritten by the Crown. Members of Parliament acting in the House are immune from criminal or civil proceedings.

This raises the question of whether it is in the interests of patients to persist with compensation for medical misadventure via the ACC system and waiving the right to civil court redress. The severe information asymmetries of health treatment combine with the predominance of public funding of the health system to both reduce monitoring effort and withhold information that enables the detection and correction of error and opportunism, as well as frustrating any ability to share the costs and risks of such error and opportunism with the agents responsible. Thus, the civil court process remains the only avenue via which errant agents of all forms – political, health professional and public servant – can be made to share the risks and costs of their patient principals, as the implicit political contract process is clearly unable to satisfactorily achieve this.

Yet, the provisions of the Accident Compensation Act removes the right for a patient to seek redress from either the practitioner for error, or other agents (e.g. public servants) for contributory negligence which increase the cost. Further, under the XXXX, Ministers of the Crown found guilty of contributory negligence in relation to discharging their political duties have their costs met from the public purse rather than personally, while Members of Parliament are shielded from any legal accountability for decisions made in Parliament by the provisions of Parliamentary Privilege. These pieces of legislation effectively preclude any ability for patients to share any personal risks or costs related to medical misadventure with the agent responsible, further diminishing the incentives to monitor, enforce or ‘blow the whistle’.

Restoration of the ability of courts to award punitive damages to disaffected patients would effectively enable ‘closing of the loop’ relating to contractual responsibilities and risk-sharing, as shown in Figure 4. Where contracts cannot ensure efficient risk-sharing across the political boundary, court direction may be able to effectively replicate the cost- and risk-bearing of a contractual system via its decisions. More importantly, even without having to resort to actual court actions, the threat of a potential court action occurring, and costs being awarded against all agents in the chain who have contributed to actual losses incurred by the patient, may provide the incentives both for patients to undertake additional monitoring, and for agents to opt not to undertake opportunistic actions, undertake more monitoring and disclose more information. This may be the only credible way of facilitating a more efficient trade-off of the nexus of contract costs and risks, and hence efficiencies, of the entire system.

Figure 4 – Restoration of the Right to Sue



Summary and Conclusion

No amount of monitoring and incentive-sharing will prevent the occurrence of inadequate performance by health practitioners. The challenge facing health systems is to minimise the costs of such inadequate performance when it does occur. The nexus of contracts that comprises a health system must balance the costs and risks of inadequate performance against the costs and benefits of monitoring and incentives that assist in the detection and speedy remedy of such performance when it does occur, if the outcomes are to be efficient.

Efficient contracts result from a trade-off of the costs of overt monitoring and incentives that align behaviours of the parties to the contract. Incentives reduce the costs of overt monitoring by sharing the costs of the risks of the contract between the parties in such a way that the party that increases the risks of contract inefficiency bears the costs of those increased risks. In the case of an information asymmetry, an efficient contract would increase the costs if the contract to the party that acted opportunistically to exploit that information advantage, thereby partially overcoming the inability of the other party to monitor the contract performance directly. Such trade-offs are a particular feature of principal-agent contracts, where information asymmetries are particularly evident.

Third party funding, and especially third party funding via a political process, however, limits the ability of principals to utilize incentives to overcome information asymmetries. This is particularly problematic in the health sector, where both severe information asymmetries and third party funding are extensive. While patient preferences can be signaled via exit in the case of private insurance company third party funding, where funding is managed via a political process, the ability to use incentives to overcome the information asymmetry is effectively negated. Hence, overt monitoring is the only available avenue. Yet patients may not have the skills to monitor. Hence, other mechanisms must be used.

In New Zealand, the quasi-market has been used to try and replicate the incentives of the private system. However, it has only been applied to aligning the interests of service providers with politicians and bureaucrats – the interests of patients do not appear to feature in the contracts of the quasi-market (Howell (1999)). Legislative and bureaucratic intervention is also doomed to fail, as it is controlled by the same process that governs health provision – the risks of patients cannot be transferred across the political boundaries to be shared with politicians and public servants. Further, political agencies are complicated by the fact that information from patients gets diluted amongst all of the other political agencies. While dedicated health politicians may overcome some of this dilution, they are themselves compromised by their inability to influence many of the key policy areas in

health, and because they are themselves embroiled in a principal-agent relationship with the generic national politicians, with all the problems this invokes.

The key would appear to be giving patients more ability to manage the monitoring and risk-sharing process themselves, rather than delegating it to politicians. This is consistent with the fact that all high-profile instances of system and practitioner failure in New Zealand have been brought to public attention by the actions of a disaffected patient. Thus, if a solution to the problem of system failure were to be found, it would appear to lie in an understanding of the incentives facing the patient.

This paper has proposed that the nature of information products makes it feasible for patients to have a property right in their health information, thereby facilitating direct assignment of monitoring and enforcement contracts by patients separate from the contracts for creating the information. However, while this may increase the ability to actively monitor, and thereby reduce losses to exploitation, it does not address the ability to incentivise agents using risk sharing. The only avenue by which this appears feasible given the extensive political involvement in health is via the civil court process. However, ACC legislation waives this right for patients in the case of medical misadventure. Without such an avenue, it appears inevitable that not only will patients face fewer incentives to monitor, but lower standards of health care overall will ensue as agents have no incentives to voluntarily disclose additional monitoring information to principals. Thus it is inevitable that more instances of inadequate practitioner care and agent exploitation will occur, and it will continue to be difficult to detect such instances. The losers in the end are patients and New Zealand society. We cannot afford the luxury of relying upon the existence of an occasional patient with sufficient public goodwill in his/her utility function to bear the costs individually and 'blow the whistle'. Mechanisms exist that can potentially improve both contract efficiency and patient outcomes. Unless such contract-based mechanisms are explored and implemented, the inevitable result will be a continuation in the decline of New Zealand health care standards.

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