

# 5 *Health Service Delivery*

## *Secondary and Tertiary Care*

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### 5.1 Introduction

Secondary and tertiary care (STC) as discussed in this chapter are services provided in a facility such as a hospital or an ambulatory care setting by a specialist that require more specialised knowledge, skill or equipment than can be provided at the primary care level. The Alma Ata Conference on Primary Health Care (PHC) clearly defined the role of STC within PHC:

[T]he support of other levels of the health systems is necessary to ensure that people enjoy the benefits of valid and useful technical knowledge that is too complex or costly to apply routinely through primary health care. The rest of the health system, therefore, has to be organised in such a way as to provide support for primary health care. (World Health Organization, 1978)

Mahler, the Director-General of the World Health Organization (WHO) from 1973 to 1988, furthered the concept, for example, by stating in 1980 that ‘people in need must have access to skilled surgical care at first-line referral hospitals’ (Mahler, 1980). The evolution of STC in the Malaysian health system demonstrates the challenges and achievements in implementing these concepts.

This chapter discusses how access to and quality of STC improved progressively in Malaysia during the 60 years since independence and how the system is currently grappling with the challenge of providing affordable, integrated, seamless care. It discusses the dynamic interactions of various components of the health system and their influence on STC and the influence of the larger Malaysian ecosystem, such as political, socio-economic, demographic and population behaviour.

The appendices provide details of the analysis that underpins the chapter. Appendix I illustrates the application of systems thinking, while Appendix II provides illustrative details of the interactions

between components of the health system that are defined in the WHO health system ‘building blocks’ (see Chapter 1) and also the interaction between the health system and the larger ecosystem.

## 5.2 The Early Phase (1960s and 1970s): Increasing Access and Reducing Disparity

At independence, Malaysia inherited secondary care services consisting of 10 major hospitals and 56 district hospitals concentrated mainly in urban centres in the West Coast states of Peninsular Malaysia (Box 5.1). Many of them were dilapidated (International Bank for Reconstruction and Development, 1955). Doctors and nurses were in short supply, and specialists were almost entirely expatriate.

### Box 5.1 Why were hospitals concentrated in the West Coast states during colonial days?

Pre-independence, specific demands led to the establishment of hospitals.

- The colonial government established hospitals for the healthcare of:
  - Colonial officers and their families
  - Government employees and their families
- Chinese charitable foundations established hospitals that provided a combination of western and traditional Chinese medicine (TCM), basically for the private sector Chinese employees.
- Corporate owners of rubber estates provided small estate clinics with a few beds for their employees, mainly Indians.
- Christian missionaries established a few not-for-profit hospitals, mainly as part of their charitable work.

The respective target populations resided mostly in the urban centres in the West Coast states of Peninsular Malaysia. The largely rural Malay population had limited access to secondary care services (Tate et al., 2005; Tung Shin Hospital, n.d.).

### *5.2.1 Socio-demographic Pressures and Political Forces*

After independence, political and community forces dictated development. Policies aimed to improve health and social services and reduce disparity between regions and ethnic groups (Prime Minister's Department, 1961) (see Chapter 3). For secondary care, these policies translated into measures to increase access to secondary care by upgrading existing hospitals where necessary and providing hospitals in districts that had none. Each hospital provided inpatient as well as outpatient (ambulatory) care. Together with rural health centres and dispensaries that also provided outpatient services (see Chapter 4), outpatient services provided first-contact curative care. A report by the then Director-General of Health credits the 'widespread establishment of outpatient departments and referrals to hospitals' with 'provoking awareness of the rural people of the benefits of modern medical treatment' (Ismail, 1975).

### *5.2.2 Hospital Services Supported PHC*

Even before Mahler's historic 1980 address, the Malaysian district hospitals were first-line referral facilities. They provided support for PHC through secondary care for patients referred from the national disease control programmes, such as those for malaria, tuberculosis (TB) and leprosy (see Chapter 6), and the rural health services, particularly for pregnancy, childbirth and illnesses of childhood (see Chapter 4). The staff of these hospitals were mainly nurses, midwives, medical assistants and junior doctors who were able to address emergencies, minor surgery, childbirth and its simpler complications, and the management of illnesses that required hospitalisation. However, the hospitals had neither the staff and the operating theatres for surgery nor the laboratory and imaging facilities for more complex secondary care. However, the district hospitals did have ambulances that provided free transport links on the one hand between district hospitals and state-level hospitals that had more sophisticated facilities and on the other hand between hospitals and health centres that provided PHC. These ambulances ferried patients, staff and laboratory samples and were crucial in providing the referral link between primary and secondary levels of care.

State-level hospitals provided, at a minimum, specialist care in internal medicine, surgery, obstetrics and gynaecology, paediatrics, and anaesthesia, with appropriate support services (Ismail, 1975). During this period, several existing, dilapidated state-level hospitals were re-built or refurbished. The government highly subsidised medical care in the public sector hospitals and therefore imposed only a nominal charge on patients at the point of care (see Chapter 9).

The development of STC required the production of a sufficient workforce of doctors and nurses. However, the number of doctors produced was small, as there was only one local medical school (later three) (see Chapter 8). Furthermore, there was no local facility for postgraduate specialist training for Malaysian doctors, and very small numbers were sent abroad annually for training, mainly to the United Kingdom. On their return, they slowly replaced the expatriate specialists and provided specialist services and leadership for the different clinical disciplines. However, the rapid production of nurses and assistant nurses (see Chapter 8) facilitated district hospitals in providing selected forms of secondary care services, and this, to some extent, compensated for the much slower production of doctors. Working alone or with doctors, medical assistants provided secondary care for communicable diseases and other common ailments that did not require specialist care. Nurses who had an additional year of midwifery training became nurse-midwives and, assisted by trained midwives, managed uncomplicated childbirth in all hospitals. The number of district hospitals increased, as did hospital beds for TB, leprosy and childbirth. The hospitals also provided support for the rapidly developing primary health care services (Box 5.2).

During the subsequent three decades, advances in medical products and the success of the disease control programmes enabled hospitals to reduce the beds provided for acute communicable diseases (Figure 5.1). Also, improved access to STC for pregnant women contributed to the reduction in maternal deaths and sustained the demand for institutional childbirth. Box 5.3 provides illustrative examples.

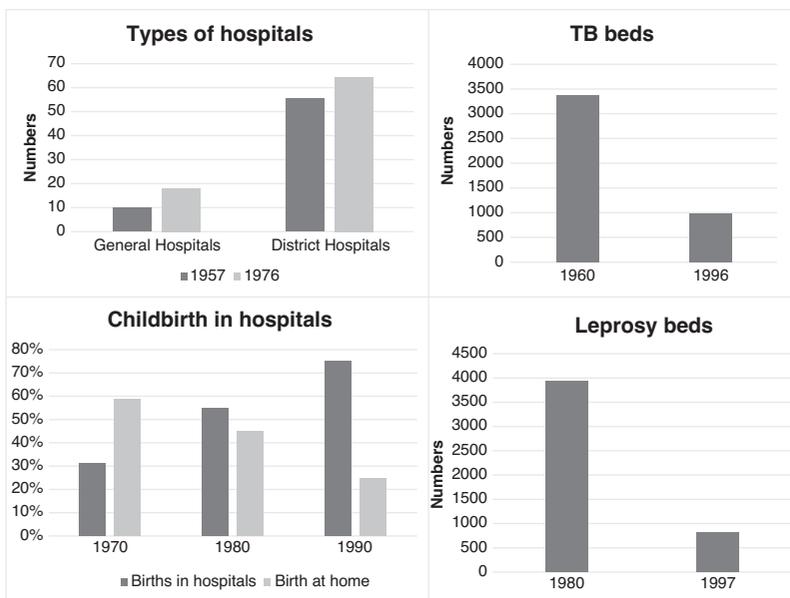
The rapid increase in the utilisation of hospitals throughout the country demonstrated the rising demand for STC (Figure 5.2).

Although the availability of hospital services increased, they barely coped with the rate of population increase. Fifteen years after independence, the disparity in the availability of STC between the more

**Box 5.2** Secondary care–supported PHC

The hospitals provided support for the evolution of PHC. The key features were:

- Ambulances that provided free transport for patients, staff and laboratory samples between front-line PHC facilities, first-line hospitals and higher-level hospitals.
- Doctors (particularly obstetricians and paediatricians) who worked in state-level hospitals participated in training nurses and medical assistants who subsequently served in district hospitals or PHC facilities.
- This helped establish rapport and trust between staff at PHC and STC level, thereby fostering timely recognition and referrals from peripheral facilities. Such referrals were given priority in the larger hospitals, thereby enhancing the credibility of the staff in the peripheral facilities.



**Figure 5.1** Evolving profile of types of hospitals, number of TB and leprosy beds, and childbirth in hospitals.

Source: Calculations by author based on data from Suleiman and Jegathesan (n.d.).

**Box 5.3** Illustrative examples: STC-supported public health

Hospital care had a major role in reducing incidence of TB (Suleiman & Jegathesan, n.d.).

- In 1960, beds reserved for TB patients accounted for 25% of hospital beds.
- The aim of hospital management was to treat patients to render them non-infective before sending them back into the community.
- The advent of effective drugs shortened inpatient stay and enabled a reduction in TB beds by 1996.

Maternal deaths declined through an effective and credible system that provided safe childbirth care with timely access to STC (Pathmanathan et al., 2003).

- Essential obstetric care: By 1976, overwhelming demand for childbirth in hospitals resulted in maternity units having extremely high bed occupancy and turnover rates (Institute for Public Health, 1983).
- Emergency and comprehensive obstetric care: Ambulances from rural health centres and district hospitals provided prompt transport for the referral of patients with obstetric complications to hospitals with higher levels of care that included specialist care from obstetricians.<sup>1</sup>

urbanised West Coast states in the Peninsula and the less developed East Coast states<sup>2</sup> remained evident (Table 5.1).

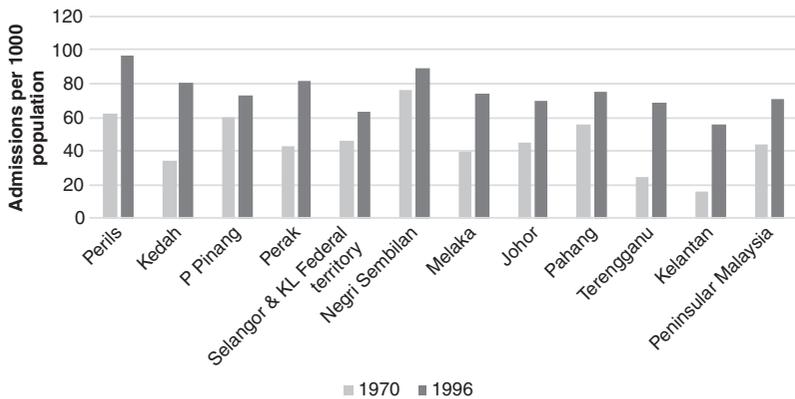
### 5.2.3 Demand for STC Outstripped Supply

Financial and implementation capacity constraints slowed the progress of building new facilities. In addition, the limited production of doctors led to numerous vacancies in medical officer positions. Meanwhile, societal perceptions were changing. Increased access to hospitals led to a rapid increase in demand for STC. By the mid-1970s, public sector hospitals, particularly the larger ones, faced overwhelming demand, leading to overcrowding. A study of the utilisation of public sector hospitals (Institute for Public Health, 1983) delved into the phenomenon. It

**Table 5.1** *Regional disparity in secondary care in different regions of Malaysia, 1972*

	Acute beds (per 1,000 population)	Admissions (per 1,000 population)
West Coast states	2.16	37.25
East Coast states	1.69	22.50
Peninsular Malaysia	2.08	34.58
East Malaysia	1.94	n.a.
Malaysia	2.05	n.a.

*Source:* Calculations by author based on data from Abdul et al. (1974).  
n.a. – not available



**Figure 5.2** Utilisation of Ministry of Health hospitals in Peninsular Malaysia, 1970 and 1996. *Source:* Suleiman and Jegathesan, n.d.

found that about 50% of medical officer posts were vacant, although nursing posts had fewer vacancies. Medical staff were unable to cope with the workload. About 25% of patients bypassed smaller district-level hospitals to seek care in larger hospitals. The commonest reason reported was the lack of surgical services. Patients were also dissatisfied with ward conditions (Public Health Institute, 1983). Many doctors, frustrated with conditions in the public sector, resigned to become general practitioners in the private sector. This contributed to the continued shortage of doctors in public sector hospitals (see Chapter 8 re. brain drain).

Moreover, it exacerbated the difficulty of improving access in the less-developed states in the country.

#### *5.2.4 STC in the Private Sector Began to Grow*

In the meantime, the number of local doctors with specialist qualifications increased steadily, and they served under high pressure in the overcrowded larger hospitals. Recognising the strong demand for more comprehensive STC and exhausted by the high pressure of work, several of them resigned from the public sector during the late 1970s and established four private for-profit hospitals in the largest towns on the West Coast. These hospitals began the trend for the growth in private sector STC in response to demands by the more affluent section of the community for more personalised care and better ‘hotel-type’ facilities. By 1980, 4.3% of all hospital beds were in private hospitals.

The few established non-governmental organisation (NGO) hospitals that predominantly served the ethnic Chinese population had close links with Chinese traditional practitioners and provided some traditional Chinese medicine (TCM) services.

Supplementary Table 5-a in Appendix II summarises the interaction between different elements in the health system and the larger ecosystem as they influenced the evolution of STC during the first post-independence phase.

### **5.3 The Second Phase (1980s and 1990s): Drive for Better-Quality Access**

#### *5.3.1 Political, Socio-economic and Professional Influences*

During the 1980s and 1990s, the population became increasingly urban, and literacy rates and socio-economic status rose, as did the population’s expectations of healthcare. Many communicable diseases decreased, while non-communicable diseases (NCDs) increased. A dual thrust in health policy governed the development of STC. The first was the continued struggle to improve equitable access to STC. The second was to respond to the rising expectations of the community and of professional bodies to provide higher-quality care, including care that was:

- a. clinically more sophisticated, with more equitable access to surgical interventions, and
- b. better quality in terms of
  - effective outcomes,
  - higher client satisfaction, and
  - improved use of resources.

### *5.3.2 More Sophisticated Clinical Care*

Doctors with postgraduate training in specific disciplines had the higher level of competency required to provide comprehensive STC. Specialist training in local universities for doctors began during the 1980s (see Chapter 8) and resulted in the availability of larger numbers of doctors with specialist qualifications and the establishment of a wider range of specialised units in public sector hospitals. This, in turn, triggered the upgrade of laboratory and imaging services and the training of allied health personnel, such as medical laboratory technologists and radiographers, for these services (see Chapter 8). To promote equitable access to specialised medical services, the Ministry of Health (MoH) adopted a regional development approach. State-level and larger district hospitals were categorised into three levels, with Level 1 consisting of five basic medical specialities, Level 2 having six additional specialities and Level 3 consisting of further specialisation within narrow fields of the more general disciplines (such as cardiologists and neurologists within the broader field of internal medicine). Every region in the country had one hospital of Level 3 status and at least one with Level 2 status. The availability of speciality services increased from 12 units per million people in 1970 to 16 units in 1997 (Table 5.2).

With the growing numbers and types of specialist qualifications from various universities and countries, professional bodies and the MoH were concerned about safeguarding the standards of competence to preserve the quality of care. This triggered governance actions in the form of the establishment of procedures for credentialing and certifying specialists (see Chapter 8).

The increasing numbers and types of sophisticated clinical services required better laboratory and imaging services. For example, Table 5.3 illustrates that the upgrading of laboratory services in

**Table 5.2** *Increased availability of specialist care in MoH hospitals, 1970–1997*

	1970	1980	1997
Peninsular Malaysia	121	220	283
Sabah	4	15	31
Sarawak	5	25	38
All	130	260	352
Units <sup>1</sup> per million people	12.1	18.9	16.2

Source: Suleiman and Jegathesan, n.d.

<sup>1</sup> One unit was equivalent to one or more specialists in a specialist unit or department.

**Table 5.3** *Laboratory services increased in sophistication in tandem with the availability of specialist clinicians*

Type of facility	Laboratory service
No specialist doctor	Medical laboratory technologist (MLT)
Specialist doctor but no pathologist	Biochemist OR microbiologist plus MLT
Pathologist	Biochemist AND microbiologist plus MLT
National referral level (IMR)	All plus sub-speciality pathology services
IMR and universities <sup>2</sup>	Very sophisticated tests and research

Sources: Suleiman and Jegathesan, n.d.;

<sup>2</sup> Institute of Medical Research (IMR).

MoH hospitals was linked to the type of specialist services available. The upgraded laboratory services required the appropriate allied health personnel with higher levels of qualifications. Appropriate training programmes and deployment strategies came into place.

The developments required higher investment and maintenance costs. The rising gross domestic product (GDP) facilitated the financing of these investments.

Figure 5.3 provides a summary of the dynamic interactions in the health system as it moved towards providing more sophisticated clinical services.

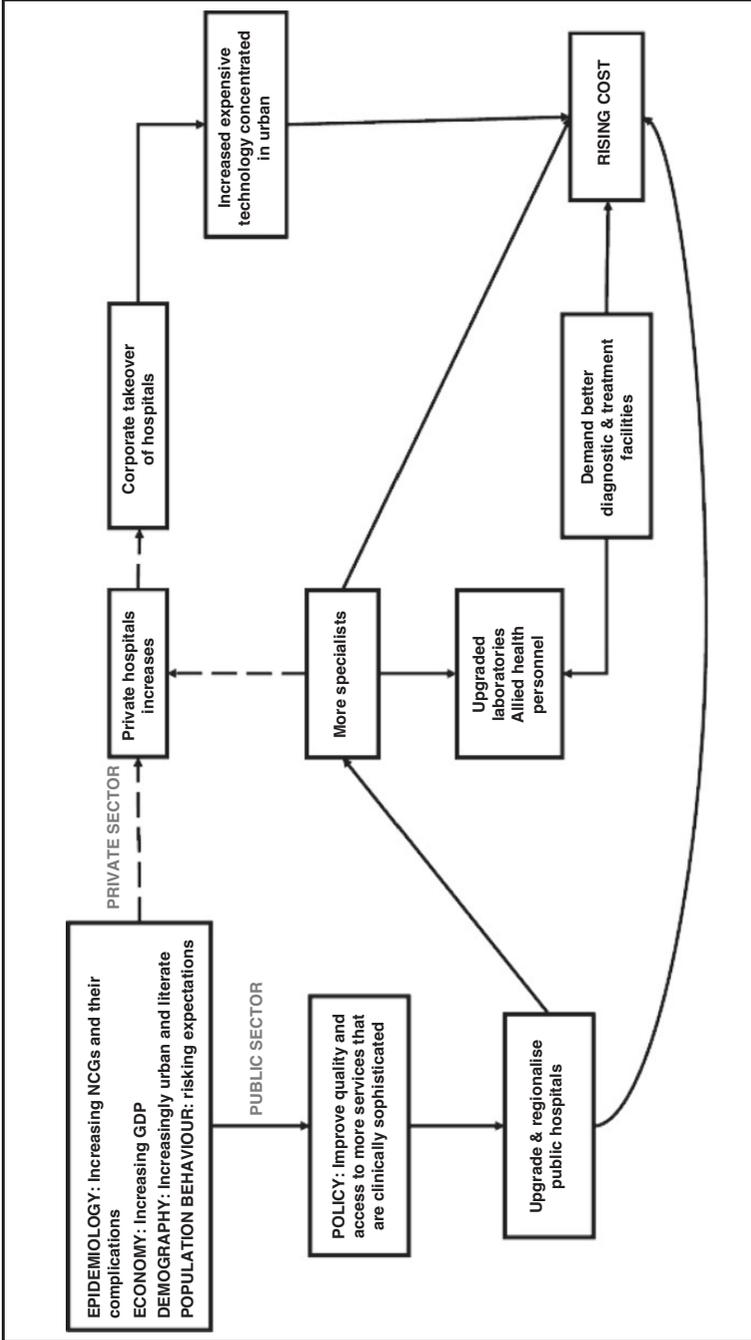


Figure 5.3 Dynamics of providing more sophisticated clinical services.

### 5.3.3 Private Sector

Meanwhile, there was high demand for STC in the private sector, leading to the rapid expansion of hospitals (Table 5.4). In 1997, 70% of private hospitals were small, with less than 20 beds, and several were in buildings not suited for providing quality care (Suleiman & Jegathesan, n.d.). Concerned about quality standards, the government enacted legislation (Government of Malaysia, 1998) with stringent standards for physical structure and with corporate and clinical governance, including procedures for monitoring quality (see Chapter 12). Enforcement began in 2006.

In parallel, there was high demand for care by the few specialist doctors who had established larger private hospitals since the mid-1970s. Recognising a good business opportunity, corporate entities moved in and bought up the larger hospitals. Corporate ownership led to a change in philosophy. While catering for the demands of the well-to-do who could afford private sector fees, these hospitals now also paid serious attention to profit margins. Their expansion and development plans reflected this change (Suleiman & Jegathesan, n.d.). One evident feature was the trend towards the rapid proliferation of higher-cost technology in the private sector as compared to the public sector (Table 5.5). These hospitals were concentrated in the wealthier regions of the country, thereby challenging the objective of equitable development.

The MoH initiated health technology assessment (HTA) as a means of rationalising the acquisition of newer technology. The output of the

**Table 5.4 Rapid growth of private hospitals, 1980–1996**

Year	No. of private hospitals	No. of private hospital beds	Private as % of all hospitals	Private as % of all admissions
1980	50	1,171	4.3	n.a.
1985	133	3,559	11.5	12
1990	197	4,675	14.1	14
1996	215	7,417	20.4	17.2

*Source:* Suleiman and Jegathesan, n.d. (data extracted from Ministry of Health Malaysia annual reports 1981, 1985, 1990 and 1996).

n.a. – not available

**Table 5.5** *Distribution of high-cost imaging technology in MoH and private hospitals, 1997*

	MoH hospitals			Private hospitals		
	CT scan <sup>1</sup>	Mammogram <sup>2</sup>	MRI <sup>3</sup>	CT scan <sup>1</sup>	Mammogram <sup>2</sup>	MRI <sup>3</sup>
Nine West Coast states	11	10	2	42	32	11
Three East Coast states	3	3	0	2	1	0
Sabah and Sarawak	3	2	0	4	3	2

*Source:* Suleiman and Jegathesan, n.d.

<sup>1</sup> Computed tomography (CT): The MoH had one unit per state except for the capital city, Kuala Lumpur, which had four units. Private hospitals had 17 units in Kuala Lumpur and neighbouring Selangor and 10 units in Penang.

<sup>2</sup> Mammogram: The MoH had one unit per state except Kuala Lumpur, which had three units. Private hospitals had nine units in Kuala Lumpur, four units in Selangor and eight units in Penang.

<sup>3</sup> MRI – magnetic resonance imaging.

HTA unit provided input into the formulation of policies in the public sector and provided the basis for the development of clinical practice guidelines (CPGs), purchasing decisions, drug regulation and health-related advertisements (Roza et al., 2019). However, there is limited information on whether the private sector uses the HTA information for guiding the development of technology.

#### 5.3.4 *Quality: Monitoring and Improving Outcomes*

In the late 1980s, the government of Malaysia initiated nationwide efforts to improve quality in the public sector. The MoH was one of the agencies that led the way in implementing the national call to action. The National Quality Assurance Programme (QAP) of the MoH spear-headed efforts to instil concern for quality as a culture at all levels of the organisation. It established a system for the explicit measurement of outcomes. This included monitoring performance trends in clinical



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**Caption for Figure 5.4 (cont.)**

medical personnel from the public sector, becoming another source of pressure on public sector capacity (R1 loop). This is a well-known system archetype known as 'shifting the burden', in which actions taken to address the outcomes of a problem (a gap in hospital capacity) can exacerbate the underlying causes of that problem (public hospital human resources).

Private sector care has become corporatised and supporting structures such as private insurance and medical tourism have been developed, creating a self-sustaining industry. In addition to health workforce challenges, the resulting fragmentation of healthcare providers and financers has created challenging tensions regarding the locus of responsibility for the provision and payment of healthcare.

care, patient satisfaction and better use of resources (physical, time and human resources). Box 5.5 provides illustrative examples.

The thrust for improving clinical outcomes (Figure 5.5) provided a fillip for strengthening clinical governance measures such as the development and use of Clinical Practice Guidelines (CGPs) and for stronger implementation of existing initiatives such as clinical audits and mortality reviews. It also contributed to improving the quality of data for health information (see Chapter 10), particularly in terms of accuracy of International Classification of Diseases (ICD) coding and timeliness of data, as healthcare providers became aware that this had a critical impact on the accuracy of indicators that measured performance.

The drive for improved outcomes of clinical care led to the establishment of disease registries for selected conditions such as end-stage renal disease (ESRD) and cancer, which are managed largely at the secondary care level. The registries are meant to provide information on disease conditions as well as treatment effectiveness and cost. The National Renal Registry, established in 1993, was a trailblazer, and it monitors trends in the quality, cost and effectiveness of different modalities of care for ESRD (Lim & Lim, 2004). It provided the data for a cost analysis that enabled the move to public-private partnership in the provision of dialysis (Lim et al., 1999).

**Box 5.5** Key features of the QAP for secondary and tertiary healthcare services in the public sector**Approach and Methods**

- Peer groups in each clinical discipline or hospital management group selected performance indicators.
- The MoH collected data on the indicators, analysed and rank-ordered the performance of individual hospitals, and shared the results with all stakeholders.
- Outliers were encouraged to analyse the factors contributing to their status and were helped to remedy issues.
- Performance trending enabled peer groups to discard or replace indicators periodically to move towards more sensitive and specific monitoring of performance outcomes.

**Examples of Results**

- Improvement in the management of acute myocardial infarction.
- Decreases in waiting time to see doctors and decreases in rejection rates for X-rays and laboratory specimens.
- Improved client satisfaction with counter services (e.g. pharmacy counters), cleanliness and facilities. For example, a small district hospital (Kuala Krai) in one of the more disadvantaged states won a national award for improving the quality of public services in 1995.

Source: Suleiman and Jegathesan, n.d.

The thrust for better outcomes in patient satisfaction and use of resources (Figure 5.6) stimulated a need for increased managerial competence at all levels of the MoH system (see Chapter 8). It also facilitated the growth of team approaches and the use of health systems research as a management and problem-solving tool. Hospitals won national ‘quality awards’ for improving client satisfaction and reducing waiting times (Suleiman & Jegathesan, n.d.). Budgeting systems were modified to provide greater authority to hospital managers to manage funds more flexibly to respond to local requirements (see Chapter 9).

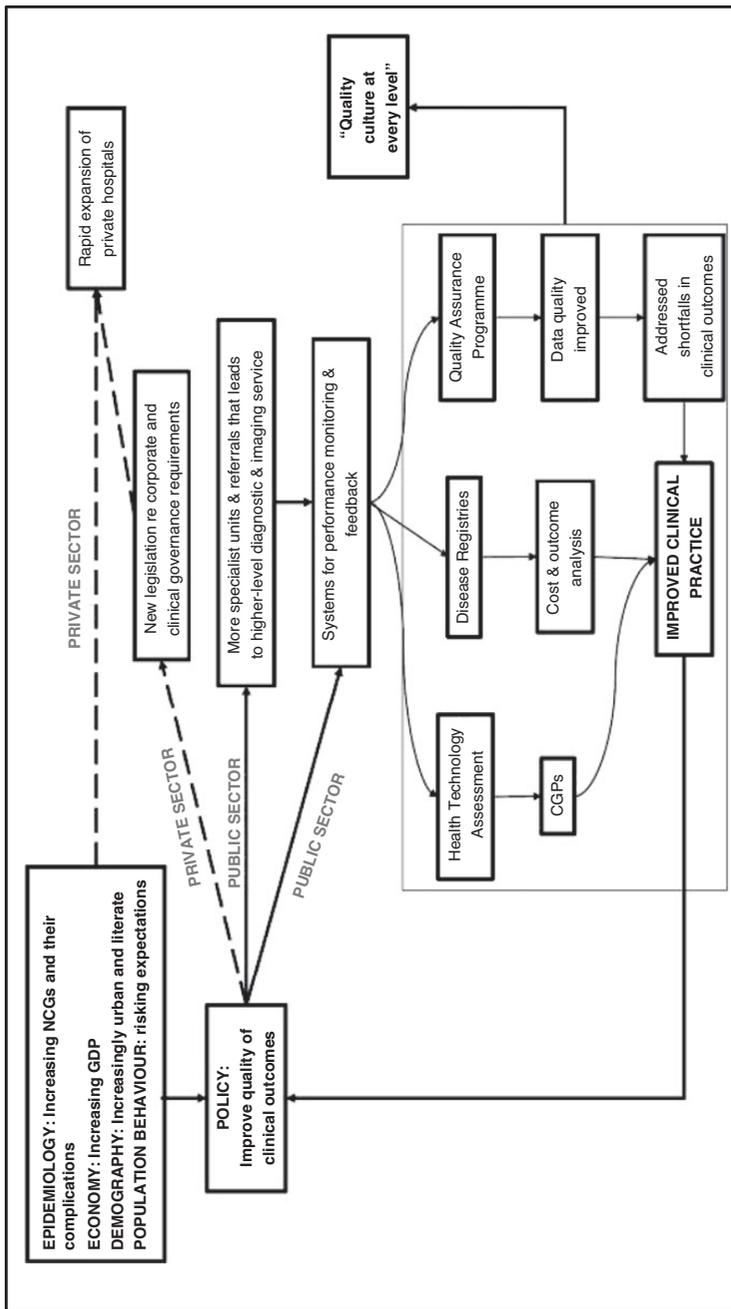


Figure 5.5 Dynamics of improving clinical outcomes and establishing a quality culture at every level.

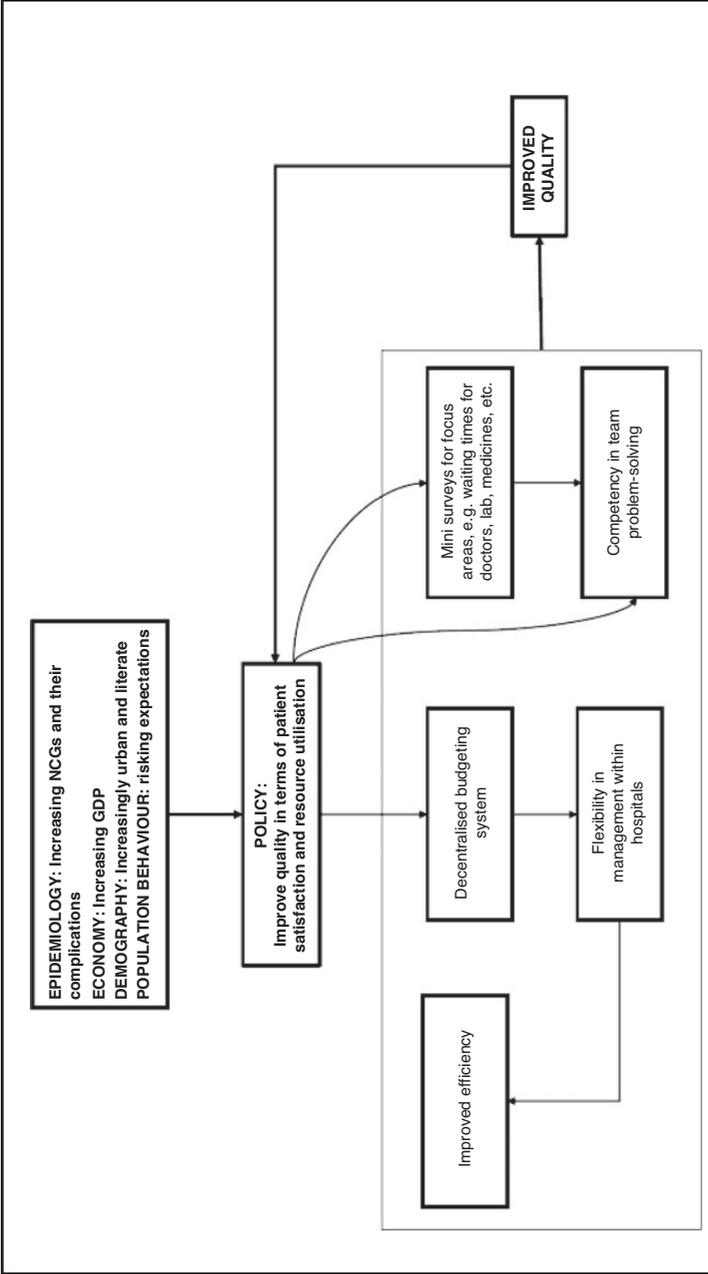


Figure 5.6 Dynamics of improving resource utilisation and client satisfaction.

**Box 5.6** Further initiatives strengthened STC support for PHC

Various measures contributed to further strengthening supportive linkages between hospitals and PHC. Examples include:

- In the QAP, the senior specialist for a discipline in each state hospital took responsibility for improving quality in all facilities. For example, the state obstetrician provided oversight to prevent maternal deaths throughout the state and therefore liaised with district hospitals, health centres and rural midwives, resulting in an improvement in the early detection and referral of complications of pregnancy (Pathmanathan et al., 2003).
- Outbreaks of dengue fever resulted in health inspectors visiting hospitals for epidemiological investigations that strengthened communication between STC and PHC. Conversely, health centres and private clinics used clinical management protocols originating from hospital-based specialists to improve the quality of care for dengue patients.

However, as the MoH was part of a larger public sector system, there were constraints. The degree of flexibility that could be decentralised was limited due to financial rules and regulations (see Chapter 9). Similarly, as all MoH staff are part of the federal civil service (see Chapter 8), constraints arose. For example, nurses with training and credentials in one discipline had to move to another discipline to further their careers (Institute of Health Management, 2006).

The thrust for improved resource management extended to strategies for improving the maintenance of building structures and biomedical equipment in public sector hospitals. New posts were created for hospital-based engineers, and maintenance services were outsourced to private contractors, with hospitals retaining oversight of the contractors' performance (see Chapter 7). Performance indicators of quality applied not only to clinical aspects of care but also to support services.

The quality-improvement measures also strengthened support from STC for PHC services (Box 5.6).

Supplementary Table 5-b in Appendix II summarises the interactions in the health system during the 1980s and 1990s (STC development Phase 2).

#### **5.4 The Third Phase (2000–Present): Drive towards Integrated, Seamless, High-Quality Care**

By the beginning of the new century, the health sector still fell short of the requirements for equitable access to quality care and faced several threats that arose from the ‘successes’ of the past. Section 5.4.1 and Case Study 5.1 analyse the interactions between various components of the health system in addressing some of these threats.

The major threats to STC included:

- In the public sector: Rapid increase in specialisation that led to increasing fragmentation at both clinical and managerial levels.
- In the private sector: Increasing conflict between medical care as a profit-oriented business and as a service to improve the welfare of the community.
- Conflicts arising from the changing roles in the public–private split of the health sector.

The health sector reactions to these threats included (but were not restricted to):

- Implementing organisational change to address the fragmentation that arose from increasing trends of specialisation.
- Taking advantage of changes in medical technology and information communication technology (ICT) to improve access and efficiency while reining in escalating costs.
- Attempting to use governance measures (legislation, financing) to address the challenges and governance gaps in dealing with the public–private split in the health sector.

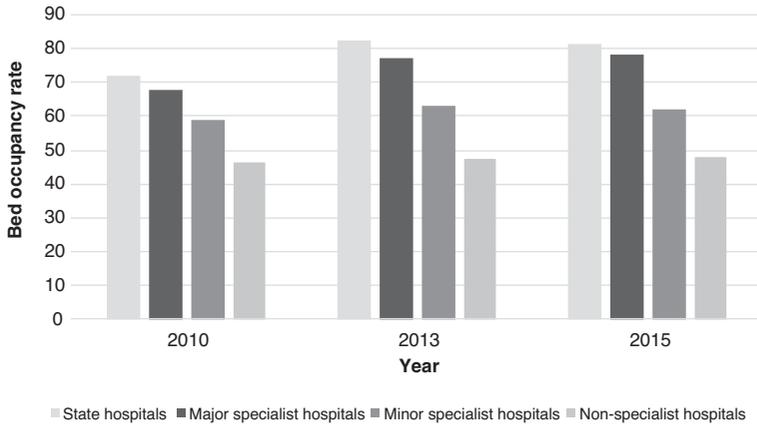
##### *5.4.1 Organisational Change*

In the public sector, there was a rapid increase in the types of clinical specialist units in hospitals and the types of programme management units at national and state levels. Communication between organisational units deteriorated. For example, communication between

hospitals and health centres, between hospital outpatient departments (OPDs) and wards, between departments of different clinical disciplines and between district- and state-level hospitals became more challenging (Suleiman, 1999). This carried threats to continuity of care for patients, such as people with diabetes, who required long-term care provided by more than one unit or department. There was an increased risk of worse-than-desired health outcomes.

Furthermore, duplications and missed opportunities could contribute to organisational inefficiencies, resulting in rising healthcare costs. The MoH addressed these threats by adopting a policy to 'provide seamless health care by enhancing integration' (Institute for Public Health, 1999). Two structural changes of note occurred. First, OPDs in hospitals were moved to health centres that were better suited to provide seamless preventive, promotive and curative care in ambulatory settings and adopted family and community perspectives in the management of conditions such as NCDs. Chapter 4 discusses this initiative.

The second strategy was the formation of hospital clusters to increase access to specialist care and improve utilisation rates in the smaller hospitals. The smaller hospitals had quite a large proportion of unused beds. During the previous experience in the regionalisation approach to improving access, specialists visited non-specialist hospitals. This proved unsuccessful because the smaller hospitals did not have the facilities or expertise to support specialist care. In the cluster concept, a major hospital that had a wider range of specialities formed a cluster with a few neighbouring smaller hospitals to share financial and human resources and equipment. In addition, there was an initial investment in upgrading surgical facilities in the smaller hospitals. Specialists and their teams from the lead hospital provided specialist services at the smaller hospitals on a visiting basis, negating the need to move patients to the major hospital. There was investment in training to enable staff at the smaller hospitals to provide adequate follow-up care after the team from the major hospital had provided treatment. The pooled budget enabled the sharing of financial and material resources such as drugs, equipment and travel between hospitals. There was shared responsibility for the outcomes of care. Initial assessment indicated that these measures provided relief from overcrowding in the major hospital and increased patient satisfaction and cost-benefit in the management of patients with moderate or



**Figure 5.7** Bed occupancy rates in MoH hospitals. Source: Ministry of Health Malaysia, 2016.

serious illness. However, they did not increase utilisation rates in the smaller hospitals. Barriers to sustaining or expanding this initiative included frequent transfer of human resources from the smaller hospitals, thus negating the investment in upgrading capacity, and inadequate recognition of the need for the initial additional investment to prepare smaller hospitals to support specialist services (Institute of Health Management, 2016; 2017). Despite these initiatives, the bed occupancy rates of the non-specialist hospitals remained below 50% (Figure 5.7).

Another aspect was the strengthening of referral systems. Within the MoH system, there were continuing efforts to improve the logistics and communication of referral between primary, secondary and tertiary care levels. This included strengthened governance through the refinement and clarification of procedures, expected standards and technological support, for example, through the telehealth project that enables real-time sharing of patient data between primary and secondary care levels, thereby contributing to quality of continuity of care for patients (Allaudin, 2014). However, other major challenges arose from governance features of the health system. For example, patients have direct access to specialist clinics in both the public and private sectors without going through primary care (Yiengprugsawan et al., 2017). This encourages the bypassing of primary care. In addition, in the private sector, it encourages rivalry between primary and specialist care providers, which in turn raises the risk of failure to refer conditions that require higher levels of competency.

Table 5.6 Referral experiences reported by doctors in public sector health centres

	% of doctors stating		
	Usually or always	Occasionally	Seldom or never
Received patient records from previous doctor	36.2	51.6	12.2
Used referral letters	99		
Received feedback from specialists	19	30.8	50.2
Obtained discharge report from hospital	27	13.7	58.4
	(within 4–14 days)	(delayed > 14 days)	

Source: Sivasampu et al., 2015.

Additionally, evidence suggests that feedback and referral from STC services to primary care in the public sector is weak (Table 5.6). In larger hospitals in both the public and private sectors, rules for referral between different clinical disciplines have not been established.

#### 5.4.2 *Advances in Technology*

Technological advances affected STC profoundly. Two illustrative examples of the influence of technology on the delivery of STC services are telemedicine and day-care surgery.

**Telemedicine.** The MoH introduced telemedicine progressively in several districts to increase access and reduce costs by enabling specialists based at larger centres to provide, through teleconsultation, diagnostic and therapeutic advice to doctors in hospitals without specialists or with a smaller range of specialities. Yusof and colleagues (2002) noted that the introduction of telemedicine increased access to STC in the remote, less accessible districts, such as Beluran and Kudat in Sabah, and led to ‘enhanced diagnostic options, cost savings and better health outcomes’. By 2016, telemedicine had increased to 45 facilities and 60 stations throughout the country (Ministry of Health Malaysia, 2016). Nurazean and colleagues reviewed the system and noted that the careful selection of sites influenced the usefulness and utilisation of teleconsultation. Factors in selection included sufficient need (i.e. inadequate expertise to address more complex problems), difficulty of physical access between sending and receiving sites, and discipline-specific guidelines (certain types of cases in each discipline are not amenable to distance guidance) (Nurazean et al., n.d.).

**Day-care surgery.** Medical technology such as advanced anaesthesia and minimally invasive surgical technologies contributed to increasing numbers of day surgeries, for example, cataract surgery, laparoscopy and other endoscopies that require short postoperative monitoring and recovery. The evaluation of day-care cataract surgery has been possible through the National Eye Database, which facilitates the tracking of trends in cataract surgery. It provided evidence that contributed to improvements in techniques and technology, as reflected in practice patterns and outcomes (Table 5.7). An increasing proportion of cataract surgery is being performed as day-care, and visual outcomes have improved, indicating improved quality. The success of the day-care centres for cataract surgery is attributed also to the availability of

Table 5.7 *Cataract surgery profiles, 2002 and 2015*

	2002	2015
Cataract surgeries	12,798	44,534
Day-care (%)	39.3	69
Phacoemulsion (%)	39.7	87.9
Local anaesthesia (%)		93
Intraoperative complications (%)		5
Unaided visual outcome 6/12 or better (%)		55.1
Visual outcome 6/12 or better with spectacles (%)	87	95.1

Source: Goh et al., 2016.

dedicated, well-trained teams of care providers, including highly trained technicians, nurses, specialists and sub-specialists.

Day-care surgery provides an avenue for controlling costs (*Evaluation of Specialist Complex and Ambulatory Care Centre*, 2018). The day-care centre approach has also contributed to integrated care, with specialists from various disciplines managing patients simultaneously. For example, endocrinologists managing problematic diabetic patients have simultaneous input from orthopaedic and vascular surgeons.

### 5.4.3 Governance Challenges Affecting STC

The fragmentation of clinical services is a challenge and occurs in at least at two dimensions of care. First, several clinical disciplines are compartmentalised into sub-specialties. Sometimes, the care provider in sub-speciality case management focuses on managing a particular condition to the exclusion of co-morbid conditions. At STC level, technological advancement necessitates multidisciplinary knowledge and skills and cross-discipline references in managing patients with multiple complex conditions. Care providers require the appropriate skills and attributes to recognise when cross-referral is needed and facilitate seamless cross-referrals. Currently, in Malaysia, the policies regarding intra- and inter-facility referral in both public and private sector clinical networks are weak.

Furthermore, clinicians at the PHC level who refer patients to STC levels of care have difficulties identifying the person or department in the hospital responsible for co-ordinating and facilitating such referrals. This situation is further complicated because patients have the right to an informed choice

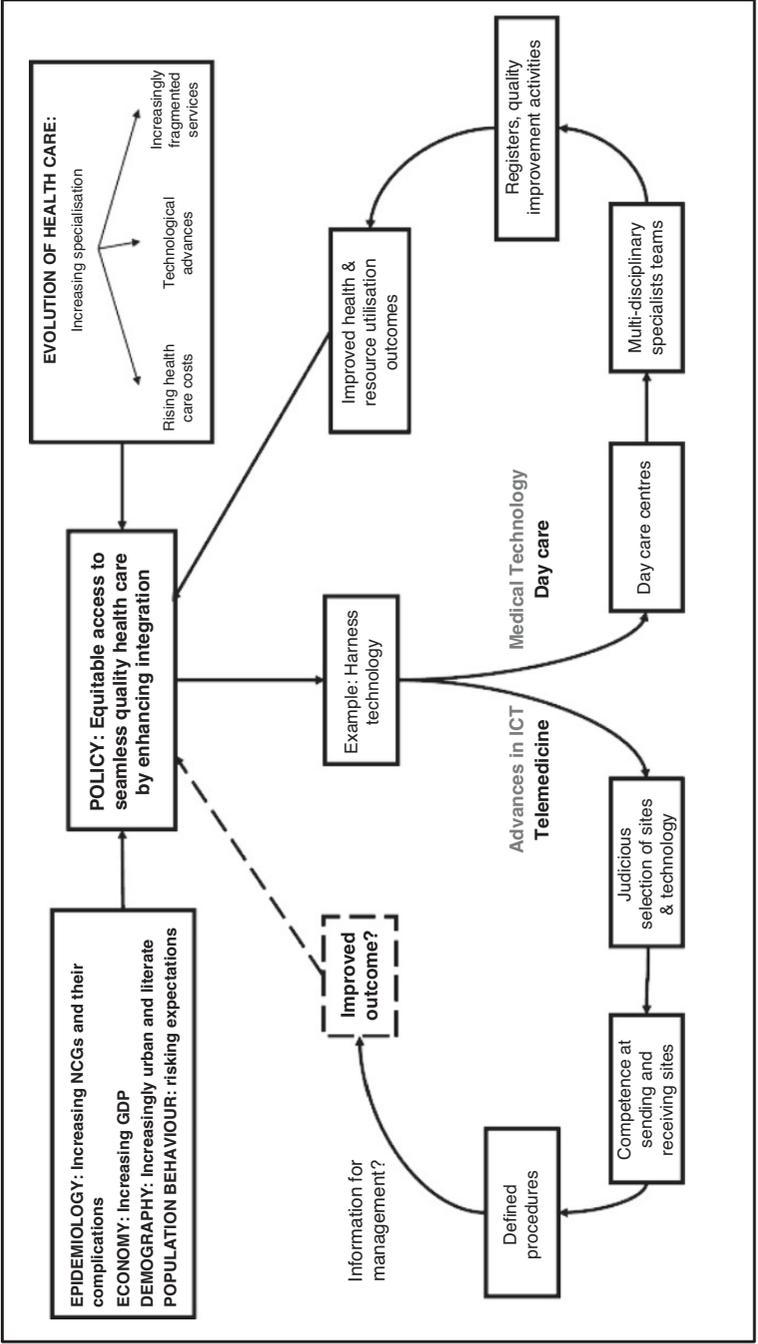
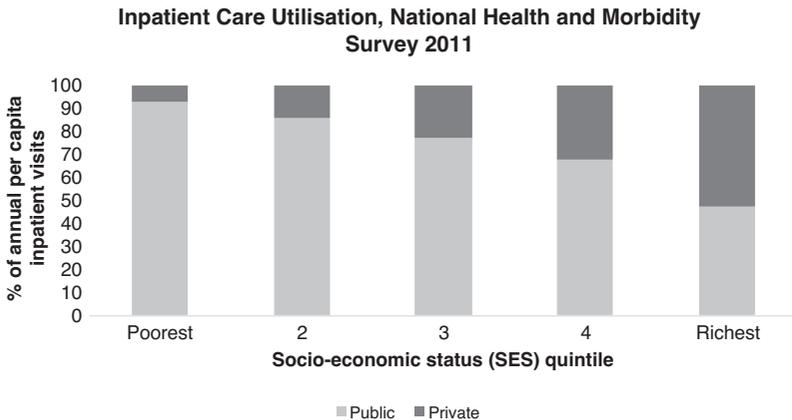


Figure 5.8 Harnessing technology to improve access to seamless, integrated care.



**Figure 5.9** Composition of inpatient care utilisation in public and private sector by socio-economic status. Source: Health Policy Research Associates et al., 2013.

of providers that best fit their medical needs and financial resources. Many patients prefer to skip primary care facilities in favour of direct appointments at specialist clinics or hospitals, particularly in the private sector.

Another dimension of the fragmentation of STC is evident in the fragmentation between the public and private sectors, each with different payment and governance mechanisms. During the first 40 years after independence, the fragmentation of the Malaysian healthcare sector into the public and private sectors appears to have assisted the national goal of improving equitable use of healthcare (see Chapters 3 and 9). Although the schism created tensions, particularly in the distribution of the workforce, it also enabled the wealthier segment of the population who could afford it to utilise private hospitals, thereby facilitating the public sector to provide for the lower-income groups (Figure 5.9) (Health Policy Research Associates et al., 2013).

However, during the most recent two decades, fresh challenges have surfaced, arising largely from underlying governance structures and financing mechanisms.

#### *5.4.4 Rising Expenditure and Costs in the Private Sector*

STC accounts for a relatively high proportion (55%) of total health expenditure (THE) (Table 5.8). Private sector hospitals are responsible

**Table 5.8 Expenditure on and utilisation of public and private hospitals, 2012 and 2017**

	2012	2017
THE	42,764	57,361
% public	55.85	51.15
% private	44.1	48.85
All hospitals as % of THE	51	55
Private hospital % of THE	18	24
Public hospital % of THE	33	31
Discharges from private hospitals (millions)	0.9 <sup>1</sup>	1.05
Discharges from public hospitals (millions)	2.2 <sup>1</sup>	2.49

Source: Ministry of Health Malaysia, 2012; 2018a; 2018b.

<sup>1</sup> 2012 data are reported as admissions, not discharges.

for an increasing proportion of THE, while that of public hospitals remains steady. Yet the proportion of discharges/admissions in public versus private hospitals has not changed during the period 2012–17. It is not clear whether the increased private sector expenditure is due to investment in new hospitals, investment in new expensive technology or higher cost of patient care.

Clients are unhappy with the price of care in private hospitals (Table 5.9).

The rapid increase in high-cost technology experienced in the previous decade continues in the private sector (Table 5.5 and Table 5.10). Are considerations of cost recovery from expensive investments driving costs in private hospitals? In the private sector, there is no overriding guide on technology acquisition. In contrast, reports from health technology assessment guide the acquisition of new technology in the public sector. Furthermore, in contrast to the public sector, no one monitors the outcomes of care and appropriateness of care across the private sector network of hospitals. Therefore, there are no feedback loops to trigger action from the authorities or to modify the behaviour of the providers themselves.

In theory, the public sector could harness the excess capacity of technology in the private sector, and there are examples of small-scale efforts in this direction, such as the purchase of PET (positron emission tomography) and CT (computed tomography) services. Case Study 5.1

Table 5.9 *Client satisfaction with hospital services*

Satisfaction with	% good to excellent	
	Public	Private
<b>Provider behaviour</b>		
Ability to give diagnosis	77	78
Clarity of explanation	77	79
Courtesy and thoughtfulness	78	82
<b>Characteristics of selected system</b>		
Private room/fewer people	44	72
Allowed to choose doctor	45	73
Waiting time to see doctor	38	72
Amount of time spent by doctor	65	75
Treatment charges	80	27
Outcome of service	78	80
Overall impressions	81	72

Source: Institute for Public Health, 2015.

Table 5.10 *Selected medical technology in hospitals, 2011*

	Public	Private
CT scanners <sup>1</sup>	52	91
MRI <sup>2</sup>	30	75
PET <sup>3</sup>	2	6

Source: Sivasampu et al., 2013.

<sup>1</sup> CT – computed tomography

<sup>2</sup> MRI – magnetic resonance imaging

<sup>3</sup> PET – positron emission tomography

on renal dialysis illustrates how imaginative cross-funding between public and private sectors can release private funds for initial investments and facilitate partnership for better utilisation of available private sector healthcare resources. However, this model has not been replicated, suggesting that there are serious barriers, perhaps related to finance and governance.

As there is no social health insurance and individual out-of-pocket payment is the largest source of private sector funding (Table 5.11), no organised entity has the responsibility of influencing rising costs.

**Table 5.11 Sources of funds in the private sector, Malaysia, 2012 and 2017**

Sources of funds	2012	2017
Private sources of financing (RM million)	19,795	28,023
Out of pocket (%)	78.7	77
Private insurance (%)	14.0	15
MCOs <sup>1</sup> (%)	0.5	4
All corporations (%)		5

Source: Ministry of Health Malaysia, 2018b.

<sup>1</sup> MCOs – managed care organisations

Private insurers are most likely to protect their own pockets by limiting payouts and passing on additional costs to individuals.

Managed care organisations (MCOs) increased their participation in managing private sector funds from 0.5% to 4% of private funds over five years (2012–2017) (Table 5.11). This has raised further issues of gaps in governance, as illustrated by Case Study 4.2 on MCOs.

#### 5.4.4.1 Governance Gaps

Corporate entities whose main driver is profit margins have acquired most of the private hospitals. Ironically, many of the larger corporations are government-linked agencies (Chan, 2015), but they too share the profit motive. Additionally, encouragement of health tourism is now a major government policy (Economic Planning Unit, 2010), thereby accentuating the profit motive in the private sector. Thus, while public sector healthcare retains its vision and goal of the health and wellbeing of the population, including addressing inequitable access, quality, safety and cost containment, the private sector strives for return on investment and competitiveness. There is a conflict in vision about whether healthcare is for social wellbeing or whether it is a business enterprise. Few governance measures are in place to address evident or emerging conflicts.

## 5.5 Conclusion

In summary, STC evolved in response to demand from the larger ecosystem. Economic growth, population behaviour and epidemiological patterns created political pressures that in turn resulted in an ever-increasing demand for STC.

The evolution of STC has moved from selective secondary care towards increasingly comprehensive STC, moulded by the ability of the health workforce to respond to demands for higher levels of competency and by the availability and capabilities of medical products and technology.

The enabling sub-systems, in turn, have influenced the evolution of the healthcare provider sub-system. These sub-systems comprise finance (sources, recipients and modalities), health information (availability, quality and use) and governance (managerial competence, governance structures and legislative tools) that either enable or constrain the evolution of the provider sub-system.

The outcomes of the healthcare system, in turn, have influenced the larger ecosystem, thereby creating a perpetual cycle (Figure 5.10).

## 5.6 Key Messages from Malaysia's Experience

### 5.6.1 *What Went Well?*

- STC ability to respond to people's desire for more sophisticated care and professionals' desire to provide the best care available effectively and efficiently. Key factors are:
  - Human resource production and use (see also Chapter 8).
  - Systematic quality improvement strategies.
  - Use of technology assessment for production of practice guidelines.
- Investment in strengthening management, and decentralised decision-making.

### 5.6.2 *What Did Not Go So Well?*

- Smaller hospitals built in response to public demand for access remain underutilised because of system inability to provide the human and material resources expected by the public.
- Rapid growth of private sector STC affects social efficiency of STC and PHC.
- In private sector STC: Unresolved conflict between the interests of shareholders (of companies owning hospitals) and those of stakeholders (users, providers, public sector STC).

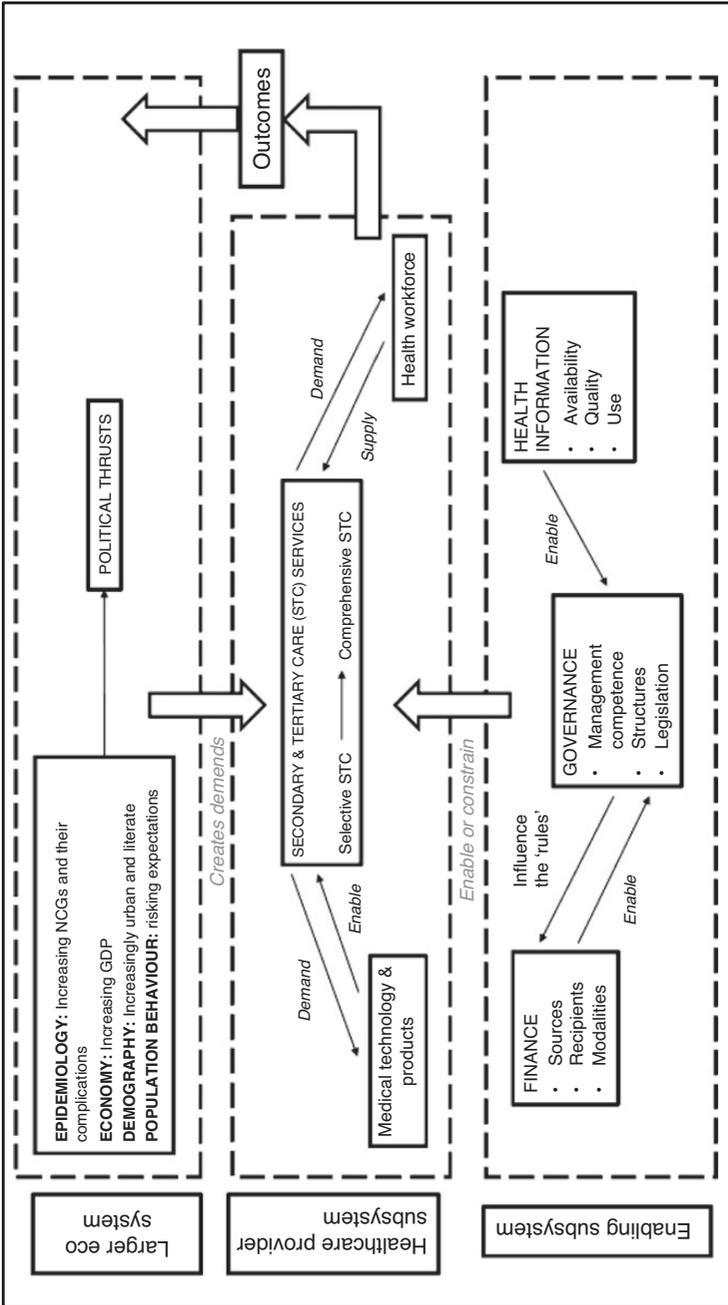


Figure 5.10 Interactions between the larger ecosystem and the healthcare provider sub-system with its enabling or constraining sub-systems.

### 5.6.3 Trends and Challenges

- The rapid growth of technology will require adaptive responses from STC and its support systems (e.g. day-care surgery).
- Increasing medical tourism will have an impact on the health system and the societal view of healthcare.

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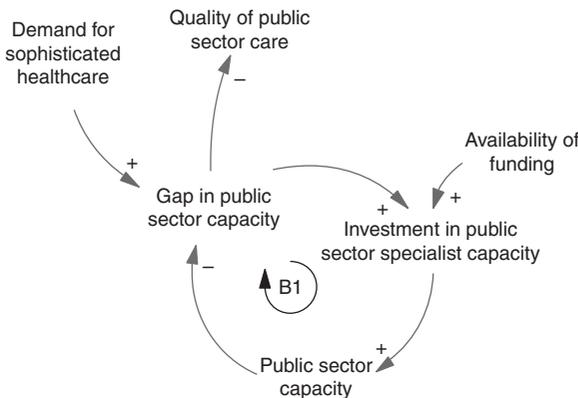
## Appendix I

### Systems Thinking Analysis of STC

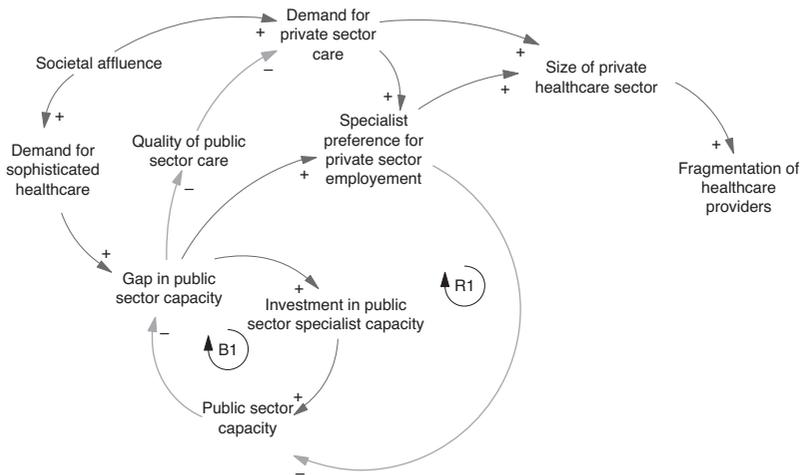
David T. Tan and Indra Pathmanathan

In the 1960s and 1970s, demand for more sophisticated medical care increased. Unable to obtain such care in clinics and smaller hospitals, patients bypassed those in favour of major hospitals, which became overcrowded. Public hospital capacity lagged behind demand, creating a gap that reduced the quality of care. The government attempted to upgrade hospitals and increase the number of specialists to reduce the gap (B1 loop) but was limited by the availability of funding (Figure 5-a).

Despite continued government investment, a gap remained between the demand for healthcare and public sector capacity to provide it. Figure 5-b demonstrates how, in the 1970s and 1980s, rising societal affluence increased the demand for sophisticated healthcare while also growing the population segment that could afford to pay for private care. This created private sector



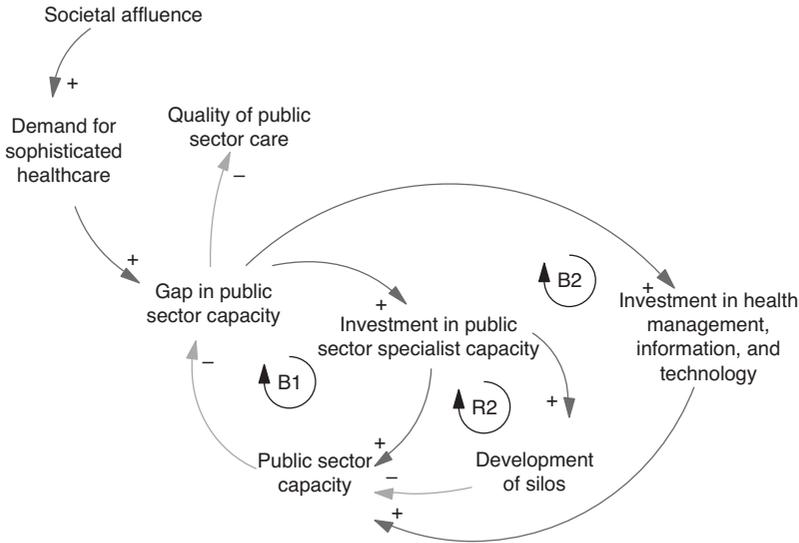
**Figure 5-a** The rising demand for more sophisticated STC stressed the capacity of the public sector, thereby requiring greater investment.



**Figure 5-b** In the 1970s and 1980s, rising societal affluence further increased the demand for sophisticated healthcare, resulting in the growth of the private sector STC, drained specialists from the public sector to the private sector and counteracted efforts to increase public sector capacity.

opportunities that were welcomed by public sector specialists facing high patient loads and inadequate support. However, the movement of these specialists out of the public sector further undermined public sector capacity, as illustrated by the reinforcing loop R1. Meanwhile, the growth of the private sector created a fragmentation of healthcare providers both between the public and private sectors and within the private sector.

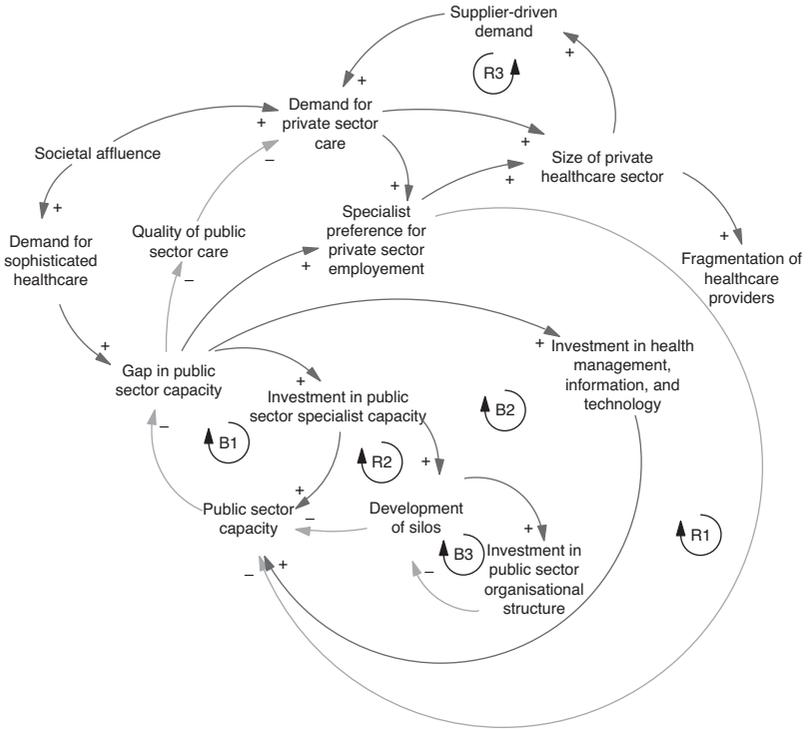
Figure 5-c illustrates that the public sector used new strategies to address capacity shortfalls. The public sector further invested in increasing clinical specialists (B1 loop) and emphasised health management and quality improvement (B2 loop), including information for performance monitoring and managerial strategies for quality improvement. While outcomes improved, unintended effects surfaced from the growing numbers and types of specialisation. Clinical treatment expertise and service delivery modalities in the public and private sectors became increasingly compartmentalised, with the development of silos in caregiving (R2 loop).



**Figure 5-c** Increased investment resulted in increased availability of specialist services but was associated with the unanticipated effect of increased compartmentalisation of care.

Figure 5-d demonstrates that in the 2000s onward, the public sector responded to the development of silos by investing in organisational structure (B3 loop) to bridge silos. This includes the creation of hospital clusters to share specialists and other resources, integrating hospital OPDs with PHC facilities, and creating new modalities of treatment such as telemedicine and day-care centres to improve access and integration.

Despite continual improvements to the public healthcare system, demand for private sector care has remained strong. Private sector care has become corporatised and supporting structures such as private insurance and medical tourism have developed, creating a self-sustaining industry and supplier-driven demand (R3 loop). While the private sector alleviates the burden of the public sector in some ways, it continues to draw medical practitioners, especially specialists, away from the public sector and creates challenging tensions regarding the locus of responsibility for the provision and payment of healthcare.



**Figure 5-d** Investment in public sector organisational structure improved the capacity to deal with compartmentalisation.

## Appendix II Supplementary Tables

Supplementary Table 5-a *Interaction of forces that shaped the evolution of STC during the 1960s and 1970s*

Larger ecosystem	(A) Influence of the larger ecosystem on STC	(B) Influence of STC on the larger ecosystem OR other components of health system
Population behaviour and demographic profile	<p><b>During the 1960s and early 1970s</b> Largely rural population (74%) Low literacy (58%) Low health literacy <i>Resulted in:</i> Need and demand for access to hospital care by the rural population <b>By the mid-1970s</b> Rising demand for more complex secondary care, evidenced in the bypassing of district hospitals to seek care in larger hospitals able to provide better investigations and surgical services</p>	<p><b>During the period</b> Probably increased awareness of hospital services (no data) <b>By the end of the period</b> Improved availability of hospitals in rural areas (no data on access or utilisation at that time)</p>
Morbidity and mortality profile	<p>High rates of maternal and infant mortality, vaccine-preventable diseases, malaria, TB, water- and soil-borne diseases, malnutrition <i>Resulted in:</i> Need for hospital care for treatment of more severe illness (TB, malaria, complications of childbirth)</p>	<p><b>By the end of the period</b> Deaths from serious illness and pregnancy-related causes declined</p>

Supplementary Table 5-a (cont.)

Larger ecosystem	(A) Influence of the larger ecosystem on STC	(B) Influence of STC on the larger ecosystem OR other components of health system
Economy and macro policies	Steady increase in GDP Rapid integrated rural development, including rural agriculture land development schemes (roads/bridges, schools, clinics, women's mobilisation for income generation, basic literacy, nutrition and health) <i>Resulted in:</i> Improved transportation to hospitals Expanding network of hospitals	Increased political awareness of the popularity of provision of healthcare services
Education sector	Rapid expansion of primary and secondary schools Rising education level of school leavers <i>Resulted in:</i> Better-qualified candidates for the health workforce Probably increasing health literacy and empowerment of women, particularly for use of health services (no Malaysian data)	
Components of the health system		
Health services (STC)	<b>Public sector</b>	
	1. Inherited dilapidated hospitals, mostly in urban areas in state capitals – some were refurbished during this period.	
	2. New district-level hospitals were constructed.	

3. District hospitals had staff and basic investigation facilities capable of managing major communicable diseases (malaria, TB, leprosy) and childbirth to reduce maternal deaths. Few had surgical facilities.
  4. Ambulances provided free transport for patients from health centres and district hospitals to larger hospitals.
  5. State-level hospitals provided more sophisticated imaging, laboratory and surgical services and specialists for basic specialties.
  6. There were strong linkages (referrals, case finding, leadership support) with rural maternal and child health (MCH) services and TB and malaria programmes.
- Private sector**
7. A few not-for-profit missionary hospitals had specialist services.
  8. Several small nursing homes catered mainly for childbirth.
  9. In the late 1970s, a few specialists resigned from the public sector and set up the first few doctor-owned private for-profit hospitals.

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Influence of other components of the health system on STC      Influence of STC on other components of the health system

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Other modalities of service delivery

*Public sector:*

Rural MCH services and TB control programme formed close bidirectional links with hospitals, especially for maternal health, which helped to popularise safe childbirth, and for TB treatment.

*Private sector (NGOs):*

Private hospitals had links with TCM providers.

Supplementary Table 5-a (*cont.*)

	Influence of other components of the health system on STC	Influence of STC on other components of the health system
Health workforce	<p>Shortage of doctors and specialists dictated the types of services available at each type of hospital.</p> <p>Introduction of compulsory year of post-registration service in the public sector for all doctors to provide staff for more rural facilities.</p> <p>Nurses, midwives and medical assistants were the backbone of district-level hospitals.</p>	<p>Demand for expanded health workforce to provide services in the expanding network of hospitals.</p> <p>Demand for health workforce willing and able to work in less developed states (e.g. East Coast states of Peninsular Malaysia).</p> <p>'Task shifting' – the MoH granted authority to nurses and medical assistants to perform some tasks of doctors in remote locations where doctors were unavailable (e.g. anaesthesia, trauma care, some complications of childbirth).</p>
Governance and financing of health sector	<p><b>Financing</b></p> <p><i>Public sector:</i> Provision of highly subsidised medical care funded by the government was almost free at point of delivery.</p> <p><i>Private sector:</i> Payment was on a fee-for-service basis, being mostly out-of-pocket expenditure for patients and their families.</p> <p><b>Governance</b></p> <p>Laws and regulations under the MoH regulated the practice of the medical, nursing, midwifery, dental and pharmacy professions. The Boards also had oversight of recognition of qualifications.</p>	

Health information	<p>Very little information was available on hospital utilisation (only volume of admissions, childbirth, deaths and attendance at clinics).</p> <p><i>Resulted in:</i></p> <p>Inadequate data for management of hospital services.</p>	<p><i>As a result:</i></p> <p>At federal level, the MoH began the process of strengthening hospital information systems and monitoring the quality of information.</p>
Medical products	<p>Standardised essential drug lists were implemented for different categories of public sector hospitals based on types of services available. This facilitated the implementation of clinical management protocols.</p> <p>Central procurement at federal level and improved supply logistics.</p> <p><i>Resulted in:</i></p> <p>Better availability (volume, continuous supply) of medical products in hospitals.</p>	

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Supplementary Table 5-b *STC services: interaction of forces that shaped the evolution during the 1980s and 1990s*

	(A) Influence on STC	(B) Influence of STC on the larger ecosystem
Larger ecosystem		
Population behaviour and demographic profile	<p>Increased rural–urban migration</p> <p>By 1991, 51% of the population was urban</p> <p>Rapid rise in female literacy</p> <p>By 1997: 49% of primary school enrolment was female</p> <p><i>Resulted in:</i></p> <ul style="list-style-type: none"> <li>Rising literacy rate (72%)</li> <li>Improving health literacy</li> <li>Increased demand for allopathic medical care</li> </ul>	<p>Improved access to basic STC services</p> <p>Increased demand for more sophisticated clinical care (investigation facilities, surgical services, specialist services)</p> <p><i>Outcome by the end of the period:</i></p> <ul style="list-style-type: none"> <li>Reduced disparities in access to care between geographic regions, especially between the West and East Coast states of Peninsular Malaysia</li> </ul>
Morbidity and mortality profile	<p>Decline in major communicable diseases (CDs)</p> <p>Remaining burden from re-emerging (dengue, TB) and new CDs (HIV/AIDS)</p> <p>Rise in NCDs (cardiovascular, metabolic, neoplastic) and accidents</p>	<p>Recognition of need for more sophisticated clinical care by policy-makers and politicians across the country</p> <p><i>Outcome by the end of the period:</i></p> <ul style="list-style-type: none"> <li>Improved quality of care in the public sector in terms of clinical outcomes, patient satisfaction and resource utilisation</li> </ul>
Economy and macro policies	<p>Budget constraints</p> <p>Macro policy directed towards:</p> <ul style="list-style-type: none"> <li>• Private sector as engine of growth</li> <li>• Improving efficiency to counter budget constraints</li> <li>• Nationwide quality-improvement initiatives in the public sector</li> </ul>	<p>Rise in private sector expenditure on health care (see Chapter 9)</p>

- Addressing imbalance between regions
- Poverty-reduction programmes

*Resulted in initiatives to:*

- Improve quality (clinical outcomes, patient satisfaction, resource utilisation)
- Outsource some hospital support services
- Begin the growth of private sector hospital and specialist services

Education sector	<p>Better-qualified school leavers were now demanding tertiary education.</p> <p>Tertiary education was expanded, including local production of doctors and various allied health professionals (see Chapter 8). This contributed to changing the profile of the health workforce in hospitals.</p>	<p>Increased the demand for medical education by increasing the visibility and prestige of doctors and specialists (see Chapter 8)</p>
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<b>Influence of other components of the health system on STC</b>	<b>Influence of STC on other components of the health system</b>
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Other modalities of healthcare delivery	<p>Notification of CDs (dengue) improved through collaboration between the disease control programme and STC services.</p> <p>Support from STC to the PHC level was strengthened through the QAP, whereby senior specialists in state-level hospitals had to take responsibility for quality in their discipline in district hospitals and health centres (e.g. maternal health, paediatrics, surgery).</p>
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Supplementary Table 5-b (cont.)

	(A) Influence on STC	(B) Influence of STC on the larger ecosystem
Larger ecosystem	(A) Influence on STC	(B) Influence of STC on the larger ecosystem
Health workforce (see Chapter 8 for details)	<p>More doctors became available. There was brain drain of doctors and nurses from the public to the private sector. The competence and remuneration of nurses and hospital assistants (medical assistants) was upgraded. More specialised categories of allied health personnel were recruited or trained to support the growing number of specialist services. Management skills in public sector hospitals were upgraded.</p> <p><b>Public sector</b></p> <ul style="list-style-type: none"> <li>• ‘Regionalisation’ of hospitals to improve geographic distribution of specialist services</li> <li>• Improved financial literacy of hospital managers</li> <li>• Improved community participation (hospital boards)</li> </ul> <p><b>Private sector</b></p> <ul style="list-style-type: none"> <li>• Fee schedules agreed on for private sector doctors and specialists</li> </ul>	<p>Increased demand for doctors, dentists, pharmacists and nurses <i>Resulting in:</i></p> <ul style="list-style-type: none"> <li>• Increased local production</li> <li>• Increased financial support for foreign training of local candidates (doctors and dentists)</li> <li>• Establishment of local training programmes for a wider range of allied health personnel</li> </ul> <p>Increased recognition of safety and quality issues in smaller private sector providers of inpatient care Increasing influence of clinical specialists in health policy and programme management Improved linkages with some public sector health programmes (disease control, e.g. dengue notification, clinical management protocol)</p>
Governance		

Healthcare financing	Progressive decentralisation of financial authority and responsibility to state-level hospitals (modified budgeting system)	<p>In 1985:</p> <ul style="list-style-type: none"> <li>• % national budget allocated to health: 4.3%</li> <li>• % GNP for health: 1.68%</li> <li>• Public sector funded 75% of THE</li> <li>• 13% of MoH budget spent on development</li> </ul> <p>Demand for increasing share of the government budget for the health sector because of higher-cost personnel and high-cost technology</p>
Health information	<p>Better quality and timeliness of hospital data facilitated Better allocation of resources (human, materials)</p> <p>Improved monitoring of performance (utilisation, clinical quality, patient satisfaction)</p> <p>Strengthened capacity for and production of health technology assessment contributed to rational acquisition of technology and products in the MoH network</p>	<p>Monitoring of quality of care in hospitals strengthened the quality of data generated in hospitals, e.g. causes of death, ICD coding</p> <p>Strengthened capacity for clinical trials and management research in hospitals</p> <p>Improved communication with patients (health promotion, patient education)</p>

## System Analysis Case Study 5.1: Expanded Access to Dialysis Services through Public Funding of Private Delivery

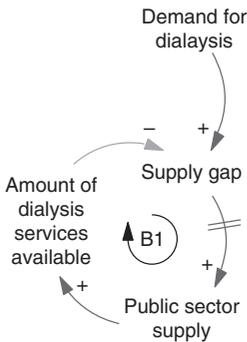
*Indra Pathmanathan, Milton Lum, Anuar Zaini and David T. Tan*

This study applies systems thinking methodology to a paper by Teck-Onn Lim, Adrian Goh, Yam-Ngo Lim, Zaki Morad bin Mohamad Zaher and Abu Bakar Suleiman entitled 'How Public and Private Reforms Dramatically Improved Access to Dialysis Therapy in Malaysia', published in *Health Affairs* in December 2010.

The major precursors of end stage renal disease (ESRD) are uncontrolled hypertension and diabetes. The prevalence of hypertension in Malaysia increased from 29.9% in 1995 to 30.3% in 2015, and one in two patients were undiagnosed. The prevalence of diabetes mellitus increased from 8.3% in 1996 to 17.5% in 2015, and three out of five patients were undiagnosed (Institute for Public Health and Ministry of Health Malaysia, 2008; 2015). In 2015, a staggering 61% of ESRD was reported to be caused by diabetes mellitus (National Renal Registry, 2018).

ESRD is treated through renal replacement therapy (RRT). The types of RRT are haemodialysis, and peritoneal dialysis with or without renal transplantation.<sup>3</sup> ESRD requires long-term dialysis, which comes at a high cost.

The first patient with ESRD to be given long-term dialysis was in the private sector in 1966. Until the 1980s, dialysis treatment was available only in Kuala Lumpur, but during the 1970s, the seeds for future development in the public sector were sown by a team of nephrologists and urologists who established service modalities using team approaches with allied health personnel, and haemodialysis equipment with a very limited budget. Facilities were gradually expanded to larger towns, mostly in MoH hospitals. Access was very limited. Constraints to the expansion of access were lack of budget for establishing the infrastructure, and the very small number of qualified staff. Many patients were considered ineligible for treatment in the public sector and were forced to resort to the private sector, but several could not afford the cost. The National Kidney Foundation (NKF) and other non-governmental organisations (NGOs) tried to alleviate the situation by raising funds and were able to supplement the public sector service to a small extent. Figure 5-A illustrates the increasing gap between demand and supply. Theoretically, the



**Figure 5-A** The gap between demand and supply. A simple balancing (B1) loop caused the rapidly increasing demand for dialysis in the 1990s to outpace the ability of the Malaysian public health sector to respond. Factors in the wider system kept the supply rate low and the supply gap large.

supply gap should have induced the private sector to step in and meet the demand (Loop B2). However, patients' ability to pay for services was a strong limiting factor. Consequently, private sector involvement was limited to a few charitable organisations and private clinics that catered to those who could afford to pay. Figure 5-B demonstrates that the persistent supply gap kept the price of private dialysis services high (R1a). Furthermore, the relatively low number of dialysis services prevented economies of scale from lowering the cost, as equipment and consumables suppliers had to keep prices high to remain profitable in the absence of large-scale demand (R1b).

Lim and colleagues (2010) noted that rapid economic growth from 1990 to 2005 was accompanied by an eightfold increase in dialysis rates to reach levels comparable with that of developed countries (Supplementary Table 5-A). They noted that 'In spite of the resource constraints that all developing countries face, popular demand in Malaysia, combined with effective stewardship of public funds, resulted in a mix of public and private financing and provision of dialysis services.'

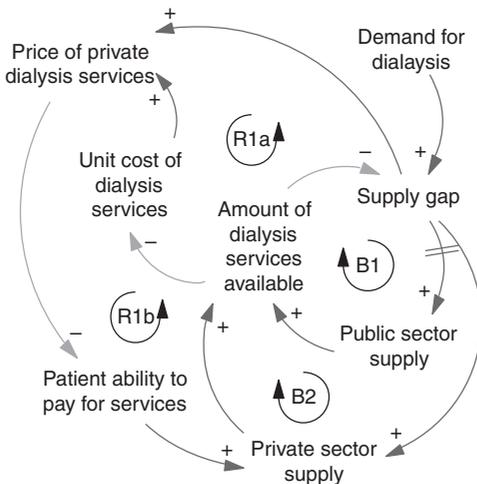
This remarkable transformation was triggered by the government's large-scale purchase of dialysis services from the private sector.

In the Malaysian scenario, there was a total dichotomy between the public and private sectors. For the first time, the government departed from its standard policy of monopolising healthcare provision and

**Supplementary Table 5-A Haemodialysis in Malaysia: prevalence, 1990–2015**

Increased funding	1980	1990	1995	2000	2005	2010	2015
Dialysis prevalence per million population	4	46	108	285	512	830	1,238
Total number of patients on dialysis at year end	59	836	2,230	6,693	13,385	23,740	37,729
% patients on dialysis by sector							
Public		88	65	42	37	33	31
Private		7	15	26	30	41	48
NGO		5	20	32	32	26	21

Sources: National Renal Registry, 2003; 2008; 2018.



**Figure 5-B** A view of the wider system affecting dialysis demand and supply. The balancing loop in Figure 5-A interacts with a second balancing (B2) loop. The two reinforcing loops (R1a, R1b) show some of the factors that kept private sector involvement low.

purchased clinical services from the private sector. This was done by subsidising payment for private dialysis and setting a reimbursement rate. In Figure 5-C, the B2 loop represents the delivery of dialysis



**Box 5-A** Key features in the rapid expansion of dialysis

- **Financing:** Increased funding, expanded access, improved efficiency
  - Increased funding
  - Public financing of private sector services through:
    - Matching grants for NGOs
    - Subsidised payment based on pre-determined fixed rate
    - Payment through multiple channels (MoH, Social Security Organisation (SOCSO), Baitulmal, Public Services Division (PSD))
    - Level playing field in terms of eligibility of private providers to participate
  - Efficiency gains: Total spending increased 15-fold, but the number of patients increased 16-fold (13.4% more patients treated because of efficiency gain)
- **Governance – legislative:** Removed barriers but improved oversight
  - Lifting of restrictions on importation and marketing of equipment
  - Exemption from import duties
  - Mandatory reporting (Private Health Care Facilities Act)
- **Information**
  - Established National Renal Registry – has very good coverage
  - Monitors quality, efficiency and equity in utilisation
  - Analyses data regularly and provides feedback for decision-making
- **Health workforce**
  - Innovation in task shifting, training private sector in public facilities

providers, who therefore had to compete with each other; that is, the money followed the patient. The private sector responded by investing in physical capacity and human resources.

The result was a spectacular expansion of private dialysis services. Competition led to an increase in efficiency. This was reflected in the reduction in the price per treatment (Supplementary Table 5-B). However, the government continued to bear the major financing of dialysis (Table 5-C).

The rapid expansion of dialysis facilities could have been expected to create a demand for workforce that exceeded supply (B3 loop), and

**Supplementary Table 5-B Dialysis: price pre-treatment**

	1990 RM	1995 RM	2000 RM	2005 RM
Private sector	302	254	194	165
Public sector	163	182	201	219

Source: Lim et al., 2010.

**Supplementary Table 5-C Dialysis: financing by sector**

	1990	1995	2000	2005	2010	2015
Public	64.4%	56.1%	45.6%	67.3%	65.8%	67.1%
Private	33.1%	36.3%	40.0%	20.7%	21.6%	19.7%
NGO	2.5%	7.5%	14.4%	11.9%	12.6%	13.2%

Sources: National Renal Registry, 2008; 2018.

training new personnel would have required time (B4 loop) (Figure 5-D). These bottlenecks were anticipated, and policies to supply the necessary workforce were enacted and successfully carried out (Box 5-A). Legislation reduced import restrictions and costs, and it established mandatory reporting that enabled oversight of quality and efficiency.

The reforms were driven by a small group of public sector nephrologists who provided strong leadership and commitment in building consensus among key stakeholders on policy details. They also overcame resistance to reforms by various stakeholders.

Lim and colleagues (2010) noted that, contrary to expectations, the rapid increase in dialysis in the private sector had ‘no adverse trends in several measures of quality including patient mortality, quality of life, dialysis adequacy . . .’ Their analysis also implied that the private sector was catering for the more affluent, while the public sector services were directed towards patients with low socio-economic status.

The development of the dialysis service system has successfully increased access to dialysis treatment through the provision of financing and workforce development. This system, however, increases government exposure to dialysis costs, and this cannot be easily changed without major disruption to the service delivery system that has been built upon government reimbursement. The total ESRD expenditure increased from 2.95% of the public sector THE in 2010



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## Notes

1. Essential, emergency and comprehensive obstetric care as defined by the United Nations Population Fund (UNFPA, [www.unfpa.org](http://www.unfpa.org)).
2. West Coast states: Perlis, Kedah, Penang, Perak, Selangor, Negri Sembilan, Melaka and Johor. East Coast states: Kelantan, Terengganu and Pahang. East Malaysia: Sarawak and Sabah.
3. In Malaysia, dialysis is the most frequent mode of therapy. In 2015, there were 33,965 haemodialysis and 3,764 peritoneal dialysis patients. Transplant rates in Malaysia have remained low, with rates of 6 and 3 per million population in 2006 and 2015, respectively (Dialysis and Transplant Registry Reports, Clinical Research Centre, [www.crc.gov.my/report-registry](http://www.crc.gov.my/report-registry)).