

**NEW ZEALAND HEALTH REFORM –
A SYSTEMS THINKING STUDY
OF RESTRUCTURING**

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Kambiz Maani
Alex Yeoh
Keith Wallace

Department of Management science and Information Systems
School of Business and Economics
The University of Auckland
Auckland, New Zealand

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Abstract

In July 1993, New Zealand's health system fundamentally changed, splitting the health care 'provider' from the 'purchaser', where previously Area Health Boards had assumed both these roles. The providers, CHEs (Crown Health Enterprises) were to compete amongst themselves for funding from the purchasers, RHAs (Regional Health Authorities). Private sector managers were brought in to run the hospitals in a business-like manner, increasing efficiency, and even returning a profit to the Government. The objectives of the reforms were to (Upton, 1991):

- reduce hospital waiting times
- improve access for all New Zealanders to a health care system that is effective, fair and affordable
- Emphasis health promotion and illness prevention

Contrary to this, and despite increased government spending for operations, waiting lists have soared. This study takes a Systems Thinking approach to investigate the effects of the reforms, and whether the new system is consistent with Government's stated objectives. The study reveals a number of inconsistencies and gaps in current policies and proposes intervention strategies for reversing their adverse trends.

Introduction

For many decades up to the 1960s, New Zealand's health system was regarded as one of the best in the world. As New Zealand's social and economic environments changed, its health system proved too rigid to cope and slowly deteriorated. Today, healthcare is one of the most controversial issues in New Zealand.

New Zealand's economic position has exacerbated the problem with health. Over the past two decades the New Zealand economy has grown slower than most other OECD countries. As a result, New Zealand has not been able to afford the same level of improvements in health as other countries. Prior to the 1993 reform, Area Health Boards, whose members were elected by the community, ran hospitals. These were funded by the Department of Health, on a per-head-of-population basis, and had overall responsibility for the health services of their community. The main problems of the old system were identified as (Upton, 1991):

- public hospital waiting lists too long
- conflict in the roles of Area Health Boards
- constraints on area health boards
- fragmented funding of the system
- problems of access to services
- little assistance for doctors making decisions
- lack of consumer control
- unfairness

The main element of the reform was the replacement of the Area Health Boards by four RHAs (Regional Health Authorities) or the 'Purchasers', which allocate Government health spending, and twenty-three CHEs (Crown Health Enterprises) - the 'Providers'. CHEs, which run groups of public hospitals, were expected to compete amongst each other, and with private providers, for funding from the RHAs, though they would automatically have a base contract for a certain number of operations. These contracts stipulate a pre-specified number of operations to be performed of a particular type and the price to be paid for them - no further operations would be funded. This was expected to lead to great efficiency gains in public hospitals.

There was also to be more focus on primary health care (first line healthcare), usually provided by GPs as 'gatekeepers'. In the years since the reforms, government spending on health has gone up by approximately \$100 million each year, yet the waiting list has increased by approximately 8000 people each year, rather than decreasing. This study will use a Systems Thinking approach to examine the effects of the reforms, and whether the new systems and policies are consistent with the stated objectives. Below we provide a brief description of Systems Thinking methodology.

Systems Thinking Methodology

Systems Thinking is a methodology for understanding complexity and dynamics underlying chronic behaviour. Using Causal Loop Diagrams (CLD), an elementary Systems Thinking tool, dynamic relationships among a set of variables, or factors, are mapped. Variables are key elements of the system which describe a phenomenon or a condition - variables can be quantitative or qualitative. Arrows indicate a causal association between a pair of variables. Two variables move either in the 'same' or 'opposite' directions, denoted by 's' or 'o'. When a set of variables are linked together in this fashion, a causal loop is formed indicating a dynamic process (or *dynamic* for short). Generic dynamics are either *reinforcing* (growing or declining), or *balancing* (goal or stability seeking). A Systems Thinking study consists of the following four steps:

1. Identification and definition of key variables,
2. Construction of causal loops,
3. Identification of key dynamics, weaknesses and leverage points,
4. Formulation of intervention (corrective) strategies.

Key Variables

Healthcare is a complex system, encompassing many functions, divisions, professions and stakeholders with potentially conflicting and vested interests. A number of dynamics underlie the health system. Each dynamic represents set of variables. The following variables play a key role in the healthcare system.

- Government spending on health
- Length of waiting Lists

- Time on waiting Lists
- Level of cooperation between CHEs
- Proportion of people using private healthcare
- Prevention efforts
- Health technology
- Health status

Dynamic Patterns in Healthcare

In this section we discuss the recurring dynamics and their effect on healthcare system. These dynamics are shown in a causal loop diagram in Figure1. Letters B (balancing) or R (reinforcing) refers to each dynamic.

Government Spending

Government spending is the driving force of the health system. Although the proportion of total health expenditure from private sources has increased (from 13% in 1980 to 19% in 1995 - McLoughlin, 1996), the major portion of funds are still provided by the Government. Government spending on health has also increased each year since the reform. This has helped reduce the gap between CHEs operating expenses and the funding they receive from RHAs. As a result, the pressure on CHEs to cut costs has been eased off. Consequently, the operating expenses of the CHEs have not fallen, and the gap between funding and expenses has not been reduced. This forms a balancing dynamic **B1**, in Figure 1. Easing off on cost-cutting enables the CHEs to focus more on prevention, which will, over time, result in a healthier population. This leads to fewer people joining the waiting list (referrals), and helps reduce the size of waiting list over time - a reinforcing pattern shown by **R2**.

In time, a relaxation of cost-cutting measures will increase the quality of public health, which will attract people who may otherwise use the private sector, hence increasing the waiting list again. It is likely that this increase may offset the positive effect of increased prevention due to the lengthy delays inherent in these programs. This effect is shown as a balancing dynamic **B5**. Longer waiting lists increase the average waiting time and the costs of keeping people on the waiting lists (e.g. health benefits, drugs, etc.). This, in turn, reduces total healthcare funds - another balancing loop, **B6**.

Waiting List Dynamics

Waiting lists are probably the most visible and politically sensitive aspect of the health reforms. The growing length of the waiting lists under the former Area Health Board scheme was one of the important factors that lead to the reforms. Hence, reducing waiting lists is one of the key aims of the present reform. Despite best intentions, waiting lists have grown at an alarming rate ever since the reforms came into effect.

There are two aspects to waiting lists - length and time, which are positively correlated. That is, as the size of the waiting list increases so does the average waiting time, and vice versa - reinforcing loop **R1**. As waiting lists become excessively long,

people in higher income groups are likely to switch to the private system and the waiting list will reduce - a balancing dynamic shown as **B4**. Since the reform, New Zealand private health sector has experienced a large growth. Increasing waiting lists make the private system more attractive and reduce government's burden (Hyde, 1995). This "shifting the burden" has led to a sharp rise in New Zealand's total health cost due to greater proportion of healthcare bills absorbed by the private system. As the government has steadily reduced its funding of elective (non-emergency) surgery, the percentage of people with private health insurance has increased from 55%, in 1995, to 64%, in 1997. This has caused a rapid rise in insurance premiums - Since 1988, premiums have risen 230% for an average family and nearly 400% for older couples (Consumer, July 1997).

The waiting list dynamic is further exacerbated by doctors who refer patients to waiting lists in advance, even if the patient does not require the operation immediately (NZ Herald, October 21, 1997). The practice of 'advance booking' prevents painful waits once patient's condition deteriorates to a critical condition. With the introduction of a proposed booking system, doctors will not be able to book patients unless they are already at the point where they need the operation.

Cooperation between CHEs

The level of cooperation amongst the CHEs can have serious repercussions for the overall effectiveness of healthcare system. Under the present competitive environment, cooperation has been effectively eliminated. Efficiency and quality gains have become 'competitive advantages' for the CHEs and are closely guarded by them. This is a gross sub-optimization of resources which impedes achievement of the desired outcomes. The lack of cooperation will result in higher expenses and lower public health quality, leading to a reduction in the number of people using the public system - eventually causing waiting lists to decline. Balancing loop **B5** shows this dynamic.

Acute and Elective Surgery

Acute surgery is the surgery performed due to accidents or emergencies. As these surgeries cannot wait, they often displace scheduled elective surgeries. Since a CHEs base contract with RHAs stipulates a pre-specified number of operations, increases in acute surgery means less elective surgery hence waiting lists will increase. As the time on waiting lists increases, the chance of a patient's condition becoming acute increases. If patient's condition can be stabilized, the patient is discharged and he/she rejoins the waiting list (McLoughlin, 1996). This 'double handling' of patients increases the operating costs of the CHEs resulting in greater financial pressure. As the RHAs give less than the full cost of the surgery, the net operating expenses of the CHEs will increase with the number of surgeries performed (McLoughlin, 1996). This effect would exacerbate the funding gap dynamic, **B1**. At the same time, longer waiting lists bring more pressure on the Government for increased funding for operations. The extra surgeries, funded by the RHAs, reduce the waiting lists in the short-run, temporarily relieving pressure on the Government. This effect is captured by the balancing loop **B3**.

Health Technology

New and advanced health technologies enable the health system to treat a wider range of illnesses. This has two effects on the system: (1) an increase in average life expectancy, and (2) an increase in size and number of waiting lists. This is because technology creates new waiting lists for treatments that previously did not exist. For example, dialysis treatment or CAT scans were not available two decades ago. Today, they are considered routine operations and sizeable waiting lists exist for them. Hence technological advances have a noteworthy and dynamic impact on the healthcare system.

The Managed Care (IPA) Model

The managed care model is based on the 'gatekeeper theory'. In New Zealand this operates through IPAs (Independent Practitioners Association) - a group of GPs working together. Under this system, the IPAs manage their patients' health under a capped funding scheme (budget holding). The IPAs run health promotion programs, awareness campaigns, and encourage immunization and similar preventative measures, which, in time will result in a healthier community. This means that people will visit their GPs less frequently, need less prescription drugs and tests, thus overall health expenses are reduced. A potential adverse effect of the budget holding scheme is that the IPAs, in order to reduce costs, could under-serve their area by referring their patients to the CHEs. This creates a balancing dynamic, which could offset the beneficial effects of the IPAs.

Since the IPAs receive a certain amount of funding regardless of their expenses, this means that as expenses go down, more funds will be available for health prevention and promotion programs. This is a reinforcing cycle indicating that, over time, the GPs in the IPA could become wealthier as the community becomes healthier. Since this scheme has only recently been introduced in New Zealand, there is little evidence to confirm this dynamic.

Leverage Points

Our study of New Zealand healthcare highlights three areas for improvements. In Systems Thinking these are referred to as *leverage points*. These leverage points are discussed below.

Prevention

Currently, under the new competitive framework, with a focus on cost cutting, there is no incentive for preventative measures. This short-term view ignores the fact that preventing health problems is by far cheaper than having to fix them later. Unfortunately, governments are often trapped in short-term and quick fix modes, which makes them reluctant to invest in fundamental and long-term strategies.

CHE Cooperation

The notion that CHEs should compete is fundamentally wrong. Competition reduces the willingness of CHEs to cooperate with each other, which would otherwise lead to better practices and greater overall efficiency and effectiveness. As a result, any

innovation or improvement by a CHE is viewed as a competitive advantage and is closely guarded. Furthermore, as the RHAs tend to give contracts merely to the lowest bidder, the CHEs primary focus has become one of cost cutting. This is to the extent that CHEs can even refuse to accept patients from outside their community area, even if they are in need of urgent medical attention (Peterson, 1997).

Waiting Lists

Currently, the average time on the waiting lists is increasing. The longer the patients have to wait, the more likely their condition will deteriorate. This increases the complexity and costs of treatment, as well as reducing the chance of recovery. Further, while people wait for treatment, they may not be able to work, receiving assistance from other government agencies such as social welfare, ACC, etc. Therefore, shortening the waiting list could bring tremendous cost savings and higher overall health gains for the nation.

Recommended Strategies

The discussion of the leverage points leads to four strategies for dealing with weaknesses in the current health system. These strategies can reverse the adverse dynamics that impede effectiveness of the reform. This requires a fundamental mind-shift from short to long term, and a 'total' system perspective.

1. Remove the requirement that CHEs compete amongst themselves.
2. Change the CHE incentives from rewarding cost cutting, to providing quality care.
3. Focus more on prevention strategies.
4. Encourage GPs to operate under the managed or integrated health care model.

As described earlier, competition amongst various stakeholders of public health is anti-systemic and detrimental to the overall success of new policies. The requirement that CHEs compete with each other for contracts should be removed, and instead they should be encouraged to actively work together to solve common problems (Note: the government has signaled its intention to change this.)

The short-term obsession of the CHEs to cut costs has to give way to a common goal of improving the health status of all New Zealanders. To insure responsible spending, CHEs should be given a capped budget, similar to the managed care model. This budget should not, however, include acute surgery, so that elective surgery would not have to be traded-off for emergency cases. The capped budget for each CHE would have to take into account the differences in the health status of the areas they serve. For example, South Auckland has a high Pacific Islander population, and these people tend to have a higher incidence of health problems. An integrated performance management system, similar to the Balanced Scorecard approach, should be introduced to measure and monitor the performance of CHEs.

The ultimate aim of the reforms should be to enhance the health status of New Zealanders. By focusing upon short-term improvements such as increasing surgery levels this aim is unlikely to be met. There has to be greater emphasis on prevention and on promoting healthier lifestyles. This is the fundamental way to improve the

state of the nation's health in the long run. Increasing elective surgery levels only serves to relieve the problem in the short term. Spending more on surgery without increasing prevention tends to just increase peoples' life spans and thus the likelihood of more surgeries in their lifetime. Spending money on prevention is a long-term investment. In the case of diabetes, it is estimated that for every dollar spent on prevention one saves three to four dollars later, by reducing diabetes-related hospital cases, including strokes, heart attacks, kidney failure and blindness (NZ Herald, October 22, 1997).

GPs should be encouraged to move to the IPA model. Appropriate incentives structures should be in place to reward GPs for keeping their communities healthy, rather than profiting from a less healthy community. The challenge is to convince GPs to switch to a capped budget. This, however, could be a win-win proposition as there is potential for GPs to realise higher profits under this system.

The focus on waiting list is a valid objective, as reducing the waiting list will reduce system 'bottlenecks' and will save health agencies the costs associated with keeping people on the list. Shortening the waiting list is a 'balancing' dynamic. By improving the public health system (e.g., shorter waiting list), the proportion of people using the public system will increase and hence the waiting list will rise even as the number of operations increases. Without continuous 'process' improvements of public health system and greater emphasis on prevention, this dynamic may never reach stability. The current focus on waiting list, however, is misguided. It is speculated that the Government's current under spending will make the public health unattractive to those who can afford private care. The strategic risk is that, the system could steadily deteriorate beyond repair.

Summary and Conclusion

This study concludes that the New Zealand health reform has not reached its desired objectives. Numbers on waiting lists have gone up and access to the system has become more limited, as there is a deliberate effort to shift people to the private system. Despite increased government spending the gap in quality and level of care between the advantaged and disadvantaged has widened. The Government's emphasis on cost cutting has resulted in false economies. Prevention programs have received less priority and attention. The higher number of operations performed is mainly due to the increases in acute surgeries, which has not reduced waiting list levels, as fewer elective surgeries are performed. At the same time, New Zealand's population is aging, which increases the stress on the system even further. Counteracting these trends, due to excessive waiting times and perceived deterioration in public healthcare, there has been a significant shift to the private system, resulting in much greater national expenditure on health.

The study has identified a number of dynamics that underlie the behaviour of the health system. They include CHEs Cooperation, Waiting list, Government spending, and Technology. Underlying these dynamics are beliefs, assumptions, and agendas (i.e., mental models) of the key stakeholders in the health system. The Government has forced the CHEs to cut cost to accommodate the extra amount of elective surgery

needed. This has led to downsized and streamlined operations, leaving less funds for prevention and maintenance. The CHEs and the public blame this on the RHAs and demand greater levels of funding. Yet, in order to reduce the burden on the public system, the Government is encouraging people with higher income to use the private system. Thus, there is a growing perception that the public system will not cater for people. As a result, the proportion of people with private insurance has been increasing resulting in a rapid growth in private healthcare.

In order to reverse the above trends, four intervention strategies have been proposed, as follows.

1. Remove the requirements for CHEs to compete amongst themselves.
2. Change the incentives of CHEs, so that they do not just focus on cutting cost, at the expense of better care.
3. Focus more on prevention.
4. Encourage GPs to work under an IPA or integrated model.

Although this report points to critical deficiencies in structure, policies and incentives in the present systems, it may be too early to discern the full impacts of the health reform. It may well take several years before the effects of these are fully felt. Nevertheless, the leverage points and intervention strategies identified in this study, provide powerful corrective mechanisms to counter the adverse effects of the reform and will allow realization of its objectives.

Bibliography

Begg, S., & Danzon, P. (1991). *Options for Health Care in New Zealand*. C.S. First.

Beardsmore, K., & Keene, L. (1994). *The Health 'Reforms': One Year On*. Wellington: The Coalition for Public Health.

Glasgow, N. (1996). The Gatekeeper Controversy: Why it exists and how it can be resolved. *New Zealand Medical Journal*, 109, 168-70.

National Interim Provider Board. (1992). *Providing Better Health Care For New Zealanders*. Wellington.

Upton, S. (1991). *Your Health & the Public Health*. Wellington: Minister of Health.

(1993, July). How Well Do Hospitals and Health Specialists Measure Up? *Consumer*, 317, 6-9.

(1997, July). Are You Ready For This? *Consumer*, 361, 21-29.

(1994, October). What's Gone Wrong With Our Public Health? *Consumer*, 331, 5-9.

(1995, June). Sick Health? *Consumer*, 338, 23-25.

Surgical Volumes. (1995). Performance Monitoring and Review Section. Wellington, New Zealand.

Ministry of Health. (1995). *Patients in Profile*. Wellington, New Zealand.

Ministry of Health. (1991). *Hospital and Selected Morbidity data*. Wellington, New Zealand.

Ministry of Health. (1992). *Hospital and Selected Morbidity data*. Wellington, New Zealand.

Ministry of Health. (1993). *Hospital and Selected Morbidity data*. Wellington, New Zealand.

Ministry of Health. (1994). *Hospital and Selected Morbidity data*. Wellington, New Zealand.

Ministry of Health. (1995). *Hospital and Selected Morbidity data*. Wellington, New Zealand.

Statistics New Zealand. (1994). *A Picture of Health*. Wellington, New Zealand.

Statistics New Zealand. (1990 - 1997). *Key Statistics*. Wellington, New Zealand.

Ministry of Health. (1980 – 1997). *Health Expenditure Trends in New Zealand*. Wellington, New Zealand.

(1997, October 15). Fraser. New Zealand: New Zealand Broadcasting Service.

Figure 1

