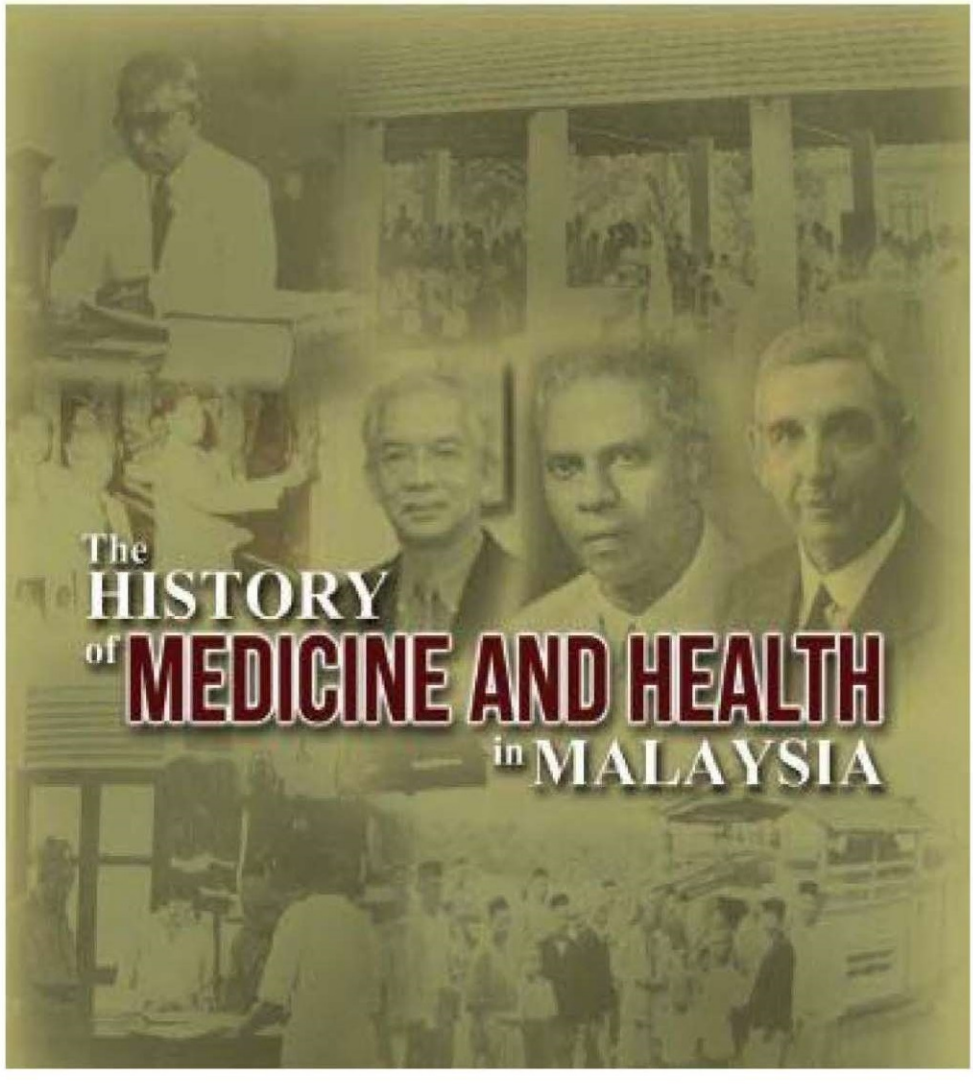
The
HISTORY
of MEDICINE AND HEALTH
in MALAYSIA

THE HISTORY OF MEDICINE AND HEALTH IN MALAYSIA

BY

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FOREWORD

Patron: His Royal Highness, the Sultan of Perak, Sultan Nazrin Muizuddin Shah

ACADEMY OF MEDICINE OF MALAYSIA

It gives me great pleasure to write the foreword for this book, "History of Medicine and Health in Malaysia". The author, Associate Professor Dr Lim Kean Ghee, is a professional colleague whom I have known for nearly three decades. Dr Lim is an Associate Professor of Surgery at the International Medical University. He graduated from the University of Glasgow in 1983 and subsequently trained in surgery and obtained the Fellowship of the Royal College of Surgeons of Edinburgh. He has written over 20 papers mainly in the Medical Journal of Malaysia, of which he has been on the Editorial Board since 1996 and the Editor-in-Chief from 2011 to 2013. Dr Lim is currently a Council Member of the College of Surgeons, Academy of Medicine of Malaysia. Given his passion and intimate understanding of medicine and its practice, I am not surprised at Dr Lim's commitment and his views on broad societal issues. Dr Lim has a deep interest in the in the local epidemiology and strongly believes that to practice medicine in Malaysia we should not only know about the disease in general but also know the disease spectrum to be expected locally. Dr Lim has published a book entitled "A Review of Disease in Malaysia" in 1993 which gives a good idea of diseases likely to be found in Malaysia. The book has become a reference book for medical students and clinicians. In 2001, Dr Lim updated the book with a second edition, bringing the material up to the end of the twentieth century.

Prof Alun Munslow (Deconstructing History - 1997) argues 'The past is not discovered or found. It is created and represented by the historian as a text, which in turn is consumed by the reader…. This book, "History of Medicine and Health in Malaysia" according to the author is not just about "History of Medicine" but takes a wider perspective rather than just past happenings within the profession. The development of Medicine is put in the context of the population, its socio-political development and the disease prevalence. Dr Lim must be congratulated for the immense amount of effort that was put to collect enormous amount of relevant information. This book is divided into three sections and cover different eras of history of medicine in the country. The sections include the early years of Colonial role, the progress and development of medicine during colonial role and the era of independent Malaysia. The book is well researched and provides extremely useful information that is not easily available in other text books. As in Dr Lim's previous publications, the book is very well organized and readable.

This book is an extremely useful contribution with wealth of information and I am confident it will be will be of tremendous benefit to the medical profession.

I wish the book the success it thoroughly deserves.

Professor Dato' Dr P Kandasami
Master of the Academy of Medicine of Malaysia
DPMP, SAP, AMN, AMP, MBBS (Bom), FRCS (Edin), FRCS (Glas), FRCS (Ire), FAMM, FAMS

PREFACE

I have heard it said that to have no history is like having no memory. Doctors appreciate how important it is to find out the history of a patient's illness. It is almost impossible to determine the diagnosis (the cause) and the prognosis (the expected outcome) without a proper history. In the same way, not appreciating the history of the medical services, the context of life then, and the diseases the medical profession faced, can be compared to having blinkers. They obscure our understanding of the strengths and weaknesses of our medical system today. We may lose sight of what opportunities and challenges lie before us as a nation.

First, a word about the title of this book. One would usually expect a book like this to be called the 'the History of Medicine'. A title like 'the History of Health' would sound strange. However, we speak of a Ministry of Health in the government and not a Ministry of Medicine. This book takes a wider perspective than just developments within the profession. It outlines and politics and progress of the times. Medicine is put in the context of the population, its socio-political development and the diseases prevalent. In addition, there have been two previous volumes; the first covering early history up to the beginning of the twentieth century and the second volume covering the mid-twentieth century. This is not a continuation of those works.

I did not begin writing this history with any thesis in mind. My interest was stirred about what I might learn about what is happening while I am involved in the practice of medicine now. What is there we can see, that might tell us how our medicine will be like in twenty to thirty years time? What are the strengths and weaknesses in our system.

I wanted to take the story right up to the twenty first century as other works have covered the past before, but I had to start from the beginning. As I plodded along, I discovered things that shaped my perspective. What I began to see was, in contrast to what we read from the history books our children read in school where the British are vilified, it struck me that in the development of medicine, one cannot but help recognise that our colonial masters, for all their defects, were humanitarian. We may fail to notice that if we just study the political history of the country. However, if we study the social developments, such as the medical services, there was plenty that showed the British did not just look after their economic interests. They may have had a sense of superiority that instituted a two tier medical services in which the senior posts were reserved only for themselves, but they also introduced, hospitals, medical dispensaries, sanitary boards and maternal and child care that eased the suffering of thousands and saved many, many lives. On the other hand, I have also sought to be honest and objective about the direction our authorities have taken the development of medicine after independence.

I would like to say that this work would not have been possible without the two volumes of History of Medicine in Malaysia which the Academy of Medicine has previously published. The subject is so vast that no single person can gather the necessary information, if much of it had not been published before. I was asked to look into the subject as Muzzafar Tate and S Selvarajah, two of the principal authors of the

previous works have died. Muzaffar Tate wrote the first volume like an academic thesis with extensive notes. In the second volume, the Academy obtained the input of many individuals, giving their different perspectives from various fields of medicine. Their contributions produced a fragmented work, with different flavours of narrative writing.

My purpose here is, I hope, to produce a readable account. Having read the two previous volumes, they seem to me to have much data, but, have threads that are not tied together. I have endeavoured to follow the threads and weave a picture. I have drawn extensively from these two previously published work. They are my primary sources of reference. I will not try to include every single detail already recounted and my research has uncovered pertinent information from many other sources. I have had to decide on my audience. I would like it to reach the public at large, but since I have to choose, I must target the medical fraternity first and include details that the layman might find uninteresting. History is a continuing process, as such, the passage of time will unveil new development and put some old events in a different light. This picture of Medicine in Malaysia will hopefully give all doctors an anchor to the past and inspire a vision for the future.

I believe, in order to understand the development of medicine, it is necessary to know the political situation of the time. Therefore in each period, I have sketched the political development, only in the briefest way necessary to understand the context of how the states of Malaysia formed and how they were administered. In addition, as medicine has to deal with the whole population, whenever possible I have sought to include information about the size of the population and give a picture of population growth.

Numbers! I have struggled how much to include. To the reader they clutter the text and block the flow, but to the student they are like figures in an account sheet. Numbers on one page when compared with numbers elsewhere give a fuller picture. I have struggled to decide how my sources should be noted. To have them in the style of an academic paper would be too cumbersome. I have therefore chosen a journalistic approach where facts are usually checked from at least two sources, and the main sources are listed at the back of the book.

The reader may find the flow of the text more like water flowing over small cataracts rather than a smooth flowing stream. It is because the text is actually made up of articles under headings that can each stand alone. Although they are arranged roughly in a chronological order, thematically, one can read the book following a subject on its own through the chapters. For example one can read the history of private practice in one chapter and continue the subject in the next chapter. This however, apply to only a few topics, like medical personnel, medical education, medical facilities and diseases like leprosy among others. Too many people have helped in one way or another for me to list but I must thank my wife, Caroline, and my daughter, Fern Yi for editing and proof-reading the text.

Please visit our Facebook page at History of Medicine in Malaysia to add pictures, narratives and comments.

THE HISTORY OF MEDICINE AND HEALTH IN MALAYSIA

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SECTION 1

THE LAND AND THE PEOPLE

Malaysia today, is home to over 30,000,000 people. Malaysia, as a nation emerged in only 1963, but the name Malaysia was not entirely new. Jules Dumont d'Urville, a French navigator, had invented the terms Malaysia, Micronesia and Melanesia, in 1831, to distinguish these Pacific cultures and island groups from the already existing term Polynesia. 'Malaysia' then included a wide area, a concept like the 'East Indies'.

But the Malaysia we speak about here refers to Sabah and Sarawak in the east and to Malaya on the west. The states of Malaya have however been different political entities at various times in history. Before Independence the 11 states constituted the Federation of Malaya. Prior to that, the four Malay states of Perak, Selangor, Pahang and Negeri Sembilan formed the Federated Malay States (FMS) while five other states were referred to as the Unfederated Malay States. Penang and Malacca were united with Singapore as the Strait Settlements. I have also taken the liberty to use both West Malaysia and Malaya retrospectively. In addition, geographically 'Malaya' or 'West Malaysia' is a peninsula.I like the Malay word for it, 'Semenanjung' and also would like use it.

CHAPTER 1 PREHISTORY

Any history of medicine must begin with the people involved, their needs, their illnesses, culture and where they live.

Malaysia is situated among the islands of a large archipelago just north of the equator in the South China Sea. Its two large land areas are separated by about 600km of water. On the west, the Semenanjung, or peninsula, is the southern most part of the Asian continent and stretches south from Thailand as a long neck of land. Across to the east, Sarawak and Sabah occupy the northern part of the island of Borneo. Malaysia was formed in 1963 when Sabah and Sarawak, gained independence from Britain and joined Malaya.

What East and West Malaysia have in common is, for a period of about one century before Malaysia became an independent nation, they were under British colonial influence. What makes Malaysia different from the rest of the island archipelago is that the Dutch colonised most of the other islands which now form Indonesia and the Spanish held the north eastern islands which form the Philippines today.

THE ORANG ASLI

Human migration into Semenanjung Malaysia can be traced back at least 11,000 years. The bones of a male with a height of approximately 157cm and about 50 years old were discovered in 1991 in Gua Gunung Runtuh in the Lenggong Valley of Ulu Perak. In 2004, another skeleton was found at Gua Teluk Kelawar in Lenggong, Perak by a team of Universiti Sains Malaysia (USM) archaeologists. This time it was a 'Perak woman' of 148cm in height and believed to be in her 40s.

In Sarawak, human remains dating back about 40,000 years have also been found in the Niah Caves in the Miri district. They were first discovered in the 1950s by Tom Harrison.

These remains show the passage of people, some of whom continued to migrate to populate the Australian continent and Pacific Islands. Their descendants are the Orang Asli of Malaysia and the Polynesians and Melanesians of today. The Orang Asli or "original people" are a heterogeneous group of people. There are just over 113,000 Orang Asli according to the 2000 census and they carry genetic traits of malaria resistance such as ovalocytosis and Hb E that indicate they have lived in this malarious region for thousands of years. The language and genes of a people help us discern their origin.

Because they never had a central government, each community living in the jungle on its own, has a language that can mutate and become a unique dialect quickly in isolation. Almost all these groups are generally not violent towards outsiders. The Orang Asli are linguistically and genetically diverse. One group may be as genetically distant from another as they are from the Malays. There are at least 18 distinct cultural-linguistic groups of Orang Asli who live in scattered villages from the coastal mangrove swamps to the rainforest in the mountains. We cannot really tell the size of the population of Orang Asli in the past. They could have been limited to the numbers we find today because of disease. Government surveys in 1911 and 1931 counted about 26,000 and 34,000 respectively. It is possible they could have been more before but declined because they were displaced by the Malay kingdoms, just as they were displaced by tin-mining in lower Perak in the late 19th century.

Linguistically, the Orang Asli can be divided into the Austroasiatic group whose language is related to the Khmers in Cambodia and the Austronesian group whose language is related to Malay and Polynesian. By lifestyle and other characteristics they can be divided into three groups or even four groups. The northern group that live in the states of Kedah, Perak, Kelantan and Pahang, number less than 3,000 today, are the Kensiu, Kintak, Jahai, Batek, Mendrik and Lanoh. They are historically forest hunter-fisher-gatherers or small scale cultivators. They have been called "Negritos", but it would be erroneous to imagine that they were small black people as the name suggests. A census in 1978 found that only 13% of the population were over 39 years old. Further demographic studies revealed that although they have a high fertility rate they also have high mortality rates especially among children and reproductive age women. Their way of life is characterised by foraging. They live constantly on the move without cultivating crops, although today such a lifestyle is increasingly unsustainable. They also engaged in trading forest products. Their social organisation is characterised by small groups, of a few married couples and individuals, who have a wide network of other groups among whom they can come and go.

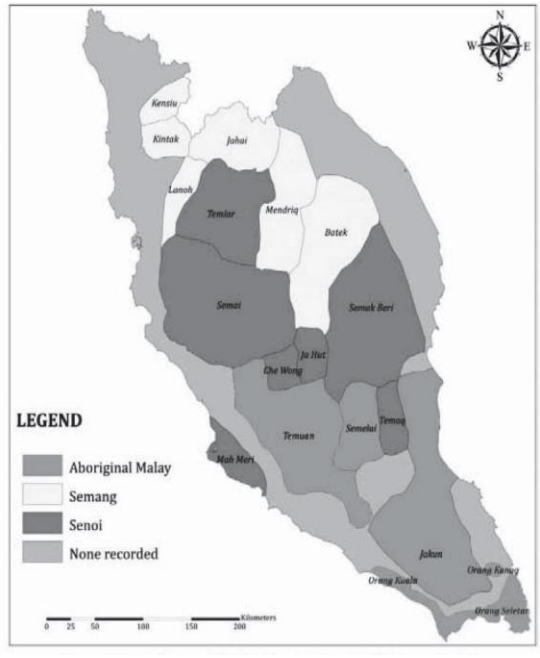


Figure 1. Map of Orang Asli distribution based on the 19 tribes categories Source: Dentan, et al. (1997)

The Central or Senoi subgroup of Orang Asli consists of the Temiar and Semai. They have closely related languages and habitats. They are traditionally slash and burn farmers, who also engage in trade. They are mainly monogamous. The nuclear family is the basic unit of society, but extended families live together and share out the duties of child raising. They live in settlements that number up to over a hundred individuals .The Temiars occupy the highlands in upper Perak and Kelantan, the Semai live in lower Perak and Pahang. Together they number just over 40,000 today. Like the northern Orang Asli, a Temiar or Semai woman is likely to see half her offspring die before her. Investigations in the 1960s show that almost all these Orang Asli have had exposure to malaria and 20-50% of them had detectable parasitemia during the survey. The Temiar and Senoi have the highest prevalence (0.22-0.32) of the Hb E gene. Genetic studies have noted an allele that links the Semai to Khmer Cambodians. Their language too has similarities.

The Semelai, Besisi (or Mah Meri) and smaller groups like the Semaq Beri, Che Wong, Temok (or Jah Hut), Orang Laut form the third group of Orang Asli. * They have been known to be inland and coastal fishers as well as hunter-gatherers. They speak Austroasiatic languages like the previous two groups. The Semelai occupy lowland areas in Pahang have names for over 112 different kinds of fish in Tasek Bera. The Orang Laut, that include the Orang Kanaq, Orang Seletar and Orang Kuala are found in Johore. Few genetic studies have been done on these small central and southern groups of Orang Asli and the results give mixed signals of how they are related to their neighbours.

Finally, the Jakun and Temuan are a fairly large southern group of Orang Asli. They speak Austronesian languages. This has led to them being labelled 'proto-Malay'. Today, the Jakun and Temuan number about 16,000 each and live mainly in the states of Selangor and Negeri Sembilan, with some outliers in Pahang and Malacca. Temuans have the highest prevalence of the ovalocytosis gene (0.14-0.22). Ovalocystosis is a disadvantage in high altitude due to its poor oxygen transport capability.

The Orang Asli are by nature non-confrontational. They have never been known to go to war (under their own leadership). In fact when outsiders approach a village, the usual response in days of old, was the entire village scurries away to hide. In social contact with outsiders, it is easy for outsiders to misunderstand their silence in response to a discussion as agreement. Not necessarily so, it is not their culture to voice disagreement. Quarrels are avoided. Perhaps it is because disagreement has never been an issue of survival. In the luxuriant forest, conflict can be resolved by moving away to enjoy the produce of another acre of land.

**when classified in three groups, some of these tribes are grouped with the Senoi and some with the Jakun.*

Orang Asli Medicine

Tate has described the medical practices of the Orang Asli in the first volume of the History of Medicine in Malaysia that the Academy of Medicine published in 2005. Most of their beliefs revolve around the spirit world and the *halak* or shaman. The practices involve incantations, dances and occasionally some secret medicinal herbs. Dying patients would be left in a deserted hut, for fear of the *hantu*, the demon of death, taking possession of other victims. Because of their great fear of the spirit world; sickness, death and even bad dreams can often trigger a village to move. Shamans were believed to not only heal but could cause illnesses such as abdominal pain leading to death by chanting over fermented food a person left behind. Shamans were also sought after to enchant a person in order that he or she becomes besotted, a condition termed 'pukau'. This is usually achieved by chanting over a photograph or some possession of the person. Although the power and belief in the spiritual world is deeply ingrained among all the Orang Asli, Schebesta, in his book
'Among the Forest Dwarfs of Malaya' has observed that they practice a simple phasmacology. For example, the Kintak of Baling cover their wounds with lime and use the sap of a certain long-leafed jungle shrub to treat a toothache. They use the areca-nut shrub for headaches. They drank a concoction from the stem of the *akar salah hutan* for coughs, and made a mixture of jungle barks for constipation. For a fever, they boiled the wild aloe. They rub *dammar* over the body in cases of rheumatism. They had herbs to induce abortions and potions for aphrodisiacs.

The Orang Asli have lived for eons in an environment with many daunting challenges to human health. Malaria is perhaps the deadliest disease. It is a disease that can quickly decimate an unprepared migrant population. Although the Orang Asli have no medicine to cure malaria, they have adapted to it with genes such as ovalocytosis and Hb E, which confer some amelioration towards the severe effects of the disease. Besides malaria, the Orang Asli have to cope with tuberculosis, yaws, schistosomiasis, filariasis, numerous intestinal parasites, smallpox, cholera, amoebiasis, typhus and many skin infestations. Even if they did not thrive, they survived. However, the whole range of diseases did not occur in every locality, and the relative isolation of the Orang Asli limited the spread of disease. Nevertheless disease was rampant in the tropics whether in the highlands or coastal areas.

The Orang Asli have traded jungle products such as *gaharu*, *dammar*, camphor and rattan for over a thousand years. Despite contact with Arab and Chinese traders, no great civilization appeared here. The early civilizations of Egypt, India and China began about four thousand years ago but it is not surprising that over that time the Orang Asli continued living only a subsistent life. The luxuriant and rich biodiversity of this comfortably warm, well watered land also encouraged the proliferation of micro-organisms that challenged the health and multiplication of human beings. The abundance and variety of vegetation enabled people to just gather food without having to labour or cultivate crops. Plant life also overgrows any land clearing and weathers down any edifice that man labours hard under the hot sun to

create. This may be a land that does not suffer freezing winters, nor devastating earthquakes or massive floods from storms, but the constant attrition of disease kept the human life span short, the human stature small and the population of humans too low to build kingdoms.

THE PRIBUMI

Pribumi is the term that has been coined to describe the native tribes of Sarawak and Sabah. Although human remains have been found dating back to 40,000 years ago in the Niah caves, it is not possible to trace any connection that they may have to any of the ethnic groups in Sarawak today. Around the area of Santubong near Kuching, Hindu and Buddhist relics dating to the 9th century have been unearthed as well as ceramics from the Tang period between the 11th and 13th century, indicating there had been trade with China.

In Sarawak, the pribumi consist of the Ibans (Sea Dyaks), Bidayuh (Land Dyaks), the Melenau, and the Dyak Orang Ulu. The Dyak Orang Ulu form about 5% of Sarawak's population but they consist of a diverse group, including the Kayan and Kenyah tribes, the smaller neighbouring groups of the Kajang, Kejaman, Punan, Ukit, Penan, LunBawang, LunDayeh, Berawan, Saban as well as the plateau-dwelling Kelabits. The diversity of the Ulu or mountainous groups shows that in small isolated communities the language and culture of a tribe quickly evolves its own pecularities which may be less than a thousand years old.

These named tribes have been recognised from the nineteenth century and we have no knowledge of previous groups, if any, that may have become extinct before them. The Bidayuh and Iban, however, have the malaria resistance ovalocytosis gene in rates as high as the Orang Asli (and twice as high the prevalence of the gene among Malays) that indicate they have lived here a long time. However, these tribes all speak an Austronesian language like the Malays, unlike the Austroasitic language of most Orang Asli. Even the Penans, who are the only truly nomadic tribe speak an Austronesian language. Many of the lowland and coastal groups have oral traditions of their ancestors migrating to where they are now by sea. The inland tribes have, in the past migrated there from the lowlands.

The pribumi of Sarawak are much greater in number than the Orang Asli. The Iban are the largest group, forming 34% of Sarawak's population today. They were infamous for being head hunters in the past and a sea people who were pirates and fishermen. Bidayuhs have an almost similar language and culture except that, by their name, they are land people. The violent reputation of the Dyak in the nineteenth century can be attributed to the fact that their lifestyle and their population at that time had led to pressure and competition for land and habitat. Tribes were either forced to move to more remote areas or faced tribal wars in which weak groups were annihilated.

Like Sawarak, Sabah has a long list of pribumi people. The Kadazan-Dusun are the largest, forming about one third the population today. They have been settled rice cultivators, but also hunt and fish. The other two large groups are the Murut and Bajau. The Murut inhabit the interior and south eastern part. They engage in shifting cultivation, fishing and hunting. The Bajau are a coastal people. They are fishermen and farmers. Other ethnic groups include the Kwijau, Illanun, Lotud, Rungus, Tambanuo, Dumpas, Mangka'ak, Suluk, Orang Sungai, Kedayan, Bisaya, Tidong, Maragang, Orang Cocos, Paitan, Ida'an, Minokok, Rumanau and Lun Bawang. They all speak Austonesian languages. Some have cultural practices similar to natives in Taiwan. In disease patterns, their incidence of *Helicobacter pylori* and cancers like nasopharyngeal carcinoma tend to be more like that of the Chinese than of the Malays.

As early as the ninth century, Sabah (then under various pribumi chieftains) has traded with China and later the Spanish and the Portuguese. The Dutch were unable to establish any control in Sarawak and Sabah because the Chinese were already buying up most of the pepper, gold, camphor, rattan, wax, resin, timber, and even shark's fins and bird's nests.

Pribumi Medicine

Tate writes that although the salient features of folk medicine practiced by the pribumi in Sarawak and Sabah are basically the same as the Orang Asli, the variation seen is greater as the pribumi are greater in number. Ibans have a saying that "nothing happens without a cause" and when there is illness without an obvious cause, the supernatural is invoked. Ibans attribute cholera to the Great Sea Spirit, while the Kadazan-Dusuns believed that smallpox was caused by the visitation of the Bisagit spirit. With this belief, medicine involves two prongs; first, to appease or trick the spirit with ceremonies, and second, to apply antidotes. Ibans believe dreams are a means of communication with the spirit world. An unusual practice emanating from this is *nampok*, or sleeping alone on a mountain top in the hope of encountering a good spirit.

According to Nissom and Schmidt, the Bidayuh recognise two types of mental illness. '*Bako*', is a state of dullness of mind and idiocy, and '*gira de kuatjaat*' is insanity or fierce madness. They believe that devils may communicate with men through birds, pigs, dogs barking and signs on trees, like strange knots on vines. The '*manang*' is their spiritual healer, and the means of healing involves ceremonies such as '*pinya'*, *'ngirarang'*, *'ngimongi'*, *'pimurang*' and '*nguja*'.

However, in the face of major epidemics like cholera, the wrathful spirit may be considered too powerful to attempt to propitiate. The solution for the tribe might be to abandon the area, leaving the sick to fend for themselves. This might be horribly unkind for the sick, but would prove effective in checking the spread of the disease.

Hugh Low, who was later British Resident in Perak, documented a long list of medicinal herbs and applications used by the pribumi in Sarawak while working as a Colonial Secretary in Borneo for James Brooke from 1848-1850. He was the son of a Scottish horticulturist who first came to South East Asia on a botany expedition at the age of 20.

THE MALAY KINGDOMS

Around the fifth and sixth century a new phase of history began. The kingdom of Srivijaya emerged on the East coast of Sumatra. By the time we have records of the kingdom sustaining trade with China, the seaman and their ships already had over one hundred years of development. Palembang and Jambi were the centres of the kingdom. The political structure of Srivijaya was a network of settlements that were trading points under the rule of '*Datus*' who gave their loyalty to a ruler. Surviving inscription suggest it had a culture built on negotiations, marriage alliances, belief in the supernatural and the charisma of the ruler that kept him in place. There were, nevertheless mention of military personnel. It was from this kingdom that the Malay settlements spread out over to the Semenanjung and even to Borneo. Scholars today agree that the language of Srivajaya was Old Malay.

Among the Malay kingdoms in Semenanjung, Kedah was probably the earliest. Cave paintings in Kodiang in northern Kedah show animal domestication and ships. Excavations in the Sungai Mas area have yielded Chinese ceramics from the 7th century and pottery from the Middle East from the 10th century. In the same way, estuarine Malay kingdoms arose in Perak, Selangor, Johore, Terengganu, Kelantan and Brunei, as well as many others on other parts of Sumatra and on other islands. The sea proved to be less of a barrier to conquest and nation building, than thick tropical jungles. Once people could build large enough ships and had mastered the art of navigating, man could cross open seas. However, despite being separated by fairly great distances, because of maritime origins and maritime links, these states remained in a way one nation through language and culture. It is more likely that more men than women migrated to populate these estuarine Malay states. It is therefore, also likely that they intermarried with local Orang Asli and absorbed them into the Malay world. Baer had noted that outbreeding among the Orang Asli is common and allowed, whereas inbreeding between close relatives rarely occurs. The migration of Asli genes such as that for ovalocytosis into the Malays shows that it has been the case. If content of language reflects content of genes, according to Dr John Crawford, a most careful scholar, Malays were "of one hundred parts, 27 part primitive Malayan, 50 parts Polynesian, 16 parts Sanskrit, 5 parts Arabic and 2 of adventitious 'words' ".*

**Bird I. The Golden Chersonese.1883.Monsoon Books, Singapore 2010.*

MALACCA

The most important kingdom that arose was Malacca, which was founded in 1402 by Parameswara, a prince from Palembang. It was from him that we get the name Malay, as he was known as a Malay prince. As a dominant power, Srivijaya had declined in the twelfth century.It almost vanished with the rise of Malacca, until the era it held power was forgotten. It was only in the 1920s when the French scholar Coedes brought to light this kingdom he called Srivijaya, that its place in history slowly became clear. It had disappeared without enough monuments to tell its full story.

In a short period of time, Malacca rose in importance and ruled over all the other Malay states for about one century. The *Sejarah Melayu* affords us a window into that era. Malacca benefitted much from trade, and its early rise coincided with the short maritime adventures of China during the early Ming dynasty under Admiral Zheng He. Islam came to Malacca during this time, just as it had spread to the other Malay states, some of them earlier than Malacca. The '*batu bersurat*' found in Kuala Berang in Terengganu dates to the fourteenth century. However, in 1511 Malacca's rule came to an abrupt end with the Portuguese capturing its capital. The power over the Malay states passed partially only to Johore and Acheh, in Sumatra, but in time each sultan in Kedah, Perak, Selangor, Pahang, Terengganu and Kelantan became independent.

Malay Medicine

In his chapter on Malay medicine, Tate noted three cultural influences: the traditional animist legacy of indigenous culture, external influence from Hinduism-Buddhism and finally Islam. Like all folk medicine it had one aspect of pragmatic knowledge of medicinal roots and herbs and another of animistic beliefs involving the *bomoh* or witch-doctor.

The *bomoh*, *pawang* or *dukun*, was the key figure in folk medicine, similar to his Orang Asli and pribumi counterpart. The role was frequently hereditary, and it entitled the bearer to wear the royal yellow. The *bomoh* was found not only in the kampong but held a position of influence in the state hierarchy. In Selangor, the court physician or *Maharaja Lela* had unfettered entry to the *istana*. In Perak, he was known as the *Sultan Muda*. The *bomoh* had a greater degree of sophistication and a wider repertoire compared to the *halak* as his knowledge was often committed to writing and hence transmissible.

However, beliefs in malevolent sprits were pervasive. There was a pantheon second to none. Skeat studied them in the late nineteenth century. The *Hantu Pemburu* roams the forests with ghostly dogs whose appearance was the forerunner of disease or death. The *bajang* took the form of a musang mewing like a great

cat. The *langsuyar* with long claws sits and hoots upon the 'roof-tree'. The *pontianak*, allegedly the still-born daughter of the *langsuyar* and also the *penanggalan*, with its trunkless human head with entrails attached terrorized people and caused sickness. There were pet-like spirits that people bred and used such as the *polong* and *pelesit* which were believed to obey their master or could turn against them. The *chenaku* or were-tigers were unseen powers behind *pawangs* and warriors. In dealing with offending spirits the *bomoh* performed rites to propitiate or expulse sickness as well as provided antidotes or '*penawar*' to neutralise the illness.

With a mindset steeped in such beliefs, it is no surprise that the Malays were not impressed with medicine that consisted only of pills, mixtures and local application. The question to them was 'What power could they have over the spirits?'

Besides these animistic beliefs, Islam was another great influence in Malay life. But according to Tate "what passed for medical practice among the Malays could hardly be described as Islamic". Very few traces of Islamic medical theory developed by the great Muslim physicians of the 9th to 12th centuries appear to have penetrated the Malay world. There were no Islamic hospitals like the famous ones of Western Asia and northern Africa, such as the Al Mansur Hospital at Cairo, where there were even separate wards for important diseases and lecture rooms. There was no influence from the culture where medical practitioners were first trained and certified. RJ Wilkinson, who was instrumental in establishing the Malay College in Kuala Kangsar, however did note that the *bomoh* and his supernatural activities were regarded as an abomination and were bitterly condemned by members of the Islamic establishment.

How then do we "account for the great gap between Islamic precept and traditional Malay medical practice"? It was the Arab who passed Islam on to the Gujerati and then to the Tamil-Muslim sailors and traders, and from them it came to Malaysia. Tate perceived that these torch bearers of Islam to the Malay world were steeped in the mysticism of the Sufi Orders. This played a leading role in proselytizing the Malay world. Sufism with its mysticism, could "accommodate the *bomoh* and the *pawang* and Islamic prayer became part and parcel of the *bomoh*'s craft". The *Kitab Tib*, a translation into Malay from Indian and Persian sources on medicine and cures, including magical beliefs and practices is an example of knowledge that was made its way into Malay medicine.

Among the *bomoh*'s pharmacopeia of antidotes and potions, there is much evidence of a vast range of pragmatic knowledge found in Malay manuscripts. One of the most remarkable, translated into English by Ismail Munshi is entitled *The Medical Book of Malayan Medicine*. It was written in Jawi, perhaps in the 1850s. It contains well over 550 remedies for maladies from baldness, depression, over-eating, to disease such as cholera, leprosy and smallpox. There are antidotes for all manner of bites and stings and prescriptions for burns, scalds, fractures and wounds. It is a collection of notes made for practical use by its complier and the remedies closely matched other sources.

How effective was this medicine? It is hard to tell, but the all-pervasive influence of belief in this form of medicine among the Malays is attested to by colonial British officials such as William Maxwell and Frank Swettenham. Much opportunity to properly analyse these medicines may have been lost when they were rejected together with the animistic beliefs that were so intricately tied to them. There are, nevertheless, manuscripts and records still available that can stimulate scientific study.

CHAPTER 2 THE BEGINNING OF BRITISH INVOLVEMENT (1786-1867)

PENANG

In 1786, Capt Francis Light, an agent of the British East India Company, obtained permission from Sultan Abdullah of Kedah, and founded a trading post in Penang. He declared Penang a free port to lure trade away from the Dutch. This drew many immigrant traders to Penang. Many of the Chinese were already settlers from an existing community in Kedah. Settlers were drawn to the opportunity where they were allowed to claim as much land as they could clear. By 1789, Penang had 5,000 residents, and this doubled by the end of the following decade. In its early days, malaria was the great scourge and one epithet the island earned was "the White Man's Grave". Light himself succumbed to malaria in 1794 and was buried in a cemetery along Northam Road, Penang.

Besides malaria, smallpox was a major cause of death. One noteworthy public health action discovered from the records of those early days was that smallpox vaccination was started in Penang between 1798 and 1804. Phua noted however, that the programme made little progress, and attempts to introduce health legislation were unsuccessful. Nevertheless, for the administration of such a small and new settlement, that was quite a notable effort, since Jenner's pioneering experiment in vaccination was performed only in 1796. Jenner tested his hypothesis by innoculating James Phipps, the 8 year old son of his gardener, on 14 May 1796.

In 1800, in order to develop Penang's harbour, a stretch of land on the mainland opposite the island was purchased from the Sultan of Kedah. It was named Province Wellesley after Richard Wellesley, the Governor-General of India and brother of the future Duke of Wellington. From being a colony of the East India Company, Penang was, for a while, elevated to the status of a fourth Indian presidency (after Bengal, Bombay and Madras) in 1805. However after 1805, when hopes for the future of the island were high, disappointment set in, as it was found to be unsuitable as a naval base. It lacked a source of good timber and was, in Stamford Raffles' opinion, too far west in the archipelago to become a great trading centre for the islands.

Until 1805, the administration did not engage any full time medical staff. Dr Hutton (after whom Hutton Lane is named) was paid a fee for his services. He was the only registered practicing doctor in Penang then. The administration first employed a full time surgeon and two assistant surgeons in 1805.

Courts were legally established in Penang in 1807. Stamford Raffles, who was assistant secretary to the Governor in 1805, became the first Registrar of the

court in 1808. Until then, petty civil cases were tried by captains of the different communities, namely Chinese, Malay or Tamil with each nationality having its own system of law. The first school was founded in 1816, the Penang Free School.

One of the first moves in medical education by the British, was to enlist and train young men for the subordinate medical service. Four young men from the Penang Free School were made apprentices in 1822 with a monthly allowance of $6 which was to be raised to $10 a month when they qualified. James Ash was among the first batch. His indenture ended in 1828 when he was given a certificate of good conduct and recognised as an Assistant Apothecary, with a salary of $25. Not all apprentices were successful. One young man absconded and was found in Singapore. He was brought back to Penang on his own expense.

Penang Hospital

In 1812 a small hospital was set up at the site of the present E&O Hotel. It catered only to the Europeans. Between 1812 and 1826, a total of 17,619 patients were admitted to this hospital, an average of 2,886 a year. Despite this, 140 out of the 300 odd Europeans residents died in the first 40 years. The cemetery at Northam Road bears grim testimony. 1819 marked the first cholera epidemic in Penang. It killed about 2,000 out of a population of 36,000 then. Colonel JA Bannerman, the Governor was among the victims. Another cholera epidemic affected Penang after it arrived in Malacca in 1829. In early 1830 there were 40-50 deaths daily from cholera in Penang, mainly among Indians and Malays.

In 1854, a Bengal-born Chinese named Ah Poo built a pauper hospital at the junction of Hospital Road and Residency Road (where the nurses' hostel now stands). He was head of the Ghee Hin Society. At first, it could accommodate 30 patients, mostly opium addicts and vagrants. It slowly expanded until there were 12 wards accommodating over 400 patients.

However, it was not until 1882 that Dr MacDowell, the Chief Medical Officer obtained funds for the construction of a proper General Hospital. (It was built across Hospital Road from the pauper hospital and the Ghee Hins donated their hospital and land to the state government) There were then 18 wards for 'natives'. Lunatic cells and an outdoor dispensary were housed in adjacent buildings. The hospital was built with convict labour and was completed in 1885. Although it was a "pauper's" or public hospital, patients were charged from 1-3 dollars, according to their ability to pay.

SINGAPORE

Contemplating the future of British interest in the region, Stamford Raffles sought to establish 'a station beyond Malacca, such as may command the southern

entrance to those Straits'. In 1819, while he was Lieutenant Governor of the East India Company in Bencoolen he obtained the Company's approval to acquire the island of Singapore in a treaty with Sultan Hussein of Johore. Within one year its revenue was sufficient to cover the cost of its administration. By 1821, the island's population had gone up to around 5,000, and its population was 10,683 in 1824. Chinese formed 30% of the population. Trade increased at an amazing rate and, by 1825, surpassed that of Penang.

The General Hospital in Singapore was established in 1821, in the cantonment for British troops near the Singapore River. It served both a civilian and military role. It was later shifted to Pearl's Bank in the mid-1840s and became known as the European Seamen's Hospital. In 1858, the hospital was moved to the Kandang Kerbau district on Bukit Timah Road, before finally being located at Sepoy Lines in Outram Road in 1882.

The administration also set up a pauper's hospital in the 1820s, prompted by the total lack of health facilities for the large number of Chinese immigrants. Many had come to seek their fortune but failed, and were left injured and starving, unable to fend for themselves. Some were dying in the open as there was nowhere for them to go for aid. The hospital was financed by revenue from the licensing of gambling, opium and spirits. However, it closed down in the 1830s because of insufficient funds.

The government then suggested that the better-off members of each community take care of their own poor. One such benevolent person who responded was Tan Tock Seng, born in Malacca in 1798, to an immigrant Hokkien father. In 1819, Tan moved to Singapore to sell fruit, vegetable and poultry. He became a successful businessman and notable philanthropist and was made the first Asian Justice of Peace. In 1843, Tan offered funds for the construction of a hospital and the foundation stone of the pauper's hospital was laid on 25 July 1844. The first batch of patients were admitted in 1849. About 100 sick and destitute people had been housed in an atap shed at the foot of Pearl's Hill when a fierce storm destroyed the shed, leaving them homeless. Rather than have them wander the streets, the government placed them in the hospital. Tan Tock Seng died in 1850. His son continued to be a benefactor of the hospital and helped it improve its facilities. In recognition of this the hospital's name was changed to Tan Tock Seng Hospital. In 1861, it was relocated to the corner of Serangoon Road and Balestier Road. A lepers' ward was also added. In 1903, the land on Moulmein Road, where the present hospital stands, was bought.

Dr John Crawfurd (1783-1868)

An interesting medical personality from that era was Dr John Crawfurd, a Scottish physician, who followed his father's footsteps in the study of medicine. In 1803, Crawfurd completed his medical course in Edinburgh at the age of 20. He joined the East India Company, as a Company surgeon in the Bengal Medical Service and was

posted to India's Northwestern Provinces from 1803-1808. Following that he was sent to Penang, where he first acquainted himself with Southeast Asia, applying himself to the study of the Malay language and culture. As there was not much scope for advancement in a medical career then, Crawfurd soon became a colonial administrator. He was sent on missions as an envoy to the courts of Siam (Thailand) in 1822 and to Cochin-China and again to Burma in 1827. In between those missions, he was appointed British Resident of Singapore (its second Resident) from May 1823 till August 1826. He authored a three volume History of the Indian Archipelago in 1820 and wrote a Grammar and Dictionary of the Malay Language in 1852.

British Medicine

Dr JS Mangennis was a surgeon of the East India Company on board one of the three ships Francis Light had brought to Penang. Mangennis therefore could have been the first British trained doctor in Malaysia. It may seem foolish to attempt to discuss the history of Western or British medicine here in such a short space, but as British medicine came to Malaysia in contact with other forms of medicine, it is perhaps appropriate to note salient features of British medicine that stand in contrast to local medicine.

British medicine has its roots in the European Renaissance. Although the Renaissance may claim its inspiration in ancient Greek learning, and recognise Hippocrates as the father of medicine, the connection is no more than inspiration. Hippocrates founded a system of rational reasoning and logical deductions from observations as a basis for medicine. Galen built on it. But it was the Renaissanc that laid the foundation and then built the structure of the practice of medicine as we know it today. Andreas Vesalius in Padua dissected and described the human body, disproving clearly from observation, previous errant beliefs. He was followed by many others such as William Harvey, who correctly explained the circulation of blood. Antonie van Leeuwenhoek developed the microscope and opened up the study of microbiology. The roll call of honours for developments in medicine is too long to list here.

Western medicine stands on the philosophical basis of science. Galen and Hippocrates may have lived in a culture of pagan gods, but they largely kept such beliefs out of their medicine. The Renaissance also flourished in the midst of a Christian civilisation, which recognises the presence of unseen disease-causing malevolent spirits in the scriptures. However, the medicine of the Renaissance stays blind to this realm. It was a learning built first on the physical (anatomy) and later on, the chemical and biological universe. It excluded the supernatural.

It was taught in universities. The early universities of Bologna, Paris, Oxford and Cambridge others were founded for learning in general, but also became the home for medicine. They were granting degrees as early as 1088 in Bologna, 1150 in Paris and 1167 in Oxford. Doctors were recognised as qualified only after a period of study and examination. Where doctors had been organised as a trades guild, their guild became colleges like the different colleges of physicians and surgeons in Britain.

When Britain gained its colonies it brought along its medical services. The Indian Medical Services were established as early as 1764. Doctors accompanied the East India Company armies and ships. The need to provide ancillary services such as apothecaries, compounders, and dressers prompted the earliest official involvement with medical education in India. These subordinate assistants would help European doctors and also reduce the Company's financial burden of employing European doctors. This further led to the training of native Indian doctors. The Medical College, Bengal in Calcutta and Madras Medical College were both founded in 1835. The studies required were similar to any medical institution in Britain and Europe.

It is not surprising then that when British trained doctors came in contact with local medical practitioners there was no common ground. The latter were unqualified and dabbled in mystical spirits. They had no rational explanation and scientific proof for their practice. British trained doctors felt completely alien to the supernatural. The *halak* and *bomoh* may have had some herbal and chemical remedies but the clash of cultures was too great for any meaningful interaction and exchange of knowledge.

ESTABLISHMENT OF THE STRAITS SETTLEMENTS

In 1824 the Dutch and British decided to put an end to the constant trade friction in the East and signed the Anglo-Dutch Treaty. The Dutch had been the dominant European power in the Malay archipelago before the arrival of the British. They captured Malacca from the Portuguese in 1641 but the Dutch did not allow Malacca to rival the importance of Batavia their primary base. By 1824 Malacca had already declined in importance from its days under the Portuguese. In the 1824 treaty Malacca was ceded to the British in exchange for Bencoolen on Sumatra. However even before its transfer to British rule in 1824 Malacca had earlier been put temporarily under British troops in 1795 during the Napoleonic wars. The Dutch homeland was under threat and they were unable to maintain their colonies. Both the British and the Dutch wanted to prevent it from falling into French hands. Hence the British presence was not entirely new to Malacca. Even then, Malacca's population had declined to 1,500 as compared to over 10,000 in Penang.

In 1826, Penang along with Malacca, Singapore and the Dingdings district (a pirate infested area in Perak) were brought together as the Straits Settlements under the British rule from Bengal in India. Penang became the seat of administration. However in 1832, the capital was transferred to the rapidly developing Singapore.

Munshi Abdullah's Hydrocele

We have an anecdotal record of a medical case from those early days of Singapore. In the Hikayat Abdullah, the scribe related his personal ordeal involving a hydrocele, which he attributed to the excessive heat of Singapore. It happened in the 1820s, when he was a Malay tutor to the white merchants. He complained of pain

which made him unable to get up sometimes for three days. One day, while visiting a friend, he happened to meet a 'general doctor' of the East India Company who was waiting to sail to Europe. The doctor explained what surgical aspiration was and offered to do it for him. He was both excited and fearful. He gave a captivating account of the debates he had whether or not to undergo the operation. In the end he decided to take the plunge; although not before making out his will! Fortunately, he survived the treatment and lived to tell about it, and he felt 'very much better for the cure'. In fact, he was quite ecstatic. Full of gratitude he bought three hundred mangosteens and four jars of preserved fruits for his doctor, and insisted that the doctor who was leaving to board the ship accept the gift.

Abdullah kept the fluid that was tapped and told the story to his friends who were greatly amazed. He even sent two bottles of the liquid to his parents in Malacca. As the news spread several men came beseeching him to take them to the doctor. Alas, he had sailed and Abdullah tells us some of them wept because he had gone. The account is thoroughly worth reading.

The period from the formation of the Strait Settlements in 1826, up till 1867, was described by Emerson as 'a half century of inactivity'. It just meant Britain made no further territorial advances. It was a period Hall described as "during which Singapore grew with astonishing rapidity, Penang developed at a more modest rate, and Malacca stagnated." The revenue from trade of Penang and Singapore tells the story clearly.*

	Penang	Singapore
1825	$10,000,000	$24,000,000
1850	$15,000,000	$50,000,000
1864	$40,000,000	$120,000,000

The First Anaesthetic

Malacca can claim a medical first in that era. Dr AJ Ratton, assistant surgeon in the Malacca Hospital, performed the first surgery in Malaysia under anaesthesia. On April 28 1847, he carried out an amputation for a Malay soldier who had his right hand blown off by a gun. It was reported in the Singapore Free Press on April 30. This was less than one year after Dr Morton demonstrated his discovery of anaesthesia using ether in Boston on October 16 1846. News travelled fast in the world even in those days. The practice of anaesthesia continued in the Strait Settlement hospital following that.

Malacca had a hospital at Durian Daun in those days and we have records of a cholera epidemic affecting Malacca in 1829.

**Mills LA. – British Malaya 1925. J. Malayan Branch of the Royal Asiatic Society. p192*

KEDAH AND PERLIS

Sultan Abdullah of Kedah had given permission to Captain Light to occupy Penang on the understanding that he would gain protection against the Siamese who were threatening him. His fears were realised in 1821 after his death. That year, Sultan Ahmad Tajuddin, his son, was summoned to Bangkok, over his lack of effort following Siamese pressure on him to invade Perak. He refused to go. As a result, Kedah was overrun by Siamese forces in 1821, and he was forced to flee to Penang. From Penang, he organised many unsuccessful attempts to expel the Thais. In 1838, a large revolt succeeded briefly, but the Thai retaliation caused more than 50,000 people to flee Kedah to Province Wellesley, greatly swelling the Malay population there. The British in Penang gave him no support, and were in fact, obstructive. Finally, in 1842 through negotiations Sultan Ahmad Tajuddin was restored to his throne. Nevertheless, three districts were affected. Setul became part of Siam. Perlis was made an independent state. Kubang Pasu was taken under Thai rule, but was subsequently integrated back into Kedah.

THE OTHER MALAY STATES

After the fall of Malacca to the Portuguese in 1511, the descendents of the Sultan became rulers in Johore, Pahang, and Perak. Over the next three hundred years power and influence changed. External forces including the Achinese, Bugis (seafaring warriors from Sulawesi who settled in Selangor), Dutch and Siamese exerted pressure on these Malay states. In the late eighteenth century, the British came on the scene. Besides acquiring the Straits Settlements the East India Company basically had a policy of non-interference in the Malay states on the Peninsula. Wars were expensive and the East India Company was motivated chiefly by profit.

However, the growth of the economy brought pressure to bear on the Governor to be involved. Tin had been mined in Perak for centuries, and the Achinese, Dutch and Bugis had sought to control these resources. With the founding of Penang, the area began to attract migrant Chinese. Long Jaffar, the enterprising nephew of the Panglima Bukit Gantang, was put in charge of tax collection in Larut in 1848. He facilitated the influx of large numbers of Chinese miners to the area. The revenue grew so much that by 1857, he had become more wealthy than the Sultan of Perak. However, trouble was brewing. Rival mining Chinese clans began to fight over water sources for mining, which led to the Larut wars.

In the 1840s, Chinese began migrating to Johore to open pepper and gambier plantations. In Selangor, Raja Abdullah brought in Chinese miners to work the Klang mines. 87 coolies were sent to Ampang, near the Kelang river in 1857, but malaria killed the majority. Another 150 were brought in, and they chose a spot near the meeting place of the Klang and Gombak rivers. The site proved to be a good one and became a thriving settlement in a few years. This was the beginning of Kuala

Lumpur. By the 1860s, a Singapore firm was mining tin at Sungai Lembing near Kuantan, employing Chinese miners.

CHINESE IMMIGRATION

Even before the eighteenth century there were Chinese settled in the region, especially in Malacca. They numbered thousands and were the merchant class. They took on local customs and language, but not Islam. Many married local women and were known as *Babas* or peranakan. But the nineteenth century saw a great exodus of migration from China due to poverty and a pressure from a population that had exceeded 400,000,000. In 1840, Chinese formed half the population of Singapore numbering over 17,000. There were nearly 600 pepper and gambier plantations on the island. From that time on, because of its entrepot status, Singapore became a channel for immigrants into the archipelago; even as many settled in Singapore itself. Before 1850, hardly any were women. The majority were men who came as labourers through the ticket system, whereby, they travelled on a loan and paid it off with interest on arrival. This soon degenerated into a *coolie* trade with merciless exploitation. From this, the secret societies arose, where migrants were bound to the godfather clansman of their dialect group to death.

But due to economic pressures in China the migrants kept coming. By 1860, there were over 50,000 Chinese in Singapore. This doubled in just over twenty years, with almost as many pouring into the Malay States even before British intervention. They opened plantations in Johore and mines in Perak and Selangor. By the late nineteenth century, about one in four migrants were women.

The Chinese formed self contained communities. They performed all occupations. JD Vaughan, a contemporary British observer, gives a list of over 100 occupations. They were actors, artisans, bicycle repairmen, builders, chemists, grocers, fortune-tellers, wood-cutters, undertakers, thieves and vagabonds. Of course, they were doctors and pharmacists too. In their self sufficiency, the Chinese were shielded from external influences. Chinese medicine formed a world of its own.

Chinese Medicine

Chinese medicine has an ancient pharmacopeia, published in various forms, from the second century up to the sixteenth century. Its system for diagnosis goes back to the classics published in the third century BC. The Chinese tradition of establishing hospitals, supported by the community, dates back to the fifth century. As with all systems of medicine, Chinese medicine takes its ethos from Chinese philosophy. The predominant feature is the concept of cosmic harmony, embodied in the principles of *yin* and *yang*. Illness is a result of an upset in the balance and medicine consists of restoring the balance. Underlying Chinese outlook, not only of

medicine, but all food consumed, runs this view that something is either 'heaty' or 'cooling' and must be either good or bad for an illness. Therefore, a patient almost always asks a doctor what he or she should or should not eat.

Chinese medicine also exhibited the same dichotomy observed in Malay medicine. Alongside the belief in restoring balance in nature, a deep-rooted superstition existed. A common belief in magic and mysticism, largely a legacy of Taoism, permeated all traditional Chinese medical practice.

JD Vaughan noted "The Chinese look at nooks, corners of roads, rocks and sundry other places for fairies and goblins and do them worship to propitiate them. Incense sticks, slips of paper, tinsel ornaments and other googaws may be seen at the most out of the way spots showing that the inhabitants of the neighbourhood have discovered an evil spirit thereabouts. Nearly every disease a man gets is assigned to the malignancy of evil spirits. If the worship of the dead is neglected or improperly performed, the spirits are sure to punish the living".

The all-pervasive role of superstition provided a great role for the temple medium and deity or *angkong*, just like the *bomoh* or *halak*. Temples were ubiquitous and most had resident mediums, some of whom acquired great reputations. They were able to prey on the fears of uncertainty of the sick. It may, however, be argued they assumed the role of a dispassionate listener and advisor.

However, there was another man, held in high esteem in Chinese society. He was the *sinseh* or traditional Chinese physician. He was a man of learning, officially regarded as belonging to the highest social order, that of the scholar. He received a systematic education and held a licentiate in medicine. They were not as easy to come by as the *angkong*. There were just five or six *sinseh* in Malacca in the 1820s. A doctor's fee was 10 cents a consultation in the 1830s.

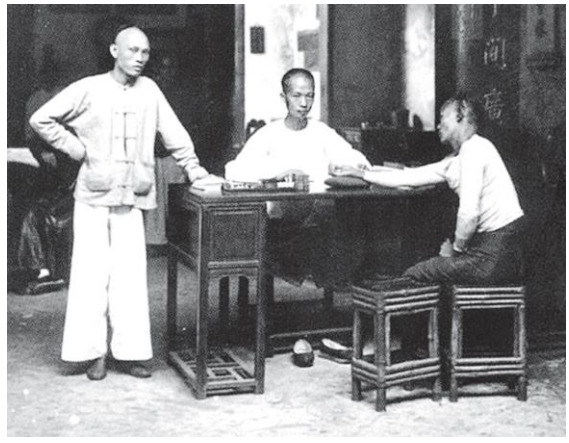


Figure 2.1 Chinese *sinseh* circa 1890

Then there is a third man in the practice of Chinese medicine, the auxillary to the *sinseh*. He is the druggist or pharmacist. Unlike the *sinseh*, he did not require any training. He was a tradesman who picked up his knowledge as he advanced in his business or career. Along the way he may study a little of traditional medicine. Vaughan offers a quaint description. "A Chinese druggist's shop is quite a picture.

There are numerous drawers arranged around the walls filled with drugs of every conceivable description; besides that there are tin canisters, bottles, unique Chinese jars, pots, deer's horns, bones of different animals. People constantly drop in with prescriptions and the medicines are neatly rolled up in paper parcels and stamped with the druggist' seal or chop." Ginseng, gingers, castor oils, wood fungus are familiar items in the list. Unfortunately, tiger bones form part of the decoction for rheumatism, and rhinoceros horns are also in the pharmacopeia, contributing to the extinction of these animals today.

Since anybody could open a shop, the druggist was more ubiquitous than the *sinseh,* and many Chinese would by-pass the *sinseh,* go straight to the medicine shop and buy 'over the counter herbs' for the common illnesses. According to an official survey in 1883, there were 139 pharmacies in the Straits Settlements. As there were no 'prescription only medicines' and substances restricted by any 'Dangerous Drugs Act', people could virtually do as much self medication as they liked – a practice the Chinese tend to carry with them into the modern world.

On the positive side, the '*yin-yang*' concept promoted a common sense approach to the questions of balance in diet and physical exercise. The *sinseh* paid particular attention to his patient's diet which has to be controlled to achieve a balance between the five tastes (sweet, sour, bitter, salty and pungent). The preoccupation with establishing an equilibrium with natural forces put an emphasis on prevention of sickness, besides seeking a cure. The 'yin-yang' concept also encouraged a holistic approach to the diagnosis of illness. Tate perceptively remarked that "the *sinseh*'s art lay more in his skill at diagnosis for prevention rather than cure". However, a good number of Chinese medicines have stood the test of time and are still in use today. Practices such as acupuncture are widely studied today.

However, the lack of scientific basis and scientific enquiry prevented Chinese medicine from developing further. The philosophical basis did not allow for ineffective or harmful prescriptions to be disproved and discarded. It could not cope with a whole new array of pathogens of disease in the tropics, that were not encountered in China.

By the end of the nineteenth century, Chinese 'towkays' had helped open several hospitals in the Strait Settlements and the Malay states, both in towns and plantations. Little interest and effort was made by Western trained doctors to cross the divide and study Chinese medicine in those early days, but one bold pioneer was Dr EAO Travers. From 1922, when he was in-charge of the leprosy camp in Setapak, Dr Travers used and studied "Tai Foong Chee" for treating leprosy for lack of any other effective treatment. Clinical results were recorded and modification to the mixture was experimented with.

LEPROSY

One of the main reasons hospitals were set up in Penang, Singapore and Malacca, besides the humanitarian care of the sick, was the need to maintain cleanliness of the towns. Vagrants with sores who were too sick to care for themselves, would otherwise be found loitering and dying on the streets. Even under the Portuguese, there was such a hospital in Malacca, known as 'O Hospital Dos Porres'. St Francis Xavier stayed there when he was in Malacca. Before malaria and beri-beri became the terrible fatal diseases of the mines and estates in Malaya, leprosy was already major health problem in the Strait Settlements.

A leper was a sick person with open sores, disfigurement, and who had often lost parts of his limbs. Hansen's disease was probably the major cause, but any person with suppurative wounds and neuropathic sores from any cause would be lumped together. Diagnostic science and skill was not developed then, and Hansen's disease had not been discovered as distinct entity. In Penang, the Senior Surgeon proposed isolating lepers on Pulau Jerejak in 1828. Tax from selling pork was to be the means of financing a pauper hospital scheme like, this but nothing came of it. Similar moves were made regarding a Pauper Hospital in the 1830s in Singapore. It was also proposed that St. John's Island or Pulau Selugu might be made leper colonies.

In 1848, the Governor wanted a medical commission formed to report whether lepers were contagious or infectious and whether isolation was a necessity. There were often calls for the Governor to forcibly detain lepers but there were no enactments to give him such power. The Governor-General in India would not grant such power without more evidence that the disease was contagious and that isolation was needed. Instead, a leprosy ward was opened in Tan Tock Seng Hospital. But meanwhile in Malacca in 1850, a leper hospital was opened in PulauSerimbun off its coast, effectively starting a leper colony while interminable arguments were going on.

The problem, however, was greatest in Singapore because it was the focal point of migrants from China. There were plenty of lepers in the Southern Chinese Provinces. As immigration was not supervised, it was common practice for leprosy sufferers, crippled by the disease, and a liability and stigma to their relatives, to be given a one way passage to Singapore or Penang, where there were Pauper Hospitals, where they could receive three meals a day. Even the Dutch rounded up leprosy patients from the islands and dumped them in Singapore at night. An 'Anti-Dumping' Act was passed in 1850 with little effect.

Following the effective example of Malacca, Penang collected $20,000 from among the Chinese and opened an asylum on Pulau Jerejak in 1871. In 1873 legislation was passed that the Colonial Government should take charge of the Pauper Establishment for lepers. In Selangor, an enactment was passed in 1893 to detain

and isolate leprosy sufferers, and the Setapak Camp was set up.

Meanwhile, on the scientific front Dr Gerhard Armauer Hansen, a Norwegian, identified *Mycobacterium leprae* as the cause of leprosy in 1873. Here in Malaysia, a treatise on leprosy was published by Dr AR Anderson who had been stationed in Malacca. It was published in 1872 entitled "Leprosy as met with in the Straits Settlements" containing "coloured photographs"! and "explanatory notes". In 1897, the 1st International Leprosy Congress of Berlin made a pronouncement in favour of rigous isolation of leprosy patients. Legislation to the effect of segregating leprosy patients throughout the Federated Malay States and Strait Settlements was finally enacted in 1899. The Setapak Camp was the largest, but elsewhere, asylums were set up on Pulau Pangkor in Perak in 1903, Tampoi in Johor and Tumpat in Kelantan. Each of the states could count about 100 new cases a year. Many were transferred to Pulau Jerejak, leaving only about 20 in each of these state hospitals. The story of leprosy in Malaysia continues in Chapter 4.

SARAWAK

Antimony was discovered in the upper Sarawak River in 1820. The Sultan of Brunei sent an official to establish his capital in Kuching. However there was lawlessness and chaos in 1839 which compelled the Sultan to send his uncle, Pengiran Muda Hashim, to pacify the locals. James Brooke, an English adventurer, also arrived in Kuching in 1841, with a 140 ton personal gunboat called the *Royalist* and helped suppress the rebellion. In doing so, he won the allegiance of the Malays and Dyaks. As a reward, Raja Muda Hashim appointed Brooke as Rajah of Sarawak, a position that was confirmed in Brunei the following year. The first school in Kuching, St. Thomas Anglican School, was set up in 1848. Over the next decade, Brooke had to, on several occasions, use force and tact to suppress piracy which was a widespread and almost acceptable 'occupation'. In 1853, due to unrest in Saribas and BatangLupar which the Sultan of Brunei could not control, Brooke was able to extend his territory up to the Rajang River mouth by paying the Sultan $1,500 annually. In 1861, following more disturbance, Brooke acquired the whole Rajang basin for another $4,500 annually, doubling the size of Sarawak.

Brooke ruled as a Rajah in Sarawak, setting up an administration with chieftains, a ruling Council and administrative Divisions. Civil cases of the different ethnic groups were judged by their own leaders. The economy consisted of jungle products as well as pepper, sago and coconut plantations. Antimony exports petered out towards the end of the century.

CHAPTER 3 COLONIAL RULE BEFORE THE TWENTIETH CENTURY (1867-1895)

The administration of the Strait Settlements was transferred from the East India Company to the Colonial Office of the British Government in 1867. For some time there had been problems with rule from Calcutta, as law-enforcement (a poorly staffed police force) and the judiciary faced great difficulties from delay in action. It caused much anxiety in a place where the population and economy were growing by leaps and bounds. There was also a sense that the authorities lacked interest and awareness of the local situation. In addition, officials in the Strait Settlements felt that there was a lack of representation of their opinion. Besides experiencing problems with piracy and Chinese Secret Societies, they also had a desire to extend their influence into the Malay States.

The population of the Strait Settlements stood at 283,384 in 1867, but was set to continue to rapidly rise with immigration over the next few decades. Malays formed the majority in Penang, Province Wellesley and Malacca, but the Chinese were the largest group in Singapore. In 4 years the population rose by 8% to 306,775 in 1871 and another 38% to 423,384 by 1881. The Chinese accounted for about 75% of the immigrants, and the rest mainly Indians. The number of Europeans was less than 5,000.

In 1869, with the opening of the Suez canal Singapore became more important than Batavia in Java. The Industrial Revolution increased the world demand for tin. Merchants and migrants in the Strait Settlements looked eagerly at the opportunities in the Malay States.

PERAK

Henry Ord, the first Colonial Office Governor, did not immediately adopt a more active policy to extend British influence into the Malay States much to the disappointment of many merchants. However events in Perak changed that. The Larut Wars dragged on and a succession dispute arose for the throne of Perak. At the same time there was a change in British policy and Andrew Clarke came as a new governor in 1873. This quickly led to British Intervention. In the Pangkor Settlement of 1874, Sultan Abdullah, who was recognized as the Sultan of Perak received a British Resident "whose advice must be asked for and acted upon on all questions other than those touching Malay religion and custom". This effectively instituted British rule.

Perak's population was estimated to be 80,000 in 1879. With a flood of migrants it rose to about 195,000 in 1889. A census in 1891 showed the population was 214,254.

Soon after the Pangkor Settlement, military barracks and a magistrate's court were founded in Taiping in 1874. A tiny 'hospital' was opened in Matang in 1875. In 1876 Taiping was made the British administrative capital. A school (Central School) was started in 1878 and the first railway in the country linked Taiping to Port Weld in 1885. In 1882, piped water supply was constructed for Taiping and Matang and when Ipoh was opened up piped water supply was introduced there also in 1895. Legislation to regulate markets and slaughterhouses were also enacted.

Figure 3.1 Taiping circa 1890

View of Taiping town on the other side of the hill in picture above circa 1879

The First Hospital

It has often been said that the Taiping Hospital was the first in the country. It was the first in the Malay States, but not including those in the Strait Settlements. It was started in 1880 as the Yeng Wah (Anglo-Chinese) Hospital with financial support from Chinese merchants while the Perak State government aided with medicines, medical apparatus and nursing staff. With consideration for the poor, patients were charged only a 50 cent fee. It worked for a few months but then encountered difficulties collecting fees. By the end of the year the government took over full responsibility and moved the hospital to its present location along Main Road in 1881.

The cost of maintenance of the hospital was so high that Hugh Low, the Resident, imposed a levy of one dollar per annum for everyone living in the district to pay for the food, medicine and medical attendance given to all warded patients for free. However, the Chinese community objected to this and it was abolished in 1884. Dr. MJ Wright was the first head of the hospital (Health Inspector).In 1884, the hospital admitted 3,068 cases, 2,501 of them for beri-beri. The hospital also housed a lunatic asylum within its grounds. In 1896, an Xray machine was installed in the hospital, the first in the country and also the Far East. In 1906, the hospital opened a dispensary to cater for out-patients especially from the rural areas. It was said a lot of the government's expense were directed towards the hospital and it was a model which was later followed in many other towns.

It is important to realize the significance of the model which the Taiping Hospital pioneered. It could have been that hospital care was left to the individual or to community initiatives to provide. The British could have catered for themselves only, since it was uncertain whether the locals would accept Western medicine. The Chinese could have continued to set up their own hospitals. Plantations and mines could have been left to cater to the needs of their workers. In many countries, health care is left to private initiative. In contrast, the Taiping Hospital offered medical care to the whole population. **It was the first General Hospital,** and was a huge step the Perak government took. It shaped what was to follow. It had an immediate effect elsewhere. It was only in 1882 that Penang undertook a similar hospital combining the Ghee Hin pauper hospital with a government built and funded one. In 1889 a hospital similar to this started in Kuala Lumpur.

Ipoh

In the mid-eighties, an with richer alluvial deposit of tin started to attract miners. It was perhaps not developed sooner as it was nearly 100km upriver from the coast, at the limits of where small boats could ply. In contrast, Taiping was less than 20km upriver. The town that grew there on the banks of the Kinta river, a tributary of the Perak river, soon attracted miners in droves. Within a few years, it outstripped Taiping in population as the mines in Taiping were exhausted. By 1891, the Kinta district had 58,587 people, of which about 4,000 were in Ipoh. In 1889 the main trunk road connected Ipoh to Taiping and shortened the journey considerably. It used to take more than one whole day by boat down to the coast, another day to Penang and then another day to Taiping. That year the output of tin from the Kinta district exceeded 7,000 metric tons, making it the largest tin producer in Malaysia, surpassing the Larut district.

SELANGOR

Unlike the Sultans of Perak, Pahang and Johore who are descendants of the Malacca sultanate, the royal house of Selangor are Bugis. Daeng Rilaka and his five famous sons from Macassar settled in the estuaries of the Klang and Selangor rivers

and were well established by 1681. They were good seamen, brave fighters and mercantile people. They were victorious in a conflict with Johore in 1717 and recognized as rulers of Selangor. They were also influential over the Minangkabaus who settled in the area that became Negeri Sembilan.

In 1866, factional fighting raged on in Selangor between Raja Mahdi and Tengku Kudin, for control of the throne. The Sultan was left powerless in between the two sides. Raja Mahdi gained the upper hand at first. However, Tengku Kudin, acting as Sultan Abdul Samad's viceroy, obtained a thousand men from Pahang and, with the support of Yap Ah Loy, the powerful Chinese headman of Kuala Lumpur, came out victorious in 1873.

Figure 3.2 Kuala Lumpur 1884

In the same year, pirates attacked a vessel from Malacca, off Kuala Langat resulting in the death of several British subjects. Andrew Clarke sent Frank Swettenham in. He was able to win over the Sultan and convince him to accept a British Resident. Thus began British rule in Selangor also in 1874.

Kuala Lumpur

Yap Ah Loy was made the Kapitan China of Kuala Lumpur in 1868 upon the death of Kapitan Liu. In the wars between Raja Mahdi and Tengku Kudin, Kuala Lumpur was attacked once unsuccessfully in 1871 by Raja Mahdi's forces and then captured on a second assault in 1872. It was retaken by Yap Ah Loy and soldiers from Pahang in 1873. The war took a heavy toll on both men and property. Mines had been flooded, houses burnt. Ah Loy managed to persuade the Chinese not to move away but to help him with reconstruction. The town was at first filthy and ravaged by frequent epidemics of smallpox and cholera. A fire broke out in 1881 and destroyed much of the town. However, a new town was built and the population increased rapidly, reaching 4,000 by 1884. In the same year, Ah Loy fell very ill. He refused to accept European medicine and insisted on treating himself with Chinese herbs. He died on 15th April 1885.

The British administration moved to Kuala Lumpur from Klang in 1880. It took 4 days to travel by boat in those days. Soon, a railway was built in 1886. By 1889,

there was a small hospital* (Tanglin Hospital) opposite the railway station on Bluff Road, where the Masjid Negara now stands. That year, a new pauper's (free) hospital was built outside the town where the Kuala Lumpur Hospital still stands.

A circular road (Jalan Tun Razak) was built so that the sick from the mines could be taken there without having to go through the town. The hospital thus improved the health and sanitation of the town. Unfortunately, so many patients died there, that, when they could, sick men immediately tried to escape as soon as they began to recover. Doctors were not loved. The visitor's book was found to contain an entry denouncing the Danish surgeon as 'a red-haired (ang-mo) Frenchman, a cruel-hearted man who delighted in blood'.

For the Chinese community in Kuala Lumpur, Yap Kwan Seng, the Kapitan China, largely financed the setting up of the T'ung Shin Hospital on Jalan Pudu. It was managed by a Chinese board and was staffed by two Chinese sinseh. Other wealthy businessmen joined in to support the hospital. European doctors showed some 'friendly interest in the rival firm, where decoctions of herbs and roots were stored in scores of small earthen kettles labeled with the tickets of the respective patients'.

In addition, Loke Yew opened a small hospital at Serendah and another wealthy towkay Khoo Mah Lek opened one at Sungai Puteh. They had fewer than 15 beds. Other towkays such as Low Cheng Keng the holder of pepper and gambier concessions in Sepang and Tanah Merah, provided basic medical dispensaries for their workers.

By 1890, Kuala Lumpur had about 20,000 people. When Governor Weld visited a few years before, he remarked that it was 'fast becoming the neatest and prettiest Chinese and Malay town'. In 1904 a 'European Hospital' was opened in Bangsar which today serves as the Public Health Institute of the Ministry of Health at Bukit Travers.

NEGERI SEMBILAN

Negeri Sembilan, as its name suggests, is a loose federation of nine states. No one is certain which formed the original nine. Sungai Ujong (Seremban), Rembau, Johol, Jelebu, Inas were quite certainly among the nine. In addition, there were either Ulu Muar, Jempol, Gemenche, Sri Menanti, Terachi, Gunung Pasir, Kelang, Naning or Segamat, some of which are not in Negeri Sembilan today. The inhabitants were mainly Minangkabau from West Sumatra. Up to 1757, these states were part of Johore. When the Bugis from Selangor ousted Sultan Sulaiman of Johore, the new Sultan put these states under Dutch rule, as a buffer against further Bugis advances for control over the Johore throne. To achieve some sort of unity among

* *believed to be opened in 1883*

these small states, a Minangkabau ruler, Raja Melawar, was invited to become the Yam-Tuan Besar over them in 1773. However, the ruler of each of these small states continued to claim sovereign right.

A feud erupted in 1873 when both the Dato Klana of Sungai Ujong and the Penghulu of Rembau died. British forces intervened and an Assistant Resident was placed in Sungai Ujong in 1874. Jelebu also came under British rule in 1886 and the remaining states soon followed soon after. In 1895, they were united under one Resident.

PAHANG

Despite an early setback in Perak with the murder of the first Resident, JWW Birch; the third Resident Hugh Low, managed the state with great success. Looking at the success of Perak and Selangor, Fredrick Weld, the new Governor of the Strait Settlements in 1880, set his eye on Pahang. Merchants imagined that the large state might hold minerals or other resources that could turn a quick profit.

In 1887, under pressure from the British and Johore, the ruler of Pahang accepted a Consular Agent in exchange for recognition as a Sultan instead of Bendahara. The next year, taking advantage of the murder of a Chinese British subject, the new Governor visited Pekan and forced the Sultan to accept a Resident British Officer. It was estimated that the population of Pahang in 1888 consisted of only 50,000 Malays and a few hundred Chinese.

VICTORY OVER SMALLPOX

Vaccination

British influence in the four Malay states described above brought about some health measures there. Smallpox was a major disease in this region, and outbreaks were often deadly. The Dutch were the pioneers of vaccination in South East Asia, having introduced it in Java early in the eighteenth century. After several attempts in Penang and Singapore, vaccination was made compulsory in the Strait Settlements in 1868. It worked. From that time, large scale innoculation campaigns were routinely held in the Malay States and were usually accepted by the populace. However, in 1888 there was a notable incident where Raja Mahmud, then *penghulu* in Kuala Selangor, and previously a combatant in the Selangor wars, refused to allow his own children to be vaccinated and resigned from his post. This was despite the expressed authority of Sultan Abdul Samad for vaccination to go on. Sometimes the Malays objected on supposedly religious grounds. However, the advantages of vaccination spoke for itself. Even in Pahang, Dr JD Gimlette, the State Surgeon noted that by 1900 over 6,000 innoculations were done. At first the cooperation and active

involvement of the *penghulus* were sought. Dr Braddon in Negeri Sembilan came up with the idea to engage schoolmasters to promote and perform vaccinations. By 1906, two-thirds of the vaccinations in Negeri Sembilan were carried out by Malay schoolteachers.

In the nineteenth century, vaccines were obtained from the French Pasteur Institute in Saigon. High failure rates of vaccination were observed in Negeri Sembilan and Pahang, in 1904 and 1906 respectively, due probably to storage and transportation problems. Eventually, vaccines were produced in Province Wellesley. It was estimated that the cost of vaccination came to between 40 to 65 cents per head and were reduced slightly with locally made vaccines. After 1900 the main source of a smallpox epidemic usually came from outside the Strait Settlements and Federated Malay States. Often it came by ship or from immigrants. 1902 however was a bad year for the Strait Settlements with 850 cases and a mortality rate of 22% (185 deaths). In 1907, Travers the State Surgeon in Selangor declared that 'the state may be considered well vaccinated and safe from any smallpox epidemic'. An outbreak of smallpox did occur in Perak starting in Taiping in 1910. There were 125 cases and 27 deaths. Rising to the occasion, a record number of 74,500 vaccinations were performed that year.

These results were outstanding for the fact that there were normally never more than 200 smallpox cases in the Federated Malay States in any year. In contrast there were serious epidemics in Johore and Terengganu in the 1900s and a devastating one in Kelantan in 1912. In Sabah, a severe epidemic of smallpox affected the West Coast in 1905, numbering over 10,000 cases with at least one fifth of them dying from the disease. In the district of Papar alone there were 4,676 cases and 1,317 deaths.

It was also on account of smallpox that quarantine measures were established, the earliest date back to 1858.

JOHORE

It was with both Sultan Hussein and Temenggong Abdul Rahman of Johore that Raffles signed agreements to obtain Singapore, but it was the Temenggong who was the power behind the throne. After the Temenggong died in 1825, his son Daing Ibrahim continued to be influential in Johore. In 1855, Sultan Ali and Temenggong Ibrahim signed a treaty whereby Ali ceded to Ibrahim forever all of Johore except Kasang and the Muar River. Ibrahim's son Abu Bakar succeeded him in 1862 Abu Bakar introduced a military and police force, law courts, built up medical, educational, postal and public works departments. In 1868, he gave up the title of Temenggong and adopted the title of Maharaja. With the death of Sultan Ali in 1877, the Kasang territory was incorporated into Johore and in 1885, Abu Bakar was recognised as Sultan. He appointed Jaafar bin Mohamed as his Menteri Besar and he built up an administration equal to that of British Residents in other states.

SARAWAK EXPANDS

James Brooke ruled Sarawak from 1841 till 1863 when he was succeeded by his nephew, Charles Brooke. He died in retirement in England in 1868. In the same year Charles Brooke asked for a further hundred miles of coastline. However, the Sultan of Brunei objected with the support of the British Foreign Office. In 1883, following the murder of traders from Sarawak in the Trusan area, Brooke was able to expand Sarawak further with an additional annual payment of $4,500 to the Sultan. Finally in 1905, he bought the district of Limbang bringing Sarawak to its present size today.

Singapore was the most important communication and trading link with Sarawak. Shipping through Kuching was the lifeline that fed the development of Sarawak. As there were no roads, the other rivers formed the highways. Sibu grew with the influx of Foochows who were mainly Christians. Bintulu and Miri serviced the further reaches of the Sarawak coast. A censes of sorts was attempted in Sarawak in 1871 and the population reported to be 141,546, half of them, were Ibans.

The first bishop of Labuan and Sarawak, Dr Francis T McDougall was a qualified physician and he practiced medicine in Kuching as early as in 1851. However, he did not make medicine his full time vocation. The Brooke regime employed its first nurse in 1870. Sarawak had its first hospital built in Kuching in 1889. In 1900 one doctor was appointed to run the rudimentary hospital and supervise dispensaries run by government cadets in a few outstations.

CHOLERA

Cholera was another frightening spectre in the nineteenth century, throughout the region. It was not present all the time but would come in sudden outbreaks, kill off hundreds and then disappear. The Bengal Delta has been called the home of cholera, and because of British administrative links and trade, from time to time the disease was carried here. The history of cholera has been stylized as a series of seven pandemics and Malaysia has been affected in every one of them. While smallpox may kill and leave scars and malaria was constantly a threat; cholera was feared more than these. It could strike a man in good health at daybreak and cause such violent vomiting and diarrhea that he was dead and buried by nightfall. Dr Malcolm Watson reported that once, the morning after the disease appeared at an estate, he found that out of 400 coolies, only 180 were left. The rest had fled. He said "the unfounded rumour went around that the manager stayed only because I had whipped out my revolver and threatened to shoot him if he did not stay".*

**Watson M. The Control of Cholera on Rubber Estates.Planter 7. 1926.*

Sarawak appears to have been most affected by cholera in this region, if not in total numbers, then in memorable incidents. Its source, no doubt, was through its shipping link with Singapore. In the third pandemic which began in 1952, not only was Kuching affected by sailors returning from Singapore, Charles Brooke lost two of his children to the disease while they were on a sea journey. In 1902, cholera devastated a great military expedition that Charles Brooke mounted against an Iban chief in Ulu Ai named Banting. Out of a force of 10,000 warriors, over 2,000 died. Tragically, he had put aside advice from his son Vyner to call off the expedition.

In Klang, Hugh Clifford told of an episode involving Chinese junks arriving at the port in 1896. They had been previously been refused admission at Deli, Sumatra because of cholera on board. With a view to convince Klang authorities that the junks no longer carried the disease, the healthy threw overboard not only their recent dead, but the dying and those even with early stages of the disease. However, before reaching port the wind dropped and so the junks were carried to port only by the current, surrounded by shark-jostled corpses. It was as if the dead followed silently to accuse the living. When the seemingly healthy survivors were quarantined on board for six days (quarantine legislation having been enacted in 1858) a further 57 cases developed and of these, 38 died.

The region could be free from cholera for years, but it would always return with devastation. Therefore yearly returns may not record many cholera deaths, but anecdotes, such as those above, give a better representation of the impact cholera had in Malaysia. From 1928, the Institute for Medical Research (IMR) was able to produce a cholera vaccine to meet the country's needs. Even so the disease still struck from time to time.

SABAH

It took many attempts before development in Sabah succeeded. The first British venture in Sabah took place in 1761 when the British East India Company concluded an agreement with the Sultan of Sulu to set up a trading post and a military station on the island of Balambangan, off the north coast of Sabah. Unfortunately, it failed. In 1846, the Sultan of Brunei ceded Labuan to the British and it was made a Crown Colony in 1848. Labuan became part of the Strait Settlements in 1906.

In 1865, the American Trading Company of Borneo bought the rights to Sabah from the Sultan of Brunei. But the small trading settlement planted in Kimanis Bay petered out. An Italian plan to establish a penal colony in Gaya Bay also came to nothing. From the Philippines, the Spanish crushed the power of the Sultan of Sulu, an old enemy, between 1873 and 1877. This made any claim the Sultan had over Sabah very weak and he was powerless.

Subsequently in 1881, Alfred Dent, an Englishman, obtained the rights to set

up a trading post in Sabah. The following year, the British North Borneo Company was formed. This was finally a venture that succeeded. Its capital was first located in Tawau, then later in Sandakan. The first Principal Medical Officer for North Borneo arrived with the first Governor in 1881. He quickly set about controlling a cholera epidemic. Hospitals made of bamboo and attap were set up in Sandakan, Jesselton, Kudat, Tawau and Beaufort. In 1888, North Borneo became a protectorate of Great Britain but administration and control over North Borneo remained in the hands of the Company.

The first census in Sabah in 1891 reported the size of the population as 67,062. Kadazans numbered 34,166. Other indigenous groups accounted for another 24,987. There were 7,156 Chinese and 857 others.

DEVELOPMENTS AT THE CLOSE OF THE NINETEENTH CENTURY

Isabella Bird, who might be described as one of the world's first travel writers, took careful notes of her travels in Malaya in 1879, and recorded the population of the Straits Settlements and Perak in 1881 as given below.

Table 3.1 Population of Malaysia in 1881
(from Bird I. The Golden Chersonese)

	Perak	Malacca	Singapore	PenangIsland
Malays	56,000	67,488	22,114	21,000
Chinese	40,000	19,741	86,766	45,000
Indians		1,781	10,475	15,000
Other Asians	850	1,514	5,881	
Europeans	90	32	1,283*	612
Aborigines	1,000	308		
Eurasians		2,213	3,091	
Others		502		
TOTAL	97,940	93,579	139,208	90,000

* excluding soldiers

She travelled through Sungai Ujong estimating the population to be 10,000 Chinese, 2,000 Malays, 3 Europeans and a few Indians. In Selangor, she visited Klang, Kuala Langat (where she visited Sultan Abdul Samad) and Kuala Selangor. She remarked that she could not really determine the size of the population as Kuala Lumpur and Selangor were still recovering from the civil war. She estimated that so many of the Malays had been displaced or decimated by the wars that the Malay population of Selangor was only about 2-3,000. Province Wellesley, she found, had 58,000 Malays; more than Penang, Sungai Ujong and Selangor combined.

Immigration and economic development developed rapidly in the Malays States. Ten years later a census in 1891 showed that the population of the four Malay States had risen to 424,218. By 1887, the road linked Malacca all the way

up to Butterworth. In 1896 it was possible to travel by rail from Malacca to Prai. By 1909, a railway linking Johore Baru to the Prai was completed and the causeway to Singapore opened in 1924.

The world demand for tin became so great at the end of the nineteenth century, that the price of tin soared. Vast amounts of British and Chinese capital were invested in the industry. Malaysia's output of 26,000 tons doubled by 1904 and accounted for 50% of the total world output.

In 1877, twenty-two seedlings of the rubber tree were brought to the Botanical Gardens in Singapore. HN Ridley, who became the director of the gardens in 1888 introduced a method of tapping the tree to extract latex, by which the life of the tree was preserved for over twenty years. This made planting of rubber economically viable. Ridley actively promoted the idea, but at first met with little success. The motorcar industry soon changed that. But before that could come about, a labour force was needed for plantations.

INDIAN IMMIGRATION

Through the lifelong work of William Wilberforce slavery ended throughout the British Empire in 1833. This occurred long before British economic involvement in Malaysia. Therefore the colonists found a workforce for Malaysia from India. From 1824 till 1867, Indian convict labour was brought to the Strait Settlements. These convicts reclaimed swamps, made roads and erected public buildings and bridges. In 1837, an Act was passed in India to permit the emigration of contract labour. By 1870 there were about 25,000 Indian labourers in the Strait Settlements. This movement was said to be "spontaneous and voluntary", neither assisted nor impeded by law. However, in 1870, this migration was denounced by an official in India as "a regular organized system of kidnapping" which brought the system to a standstill. After much bargaining by Governor Ord, emigration was again permitted in 1872. In 1884, after prolonged negotiations, immigration into the Malay States was placed on a legal footing. Each recruit had to be taken before a magistrate who would make sure the emigrant was going voluntarily.

The contract system that brought labourers to Malaysia was known as the Kangani system. An Indian overseer recruited labourers from his own village usually with the approval of the headman. As the 'migratory instinct' was absent in the Indian peasant, 'artificial pressure of recruitment' was necessary. The Indian Government, aware of the need to protect the labourers, passed legislation from time to time. The Strait Government appointed an agent to supervise housing and provided medical facilities. Employers were asked to supply rice rations below market price. The Governor was empowered to close any estate on which the mortality rate exceeded seven percent.

From 1880 to 1900, a yearly average of about 20,000 came through Penang.

It was estimated that 84% of labourers who left Madras returned home. But by 1901 there were over 110,000 Indians in the Strait Settlements and Malay States. Between 1900 and 1922, there was practically no interference from the Indian Government with the recruiting of labourers. The peak of Indian labour immigration came in the first decade of the twentieth century. About 48,000 Indian labourers entered the country between 1900 and 1910, reaching a peak in 1907. Rubber was the main driving force.

There was at the same time, another group of Indian migrants, who trickled in over many years. They were the middle and professional class composed of merchants, businessmen, financiers, shopkeepers, English-educated clerks, teachers, hospital assistants, technicians, priests and even medicine men.

Indian Medicine

Indian traditional medicine has declined in prominence over time. A brief treatment of its history would however, give insight regards its impact on Malaysian society today.

The Ayurvedic tradition of Hindu medicine, like traditional Chinese medicine, had a diverse and extensive pharmacopeia. However the Muslim conquests of India from the 11th century diminished its position. In South India however, Siddha medicine, which traces its origins to the Tamil mystic and sage Agastiyar, was not similarly overshadowed by Muslim influence. Tamil writings such as the *Tirukural*, from before the 4th century, contained a chapter entirely devoted to medicine. Siddha medicine was influenced by Ayurvedic medicine in terms of diagnosis, treatment and its pharmacopeia. Nonetheless, Siddha medicine has its distinct characteristics, one of which is a strong emphasis on alchemy and the primacy given to mercury.

Traditional Indian medicine further declined during British colonial rule. In the early eighteenth century, the British East India Company established institutions to train Indians for their medical service. Initially in 1822, some moves were made to incorporate aspects of Ayurvedic medicine and Sanskrit in the program. But by 1835, when the first medical colleges were set up in Madras and Calcutta, it had been decided that only English and western medicine would be taught. The training of dressers and apothecaries followed suit.

None of the Indians who came to Malaysia were prominent traditional traditional medical practitioners. The vast majority came as contracted labourers. There health care was overseen by the British who employed British-trained Indian dressers, apothecaries and doctors. Among the Indians who migrated on their own initiative, hardly any traditional medicine practitioners of note were known.

Nevertheless, Hindu culture is permeated with traditional Indian medicine. For example there was a person called the *Ambattan*. He was an intermediary for social

occasions. Often he was a musician, and he had a practical knowledge of treatment for ailments such as asthma, rheumatism and sprains. In the Malaysian context these were often family secrets handed down from father to son. It was a medley of Ayurvedic, Siddha and *unani* traditional medicine. Inevitably, the Hindu temple featured in events of sickness. The temple keeper (*Pujari)* acted as a soothsayer, exorcist or spirit medium. He employed both magic formulae and herbal remedies. Astrology played a particularly important role. There was a correct time to pluck herbs for medicine. In our modern day, with Caeserian section available, an auspicious time of birth is still often chosen. Finally domestic remedies are common to Indians as to any community. One particular practice that has been found to be harmful has been the giving of neem or margosa oil to infants which usually keeps them quiet. The oil is toxic to the liver.

DENTISTRY

Among the various trades of the immigrant Chinese were unqualified dentists. Even up to the twentieth century these 'tooth pullers' survived to ply their trade in night markets. Not only Chinese were involved, Malays could be found doing the same. They would sit on a mat with a pile of teeth to show their experience. The earliest recorded qualified dentist in Singapore was Dr Cheong Chun Tin who was trained in California. He had a private clinic along South Bridge Road in 1869. The first Dental Surgeon to be employed by General Hospital then at Sepoy lines in 1886 was Mr MF Simon from Britain.

SECTION 2

THE TWENTIETH CENTURY

The twentieth century saw a dramatic change in life in Malaysia. To put things in perspective, before the twentieth century, it had been one of the most under-populated areas of the world. With an overall population estimated at just under two million (including one and a quarter million in British controlled Malaya and the remainder in five other unfederated states and Sabah and Sarawak) at the beginning of the century, the population doubled in twenty years.

It grew further to over 20 million at the close of the century, more than a ten-fold increase in one century. There has never been a century like the twentieth century. Like the rest of the world Malaysians experienced the dramatic change in living of having homes with electricity, motorised transportation available to almost all, air travel, the rise of industrial manufacturing and the dawn of the computer age. Education and health care slowly reached all. The standard of living rose as never before. We need to bear such things in mind and imagine what life was like to appreciate the developments in medicine that unfolded.

CHAPTER 4 THIRTY YEARS OF SPECTACULAR PROGRESS (1895-1929)

THE FEDERATED MALAY STATES

One problem the British administration faced at the end of the nineteenth century was that each Resident in Perak, Selangor, Negeri Sembilan and Pahang built up the administration his own way. Furthermore, while Perak and Selangor were profitable, the rebellion in Pahang incurred a huge debt. Its administration continued to incur a deficit. In addition, there was also a need to link up systems like roads, railways and telegraph between the states. In 1895, the Governor of the Strait Settlements asked Frank Swettenham to get the Sultans to agree to a federation of the states. His efforts were successful and the Federated Malay States were formed on 1 July 1896. Frank Swettenham was made the Resident-General and he chose Kuala Lumpur as his base.

A population census in 1901 showed a total population of 1,242,368 in the Federated Malay States and the Strait Settlements. Before the twentieth century it was not common for European women to come with the men. Hence a large number of them who came to live here married local women, accounting for the Eurasian population.

Table 4.1 Population of Malaysia in 1901
The figures in brackets show the percentage increase since 1881.
The figures for Penang are not comparable as they include Province Wellesley.

	Federated Malay States	Malacca	Singapore	Penang (inc P Wellesley)
Malays	320,859	72,978	36,080	106,000
Chinese	301,463	19,468(-2)	164,041(89)	98,424
Indians	58,386	1,276(-7)	17,823(70)	38,051
Europeans		74	3,824	1,160
Eurasians		1,598	4,120	1,945
Others		93	2,667	2,627
TOTAL	682,708	95,487	228,555	235,618

The shape of future of urban growth of the main towns was being set. Taiping which initially was the focus and premier administrative centre began to fade as Kuala Lumpur was made the federal capital. Taiping's growth had been in the 1870s. Kuala Lumpur which started to grow in the 1880s exceeded Taiping in population by 1891 with 19,020 people compared to 13,304 in Taiping. Tin had been depleted in Taiping by 1890 and with the move of administration away, its population stagnated and was only 13,331 in 1901. Meanwhile Kuala Lumpur grew to 32,381 residents in 1901. Even in Perak, Ipoh was outgrowing Taiping. It had only 3,184

people in 1891 but grew four times to 12,791 in 1901 and was the economic hub of the Malay states. There were more millionaires in Ipoh than in any other town and the richest men, Foo Choo Choon and Leong Fee were reputed to be the richest Chinamen in the world.

With robust economic and population growth the development of British Malaya saw its Medical and Health care system take root. Hospitals had been set up and each state had a State Surgeon in-charge under British rule. With the Federation of the states, one single medical and health structure developed for both the four Malay states and the Strait Settlements. Programmes and legislation were common to all and the medical staff were effectively under one medical service, although administratively the Strait Settlements and Federated Malay States were separate and some different rules did apply.

PUBLIC HEALTH

The Municipalities or Sanitory Boards of Singapore, Penang and Malacca were established in 1857, 1867 and 1886 respectively. Legislation to set up Sanitary Boards in Perak and Selangor were enacted in the 1890s. Similar boards for Kuala Lipis, Kuantan, Pekan and Raub were set up in Pahang in 1898. For Kuala Lumpur, an improved water supply was obtained by building a large catchment reservoir in the hills above the town. It was completed in 1910 after numerous hiccups. Previously, water was drawn upstream and brought by bullock cart to storage tanks at the market. 248 miles of subsoil drains were installed over 32 square miles in Kuala Lumpur by a man who became known as 'Drainpipe Evans.' The awareness that proper drainage was vital to control cholera and malaria, meant that serious attention was placed on these measures and they were largely successful.

Even in Singapore, public sanitation did not improve till after the twentieth century. The Strait Settlement Medical Report in 1904 said that Singapore 'had practically no sewerage system, the drainage in many places is bad and the water supply is constantly cut off'. Nevertheless, the fact that there were Medical Officers in the administration in the Strait Settlements and Federated States reporting such problems, shows that the matter was noted and addressed; even though their reports were often negative and complained of inaction.

The Opium Menace

One of the first local Chinese to graduate in western medicine was Dr Gnoh Lean Tuck from Penang, better known as Dr Wu Lien-Teh (see Chapter 5). Dr Gnoh started private practice in Penang in 1904 buying over the dispensary of a British lady doctor on Chulia Street. Seeing the social and health problems opium addiction caused he began to strongly advocate the banning of opium. He wrote numerous articles in the newspapers drawing attention to the ramifications of the ills of the opium trade (which was still legal then).

In fact, the tax from opium was a major source of government revenue. Before the days of tin and rubber, opium revenues contributed to more than half the government coffers. The East India Company found that opium from Bengal was the commodity they could sell in China. They literally pushed it on to China to balance trade. It even fought a war in 1840 to assert its right to trade in opium in the face of a Chinese Imperial ban on the trade. The Strait Settlement became a transit point for that trade as well as a convenient extra market. The government wilfully remained blind to the social menace it was. Even when doctors such as Dr Robert Little warned in 1848 that opium smoking was 'a canker eating into the vitals of society'* and proposed its suppression nobody listened.

It was only after another 50 years that a champion rose to fight the cause. Dr Gnoh was encouraged by a resolution in the British Parliament in 1906, declaring the Indo-Chine opium trade morally indefensible and that it should be brought to a speedy close. He served as President and Physician-in-chief of the Penang Anti-Opium Association and contributed a thousand dollars to help found a free hospital to treat opium addicts. He organized the first Anti-Opium Conference for the Strait Settlements and FMS in Ipoh in March 1907 which was attended by three thousand people.

His medical advocacy paid off. There was a discernible drop in the number of addicts. Opium tax farmers became alarmed and begged the Government to step in. Dr Gnoh received calls to cool his campaign with promises that he would be rewarded for his cooperation. He took it as an insult. This led to a search of his clinic on the orders of the Senior Medical Officer at which one ounce of tincture of opium was found in his poison cupboard. He was charged with possessing a 'deleterious drug' without license and fined $100. He appealed against this fine but was unsuccessful, despite the fact that opium was openly available, where a town like Taiping with a population of 8,000 had 19 'Licenced Chandu Shops'. However his prosecution and appeal rejection attracted worldwide publicity. He received an invitation from Yuan Shikai, the then Grand Councillor of the Chinese Government in Peking to take the post of Vice-Director of the Imperial Army medical College in Tientsin. Dr Gnoh left for that post in 1910.

A commision was set up to investigate the claims about the harmful effects of opium and how to minimise and eventually eradicate the evils arising from its use. In 1909, the Opium Commission reporting to the Governor stated that 'the harmful effects of opium were exaggerated' and recommended its suppression only in women and children. The battle against opium still had a long way to go. A decade later there were 300,000 opium addicts in Malaya out of a population of 4,300,000. Almost all were Chinese. When opium smokers were registered, among the thousands of Chinese there would be, for example in 1929, 51 Indians and 8 Malays.

**R Little "On the Habitual Use of Opium in Singapore" The Journal of the Indian Archipelago and Eastern Asia. JR Logan Ed. 11:2 1849(1948)*

In Singapore, Dr Chen Su Lan started the Anti-Opium Clinic, and almost single-handedly kept it going. The clinic helped about 7,000 smokers break their habit. Another person much involved in the fight was Dr RM Connolly, President of the Perak Anti-Opium Society. He met with the Under Secretary of State for the Colonies in England to petition the British Government; condemning the attitude of the local government at the annual Anti-Opium Conferences, but to no avail. It remained a state enterprise until the Second World War, despite the effort of many other distinguished doctors to abolish it.

Even in 1920 the revenue from opium amounted to $43,000,000 and accounted for 55% of the Straits Settlements government income. By 1933 it was worth $47,000,000 but only amounting to 11% of government revenue as tax on rubber and tin increased.

MEDICAL FACILITIES

By 1900, there were 85 hospitals and some 30 dispensaries throughout Semenanjung Malaya. Legislation had been enacted, requiring plantations to provide hospitals since the mid-1880s. Estates furthest removed from government hospitals were required to have 1 bed for every 25 labourers, and a qualified dresser. Those within 3 miles from a government hospital were required to have 1 bed for every 50 labourers. However, many were in atrocious conditions. The best were on the sugar plantations of Province Wellesley and the Kerian, Larut and Matang districts. The Caledonia Estate had a qualified European doctor assisted by two experienced dressers. The norm, however, in a new estate was a wooden shack with stretchers serving as beds under the charge of an unqualified dresser. Another rare exception was the Pahang Corporation hospital on its mining concession at Sungai Lembing near Kuantan. It was under the charge of a European medical officer and had a death rate much lower than most private institutions.

Private hospitals fell into two categories. Some were run by European businesses like the one at Sungai Lembing and one at Kuala Lebir in Kelantan. The hospital at Kuala Lebir was run by the Duff Development Company for its local and European staff and was the only regular medical facility in all Kelantan at the time. However the condition of most private hospitals were less satisfactory. Dr WH Fry, the State Surgeon in Pahang in 1905, stated that the four private hospitals in the state refused to supply any information and some kept no records of any kind, although ‘the mortality was known to be high’.

The Chinese-run hospitals, Tate says, “were uniformly worse”. Some were established by leading *towkays* as mentioned in Chapter 2 (pg19). In 1900, Dr JD Gimlette, the State Surgeon of Pahang, regarded the Loke Yew’s Toong Shoon Hospital at Bentong, which was opened for his coolies in his mining concession there, as ‘a hot-bed of disease’. Its accommodation for some 20 patients was very bad

and often overcrowded. Out of 365 patients treated, 273 died (75%). Of these however, 84 died within 24 hours of admission. A second group of hospitals were set up by Chinese brothel keepers to handle disease among prostitutes. This came from the initiative of Dr TC Mugliston, Colonial Surgeon Resident, Singapore following an Ordinance in the Strait Settlements and four Malay States. Unfortunately, these institutions were also primitive and run by Chinese 'quacks' and 'second-rate underqualified European practitioners'.

Government Hospitals

In terms of government hospitals, the leading hospital was the Singapore General Hospital. It had 18 wards with a daily average of 571 patients in 1904. Dr JT Leask said it was lit by gas light at night and had a staff of 13 dressers (medical assistants) to cover the 24 hour shifts. Removal of night soil and rubbish were 'irregular'. The telephone was frequently out of order. Tan Tock Seng Hospital at Balestier Road had three times the number of beds and a comparable death rate for patients. Hospitals in Perak, Selangor and Negeri Sembilan were on par with those in the Strait Settlements. The buildings of these hospitals were quite similar, consisting of long airy wards with cement floors, lined with rows of plank and trestle beds. At times they were described as 'clean and neat and smelled of disinfectant'. At times they were described as 'crudely constructed, smelly, isolated, crowded and staffed by hospital dressers and medical officers who could be rude and racist.'There were government hospitals in every district of the Straits Settlements and Federated Malay State. That included 5 in Penang, 6 in Perak, 6 in Selangor, 5 in Negeri Sembilan, 4 in Malacca and 4 in Pahang.

Outside the Federated states, Johor had a medical establishment, Kedah had a small hospital in Alor Star but Kelantan and Terengganu had no public medical service.

In Sarawak, in 1909, a three story complex called the Pavilion was built. On the ground floor was the Medical Headquarters, laboratory and consulting rooms. The first floor was exclusively for Europeans and the top floor was a hostel for nurses. An asylum for the mentally ill was also built that year in Kuching. A larger General Hospital was built in 1926 at the site of the present office of the Director of Health.

Sabah had primitive hospitals in Jesselton (Kota Kinabalu), Sandakan, Tawau, Kudat and Labuan. However, medical facilities were low on the British North Borneo Company's priorities. It often did not provide sorely needed funds to upkeep the hospitals. They also sought to cut costs by reducing the salaries of Government doctors and encouraging them to do private practice. However, medical care was extended in the form of rural dispensaries. The first was in Tambunan in 1914, followed by others in Tenom and Kolam Ayer in 1916. Prison Hospitals were built in Jesselton and Sandakan and there was also a Pauper's Hospital in Sandakan.

The ratio of hospital beds to population was 1:100 for Selangor and 1:170 for Perak in 1895. According to Emily Sadka, this compares to the best found elsewhere. Singapore with a higher population had a ratio of 1:300. The general efficacy of scientific medicine in 1900 was yet to be proved. Tate notes that 'the Chinese often used the government hospital as a last resort when all the resources of traditional medicine had been tried and failed. Colonial medical officers frequently cited that a high number of patients were admitted when they were beyond any chance of recovery and died within 48 hours of being warded'. Malays were even more reluctant to be warded in government hospitals. In 1909, barely 4% of patients in all government hospital in Selangor consisted of Malays. Even in Pahang, a predominantly Malay state only 11% of patients were Malays.

PSYCHIATRIC FACILITIES

The Taiping, Kuala Lumpur and Seremban Hospitals already had Lunatic Wards before the twentieth century. In 1898, the old jail near the Kuala Lumpur Hospital was converted into a lunatic asylum. However, in all these facilities these psychiatric wards were always overcrowded.

The Government of the Federated States made plans in 1906 to build a psychiatric hospital in the Kinta District, Perak. In 1908, construction began on a 544 acre site in Tanjung Rambutan. Meanwhile, the number of patients in the Lunatic Ward of the Taiping Hospital kept increasing from 139 patients in 1907 to 180 in 1910 until overcrowding became critical.

The Federal Lunatic Asylum in Tanjung Rambutan was opened in November 1911. The buildings cost RM20,000 and consisted of three male wards and one female ward separated by a kitchen building. The facility had farms around it to help the hospital become self supporting. Dr WF Samuels, a six foot man with an out-standing moustache, was appointed the first Medical Superintendent and served there till 1929. There were 5 doctors and 8 European nursing staff. He trained locals to become dressers and nurses. Following the opening of the Federal Lunatic Asylum, some wards like those in Taiping were closed.

In Singapore, a large asylum, the Woodbridge Hospital, was built at a 'safe' distance from town in 1928. Before that the insane were incarcerated in the local jail. A degree of specialization was already acknowledged, as the Governor stated that the Medical Superintendent appointed must have attended lectures at the Denmark Hill Mental Hospital, London, and possess the Diploma of Psychiatric Medicine. He also added that the officer should have some taste for gardening and farming. The Woodbridge hospital sometimes had to accommodate patients from other states.

In Sabah, mentally ill patients who were initially kept in jails, had a small asylum built for them in Sandakan in 1929. Sarawak also had a similar facility opened in the 1920s.

MEDICAL PERSONNEL

By 1900, there were 89 senior medical appointments, including nurses, in the Strait Settlements and 23 in the Federated Malay States for Europeans. Not all were filled. They were under the charge of the Principal Civil Medical Officer (PCMO) who was based in Singapore. In Singapore there were 2 Colonial Surgeons, the Port Health Officer and 10 Assistant Surgeons (a total of 13). Penang had 2 Colonial Surgeons, a Resident House Surgeon, and a Deputy Health Officer on the island and 2 Colonial Surgeons and 3 Assistant Surgeons in Province Wellesley (a total of 9). In each of the Federated States the senior medical officer in charge was called the 'State Surgeon'; a term we would today find unusual as it did not mean his chief duty was to perform surgical operations. Johore had a functioning medical establishment with government hospitals in Johor Bahru, Muar (with a branch at Tangkak), Batu Pahat with European doctors. The sultan even had his own attendant physician.

One major shortcoming of the government medical services even then, was the chronic shortage of staff. There were never enough fully qualified personnel to fill all the posts provided by the establishment, because senior appointments were held only by Europeans. One doctor often had to take on the duty of other posts in addition to his own. For example in 1908 Dr WG Ellis who was Superintendent of the Singapore Lunatic Asylum, doubled as medical officer in-charge of the Beri-beri Hospital and stood in as lecture for Anatomy and Forensic Medicine at the Singapore Medical School. In that year he also acted as the PCMO for six months.

With doctors taking long leave and going on transfer, services were often disrupted. It was not the same when positions were held by the doctor's colleague, only on an 'acting basis'. There were subordinate staff to help, such as dressers (medical assistants) and apothecaries (pharmacists) who were at times praised in reports or lamented. Dr SHR Lucy in State Surgeon in Selangor reported in 1900 that 'praise is due to them for the way they have met this press of work: at the same time, it is impossible, with the present staff to do justice to the patients". The same year, Dr WL Braddon, State Surgeon in Negeri Sembilan wrote 'The apothecary at Seremban General Hospital is quite useless… but I have no qualified assistant upon whom I can place any reliance'. He found his dressers, all of whom were unqualified 'proved capable of learning and deserving promotion'. Almost all of these subordinate staff were Asian or Eurasian.

In the large and less developed states, dressers on small salaries were often left in charge of large districts far from the state capitals. In 1896, on the initiative of Dr MJ Wright, a floating dispensary along the Perak River, manned by dressers, was started and a similar service was introduced on the Pahang River in 1910. But shortage of staff sometimes caused the service of these dispensaries to be suspended.

ORGANISING THE MEDICAL FRATERNITY

The earliest association of doctors in Malaysia was the Straits Medical Association. They began publishing a medical journal which was appropriately called the Journal of the Straits Medical Association in 1890 which continued for 4 years till 1893. In 1894 they had a membership of 30 and applied to be affiliated with the British Medical Association. They were granted affiliation the same year and changed their name to the Malaya Branch of the British Medical Association. That change helped them increase their membership, which reached 88 members in 1908. From 1904 till 1907 the association published a journal entitled the Journal of the Malaya Branch of the British Medical Association. The membership further increased to 98 in 1910 and 117 members in 1912. In 1911 and 1912, the name of the journal was changed to the Malayan Medical Journal, but publication ceased after these two issues. The 1912 issues published a list of members. The list showed 38 members in Singapore, 20 in Selangor, 15 each in Penang and Perak, 6 in Negeri Sembilan, 4 each in Johore and Malacca, 3 in Pahang, 2 in Sarawak and 1 each in Sabah, Kelantan, and Labuan. In addition there were 5 members in Thailand, 1 in Christmas Island and 5 more in unspecified locations.

MEDICAL EDUCATION

From 1879, local men from the Strait Settlements had been sent to study medicine at the Madras Medical College. On qualification, they were appointed Apothecaries. They served in the Subordinate Medical Service and were tied by a bond for fifteen years, with no prospects of promotion to full medical officers. This unattractive system was noticeably unpopular by the 1890s. Local doctors were paid half the salary of their British counterparts. Even the white nurses would try to bully them. In contrast, British Medical Officers were entitled to full sabbatical leave after every three years of service. In 1901, apothecaries were given a new designation as Assistant Surgeons.

In 1906 the Federated Malay States and the Strait Settlements enacted the Medical Registration Regulations. Holders of British or British Colony degrees, diplomas or licence were recognized as Medical Practitioners. Also included were similar European, American or Japanese qualifications approved by the Resident General. It also established a Medical Council with disciplinary powers. It was a move to shut out retired hospital dressers and unqualified persons, some of whom had opened dispensaries in the smaller towns. The situation gave rise to a greater awareness for more qualified medical personnel.

Assistant Surgeons who desired to be registered under the new regulation had to sit for an examination. A few senior doctors like Dr FW Nicholas and Dr DB Pereira in Perak were exempted from the exam. It was a difficult exam. For instance in 1907 from the Federated Malay States, only 3 passed; Dr Saw Ah Choy

of Taiping, Dr K Matsutake of Ipoh and Dr R Van Geyzel of Seremban.

The pressing need for more medical staff had already been obvious from the turn of the century. In 1904, the leading Chinese and non-European communities in Singapore headed by Tan Jiak Kim petitioned the Governor of the Strait Settlements to establish a medical school in Singapore. Events moved rather quickly. The Colonial Secretary requested a public subscription with a target of $71,000 ($1,000 for building renovations, $10,000 for equipment and $60,000 for scholarships) for a foundation fund, which was raised overnight. In fact the amount exceeded the target. $87,000 was raised. In June 1905, it was announced in the government gazette that the Straits and FMS Medical School would be opened on July 1st 1905. With public contributions having financed the building of the medical school, the Government undertook to bear the cost of its maintenance, estimated at $13,000 annually. Pupils would be drawn from boys who had passed the 7th standard in one of the English schools of the Colony or the Federated Malay States. The Colonial Secretary wrote in his report that 'in the circumstances, the establishment of the school can only be regarded as an experiment'.

That experiment proved to be a great success. Dr RDE Freer was appointed the first principal, other teachers were part-time staff. Sir John Anderson the Governor officiated the formal opening on 28 Sep 1905. The first enrollment consisted of 23 students, 16 taking the five year medical course and 7 took a two-year hospital

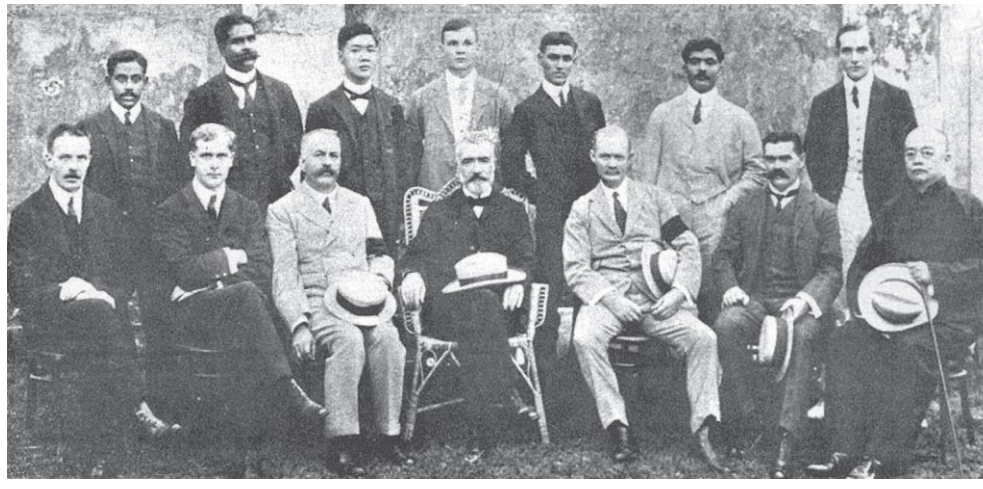


Fig 4.1 First Licentiates of the Straits and FMS Government Medical School

assistant's course. They were housed in the former Female Lunatic Asylum in Pasir Panjang, Singapore. Each student was given a scholarship of $15 a month with a yearly increment of $1. Seven medical students passed in March 1910 with the award of the Licentiate in Medicine and Surgery (LMS) diploma. Four of these went into private practice, 3 became Assistant Surgeons in the Medical Services.

The first Malay graduate was Dr Abdul Latiff bin Abdul Razak, in 1911. Women were not far behind. Two women graduated in 1911. Dr Eugenie Nunes passed her exams in December 1910 and graduated the next year. She came from Pakistan and returned there upon graduation. Dr Emily Pakiam Hitchcock was the daughter of a doctor in Sri Lanka. She finished in 1911 and graduated that year. She married a doctor in 1913 and practiced in Ipoh.

The King Edward VII College of Medicine

In 1913, the name of the medical school was changed to the King Edward VII Medical School, in recognition of a bequest from the King Edward VII Memorial Foundation and the fact it was established during his reign. A second full time staff was engaged, courtesy of a gift, donated to endow a Chair of Physiology. In 1916, the LMS awarded by the school was given recognition by the General Medical Council (GMC) of Great Britain. In 1919, the GMC warned of possible 'de-recognition' but the government desperately found the necessary resources, voting $6,200 for equipment and $22,000 more annually for academic staff emolument to meet the required standards. It also set aside a sum of $1,000,000 for new buildings. In 1921, the school was renamed the King Edward VII College of Medicine to reflect its academic status now as an institution of university standard.

In the next decade, nine new professorships were created, adding to the existing one in Physiology. First was the Chair of Anatomy in 1920, followed by Medicine, Surgery and Obstetrics and Gynaecology in 1922. Chairs in Bacteriology, Biology, Biochemistry, Clinical Surgery and Dental Surgery were added in 1926. The Chairs of Bacteriology and Biochemistry were gifts from the Rockerfeller Foundation of New York. In 1926, on the recommendation of the GMC of Great Britain, the five-year medical course was extended to six years. Among the first cohort to undergo this six year course were Dr ES Monteiro and Dr BH Sheares who were later to distinguish themselves as professors in their alma mater and in public service. In 1935, one more chair in Pathology was established.

In June 1926, the Department of Dental Surgery was added. By 1927, there were 7 applicants but the drop-out rate was high and dental teaching had to be re-started in 1930 with Dr EK Tratman as the first Professor of Dentistry. The first two graduands with the Licentiate for Dental Surgery were Dr Philip Khoo Lip Chuan and Dr Teo Lam Chye in 1933.

The medical school came of age in 1926 when the College of Medicine Building, housing the pre- and para- clinical departments, administrative offices and library, was opened. The occasion was marked by the conferment of honorary diplomas on Sir David Galloway, Dr Lim Boon Keng and Dr Malcolm Watson. The College building still stands impressively today.

Training of Nurses

Posts for matrons and sisters in government hospital were the preserve of Europeans. In all the major hospital they began to train locals as nurses. The training programs were formalized into four year programs graduating staff nurses. Staff nurses could be promoted to senior staff nurses but not to nursing sisters. Right up till the Japanese Occupation, the programs for nurse training were under the administration of the Medical Services of each state or settlement. By and large, there were enough nurses trained.

In larger hospitals, young men were also trained and qualified as Dressers or Hospital Assistants. They assisted doctors in every way, in wards, clinics and even surgery. They were also put in charge of small hospitals.

THE INSTITUTE FOR MEDICAL RESEARCH

Frank Swettenham, the prime moving force behind the economic development of Malaya, was a visionary colonial administrator who saw the need of having an adequate centre for medical research in the country. When he became the Resident- General of the Federated Malay States, he actively promoted the idea of establishing a 'Pathological Institute'. Fortunately, he enjoyed the powerful backing of the Secretary of State for the Colonies then in the British Government, Joseph Chamberlain. In 1897, Chamberlain had created the post of Medical Adviser to the Colonial Office and appointed Dr Patrick Manson to it. On Manson's advice, Chamberlain went about setting up centres for teaching and research into tropical medicine. To this end the London and Liverpool Schools of Tropical Medicine were founded in 1899 and in 1900. A sister institute in Kuala Lumpur was mooted.

Malaria and beri-beri were the diseases of foremost concern for the 'Pathological Institute'. They were highly lethal. Yet, in 1900, they were still shrouded in much uncertainty. Exact records of the how many died before the turn of the century, were not available. The area under British administration was increasing, and supporting a rapidly mushrooming immigrant population. However, together, malaria and beri-beri were killing over 10,000 a year at the dawn of the twentieth century. Swettenham was well aware disease could shut down new mines, plantations and even ports and towns.

Dr Hamilton Wright, an American pathologist at the London School was selected by Manson to be its first head of the Institute. However the allocation Swettenham had envisioned for the Institute was short of what Dr Wright had in mind. He was almost only a one man show occupying a small ward in the Kuala Lumpur District Hospital as Government Pathologist. He was given a budget of $8,500 for the erection of buildings and purchase of equipment. Following an interview with Swettenham a few days after his arrival however, Wright received approval for expenditure of more than double that, amounting to $20,000. New buildings which

now still stand in Jalan Pahang next to the Kuala Lumpur Hospital were ready for occupation in 1901 and was designated the Institute for Medical Research (IMR). Wright was made its Director.

Besides properly qualified assistants, Wright envisioned having Government medical officers, apothecaries and dressers come to the Institute for refresher courses, and to do their own research. However, this proved impractical due to the heavy work load medical officers had in their posts as they were already understaffed. He managed instead to get posts for two 'trained European assistants'. These assistants could take turns to be in charge of medical districts in rotation to free District Surgeons for three to four months of training at a time at the Institute. To ensure the permanence of the Institute, Wright sought to make the directorship of the Institute a 'gift' to the London School of Tropical Medicine, meaning the holder would be selected by the School but paid for by the Straits Settlement and Federated States Government. Swettenham and his successor WH Treacher were supportive of such moves, but John Anderson the new Governor in 1904 did not share such views.

Anderson considered the IMR a luxury which the Federated States could do without. He wanted the Institute to cease functioning as a purely scientific centre for research and for it to be downgraded to a branch of the Medical Department. Manson, in London, was scandalized and wrote a lengthy memorandum to the Colonial Secretary but eventually Anderson prevailed. The absorption of the IMR by the Medical Department meant it became a handmaiden for other government departments carrying out routine checks and inspections on their behalf. These included investigations into the purity of licensed opium or foodstuffs and water supplies for municipal bodies; evaluations of sources of venereal disease; autopsies and pathological studies of specimens from Government hospital.

Nevertheless, research work still carried on. Wright laid a good foundation for malaria research in studying mosquitos. In the study of beri-beri he and Dr GW Daniels, his successor, unfortunately pursued the wrong track, seeing it as an infectious disease. Dr Henry Fraser, the third Director, oversaw the Durian Tipis experiment that made landmark findings about beri-beri. The Institute was productive, but it is noted that in both malaria and beri-beri, it was the doctors outside the IMR that made the biggest contributions.

RUBBER

HN Ridley who had pioneered and promoted rubber planting succeeded in getting 345 acres under rubber in 1897. The lack of labour hampered growth. Negotiations with the Government in India that permitted the recruitment of Indian coolies in 1884 opened the door for expansion.

However, the first attempts were fraught with difficulty and would have failed, had malaria not been overcome. But the work of Watson turned a crucial

corner for the progress of rubber in 1901. By 1905, 50,000 acres were under rubber and 200 tons of rubber were exported. It was still a mere drop in the ocean compared to the total world output of rubber of over 60,000 tons, which consisted mainly of jungle rubber. With the booming car industry, speculators forced the price of rubber up so high that Malaysian plantations mushroomed and could deliver rubber at a price lower than South American jungle rubber. In 1920, Malaya exported 196,000 tons of rubber accounting for 53% of the world output. Rubber fetched 80cents a pound that year, but overproduction saw the price fall to one quarter of that in 1922.

THE CONQUEST OF MALARIA

Malaria can be traced as far back as recorded history. It was known in ancient Egypt. Passages in *Sanskrit* writings in India and by Hippocrates in Greece more than 2,000 years ago describe a disease that fits malaria. Some historians argue that malaria could have caused the fall of some civilizations like Angkor. Malaria was certainly more prevalent in Malaysia with its warm wet climate, which was suitable for the breeding of mosquitos that carry the parasite responsible for the disease. It has been said malaria was the single most important factor hampering the development of the tropics. AA Sandosham, a doyen in malaria research in Malaysia, has written about the historical significance malaria in Malaysia and I cannot do any better than to quote him -

"Penang was said to be healthy when it was first occupied in 1786 but soon became malarious. Francis Light himself succumbed and in 1829 one-third of all deaths in Penang were attributed to malaria. Many have observed that any area of land once cleared of its natural vegetation is not fit for occupation for three to four years. No wonder the locals sought to explain it with the presence of spirits.

Carey observed that in the New Amherst Estate between 1892 and 1898 that the coolies were so riddled with malaria and all so miserably anemic and lacking in strength that the estate had to be abandoned. During those years there was an average of 50 Tamil women on the check roll each year. Yet in the whole period, no living child was born. The town of Jurga was at one time abandoned because of malaria. Port Swettenham was also once ordered closed by telegraph within two months of it being opened because of malaria.

It was very fortunate for Malaysia that the time attempts were made to develop the plantation industry came so close to the discovery of the cause of malaria. In 1883, King had written an article giving 19 arguments in support for the thesis mosquitoes conveyed malaria. In 1897, after painstaking research, Ronald Ross discovered the early stages of the malaria protozoan parasite of man in the midgut of the mosquito and proved the theory'.

Malaya can lay claim to the honour of being the first country in the world

to have successfully applied the knowledge of the mode of transmission of malaria to its control. Even before the Americans had actually commenced their work on the Panama Canal, anti-larval methods had already been successfully employed in checking the ravages of malaria in Selangor. That it was an achievement to be proud of can be understood only if one is aware of the undisguised incredulity and misgivings with which the discovery of the mode of transmission was received when first announced in 1898."*

The pioneering rubber estates were situated along the coastal areas of Selangor. Dr Malcolm Watson, fresh from the London School of Tropical Medicine was posted to Klang as District Surgeon. In 1901, seeing Klang in the midst of a malaria outbreak he remembered Ronald Ross' work and obtained $30,000 for the Sanitary Board to drain the swamps around it. Hardly had that epidemic been controlled, when Port Swettenham lying in the estuary of the Klang river, was ordered shut. It had just been opened two months. 118 of the 176 government servants were stricken with malaria. He obtained another $50,000, drained 100 acres of land and made bunds to keep out the sea water. Six weeks later, the port reopened and bustled with life. The death rate at the Klang and Port Swettenham hospitals declined dramatically including those recorded as other diseases such as dysentery and nephritis. Malaria had rendered people vulnerable to other pathogens.

In 1907, in order to devote more time and study to malaria, Watson resigned from government service and became a med ical adviser to rubber estates that were opening up all over Selangor. But malaria was not so quickly controlled. 6.3% of estate labourers died of malaria in one year in 1911. Sandosham has said it was a stroke of luck for Watson in Klang because this type of anti-larval work proved suitable for this type of terrain. But much of the rubber land being cultivated in Selangor was on the coast. There was, however, the possibility that Watson could have tried his work in the hilly area around Seremban as the State Surgeon there had a similar proposal. Had drainage work been done there, it would have been a complete failure and setback anti-malarial work for years in this country.

Nevertheless, it was soon realized that the battle against malaria was a complex multipronged battle. Quinine was found to be effective treatment for those infected, as Watson himself testified. The Institute for Medical Research in Kuala Lumpur made valuable contributions towards solving various problems connected with malaria. Dr Hamilton Wright, the first director, published the first volume of studies on malaria and mosquitos in 1901. Sandosham named a long list of researchers who have made important contributions. Oiling was introduced in 1901 as another anti- larval tool. Entomologists, engineers, administrators, planters and the lay public all had a share in the conquest of malaria.

* Sandosham AA. *Malariology with special reference to Malaya.University of Malaya Press.Singappore. 1959*

In 1911, when the Health Branch of the Medical Department was put in charge of estate health, there were 9,040 deaths among 143,614 Indian Estate workers, a mortality rate of 62.9 per 1,000. Ten years later in 1921, there 3,195 deaths were recorded among 175,649 workers, a rate of 18.19. In 1925, the death rate fell further to 11.4 per 1,000. That year, there were 1,403 estates and 167 estate hospitals. It looked promising that malaria had been controlled, and the future brought even better results. However, by this time there have easily been over 100,000 deaths from the disease.

Had it not been for this timely success, agricultural development in Malaysia would have been delayed many years. The anti-malrial campaign had been so successful Malaya had become the most prosperous country in the region and 'one of the most prosperous on the globe.'(Sandosham)

Dr Malcolm Watson (1873-1955)

Dr Malcolm Watson graduated in medicine with commendation from the University of Glasgow in 1895, and came to the East first as a ship's surgeon. After a short stint, he returned to Britain to study at the London School of Tropical Medicine. He married a nurse, Jean Alice Gray in 1900 and then relocated to Malaya. The work that made him famous came almost immediately. He obtained his MD again with commendation from Glasgow University in 1903. He resigned from government medical service in 1907. As an Estate Medical Officer, he was once sacked for paying 'too much attention to bugs and too little attention to patients in hospital'. On the contrary he was kind to his patients, especially children and brought them toys and sweets when they were admitted to the estate hospital. During the 1918 influenza pandemic, he converted his own house into a temporary hospital. He was thorough in his work and insisted on the same quality from the junior doctors under him.

In 1911, the Singapore Government asked him to help control malaria there which killed 2,802 people in a year. The number of deaths were halved in two years. His advice was then sought further afield in the Netherland East Indies (Indonesia), Nepal, India and later even in Africa.

The Rubber Growers' Association awarded Watson a gold medal in 1914 and he was knighted in 1924. That same year he received the Stewart Prize of the British Medical Association and an honorary LLD from his alma mater. In later years, he received numerous honours including the William Jones gold medal of the Royal Asiatic Society of Bengal in 1928, the Fellowship of the Faculty of Physicians and Surgeons of Glasgow in 1933, the Mary Kingsley medal of the Liverpool School of Tropical Medicine in 1934, the Albert medal of the Royal Society of Arts in 1939 and the Fellowship of the Geological Society of London in 1943.

When Ronald Ross, Director of the London School of Hygiene and Tropical Medicine visited Singapore in 1926, Watson showed him around. In 1928, when Watson retired from his post in Singapore he was appointed Director of the Ross Institute of Tropical Hygiene. At Ross' demise he served as Director of the London School of Tropical Medicine, which was merged with the Ross Instute, until his retirement in 1942. His wife died in 1935 and he remarried Constance Evelyn Loring, with whom he patented an invention for controlling dust in mines thus preventing silicosis and

explosions in coal mines, in 1948. In that same year, he gave the Ronald Ross oration in Washington DC.

Sir Malcolm Watson died on 28th December 1955 at the age of 82years. Three years earlier, he had written to the Director of the IMR "Malaya is still the country that I look to as my real home where I lived life at its fullest'.

SOLVING THE ENIGMA OF BERI-BERI

Between 1885 and 1905, according to Dr WL Braddon, over 150,000 sufferers from beri-beri were treated in government hospitals in Malaya. He estimated that 30,000 died, while many who recovered were permanently disabled from the disease. Malaria killed more, usually after a fairly short febrile illness. Beri-beri however, landed many weak and ill in hospitals. Beri-beri patients also died, but not as quickly. They were rendered miserable wretches, unable to work and care for themselves.

Jacob Bontius, a Dutch physician in Batavia described and named the disease there, in the 1620. Beri-beri is thought to be a Singhalese word meaning 'I cannot, I cannot'. Its symptoms were said to consist of some initial fever, loss of appetite, lethargy, muscle weakness leading to paralysis and death. In Malaya its appearance coincided with tin mining in Perak and Selangor. Observers noted quickly that Chinese labourers, especially the new comers known as '*sinkhek*' were terribly affected. On the other hand Malays, Europeans and North Indians were hardly affected at all. Along with malaria,beri-beri was the disease that filled the hospitals.

In the 1880s, unsanitary conditions, overcrowding and poisonous 'miasma' from the ground were thought to be the cause of beri-beri. With the excitement over the microbiological discoveries of Pasteur, Koch and Ross in the 1890s, germ theories overshadowed environmental theories. At the same time, suspicions about a dietary cause emerged. However, there were disputes. Dr Gimlette in Pahang stated in his report in 1900 that 'proofs are yet wanting to justify any conclusions as regards the influence of diet and rainfall'.

Braddon did much to treat beri-beri as well as to find out its cause. He established a sanatorium for beri-beri patients near Port Dickson. However, his faith in a seaside cure and an infection theory evaporated with the statistics from the sanatorium. By 1899, with a modest government grant, he set up a small laboratory and conducted over 80 experiments based on blood and tissues from beri-beri patients and healthy controls that, to him, ruled out bacteria as a cause of the disease. However, it was his observations at a European mine in Jelebu that confirmed for him what he suspected. Old hands, free men or '*laukhek*' catered their own food, which included a varied diet and local parboiled rice, whereas '*sinkhek*' were supplied imported polished rice by a local contractor. The '*laukhek*' did not suffer from beri- beri as much as the '*sinkhek*'. On his advice '*sinkhek*' were put on a more varied

diet, but he also recommended that they be re-located. Beri-beri among the '*sinkhek*'

disappeared, but because of the re-location this event did not prove his theory. But by 1901, he had submitted his assertions that polished rice caused beri-beri, whereas parboiled rice did not and recommended that parboiled rice replace polished rice. In the Seremban prison, the benefits of this change were seen immediately.

In 1904, Braddon submitted a long draft manuscript on his findings and thesis to the Secretary of State for the Colonies, which impressed Patrick Manson. However, Manson did not think the evidence proved the case. Back in Malaya, Braddon faced resistance from both Wright and Daniels, the first two Directors of the IMR who were adherents to the germ theory. In late 1905 evidence in favour of Braddon's idea of the diet factor grew stronger. An outbreak of beri-beri in the Kuala Lumpur Lunatic Asylum that year, proved to be a testing ground. Inmates who were fed parboiled rice recovered. Dr Henry Fraser, the new IMR Director, received authority to conduct a large scale experiment in Durian Tipis in Negeri Sembilan. Fraser took charge for strict impartiality. 300 Javanese labourers were split into two equal groups. One group was given polished rice and the other given parboiled rice. The results completely vindicated Braddon's thesis. In 1907, Braddon published his book entitled
'The Cause and Prevention of Beri-beri' in London which was a major contribution to advancing both knowledge as well as measures to overcome beri-beri.

However, as to its cause, Braddon did not quite hit the nail on the head. He did not get the fame for solving the enigma of beri-beri, nor enough of the credit for its subsequent decline. He asserted that 'the disease was due to nothing else then the eating of rice which certain influences have rendered toxic…some form of mould or germ-fermentative process taking place in the grain'. This was plausible and reminiscent of ergot poisoning from a fungus which occurs in rye and also like the recent work of Guerin who discovered a fungus on the seed of darnel in 1898. On account of this 'grain intoxication' theory, further research at the IMR by Fraser and Stanton were led off track and studies failed to find any poison. Braddon himself was sidelined and retired in 1908 to become a planter in Negeri Sembilan.

In the end, it was Christian Eijkman working in Batavia who won the Nobel prize in 1926 for his work on beri-beri. In 1897, Eijkman stumbled on to the cause when chickens in his laboratory fell ill with beri-beri when they were fed polished rice, and recovered when fed unpolished rice. He postulated an 'anti-beri-beri' factor acting like an antidote to the disease which he first suspected was caused by some unknown bacteria. His assistant Gerrit Grijns correctly interpreted it as a deficiency syndrome in 1901. Casimir Funk, the chemist, succeeded in isolating the compound from rice bran and called it vitamine in 1912, short for 'a vital amine'. But he too missed out on the Nobel prize. As the word vitamin became the generic word for all nutrients required in tiny amounts, this vitamin became known first as anuerin, for its anti-neuritic properties and finally thiamine, on account of its sulphur content. Most people know it today as vitamin B1.

Now that the cause of beri-beri had been discovered we can trace how the

disease came about. Polished rice was introduced to Burma and Thailand in the early 1860s by the British. It was the product of steam powered rice mills. In 1880, rice milling proliferated further when a furnace fired by rice husks, a waste product of milling reduced milling costs substantially. When the mines opened up in Malaya it could not grow enough rice to feed the burgeoning population and cheap polished rice was imported from Burma and Thailand. Throughout the course of the beri-beri debacle, white rice was often preferred by the consumers. Often, Chinese miners refused to change their staple diet and were uncooperative when given dietary advice. So it was only in the 1920 that beri-beri admissions to hospitals were substantially reduced. Although consumers were still reluctant to abandon polished rice, an outright ban and an import tax were thought to be impractical. The decline in beri-beri was the result of a more varied diet.

Dr William Leonard Braddon (1861-1936)

W Leonard Braddon was the son of a doctor in Upton-on-Severn, England. He received his early education at Owens College, Manchester and undertook his medical training at Guy's Hospital, London, obtaining his MRCS in 1884 and his fellowship for surgery from the Royal College of Surgeons of England the next year. He graduated with an MBBS from the University of London in 1887. A distinguished student, he gained a scholarship and won a gold medal for forensic medicine.

He initially joined his father's practice but a roving spirit led him abroad on several voyages. This resulted in him joining the medical services of the Malay States in Selangor in 1888. However, most of his career was in service as State Surgeon in Negeri Sembilan. He spent much of his time focused on the study of beri-beri. Although not formally trained in epidemiology, he developed epidemiologic skills and soon acquired a reputation as the most learned student of the disease. He was both thorough and meticulous in his 544 page book on *'The Cause and Prevention of Beri-Beri* in 1907', and epidemiologists today can still observe from it his strengths and weaknesses.* He described the design of what he suggested would be a definitive experiment for testing his hypothesis, but in 1908, before that experiment could be completed, he retired from the Colonial Service for "engaging in commercial transactions judged inappropriate for government officials".

Braddon remained in the Federated Malay States, and joined his brother as a rubber planter. He won the Stewart research prize of the British Medical Association in 1912 for his work on beri-beri. He was later president of a large estate owners' association, a coroner, and an immigration officer. He also ran a nursing home and was even a policeman. Braddon had three daughters. He has been described as a stern-looking man, with a temper in contrast to his congenial brother. The depression of the 1930s affected him badly. When Braddon died in 1936 he left his widow penniless. He was buried near St Mark's Church in Seremban on a low hill near the Government Rest House. In recognition of his great contribution, the Negeri Sembilan government granted his widow a small pension and she lived on in the Seremban Rest House. A street in Seremban was named after Braddon but was later renamed Jalan Tetamu.

** Vitamins and vitriol: W.L. Braddon's epidemiology of beri-beri. Am J Epidemiol 1998; 148:519-527.*

His error in science was that he was convinced there was a poison in polished rice and failed to see that the key was a vital nutrient in the unpolished rice. Had he remained longer in the scene he might have changed his view. Nevertheless, the actions he took and the changes that followed his advocacy saved thousands of lives. The irony of it was that he discovered the cure for beri-beri but not its cause.

THE TREATMENT OF YAWS

Yaws or 'puru' is a skin ulcer that occurs mainly in the hot wet regions of the earth. The bacteria that caused it is indistinguishable in shape and size from the syphilis bacteria but it is transmitted by skin contact. It was said that of the many diseases prevalent then, none was of more interest and importance to the Malays than 'puru'. Although not fatal, it caused much discomfort and distress.

While stationed in Kuala Kangsar in 1919, Dr A Viswalingam visited Upper Perak and observed several cases of yaws. His opportunity came when he met the District Officer, Raja Abdul Aziz who was himself affected. Realising the causative organism of yaws was almost identical with syphilis he 'ventured to use Neosalvarsan to treat it'. He offered to treat the Raja with the injection but he was reluctant. Dato Yahaya, the Penghulu of Lenggong who was accompanying the Raja remembered a female relative staying with him who had extensive lesions of yaws. She was anxious to be to be cured and availed herself of the injection.

On his subsequent visit a month later, Dr Viswalingam said, he found almost the whole village crowding at the Penghulu's house. 'It appeared' he said 'that within the first day or two after the injection the lesions' of his patient 'dried up and within the next three to four days the scabs dropped off'. Almost the whole crowd has some manifestation of yaws and desired to undergo treatment. Dr Viswalingam then 'undertook an investigation of all the aspects of yaws, ascertaining its incidence by means of a census and launched a systemic campaign to eradicate the disease'. In about 3 months he treated over 5,000 patients. His report received little notice by the Medical Department, but George Maxwell the Perak Resident took notice and succeeded in helping him mount a systematic campaign for the eradication of yaws in the Federated Malay States. On account of his sterling work in Kuala Kangsar, the District Officer recommended that Dr Viswalingam should be made the deputy chairman of the Sanitary Board. However, Dr Dowden, the acting Senior Medical Officer of Perak vehemently opposed this. As a result of this Dr Viswalingam was transferred to Kuala Pilah in 1920 not withstanding protests from the Sultan of Perak.

Over 9 years from 1921, about 13,000 to 31,000 cases of yaws were treated with Novarsenobillon each year. Although it reduced the prevalence greatly, it was limited to the four Federated Malay States and hence did not manage to eradicate the disease, as there was a reservoir of the disease in the Unfederated States. As a result the Post-War period saw a marked recrudescence of the disease.

Dr Arumugam Viswalingam (1890-1985)

A Viswalingam was born into a family that had resided for generations in the village of Urelu in Northern Sri Lanka. He was the oldest of seven children. At the age of 5 he was admitted to the village Christian Mission school and completed his schooling at the Canderodia English Institute in Jafna, passing the Cambridge school certificate in 1906. With a spirit of adventure he got his parents' consent to visit Singapore in 1907. There he decided to take up the study of medicine and was successful in the competitive examination to select applicants in 1909. He obtain a scholarship of $15 per month and applied for a supplementary $15, which was increased by $5 annually but bound him to serve the government for 10 years, which would be $25 less per year than was paid to those not under such an agreement.

Dr Viswalingam won several prizes as an undergraduate and was the only one out his batch of 23 who passed all the examinations in the first instance, and one of 6 to graduate within the prescribed period of 5 years. In 1913 he was posted to Perak and for 4 months was Assistant Surgeon at the Tapah District Hospital, where he caught malaria, despite active treatment. After that he was transferred to Taiping the state capital to help maintain discipline in the school for hospital assistants and nurses. The first World War broke out the next year and when the Medical Officer left for England, Viswalingam was left to 'cover his duties'.

In 1917 he recognized the first case of pallegra in Malaya and wrote a report that was published in the Journal of Tropical Medicine and Hygiene, London. He had further such patients, all Chinese, and treated them successfully with vitamin B complex on the advice of Dr AT Stanton, of the IMR. The cause of pallegra had not yet been determined but then events were hot on the heels of discoveries about beri-beri.

Dr Viswalingam was on furlough in Sri Lanka in 1918 when the influenza pandemic of 1918 struck and Dr Kanagaratnam who was at his post in Taiping succumbed to the disease. On his return he was posted to Ipoh briefly, then to Kuala Kangsar. There he records he had a record number of 'rare surgical cases' performing gastro-jejunostomy, splenectomy, nephrectomy, operations for liver abscess, inguinal hernia, amputations and wiring for comminuted fractures. Medical Officers were actually also technically in charge of sanitation but most were more concerned with the curative aspect and 'could ill afford to give much time and energy, even if he had the inclinaction, to attend to sanitary work'*. However, during one inspection visit to the town by the Sultan and State Resident where they remarked in the course of conversation there were a lot of flies, Viswalingam was set on the task of public sanitation. He organized the refuse collection, the disposal of 'night-soil', lectured and licensed the food handlers and insisted plans for all new buildings be submitted to the Health Officer. These measures were effective.

It was also during his stint in Kuala Kangsar that he did his landmark work on yaws, but he was transferred to Kuala Pilah after only 2 eventful years. In 1922 after two years in Kuala Pilah he applied for Sabbatical leave hoping to pursue studies in Europe. That was denied, but instead he was able to enroll to specialize in ophthalmology in the Eliot School in Madras. He also took a three month course in Obstetrics and Gynaeocology. On his return the next year he was ordered to organize ophthalmic work in Kuala Lumpur at the Tanglin Hospital. In 1930 he applied and

**Viswalingam A. Pioneer Preventive Social Medicine in British Malaya. 1977.*

obtained approval for Sabbatical studies in Vienna, Austria. On his return the next year he was asked to include ear, nose and throat work. A few years later another European surgeon who was keen on ear, nose and throat surgery came and Dr Viswalingan was told albeit 'unofficially' that he should 'confine himself solely to ophthalmic work, even though he had been sent to Vienna to acquire this proficiency. In 1932, when Dr Hennessey the designated Ophthalmic Surgeon of the Federated Malay States retired he should have been made the specialist, but the Principal Medical Officer had the post abolished!

Dr Viswalingam stayed faithfully at his post in Kuala Lumpur when the Japanese invaded and he stayed there till at last the order to evacuate was given on Jan 8 1942. However, he got only as far as Serdang and after a short time there returned to Kuala Lumpur to find his house occupied by Japanese troops. Destitute, the Christian Brothers at St. John's Institution offer his family shelter, remembering his previous services to them. He refused to work for the Japanese, except to offer free service. Slowly his financial situation deteriorated and at the encouragement of the Brothers he set up a clinic and saw patients for a nominal fee.

When the British returned, Viswalingam immediately rejoined the medical services and set about reconstructing the Eye Department in Kuala Lumpur. Again officialdom dealt him a raw deal. He had reached the prescribed age for retirement. A new and better scheme of service was introduced. However, he was not allowed to extend his service to benefit from it, even though he had set to work immediately, while British expatriates were given full paid leave to recuperate for six months. He described this as having ashes in the mouth.

In retirement he did some private practice but his wife was anxious to take their younger six children back to Sri Lanka. Accordingly, he left in 1951. He practiced in Colombo and became president of the Ceylon Ophthalmological Society, founder president of the National Association for the Prevention of Blindness and was Honorary Member of the International Agency for the Prevention of Blindness. Malaysia cannot quite claim full ownership of Viswalingam. He lived in an era of a borderless world, one which we shall one day again hopefully see. His legacy should not have been so easily forgotten and he ought to receive the accolades and honours he so rightly deserved.

PRIVATE MEDICAL PRACTICE

The British Administration in Malaya never conceived of a monopoly on medical care nor a national medical service to cater for the whole population. Its Medical Department was vital, as Governors like Frank Swettenham knew beri-beri and malaria could devastate the development and economy of the country. The government also needed to care for the 'paupers'. It also saw its duty in public sanitation and programmes like vaccination. But where possible, the Government tried to pass the burden of health care on to business concerns like the rubber estates. It enacted legislation so that estates had to provide medical care and report statistics. It also left open the field of medical care in towns to private practitioners. Government hospitals had 'outdoor dispensaries' and in rural area it had mobile dispensaries but there were no clinics manned by medical officers purely for primary care.

Therefore private medical care was in existence from the earliest days. Dr Hutton was in private practice in Penang before the first hospital there was opened. In Singapore, Dr Lim Boon Kheng, the first Chinese to be awarded the Queen's Scholarship,* chose to read medicine at the University of Edinburgh and obtained a First Class Honours degree. He returned to practice medicine in 1893 at Telok Ayer Street. In private medical practice, local doctors like him held the advantage. The population was mainly Chinese. If employed in the Government Medical Department, local doctors were designated Assistant Surgeons and paid only half the salary of their European counterparts and were never eligible for promotion. In private practice the field was even, and the closer rapport locals had with 'fellow countrymen' dictated the unfolding shape of private practice in the country.

Private practice was in no way less lucrative than Government Service; in fact it paid better. But a small European population meant it was less attractive for European doctors to leave Government service for private practice. Nevertheless the choice of the public as to which Western medicine private doctor to see was by and largely 'colour blind', in the sense no doctor was looked down upon, even if for some the 'white doctor' was held in awe. Dr David James Galloway was Singapore's leading European general practitioner and was Physician to the Sultan of Johore. Like Dr Lim Boon Keng, he also lectured at the medical school.

In the nineteenth century, a doctor's visit cost fifty cents, which was a princely sum then. In the early twentieth century, it cost $1 and would include medicine, usually for three days. This practice of dispensing medicine with clinic consultation must have somewhat been influenced by the Chinese way of medical practice, where a visit to the doctor meant almost the same thing as buying medicine. It was also a form of necessity in those early days where there were as few pharmacists and apothecaries as there were doctors.

The first local doctor in Penang, was Dr Koh Leap Teng from Penang Free School, who won the Queen's Scholarship in 1894 to pursue a medical degree at the Edinburgh University. He graduated in 1900, and returned to Penang to begin private practice the following year. Another early pioneer was Dr Lim Chwee Leong. He entered the King Edward VII College in 1909 and was awarded the Lim Boon Keng Medal when he graduated in 1913. For a short period of time, he worked as Assistant Surgeon for the Government District Hospital before setting up his own practice in 1914. He named his dispensary the Soo Beng Dispensary, after his native village in the Fujian province in China. It stands at the junction of Carnavon Street and the road now named after him. He was active in promoting education and was also a trustee of the Penang Chinese Town Hall shortly before his death in 1957.

**The Queen's Scholarship was established by Sir Cecil Clementi Smith, the Governor of the Straits Settlements in 1885. Two scholarships were awarded each year for students to pursue university level education in the United Kingdom. From 1897 onwards the prestigious award was given to the best students in the Senior Cambridge Examination. Between 1885 and 1911 twelve out of 46 scholars opted for medicine. It was named the Queen's Scholarship after the British Monach, Victoria. After her reign it was called the King's Scholarship after Edward VII and George V.*

His son Tun Dr Lim Chong Eu, was also a King's Scholar who chose to study medicine in the Edinburgh University. He rose to much greater fame through his involvement in politics, becoming the Chief Minister of Penang.

There were no limits as to what private practitioners could or could not do. Dr Ernest Travers, who started private practice in Kuala Lumpur in 1909, once did an emergency operation in the home of a patient (with an assistant to give the anaesthetic) whom he found too ill to be moved. Because there was inadequate light for the operation, he ordered the roof to be removed. The operation was reportedly successful.

In Ipoh, Dr RM Connolly, the District Surgeon, was the first to move to private practice in 1905 to look after the tin mines and rubber estates. He also took over the Oldfield Dispensary in 1906 (A. Oldfield, one of the earliest European residents in Ipoh, was the town's first chemist who had just retired). Dr Wong I Ek, a graduate from Hong Kong and a classmate of Sun Yat Sen was another pioneer. He opened the Ipoh Dispensary in 1903. Dr Khong Kam Tak was the first local doctor. Born in Penang in 1884 he had his early schooling at Penang Free School. He moved to Ipoh in 1899 where his father was a tin miner. He enrolled in the Anglo-Chinese School. He was one of the first two in Perak to pass the Senior Cambridge school exam in 1902. He proceeded to study medicine in Cambridge and set up his practice in Ipoh in 1912. Doctors like Dr Connolly and Dr Khong served as Medical Superintendents of the Perak Chinese Maternity Hospital doing voluntary work. Ipoh was then the fastest growing town in the country and though it lost out to Kuala Lumpur as the Federal Capital its residents claimed it was still 'the Hub of Malaya". Perak then contributed more to the Federal coffers than the other three states of Selangor, Negeri Sembilan and Pahang combined.

Dr Samsudin bin Cassim from Taiping, the first Malay doctor from Perak, and the second in the whole country studied medicine on a Perak State Scholarship, first at the Madras Medical College. He then switched to the newly opened King Edward Medical School in Singapore. He graduated in 1912 and worked as an Assistant Medical Officer as he was duty bound to do so as a state scholar. It was work at half the pay of his European counterparts, and being treated little better than hospital assistants. After years of practice and seeing no room for advancement, he sent in his letter of resignation in order to enter private practice. His resignation was rejected on the grounds that the Service was short of doctors. He then decided to use a more wily way to get out of the Service. He pretended to have lost his memory and needed to put everything in a little notebook to help him remember. Doctors were expected to know all their cases by heart and his superiors got so fed up with his always having to ask to look at his notes that he got his wish and was medically boarded out – and with a pension too! He set up his clinic at 13
Anderson Road, Ipoh. TM Ho continues, 'One day shortly after, he met his former superior at the Ipoh Race Course. "I see that you have recovered your memory in an amazingly short time" his former boss said to him sarcastically. Dr Cassim replied,

"I am a very religious man. I pray five times a day. All I can say is my prayers have been answered."

Private practice tended more to be the province of those who graduated from foreign medical schools. Those who were trained at the King Edward VII medical school quickly absorbed into the Medical Services upon graduation and expected to stay on. Slowly their terms of service improved as the service was 'Malayanised' from the 1930s onwards.

In Kota Bharu, Dr Ali Osman Merican from Penang became the first doctor to set up private practice in Kelantan. He was a graduate of the Hong Kong University. Two of his sons followed him into medicine. Dr Ezanee Merican also entered private practice in Kota Bharu, and became the President of the Malaysian Medical Association, and Dr Mahmood Merican became an orthopaedic surgeon.

Dr Lim Boon Keng (1869-1957)

Born in Singapore, Boon Keng's mother and grandmother were 'nyonya' hailing from Penang and Malacca. His grandfather arrived in Penang in 1839. He studied Chinese classics briefly at a school set up by the Hokkien Clan Association, then moved on to the Government Cross Street School and to Raffles Institution. His father's death brought on financial difficulties that nearly ended his education but the headmaster stepped in to his aid. He did not disappoint. He won the Queen's Scholarhip* in 1887. While in Edinburgh, his inability to translate a Chinese scroll presented to him by a lecturer prompted him to learn more Mandarin on his return.

Dr Lim Boon Keng was a man of many parts. At the age of 26 he was appointed as Chinese member of the Straits Settlements Legislative Council. He helped raise funds to found the King Edward VII Medical School and volunteered to lecture there in Pharmacology and Therapeutics. He co-founded the Anti-Opium Society in 1906 and maintained a private hospital for prostitutes. Hearing of Ridley's work and call, he ventured into large-scale rubber planting with a partner in Malacca. In 1906, he also helped establish the Singapore Chinese Chamber of Commerce. In addition, he also helped set up the Chinese Commercial Bank, the Ho Hong Bank and Overseas-Chinese Bank. He was involved in social organizations promoting literacy and in various clubs. He bridged the gap between the British and Chinese worlds.

On the international stage, Dr Lim assisted Dr Sun Yet-sen in raising funds and witnessed the birth of the Chinese Republic in Hankow in 1911. He was the medical delegate of the Chinese Government to health conferences in Paris and Rome. He was a Fellow of the Royal Medical Society and once its President. In 1921, he became the president of Xiamen University and devoted the next 16 years to its running. He finally settled down in Singapore for good in 1937.

Dr Lim was already 72 years old when the Japanese conquered Malaya but he was coerced into leading the Overseas Chinese Association and ordered to raise $50 million. It was a depressing and impossible task. It drove him to drink and to attempt suicide. He regretted his wartime years and emerged from it a changed man. In contrast to his illustrious pre-war days he lived as a recluse the last 12 years of his life. In old age he was dubbed the 'Sage of Singapore' and died peacefully on 1 Jan 1957 in his 88th year.

THE UNFEDERATED MALAY STATES

British rule over Perak, Selangor, Negeri Sembilan, Pahang and the Strait Settlements left the peninsula or Semenanjung divided. Geographically, Johore separated Singapore from the rest of the Federated Malay States. Johore was independent but continued to adopt a British system of rule, including Medical and Health Services. In the north four more Malay states ruled by Sultans, namely Perlis, Kedah, Kelantan and Terengganu and a fifth Malay dominant area of Patani in South Thailand were under Siamese rule from Bangkok.

Patani was once a Muslim state and in its golden age, under four queens, from 1584, its borders included Kelantan and Terengganu. Between 1700 and 1703, Terengganu emerged as an independent state with Tun Zainal Abidin, a scion of the Pahang Bendehara family as Sultan. Long Yunus united the chieftains in Kelantan and moved his capital to Kota Bharu in 1777. His son Long Muhammad proclaimed himself Sultan Muhammad I of Kelantan. Patani weakened and was conquered by the Siamese in 1786 when the Sultan failed to send troops to the King of Siam in a battle with Burma. It was then put under the rule of the Raja of Ligor (Governor of Nakhon Si Thammarat) and partitioned into seven states.

The Sultans in these four states saw the economic development in the British ruled states, but they also observed how the Sultans there lost their influence. They were therefore reluctant to accept British Residents, aware now of its implication. Instead they accepted British Advisers. In many practical ways however, life changed slowly to become like the Federated States as taxes were collected, land laws were enforced and police and courts as well as medical services were set up.

The last state to accept a British Adviser was Johore. Sultan Ibrahim who succeeded his father Sultan Abu Bakar signed a treaty with the British in 1914. It had by then already got a government modeled after the Federated States, and like the Federated States, Johore had a sizable Chinese population. But unlike the other West Coast states it did not have tin mines. Its agricultural sector however, was developing. Besides rubber it emerged as a major exporter of canned pineapples, largely due to the entrepreneurship of Tan Kah Kee, the Singapore millionaire.

SARAWAK

Charles Brooke died in 1917 and his son, Charles Vyner, ruled as the third Rajah until the Japanese invasion of December 1941.

The twentieth century saw the beginning of a huge influx of Chinese migrants into Sarawak. There were already more than 10,000 Chinese in Sarawak at the turn of the century and the number grew to over 45,000 by 1910, reaching 123,626 in 1939. Today, they form the second largest ethnic group, numbering more than the Bidayuh, surpassed only by the Ibans.

Hakka gold miners had first settled in Sarawak in the mid eighteenth century in Bau, Simanggand and Engikili. They later shifted to gambier and pepper planting. An agreement between Charles Brooke and Wong Nai Siong, a Fuzhhou Methodist minister brought the first big wave of Chinese immigrants to start a colony in Sibu. The first batch of 1,000 migrants faced a very difficult beginning. The first crop of rice was eaten by rats and birds. The second was destroyed by floods. The third crop failed again, on account of birds, and the settlers were left destitute. Only about 500 remained and cried to go back. In 1903 Rev JM Hoover and Dr West were sent there, and slowly, the colony thrived. A second batch was led by Tang Kung Suk, a Cantonese, and a third was brought by Reverend Dr William Brewster from Xinghua in Fujian. The Hakkas and Fuzhous make up two thirds of the Chinese in Sarawak. Hakkas were greater in number at first but more active migration by Fuzhous led to them exceeding the Hakkas by a small margin.

The Fuzhhous in Sibu had a medical officer as early as 1913. In 1931 a proper hospital was built in place of the shack that served as a hospital. It was named the Lau King Hau Hospital after its benefactor. In Miri, the Sarawak Shell Oilfields Limited provided hospital services from as early as the 1910s.

FURTHER DEVELOPMENTS IN THE FEDERATED MALAY STATES

Public Health

George Maxwell, the Chief Secretary to the Federated Malay States, deserves to be remembered for his work in improving health care in the country from 1921. He continued to contribute much till his retirement in 1926. He revitalized the inactive Malaria Advisory Board which had been in existence in 1911. He established Mosquito Destruction Boards in every district and made land owners responsible for anti-malarial measures. In 1924, he set up a Commission to study and give advise on improving health and sanitation. In 1926, the Health Board Enactment was passed. This enactment established a Central Health Board which made recommendations for medical facilities in the estates, such as those concerning hospitals, dispensaries, employment of medical practitioners, midwives and attendants. Below the Central Board were Local Health Boards, whose members were appointed by State Residents. They reported to the Central Board and implemented preventive health measures on all plantations, mines and state land. The Central Board had the power to impose an annual cess to fund activity. It was a bold piece of legislative work, equal to the best anywhere in the world.

LEPROSY – The Era of Segregation

Compulsory segregation of lepers, which began at the turn of the century, may have improved the cleanliness of urban areas but it did not improve the well being of the patients. They were forgotten by society once they were detained. The

Setapak Camp was described in the IMR Jubilee Report as 'a thieves kitchen, which had the best forgeries of notes and coins and the most potent illicit liquor in the country'. There were some 400 men, women and children 'confined under the most wretched conditions…they were constantly escaping into town in spite of all precautions and stole anything they could lay their hands on… and riots were a weekly occurrence… Life tended to be dull, brutish and short'.

When Dr Travers was appointed Senior State Medical and Health Officer in 1922, he took charge of the Setapak Camp and took an interest in the treatment of the disease with "Tai Foong Chee". He also went about addressing social problems and provided more humane surroundings. In a short period of time, instead of having to prevent lepers from escaping, the problem became how to house those who came, from all parts of the country, for the new treatment. Travers also put forward his idea of a site suitable for agriculture with hospital and treatment facilities…a settlement like a 'kampong' in a paper at a Congress of Tropical Medicine in 1923. Out of this vision came the Sungai Buloh Settlement which George Maxwell had mooted. Travers retired in 1925, but his dream became a reality in 1930. In August that year, 940 odd patients from the Setapak Camp, including some from the Taiping Centre, which was closed, were sent there.

In 1931 the Setapak Camp had to be reopened to house 300 opium-smoking lepers from Pulau Jerejak and some from Sungai Buloh. But slowly, camps in other parts of the country were closed. By 1936, with the country's economy recovering, construction of the third phase of the Sungai Buloh Settlement began. That year, the settlement had a population of 1,830 with 441 admissions and 215 remissions.

Over in Sarawak, a leper settlement was opened in Pulau Satang in 1924. The lepers were later transferred to the 13th mile Kuching-Serian Road and hospital named the Raja Charles Brooke Memorial Hospital.

In Sabah, there were 9 leper patients in the Sandakan hospital in 1891 when Copuan Island was opened as a segregation centre for them. Conditions improved for them in 1911 with the introduction of the leper's ordinance. Pulau Bahala became a new leper colony in 1913. There were 70 patients there when the Japanese Occupation began in 1941.

Dr Ernest Aston Otho Travers

If Dr Ernest Aston OthoTravers cannot claim fame to having discovered any radical cure for a disease or any scientific breakthrough in studying a disease, he ought to be remembered for two things. He showed how healthy surroundings could change the outcome of a disease. He also demonstrated the potential benefits of scientifically assessing the potency of traditional medicines from other cultures.

Dr Travers came to Malaya in 1887 first as Residency Surgeon at Sungai Ujong (Seremban) in 1887. He was made Residency Surgeon of Selangor in 1891 and State Surgeon in 1897. He was said to be the life and soul of the European community in

Kuala Lumpur and was a close friend of locals like Loke Yew. He started the *Selangor Journal* with two partners in 1892 and left government service in 1909 to go into business with Loke Yew and to set up private practice. He soon made a fortune and retired to England hoping to increase his wealth on the London Stock Exchange. Instead he lost it.

He returned to Malaya after the First World War and it was his work as Senior State Medical and Health Officer from 1922 that he left his mark. He transformed the care of leprosy patients first at Setapak and he laid the groundwork for the Sungai Buloh Settlement.

THE BEGINNING OF SPECIALISATION IN MEDICINE

Although the head of medical services in the Federated Malay States were called State Surgeons, they were in charge of even health problems, and the nature of their work being prevented them from being purely devoted to surgery. Some of them like Dr WL Braddon were in fact FRCS (Fellowship of the Royal College of Surgeons) holders. It was however in 1922 that three specialist posts for surgery were established in the Federated Malay States. They were filled by Dr CB Paisley in Taiping, Perak, Dr TWH Burne in Kuala Lumpur and Dr CS Wilson in Seremban for Negeri Sembilan.

On the opposite of the fence, Dr JV Landor and Dr JMA Lowson were recognized as physicians in Johore Bahru in 1932. Dr RA Pallister was the physician in Penang. Degrees from the Royal Colleges of Britain were *de facto* qualifications for specialist positions.

However, it is in the King Edward the VII medical school that the beginning of the specialties and sub-specialties is to be found. In the late 1920s, besides the Chairs for basic sciences for Anatomy, Physiology, Biochemistry, Bacteriology and Pathology, there were the Clinical Chairs for Medicine, Surgery and Obstetrics/Gynaecology. Dr Kenneth Black, a surgeon, took leave to study ophthalmology in India and added this discipline to the curriculum.

The Asian pioneers in specialist qualifications were Dr Michael E Thiruchelvam, Dr Lim Eng Cheang, Dr Gopal Haridas and Dr FK Lau. Thiruchelvam obtained his FRCS on his own initiative, in 1930 while on leave in London. EC Lim was very quick. He obtained his LMS in Singapore in 1929 and obtained his MRCP from Edinburgh in 1932. He worked in the Ipoh General Hospital until the War, despite not being given any recognition for his specialist qualification. He set up private practice in Pangkor Island during the Japanese Occupation and moved to Ipoh after the Japanese surrender. He even took a year off from his practice to study cardiology in England and America. Haridas was sent for training in childhood diseases and obtained his MRCP from London in 1933. However, not only were there no posts to recognize and reward their higher qualifications, Dr Haridas was reprimanded for his action, because taking the MRCP was not sanctioned. FK Lau was a King's

scholar who qualified in Cambridge and went on to get his MRCP in London before returning to be a Major in the Army after the War.

Dentistry

At the same time Prof EK Tratman was appointed to establish the dental school in Singapore, Dr CF Mummery was appointed by the government in 1929 to set up dental services for the country in Kuala Lumpur.

Radiology

It was during this period also that x-ray machines were made available in all the major hospitals in Malaya. Dr CF Constant who was appointed radiologist in 1924 was both enthusiastic and influential in developing radiology. In 1927 five sets of new machines were installed, 2 in the Kuala Lumpur Hospital, one each in the European Hospital in Bangsar and in Ipoh and Seremban. This made radiology services in Malaya the best in the Far East. With the increased workload, Dr FG Greenwood was appointed to Ipoh.

CHAPTER 5 THE DEPRESSION YEARS AND ECONOMIC RECOVERY (1929-1941)

The seventh census in 1931, showed the total population of Malaya (including Singapore) had reached 4,351,514. Administratively however there were three entities. The Strait Settlements had a population of 1,092,222 (including 557,745 in Singapore). The four Federated Malay States had a population of 1,732,688 and the five Unfederated Malay States had 1,526,604 people. In addition, the Malaysia we speak of today, had two more parts, Sarawak, under the Brookes had an estimated population of 500,000 and Sabah, under the North Borneo Company had about 270,000 people.

Table 5.1 Population of Malaysia in 1931

Strait Settlements		**Federated Malay States**		**Unfederated Malay States**			
Singapore	557,745	Perak	785,581	Johore	505,311	Sarawak	500,000
Penang	340,259	Selangor	533,197	Kedah	429,691	Sabah	270,233
Malacca	186,711	N.Sembilan	233,799	Kelantan	362,517		
Labuan	7,507	Pahang	180,111	Terengganu	179,789		
				Perlis	49,296		
Total	**1,092,222**		**1,732,688**		**1,526,604**		**770,233**

THE GLOBAL ECONOMIC DEPRESSION

The economy of Malaya was one of the first in the world to feel the effects of the Great Depression of 1929. Its economy was dependent on exports. Both the main commodities it produced, rubber and tin were sold in the world market and consumed mainly by the industrialised nations. The price of rubber, which was already one quarter its peak value, fell further to about 8 cents a pound, a tenth of its peak value. The local population, however, probably felt less of its effects. Most of the Malays, who were agriculturalists producing almost all their basic needs probably did not even feel the economic effects. The Chinese, who in JD Vaughan's list, were food sellers, barbers, umbrella makers, firemen and market gardeners probably felt little of its effect. But those who were watchmakers, fortune-tellers, miners, planters and labourers experienced it to a some degree. 168,000 unemployed Chinese went home and more than 13,000 destitute labourers were repatriated. The intake of Indian labourers was also suspended.

But it was the British community that was most affected, even if they did not suffer as much as the poorer classes. The dream of a booming tropical paradise evaporated. Some planters failed in their ventures. Many other weathered though it but became much poorer. Many estate medical officers returned to England or joined the Indian Medical Service. Many others lost their jobs. There would probably have been many more Europeans who would have settled here had there not been the

Great Depression. If economic expansion had been smooth and continuous, more of the future commerce of the country, such as the automotive industry, construction, manufacturing and services besides the plantations would have been British owned. But because the economy recovered slowly, it was the Chinese who were more adept at filling up the many small niches that opened up again slowly. The Great Depression also forced the Government to economize. A Retrenchment Committee in 1931 demanded a 13% decrease in salaries together with a reduction in the staff of departments such as Education, Health and the Police. All public works were put off for two years.

There had been no regulation on immigration up to 1930. Even as more than 170,000 Chinese returned to China, 242,149 came. An Immigration and Alien Bill was passed in 1931, not only to control the quantity but quality of people coming into Malaya. In the early days, mainly men came on their own, resulting in an unequal sex ratio. Now, men were encouraged to bring their wives. As a result thousands of Chinese women came. For three years, the number of arrivals were gradually reduced till about 1,000 a month. As expected, there was opposition to the bill from the Chinese. When conditions began to improve in 1934, the numbers were raised, but the old system of unrestricted immigration was not restored. 1934 also saw the resumption of Indian immigration.

SABAH

Sabah had a population of 104,257 in an estimate census in 1901. It grew to 270,223 in 1931. Before the mid-eighteenth century, Chinese settlers in Sabah ceased to speak Chinese and melted into the local culture within two generations. In the 1880s, Christian Hakkas organized by Medhurst and Leschler, settled in Kudat to plant maize, coconut, coffee and other crops. More settlers followed in the twentieth century, about 10,000 in a decade, on average, till there were 50,056 Chinese in Sabah in 1931.

One unusual group of about 1,000 Chinese were brought from Hebei by the Chartered Company to settle in Penampang after devastating floods by the Yellow River. They represented a rarity in South East Asia, being Northern Chinese. From the 1930s voluntary migration overtook organized migration. The Chinese concentrated in the towns of Kota Kinabalu, Sandakan and Tawau.

PUBLIC HEALTH

A slight shift in the major disease occurred in the 1930s. Malaria still constituted a huge problem. In 1931, there were 916 deaths from acute malaria in the Federated Malay States alone, out of 19,722 admissions for the disease. There were 3,169 cases of chronic malaria and 149 deaths. Tuberculosis appeared as another major source of mortality with 821 fatalities in the Federated States in 1933. While malaria was mainly a rural problem, tuberculosis deaths were mainly in urban areas. In the

Unfederated Malay States, malaria was an even greater problem. There were 2,446 deaths in Kedah in 1930 from 'fevers' which were probably mostly malaria. Kelantan was remarkably different. It was reported in 1931 that "Malaria rarely occurs in Kota Bharu, and even in Kuala Krai"*. As regards to tuberculosis, 109 patients were admitted to the Kota Bharu hospital that year, of which 48 died. However, this says nothing about how many untreated tuberculosis patients there were in the community.

Health Services then began to include education for the public. The Committee for Public Health Education kept a van which travelled around the country screening films. "Aminah", a film on infant welfare, targeted rural Malays. "Malaria" was directed at the estate population and "Rescue of Swee Kim" was a film concerning tuberculosis. Lectures were given in villages concerning water supply and water borne diseases, mosquitos and malaria, and various diseases such as hookworms and yaws. Besides screening films and giving lectures, practical demonstrations of health measures were carried out. The Health Department also participated in exhibitions such as horticultural shows.

Perak was the most active in health promotion campaigns. Health lectures were given in selected kampongs, and by the end of 1933, they were given in all the districts. Even the Sultan of Perak, Iskandar Shah, made a trip down the Perak River, accompanied by the Health Officer, exhorting people in kampongs to keep their villages clean, and to co-operate with health officers. Although hospitalization rates for Malays were lower than that of other races, Malays formed the largest group seeking outpatient treatment, numbering 122,062 in 1936, compared with 74,432 Chinese and 65,261 Indians.

Even the Orang Asli were being reached with health services. The Kelantan Medical Report of 1933 stated that three Temiar individuals were being trained in Kota Bharu for a week to treat skin diseases, malaria and simple problems and were being given medical supplies to use in their villages. The Malays in Kelantan, who were said to have very definite ideas about midwifery, quickly became receptive to the travelling dispensary. In 1930 the dispensary would leave Kota Bharu every Saturday morning and returned only on Wednesday having treated more than 17,000 patients.

HEALTH VISITS

Health officials regularly visited rubber estates throughout the Federated Malay States and Johore. Estate managers were cooperative as the threat of malaria was a concern for all. Although control measures were vigorously applied, malaria did not quickly disappear. The number of recorded cases increased during some years when replanting was done. Health officials made recommendations regarding sewerage, water supply, as well as housing.

**The Annual Report of the Medical Department, Kelantan, 1931*

In Johore, health officials temporarily closed down three out of eight pineapple factories for failure to comply with health standards. They were reopened upon compliance.

School Health Visits

By the 1930s health visits were being made to schools in all states. In Negeri Sembilan, medical officers and dressers examined over 9,000 school children and 90% were treated for some ailment or other in 1938. In Pahang, over 14,000 school children were examined. Skin diseases were common among Malay children. Even beri-beri was noted. In Pahang attempts were made to provide some boys with half a pint of milk daily. In Johore, 6,697 children in 53 schools were examined in 1938. Teachers in rural schools were taught to treat simple ailments, and schools were provided with medicines. Even in Terengganu, in 1939, health visits covered 93% of nearly 3,800 children enrolled in schools.

Dental Health

Selangor was the first state to have a Dental Surgeon appointed. He visited schools not only in Selangor but also in Pahang and Negeri Sembilan. In 1936 a Dental Surgeon was appointed in Perak to inspect and treat students in government schools.

MATERNAL AND CHILD HEALTH

The roots of the early establishment of maternal and child health services in Malaysia can be traced to socio-political movements that became strong in Britain in the 1920s. However, even before that in 1917, the Midwives Ordinance was passed in the Straits Settlements to establish rules and regulations for obstetric practice. In 1923, legislation was introduced to regulate the training and practice of midwives. Data from the registration of births, deaths and maternal deaths revealed the exact magnitude of obstetric and paediatric diseases in Britain. The ripple effect caused attention to be focused on these areas here in Malaya as well. Pressure from the Colonial Office resulted in legislation requiring the registration of births and deaths. This provided the data base for maternity and childhood immunization services. Professional midwifery was introduced and 'bidans' were trained as auxiliaries to nurses.

Figure 5.1 Health Visit: Post-partum Visit in a Poor Kampong Newly Born Baby

In the late 1920s urban Maternal and Child Health clinics were established, under Miss Aherne. Free bus services were provided, and the people appreciated it. Trained midwives and nurses visited pregnant women in their homes, taught hygienic birthing care, taught nutriton, advocated safe childbirths in hospitals and ran clinics for antenatal care and child health including immunization. In 1927, Miss Simmonds, a health visitor organized the Domiciliary Midwifery service in Singapore, which was later extended to rural areas.

Figure 5.2 Coming to the Infact Welfare Clinic. Crossing the Tina River, Ulu Langat

By 1933, Infant Welfare Centres were set up in Kuala Lumpur and Klang in Selangor, Ipoh, Taiping and Teluk Intan in Perak and also in Seremban. Attendances for Malays doubled those of the previous year although they were still fewer in comparison to Chinese. Overall, attendance was increased substantially year by year. Efforts were made to popularize soya bean milk for infants, because it was cheaper and several beneficial properties had already been identified. Trained midwives made better headway in Perak than in Selangor. In 1939, in Selangor, among new mothers visited by Health Visitors, 181 births were attended by unqualified bidans and only 3 by trained midwives.

In 1930, in Kedah, there were two certified midwives attached to the Alor Star Hospital under the supervision of a Lady Medical Officer. They attended to cases in homes whenever called upon. This was the most practical measure, as Malay women were highly reluctant to be admitted to hospital for childbirth. Aiming for hospital delivery would have been futile. In 1930, a third certified midwife was targeted for Pulau Langkawi. The philosophy behind this move was to train "women who can enter every house, win the confidence of the people, render really useful help and slowly oust the 'bidan' from the field. No one would be more eminently suited to be entrusted with this life-saving mission than the Malay woman herself " .*

Infant Welfare clinics were started in Pahang in 1936 in Kuantan, Pekan and Beseraah under the charge of a Lady Medical Officer. In Kuala Lipis. the matron of the hospital was put in charge.

**Medical and Sanitary Report, Perlis 1930*

In Johore, there was a Lady Medical Officer and an Assistant together with two Maternity Nurses stationed at the Johore Bahru Hospital and a Women and Children's Clinic in Muar. Locally trained midwives did maternity work and house visits in kampongs. There were 131 certified midwives in 1936, and the population of Johore appeared more receptive to trained midwives then in Selangor. There was also a motor bus service that brought patients from the villages around Johore Bahru to and from the Women and Children's Clinic. A similar one was made available in Muar.

Terengganu had greater obstacles to overcome. It had only 7 trained midwives in 1939. Although Infant Welfare Centres were available in Besut, Kuala Terengganu, Dungun and Kemaman, attendance was poor. It was reported that grandmothers often obstructed the parents who were willing to come. Infant mortality was high (317 per 1,000 births in 1935). Many tended to consider tinned milk superior to breast milk, and newborns were often fed diluted condensed milk with mashed bananas, rice and coconut milk.

In reviewing the progress made in bringing health care to the Malayan population in this era, credit must be given to the British administration. This development was outstanding and went beyond merely safe guarding their economic interests. It was a manifestation of noble humanity. Tate argues the point clearly and is worth quoting. "The extent of care displayed towards newborn infants and their mothers even in the most remote areas, the provision of accommodation and livelihood for the geriatric population termed 'decrepits', detailed planning and expansion of medical services to those in rural areas and other inaccessible parts of the country, facilities made available for lepers who had nowhere to go, and the comprehensive health and dental services provided to young children in schools, do not suggest purely financial motivations on the part of the British."*

MORTALITY RATES

The Registration of Births and Deaths Enactment came into force on 16 April 1934. It not only provided data for maternal and infant health but showed the impact of diseases like malaria and tuberculosis more clearly. It was not that records of births and deaths were never kept before, but the act made it a legal requirement.

In 1936, the Infant Mortality Rate in the Straits Settlements was 171 per 1,000 livebirths compared with 142 in the Federated Malay States. In Selangor, the Infant Mortality Rate was recorded at 146 in 1937, and rose to 156 in 1938. One explanation for the rise was that immigration had picked up again after the Depression. These immigrants came in a poor state of health and had not properly adapted to new surroundings. Malacca had an exceptionally high Infant Mortality Rate of 260 in 1936 and inquiry into it was made.

**MD Tate. Epilogue:The close of an era. History of Medicine in Malaysia - the foundation years. Acad Med Malaysia 2005 p116-7*

In 1935, the Registry of Deaths recorded 21,975 deaths in the Federated Malay States. Malaria was the leading cause. Following that was pneumonia (2,219) dysentery, diarrhea and enteritis (1,665) and tuberculosis (1,441).The mortality rate in the Federated Malay States in 1936 was 19.2 per thousand, compared to 24.9 per thousand in the Straits Settlements.

MEDICAL FACILITIES

Between 1934 and 1935 Block A and C were added to the Penang Hospital at a cost of just above $1,000,000. The C Block was a 5 storey building housing 20 wards which are still in use today. Block A has housed many different services over the years, including the Casualty and Dispensary, the Records Office, Library, Administrative Offices, Doctor's Rooms and Clinics, the Operating Theatres, the Xray Department, and First Class Wards. The first X-ray machine in the hospital had been installed in 1910, but the new building came with a new and better machine. Dr JD Tull pioneered the Pathology services in Penang, persuading the Strait Settlements to set up a Pathology Laboratory in Penang in the 1920s. This became an important adjunct to the IMR in KL. Tull himself moved on to the Chair of Pathology in the King Edward VII College of Medicine.

Perak had two General Hospitals, in Taiping and in Batu Gajah. It had 14 District Hospitals. There were two Gaol Hospitals, the Central Mental Hospital in Tanjung Rambutan, a Women's Hospital and a male Malay Hospital in Kuala Kangsar. There were seven mobile road dispensaries and two riverine dispensaries.

Selangor had 5 hospitals in Kuala Lumpur and other hospitals in Klang, Kajang, Kuala Kubu Baru and Serendah. The hospitals in Kuala Lumpur were the General Hospital, the Bangsar Hospital, the Malay Hospital, the Gaol Hospital and the Police Ward at Tanglin. In 1939, these hospitals in Selangor admitted 33,201 patients and treated 265,877 outpatients.

In Negeri Sembilan, the hospital in Jelebu closed down, leaving four, in Seremban, Kuala Pilah, Tampin and Port Dickson. In 1939, these four hospital received 22,103 admissions, and 131,589 outpatients were treated. Pahang had hospitals in Kuala Lipis, Raub, Bentong, Temerloh, Kuantan and Pekan. All these were under the charge of two medical officers based at Kuala Lipis and Kuantan. In addition, there were 11 estate hospitals and small wards under the charge of a dresser in Kuala Rompin and Endau.

In Kedah by 1930 there were hospitals in Alor Star, Pulau Langkawi, Sungai Petani, Kuala Ketil, Baling, Kulim and Serdang. Each district was provided with a motor ambulance which travelled the area as a mobile dispensary, visiting schools, police stations and village centres. There were permanent out-door dispensaries also in Alor Star, Changloon, Sik and Bandar Baru. In 1930 the hospitals at Kuala Ketil and

Serdang were leased to the Estate Group Association as under the Health Board Enactment the estates were required to provide their own hospitals.

In Johore, the General Hospital in Johor Bharu and District Hospital in Muar had Xray machines by 1930. In 1936 there were 2,373 hospital beds in 14 government hospitals. There were district hospitals in Segamat, Batu Pahat, Kota Tinggi, Kluang, Mersing and Pontian. In Johore Baru, there was in addition to the General Hospital and Mental Hospital, a Leper Asylum, a Gaol Hospital and a Military Hospital. Just before the Second World War the brand new 5 storey General Hospital was opened in Johore Baru in late 1941. It had the state of the art facilities and equipment. Unfortunately, during the Japanese Occupation it was completely taken over and used only for the Japanese forces and civilians were treated in a building adjacent to the Bukit Zahrah school.

The first hospital in Terengganu was the Kuala Terengganu General Hospital. Hospital charges for the general ward were set at 40 cents a day and $1 a day for the second class ward. Patients unable to pay received free treatment. Hospitals in Chukai, Kemaman and Kuala Dungun were built in 1937, and made available a total of 238 hospital beds for the state.

By 1930, there were 10 static dispensaries operating in Sabah. In addition a travelling dispensary served Papar. The buildings in Tambunan and Keningau were upgraded to hospitals. By 1941, there were 14 hospitals and 24 dispensaries and clinics, including a leper colony on an island off Sandakan.

By 1940 the Sarawak Civil Service had a Principal Medical Officer, a pathologist, a medical officer, a matron, nursing sister and in addition, local staff such as trained hospital dressers. There were official initiatives to teach hygiene, conduct school health visits and provide travelling medical services to rural areas. The Brooke administration negotiated successfully with Singapore to have 2 places in the Medical Faculty reserved for students from Sarawak. The first to be admitted was Dr Chong Chun Hian who later became the first local Director of Medical Services. Arrangements were also made with the government in Singapore to second two doctors to Sarawak. Dr Sockalingam was the medical officer and Dr C Sanmugam the pathologist. They were unable to return to Singapore with the Japanese invasion, and thus continued to work in Sarawak, eventually making Sarawak their home.

PSYCHIATRIC FACILITIES

A Mental Asylum was built in Johore in 1915 at the 3rd mile, Jalan Skudia on the shores of the Lido Beach. It housed less than 100 patients and was converted to a home for the elderly when the Tampoi Mental Hospital was opened in 1933. Dr JD Perinbam was appointed the Medical Superintendent, first at Skudai, then at Tampoi, from 1922 till his death by the Japanese in 1942. A few months following his death, the Tampoi Hospital was closed till 1952.

Meanwhile, up north, at the Central Mental Hospital in Tanjung Rambutan, Dr JW Murdoc took over from Dr WF Samuels in 1932. There were about 1,500 male and 800 female patients, in 30 male wards and 15 female wards that year. In 1937, there were 1,054 lunatics admitted in Singapore, 2,883 in Tanjong Rambutan and 557 in Johore, a rather high prevalence for a population of just about 5.2million. (In comparison the Madras Presidency had 47 million people and only 2,000 people in lunatic institutions). More wards were added in Tanjong Rambutan until there were 42 male wards and 23 female wards in 1941. The number of patients rose to about 3,154, of whom 68% were males. The hospital had farms, and at its peak, there were 20 farms. However, most were later closed down during the Japanese time and were never revived.

MEDICAL PERSONNEL

In 1932, the staff of the Straits Settlements and Federated Malay States medical services were amalgamated to form the Malayan Medical Services under one Director. There were posts for specialist Surgeons in Singapore, Penang, Perak and Selangor. Besides the specialists in the King Edward College of Medicine and the IMR, there was a specialist Pathologist, Ophthalmologist, and a Radiologist in Singapore. The was one anaesthetist and one dental officer each for Singapore and for Selangor. Besides a chief medical officer for each state, there were posts for 16 Medical Officers, 12 Lady Medical Officers and 20 Health Officers. These were all Europeans. In addition, there were 179 local appointed Assitant Medical Officers. 74 were stationed in the Strait Settlements, 64 in the Federated Malay States and 41 in the Unfederated Malay States.

Although the Government Medical Services remained chronically understaffed, doctors were being sent to every state. In the 1930s Terengganu had one Medical Officer (European) and two Assistant Medical Officers (Asian). In addition there were 22 male dressers, three midwives, one health inspector with an assistant plus several ancillary staff, such as clerks, storekeepers and menial workers. The Medical Report for 1935 stated that as many as 9,944 cases of tinea and 9,290 cases of scabies were treated, besides other disease of course, like malaria which was prevalent on the island of Pulau Perhentian and in the estates and mines, such as the Nippon Mining Company in Dungun.

One reason for the chronic shortage of doctors was the perpetual small intake of students to the King Edward VII College of medicine. It never averaged more than 22 a year. ‘Colonial policy patently wanted to ensure that local graduates did not swamp the existing medical establishment, which would have jeopardized the privileged position of its European occupants’*. The Depression was also blamed for the understaffing. Some graduates had to wait months, and even as long as two

**MD Tate. Epilogue:The close of an era. History of Medicine in Malaysia - the foundation years. Acad Med Malaysia 2005 p114*

years, for a job. Many had to work gratis for months before they were absorbed into the government service.

There were 129 nursing posts for Europeans, in addition the a large number of locally trained nurses. Local nurses underwent a four year course. Some of these trained nurses were attached to infant welfare centres and in health work. A large number of dressers or hospital assistants were also employed as dispensers, laboratory assistants, and manned outpatient clinics, male wards, veneral disease wards and clinics and small hospitals.

Malaysians were increasingly becoming a larger proportion of the medical and nursing staff. They proved to be as capable in service as in acquiring specialist qualifications. The ordeals of these pioneers are stories worth telling. Bit by bit, the administrative divide keeping non-Europeans as subordinate staff, appeared more and more incongruous.

Dr Michael Emmanuel Thiruchelvam (1897-1976)

Michael Thiruchelvam was born in Jaffna, Sri Lanka but followed his family here to Kuala Lumpur where he studied at St. John's Institution. He gained admission to the Straits and FMS Medical School in 1912 (one year before it was renamed the King Edward VII Medical School). However, the following year, he had to leave to become a teacher, to earn a living on account of his father's ill-health. During this time, he studied English Literature and Physics and obtained the London BA and BSc degrees by external examination. In 1919, he was able to re-enter the King Edward VII Medical School on a scholarship and for four successive years he won the Silver Medal for the student who was first in the examination. He passed with honours in Medicine and Midwifery, and won the Lim Boon Keng Medal for Materia Medica. Ironically, the only subject he did not obtain a distinction in was surgery, the subject he was to excel in later.

Upon graduation in 1922, Dr Thiruchelvam was appointed Assistant Medical Officer in Ipoh. There, he displayed both a flair and passion for surgery. He wanted to specialize in surgery and began to accumulate leave with the intention of sitting for the specialist examination. In 1929 with his own savings, he took leave to Sri Lanka and then surreptitiously flew to the UK.There he obtained the LRCP and MRCS (Lond) but he also gained the Fellowship of the College of Surgeons of Edinburgh (FRCS). He was the first Asian surgeon in the country, in fact the first to obtain any specialist qualification. He married Josephine Muutukumaru, the daughter of one of Sri Lanka's best known doctors in 1930.

Upon his to Malaya tin 1930, he was refused any specialist post. With help from lobbying colleagues he was promoted to be a Deputy Medical Officer, still one rung below European Medical Officers. For the next 10 years he battled patiently for better treatment even as he gained a great reputation for his surgery. After obtaining his Diploma in Otolaryngology in 1939, Thiruchelvam was travelling through Europe when the War broke out. He left his wife, who was pregnant then, in Sri Lanka and returned to serve as Senior Surgeon in Taiping. He was interned briefly in Changi Prison when Malaya fell, but was soon released and ordered to head the Medical Services in Perak. He agreed to the clinical work, but refused to do the administration for fear of being later labeled a collaborator.

His reputation was such, when the head of the *Kempetai* (the Military Police) visiting Malaysia needed an abdominal operation he was called upon in preference to the Japanese doctors, albeit to do the operation with bodyguards carrying loaded stenguns trained on him. Luckily the patient survived.

People who knew him said the Japanese Occupation changed Dr Thiruchelvam. From being an impatient and rather arrogant surgeon, he became a more compassionate and spiritual person.He also refused honours, turning down a knighthood from the British Government. He left government service for private practice in Ipoh. His fame though, endured and when Jawaharlal Nehru, Prime Minister of India visited Malaya, he made a special request to meet Dr Thiruchelvam. Michael Thiruchelvam was devoted to the Catholic Church and received an honorary decoration for his services to the church. Sultan Yussuf Izzudin Shah also appointed him to the Perak State Council.

At the age of 76 he suffered a stroke that slightly affected his speech and fine manipulative skills. He died three years later.

Dr Gopal Haridas (1899-1964)

Gopal Haridas was born in Penang and schooled in St. Xavier's Institution. It was said he was well behaved but by no means brilliant. He entered the King Edward VII Medical School in 1916 and was hard working, punctual and meticulous but not considered brilliant by his colleagues. He failed the LMS examination on his first attempt but passed easily on his second in 1922. In those days one could not choose where one would like to work. His first job was an assignment as Demonstrator in Pathology. After six months at that post, he became House Physician at the Singapore General Hospital in 1923. In 1929, Dr Haridas was selected to be Tutor in Medicine. Professor Hawes had such a high opinion of him that in 1932 he was sent for post-graduate training at the Great Ormond Street Hospital for Children's Diseases. He attended the MRCP course at Charing Cross Hospital and applied for permission to sit for the exam but was denied. Just in time, when he was already on board the ship going home, he was informed permission was granted. He got off the ship and passed his MRCP in April 1933. He returned that year to become Lecturer of Paediatrics under Professor Hawes. In 1937, Dr Haridas was promoted to the Malayan Medical Service (the service formerly reserved for Europeans) and was made Chief Medical Officer of Tan Tock Seng Hospital. He retired from Government Service in 1954 but continued to practice in Singapore till his death in 1964. In 1967 the Singapore Paediatric Society inaugurated a memorial lecture in his honour.

Even in those days, Singapore was better at keeping talented doctors in academia and government service than Malaya. Doctors 'up country' had a greater tendency to leave for private practice.

ORGANISING THE MEDICAL FRATERNITY

The Malaya Branch of the British Medical Association

The Malaya Branch of the British Medical Association (BMA) opened its door to locals, but was largely controlled by Europeans. It was a professional body that

promoted both academic pursuits as well social interaction. On the academic side, it published the Malayan Medical Journal, but this ceased in 1912. It was, however, revived in 1926 with the same name but beginning again with volume one. It ran continuously till 1937. That year the name of the journal was again changed to the Journal of the Malaya Branch of the British Medical Association. The journal ceased publication in 1941 with the Japanese invasion. After the War the journal was revived immediately in 1946 with a name change again. It became the Medical Journal of Malaya, which continues to be published without break till today.

The Alumni Association

By the 1920s, there were over one hundred medical graduates of the King Edward VII College of Medicine. Most of them were in government service. What was most galling in the service was the divide. The Malayan Medical Service was the sole preserve of European doctors. Non-Europeans served under the Subordinate Medical Service. Besides being a social organization for medical graduates, the almuni had the desire to break the divide in the medical service. That gave them the greatest impetus towards forming their association.

In 1921, a graduates' association was founded with Dr EW de Cruz as president but it floundered after two years. In 1923, Dr Chen Su Lan returned from a visit to the United States where the role of the alumni impressed him. He became the prime mover and the first president of the Singapore Medical College Graduates Association. He served as president till 1934. In 1930 the association changed its name to be the Alumni Association of the King Edward VII College of Medicine, or as it was more usually referred, just the Alumni Association. It chose for its motto a phrase from the gospels "Not to be ministered unto, but to minister". The association worked for better working conditions and study leave for local doctors. It also lobbied and was successful in getting promotion for a select few local doctors to posts of Deputy Medical Officers. It wanted to put Asian doctors on par with European doctors, but it did not succeed in this even till the outbreak of the Second World War.

The association also made representation for the government to set up a university. The golden opportunity came with the appointment of the McLean Commission to study the possibility of setting up a university for Malaya in Singapore. Dr George Allen the Principal of the King Edward VII College was a strong supporter along with the Alumni. However entrenched conservative opposition from the colonial establishment saw a watered down report published in 1939. It recommended that this be done after five years during which Raffles College raised its standard to the required level, in order to become the Arts Faculty. In the event, these plans were overtaken by the outbreak of the Second World War.

The Malayan Dental Association

The Malayan Dental Association was formed in 1938, the same year the Dental Clinic in the Singapore General Hospital was built to replace the Norris Block. It brought together graduates from various universities, uniting practitioners in private and public sectors as well as the universities. By having representation on the Dental Council it played a role in the regulation of practice and legislation.

The Penang Medical Practitioners' Society

Dr JE Smith, a general practitioner and leader of the Eurasian community convened a meeting of a group of 18 private medical practitioners on 27th May 1932 at 337 Anson Road, Penang. In less than an hour they had drafted rules which were circulated, considered and adopted. It was decided that the annual subscription fee be $6 and the Penang Medical Practitioners' Society thus came into being. The driving force was a felt need to get the authorities to listen to the problems of private doctors. Although many of them were graduates from British universities, there was no place for them in the government service. As in the case of the Alumni Association, these doctors felt a disconnect with the Malayan Branch of the BMA. Their uniting factor was being located in Penang, far from the activities of the Malayan Branch of the BMA in Singapore. Besides having a voice to speak to the authorities, the society also organized social events and educational programmes to help doctors keep abreast of medical developments.

The Perak Medical Practitioner' Society

Five year after Penang, 10 private practitioners in Ipoh met in the house of Dr Goh TeikWah in 1937, and formed the Perak Medical Practitioners' Society. Another 10 were persuaded to join, making a total of 20 founder members. Dental Surgeons were also welcomed. The BMA clinical meetings were largely hospital-oriented and private practitioners and local doctors felt under-represented. They wanted to air common problems in practice and were encouraged by the success of the Penang Society. Dinner meetings in restaurants became their hallmark and the occasion for local doctors to play hosts to the European government doctors. It also gave them direct access to the Chief Medical and Health Officer.

PRIVATE MEDICAL PRACTICE

The economic conditions in the 1930s affected private medical practice to some extent. Dr Lim Poh Thye who graduated from the University of Hong Kong started his practice in 1929 but could not maintain his clinic and became a ship surgeon for two years. But the economy recovered after a few years. Besides those from foreign universities, graduates from the King Edward College of Medicine also often left for private practice after a short stint in government service. Doctors in government service were not allowed to do private practice. On the other hand, by and large, doctors in private practice did not have the right to practice in government

hospitals. However, in a few cases, on account of the shortage of doctors in hospitals special arrangements were made. In the Penang Hospital, Dr Ong Eng Khuan, one of the oldest private practitioners, conducted 'GP rounds' on Wednesday afternoons and Dr Lim Poh Thye did some sessional work in the out-patient clinic.

In Penang, Dr Alfred McKern, a Scotsman, had the busiest practice in town. But he never compromised on thoroughness with his consultation nor time to build his relationships. Even once, when called on Chistmas Eve night, he put aside his celebration to attend a primigravida in labour and slept on a sofa in his patient's house till the baby was safely delivered the next day. When thanked, he simply replied "I'm a doctor, remember? I was only doing my duty." It was most unfortunate that such a dedicated doctor lost his life when the Japanese came and executed him in early days of the war.

In the 1930s the usual practice was for doctors to charge $1 for consultation and three days of medication. However, there was a general practitioner in Penang who undercut others by charging only 50 cents but gave one day's supply of medicine instead. The only doctors in town who did not dispense were European doctors at the Georgetown Dispensary, but they mainly served the tin dredging companies and rubber estates on retainers' fees and had very few private patients. It was obviously a disadvantage to them. Dr Goh Teik Wah from Penang graduated from the University of Hong Kong and returned to practice in 1935. He held the conviction that doctors should only charge for professional services. and leave the dispensing to pharmacists. So when the newly opened Boon Pharmacy in Belfield Street, Ipoh, offered him a consultation room upstairs, he accepted the offer. His first week went by without a single patient. Slowly, doing home visits and domiciliary deliveries, he acquired a practice. Such outcomes further cemented the trend of doctors combining dispensing with their practice.

In 1937, a 58 year old doctor returned from China to begin private practice in Ipoh. The crowd that waited for him at his clinic at 12, Brewster Road spilled into the streets. His fame preceded him. He was born Gnoh Lean Tuck in Penang but became famous as Dr Wu Lien-Teh in China. He became president of the fledgling Perak Medical Practitioners' Society. He continued his practice throughout the Japanese Occupation until 1959 when he was 80 years old. He then packed up his beloved books and moved back to Penang. In January 1960 he got up one morning feeling unwell. He asked for his daughter and sent for an ambulance. Before they could arrive, he died.

Dr Wu Lien-Teh (1879-1960)

Although his fame came from work outside Malaysia, Dr Wu was one of the most illustrious doctors this country had ever produced. He was born Gnoh Lean Tuck in Penang of a Cantonese immigrant from Taishan and a second generation resident mother. He attended the Penang Free School (where a school house is named after him) and won the Queen's Scholarship to study medicine at Emmanuel College in

clinical years at St. Mary, London, and a year's postgraduate research in bacteriology at the Liverpool School of Tropical Medicine, he returned in 1903. As there was no post for his qualification in the two-tier medical service, where he could not be above a European, he joined the Institute for Medical Research as its first research student. When he finished his term he set up private practice in Penang. He married the younger sister of Dr Lim Boon Kheng's wife. His advocacy for abolishing the opium trade (described in Chapter 4) led to his departure for China in 1910.

Dr Gnoh travelled to England before beginning his new job in China, giving an impromptu speech at a big Anti-Opium Meeting in London where he received a standing ovation from the 500-strong delegation.

In China, Gnoh went by the Mandarin version of his name, Wu Lien-Teh. In the winter of 1910 he was dispatched to Harbin, where news of an unknown illness was killing 99.9% of its victims. Dr Wu suspected it was pneumonic plague but a prominent French doctor with experience with bubonic plague arrived and insisted on being in-charge. Examining patients without a mask on, he caught the pneumonic plague and died six days later. It was perilous work, but Dr Wu managed to perform a postmortem, perhaps the first ever done in Manchuria, and proved it was pneumonic plague by culturing the organism from the lungs. He could then formulate a clear policy. In late January, he visited a burial ground and saw, to his horror 2,000 corpses left unburied. Fearing the coming spring, when rats would gnaw at the decomposing bodies and spread the disease, he sent a memorandum to the throne explaining the need to cremate the bodies. Centuries old conservatism stood in the way, but the Imperial Edict was granted and the mass cremation took place at the end of January. It turned out to be the turning point of the epidemic. 60,000 people died, but it was confined largely to Manchuria, and the deaths of millions, feared, as in the Black Death of the European Middle Ages, did not materialize.

Dr Wu survived the plague himself, and in recognition of his services, he was asked to organize and chair an International Plague Conference in 1911. Studies showed that it was the hunting of a rodent that had pelt like sable (which was in great demand in America and Europe) that triggered the outbreak. Following this, he wrote a long memorandum on 'Medical Education in China', suggesting systematic clinical teaching, adoption of human dissection, the establishment of a Central Medical Council and the need for English, in addition to Chinese to be used as a medium of instruction. He was one of 23 Chinese doctors who met in 1915 to form the 'National Medical Association of China' and he became its Honorary Secretary and the editor of its journal. He was made the first president of the association from 1916 to 1920. He was also appointed Physician to President Yuan Shikai and to successive Presidents of China. He help found the Central Epidemic Bureau in Beijing in 1919 and directed the National Quarantine Service from 1931 to 1937. He was also largely responsible for controlling diseases like cholera. He received honorary degrees from the University of St John's in Shanghai, the University of Hong Kong and the Imperial University of Tokyo (the first for a non-Japanese). He wrote a book about *The History of Chinese Medicine* in 1932. The Russians elected him a foreign member of the Society of Microbiology of the USSR. The Americans awarded him a Rockerfeller Foundation Scholarship to study at John Hopkins University, where he obtained a Masters of Public Health degree. In 1935, he was nominated for the Nobel Prize in medicine, the only Malaysian ever to have that honour.

Dr Wu also had his share of misfortune. His wife and three sons died young in China. He remarried Marie Lee Suk-Cheng and had a second family, two sons and three daughters. In 1937, Japanese planes started to bomb Shanghai where he lived as Director of the National Quarantine Service. Soon, Shanghai and Nanking, the Chinese capital, were overrun and the government fled to Chungking. Dr Wu decided not to serve the new masters and returned to Malaya. Here he lived quietly the rest of his life, even as he continued to speak up for the system of medical practice he dreamed of. Writing in the Medical Journal of Malaya in 1948,* he visualized his utopia: a land where medicine is freely available and without charge to all. He dreamed of a place where doctors, both at health centres and hospitals, were keen to do their share of lecturing, treating patients, supervising laboratories, performing needed operations, where doctors were not overworked, nor over-rich and proud of team work; and yet also anticipated the time when they may enjoy a holiday, and undertake postgraduate studies abroad every five years.

LEPROSY – THE END OF SEGREGATION

In 1930, it was estimated that there were 1,200 leprosy patients in the Strait Settlements and about 1,600 more in the Federated Malay States. Most were in detention centres. Following an editorial in the Malayan Medical Journal in 1931, the subject of compulsory segregation came out in the local newspapers as a matter disturbing public conscience.

It had become known slowly over the years, that leprosy was very lowly infectious. This awareness arose from the work of St. Maur Mouritz who experimented with innoculating healthy persons with the mycobacterium in Hawaii in 1885, and they failed to be infected. In places like the Philippines, the policy of isolation showed no evidence of reducing the incidence of the disease. It was also pointed out that tuberculosis was at least 5 times more infective and carried a higher mortality rate, yet tubercular patients were not segregated. As a result, provisions for domiciliary treatment and voluntary segregation were in place by 1933. Ryrie estimated that in 1935, there were 443 new leprosy cases a year, 70% of whom were born in China or India.

Unlike Sungai Buloh, which was designed as a treatment centre, Pulau Jerejak was from early on, a rather over-crowded detention centre, and showed compartively higher death rates. But from the late 1920s to 1940, renovations on the island brought gradual improvements to the outcome of patients there. As the mortality of leprosy dropped, overcrowding became a problem in both centres. The death rate, which was a staggering 20% annually in the 1920s, dropped to 0.3% in 1935. As a result, the population of Pulau Jerejak grew to 1,315 in 1939, and to 2,178 in Sungai Buloh. In 1938, the were at least 21 births in the Sungai Buloh Settlement. Four babies died, and the remaining were removed to the Non-Leprous Children's Home in Kuala Lumpur. No leprosy mycobacterium was found in any cord or placenta in any of the babies.

**LT Wu. Prospects of Social Medicine in Malaya. Med.J Mal 1948*

Beside Pulau Jerejak and Sungai Buloh, (the number of detainees in other centres plus patients either discharged or absconded) it was estimated that there were about 5,400 diagnosed leprosy patients just before the war.

The abrupt onset of the Second World War in Malaya had an equally sudden impact on the treatment of leprosy. It led to drastic reductions at both leprosariums. A large number of patients dispersed to their homes. Those who remained behind were gradually reduced to eating tapioca and snails. The death rate climbed back up to 30% though not due to leprosy *per se*. Dr Ryrie, who remained behind to work, was later interned by the Japanese in 1943, and for health reasons was repatriated prematurely after the war. At the end of the war, there were 640 left at Sungai Buloh and 360 at Pulau Jerejak.

MALAY NATIONALISM

Even as British rule extended throughout Malaya at the turn of the century, the first seeds of nationalism among Malays were sown. On the surface the Malays were the most apolitical race. One could not discern any such public movements then, but the seeds were sown by the newspapers. The earliest were religious based, like the *Al-Imam* founded by Syed Sheikh Ahmad Al-Hadi in 1906, after his return from Cairo. It was followed by periodicals such as *Neracha, Al-Ikhwan, Pengasuh* and *Saudara*. The Chinese also had their newspapers, the earliest of which was *Lat Pau* in 1881, followed by *Nanyang Siang Pau* and *Sin Chew Jit Poh*. Tamil dailies, such as the *Tamil Nesan* in Kuala Lumpur, appeared in 1924.

The first Malay political party called the Kesatuan Melayu Singapura was founded by Mohammad Eunos in 1926. Similar parties were formed in Perak, Malacca and Penang in 1937, Pahang, Selangor and Negeri Sembilan in 1938 and in Kelantan, Sarawak and Johore in 1939. These were the first visible signs of the germinating seeds.

CHAPTER 6 THE JAPANESE OCCUPATION

When the Second World War began in Europe in 1939, there was at first hardly any noticeable effect here in Malaysia. It was only something those who listened to the radio were aware of. Schools, hospitals and business were not disrupted. Export and import continued. In the event of war coming here, the British were confident in the defense of Singapore, having just completed a large naval base. However, two days after the Pacific War began with the bombing of Pearl Harbour in December 1941, the two British battleships that were the backbone of its naval defenses were sunk by Japanese planes off the coast of Kuantan. With the sea at their command, the Japanese landed in the north. Within two short weeks, the Japanese invasion from Kota Bharu and Pattani swept down the whole of Malaya, and Singapore surrendered on 15th February 1942.

Life changed within a short space of time. Due to 'scorched earth tactics' of the retreating British forces, millions of gallons of petrol were set ablaze or drained into the earth. Docks, bridges, warehouses, rubber stores and tin dredges were destroyed. Looters carried off provisions and much food was left to waste in the open, exposed to the elements. Terror seized the population when the Japanese announced that they would punish those who disturbed public order. In Singapore, thousands of Chinese were massacred on the beaches in cold blood, on suspicion of being anti-Japanese.

Singapore was made the capital and renamed Syonan. The whole of Malaya was to be annexed outright to the Japanese empire. It was divided into eight provinces under Japanese Administrators, while the Sultans were confirmed as Heads of their respective States. Instead of trying to be liberators, the Japanese ruled with an iron fist. There were also acute economic problems. Rice from Burma and Siam grew scarce. It was during this time that Siam took on its new name Thailand, 'the land of the free'. They allied themselves with Japan and were handed sovereignty over the northern states of Perlis, Kedah, Kelantan and Terengganu.

The Japanese made food self-sufficiency a policy and encouraged growing more food. They turned some rubber land to food production, but food continued to be short throughout the Occupation. In place of unobtainable imports, substitutes were produced. This included ropes from coconut husks and pineapple fibre, and palm oil for grease and lubricating oils. Even then, raw materials dried up. Japanese businesses moved in to control every industry. The Japanese banks gave enormous overdrafts to these businesses, until the money flooding the market quickly became almost worthless.

In education, all English schools were converted to Japanese schools, but high schools were not allowed, and considered politically undesirable. Vernacular primary schools were allowed to remain open. A number of technical and trade schools were opened. Books were given free. These efforts appeared effective, and children began speaking Japanese and singing Japanese songs. Some became so proficient in Japanese, like Dr Sambanthanathan Underwood, who later, in 1958, was able to take up a Japanese Government scholarship to do plastic and reconstructive surgery in Japan and even wrote his PhD thesis in Japanese.

Because of the on-going war in China with Japan, the Chinese were given the harshest treatment, and they offered the greatest resistance. To begin with, the Chinese were compelled to raise $50,000,000, and many were forced to sell and mortgage property. The Japanese tried to use budding Malay nationalism to their advantage. Only Malays were invited to an 'Independence Conference' in Kuala Lumpur. But the Malays were not spared from exploitation and the resulting economic hardships. Many Malay leaders joined the resistance movement. The Japanese also tried to utilize Indian nationalism for their own purpose. The Indian Independence League and Indian National Army were organized in Malaya for the liberation of India. Many Indians from Malaya were recruited under the leadership of Subhas Chandra Bose to join the Japanese in their invasion of India from Assam. However the advanced failed with defeats at Imphal and Kohima. On the other side of the fence, there were Indians, none more famous than Dr Kathigasu and his wife Sybil in Ipoh, who became heros of the resistance by simply continuing to serve the people. They ran a clinic which happened to be a source of medical help for guerillas in the jungle. If the British had been accused of 'divide and rule', the short Japanese Occupation magnified this manifold.

Under Japanese rule however, it was the British who suffered the most. Those who did not manage to evacuate to Australia were all made prisoners of wars and interned in Changi prison in Singapore, including doctors.

The Japanese attacked Brunei on 16th December 1941 and soon took over Sabah and Sarawak as well. As resistance there was less, the regime was less brutal. Together with Brunei, the two states were united under one administration known as *Boruneo Kita* (Northern Borneo). The Japanese formed local militia and elite families were required to supply one son each to join the force.

MEDICAL SERVICES

One of the memorable incidents among the medical fraternity at the time of the Japanese invasion was the student casualties suffered during the attack on Singapore. Medical students were enrolled in the Medical Auxilliray Service.During the bombing and shelling of Singapore, one student on duty at the Tan Tock Seng Hospital, named Yoong Tatt Sin, from Malacca, was wounded by shrapnel from a

bomb at 4am on 14 Feb 1942 while in his dormitory. He was taken to the General Hospital as daylight appeared where Professor Monro quickly operated on him but he died from injuries to his liver and haemorrhage. During the day while college student were burying him more shells hit the grave site and 10 more medical students and one dental student died. It was the day just before Singapore surrendered. Another two local graduates were also killed at the Kandang Kerbau Hospital attending to casualties.

Immediately after the British surrender, the Japanese designated the Tan Tock Seng Hospital, Kandang Kerbau Hospital and Mental Hospital facilities for treatment of the local population. The General Hospital was taken over by the Japanese and its staff and patients were transferred to the Mental Hospital which was made to improvise to provide the services of a general hospital. The Kandang Kerbau Hospital which had been the casualty hospital, became the Central Civil Hospital. The hospital included maternity services.

Over in Johore, Dr SD Luther, the pathologist and Dr JD Perinbam, the medical officer in charge of the Tampoi Mental Hospital, had organized a charity dinner and dance on the 6th December 1941 to collect donations for the British War Fund. The Straits Times reported that about $30,000 was collected. During the early days of the Japanese occupation in March 1942, Dr Perinbam was taken to the Kempetai Headquarters. He was held for five days, interrogated and tortured. Five other doctors including Dr A Damodaran, Dr K Eapen, Dr VJ John and Dr KL Verdhese were also called up and questioned about their participation in the dance. They were held only for a day, and released after signing a declaration they would co-operate with the Japanese Government. On the 15th of March, Dr Perinbam was taken back to the Tampoi Hospital, so battered and weak that he could hardly stand. Dr Luther, who had not been taken for interrogation, was then picked up. The two of them were made to stand on the edge of two air raid trenches. Dr Damodaran, the most senior doctor was commanded by the Japanese Officer in charge to read out the charges against Dr Perinbam and Dr Luther. Dr Perinbam was then bayoneted and tossed into the trench. After that Dr Luther was shot with a rifle and the commanding Japanese Officer delivered the final fatal bullet with a pistol. A really sad note to add to this account is that Luther's daughter, Mabel had been one of the 10 medical students killed in the bombing raids in Singapore.

Other tragic losses to the medical profession were Dr A McKern and Dr J Emile Smith, the first President of the Penang Medical Practitioner's Society, who were both summarily executed without trial in Penang, very soon after Penang fell.

It was therefore with fear and trembling that doctors went about seeking their vocation in those perilous times. All the European doctors had either managed to flee or were interned in Changi prison in Singapore. In a way it was a time for maturing. No longer were Asian doctors only Assistant Medical Officers. Malaysian doctors realized they were the only ones who were left to provide leadership for

the medical services. The country was in shambles. The Japanese had neglected health measures, in their brutal actions for conquest and domination, that resulted in an increase in malaria and other diseases. The death rate rose sharply. The Japanese looted hospitals and their stores. Beri-beri became rampant again. Hall* remarked that "all this was particularly noticeable because public health administration of Singapore and Malaya had been unsurpassed anywhere in Asia".

At the beginning of the Japanese invasion, many in the north of Malaya, including doctors, fled south to Singapore for safety as the Japanese moved down from Kelantan and Patani. Probably the only exception was Dr LW Evans, the Chief Medical Officer at the Penang General Hospital, who stayed behind to take care of the hospital till the Japanese occupied Penang. They allowed him to continue to administer the hospital, but interned him a year later. With the British surrender, doctors slowly returned to their posts. Some were dispatched under orders. The Japanese Medical Chief, Dr K Ando, ordered Dr AWE Moreira to lead a convoy of doctors back to Taiping. They were, Dr TJ Danaraj, his wife Dr Winifred Danaraj, and two brothers, Dr AWC Jumeaux and Dr ELS Jumeaux. There, they manned the hospital, and took an interest in the Taiping jail, where the political prisoners were incarcerated.

Doctors who used to work under Europeans were now in complete charge. Supplies and medicines were in short supply, but they performed all the duties, including surgery for trauma and emergencies. Local doctors with surgical experience who helmed the surgical work were Dr A Apparajoo and Dr Tan Hor Kee in the Penang Hospital, Dr ME Thiruchelvam and Dr Kanapathipillai in Ipoh, Dr CV Jumeaux, Dr S Ramamirtham and Dr A Viswalingam in Kuala Lumpur, and Dr K Vellasamy in Singapore.

The medical fraternity was not large, and in difficult times, even if they could not meet they were aware of each other. Dr G Sreenevasan, Dr Selvarajah and Dr JS Eapen in recounting those times could name almost all the doctors in service then. There were 14 in Kedah, 1 in Perlis, 2 each in Kelantan and Terengganu, 21 in Penang, 34 in Perak, 40 in Selangor, 5 in Pahang, 11 in Negeri Sembilan, 7 in Malacca, 30 in Johore and 6 more whose location they were uncertain of. This was a total of 173 'up country', – the term used then, meaning those not in Singapore.

It should however not be forgotten that the dressers also continued to provide a big supporting role, without which the medical services could not have been sustained.

**Hall DBE. The Japanese Impact. In - A History of South-East Asia, 4th Ed. 1981 Macmillam Asian Hisotry Series p864*

Dr A C Kathigasu (1892-1972) and Sybil Kathigasu (1899-1948)

The story of Dr Kathigasuand his wife Sybil belong to those of war heroes and deserves to be told. Arumugam Canatapai Kathigasuwas born in Taiping and received his education at King Edward VII School in Taiping and the Methodist Boys School in Kuala Lumpur. He gained entry to the Straits and FMS Medical School in 1908 and graduated in 1913 at the aged of 21years, the youngest doctor then on record. While working in Kuala Lumpur General Hospital in 1919, he met and married Sybil Daly, a nurse born in Medan, Sumatra, to an Irish planter and Indian mother. Becoming a Catholic, he took the name Abdon Clement Kathigasu. Their first child, Michael, died hours after birth and the couple adopted a boy named William Pillay, whom Sybil's mother, a midwife, had delivered. Two years later they had a daughter, Olga. Their third child Dawn was born in 1936.

In 1925, Dr Kathigasu was posted to Kuala Lipis, where the new railway line was being built to Kelantan. During a flood, his house was completely submerged. When the authorities failed to get him suitable alternative accomadation, he resigned from government service to start general practice at the United Pharmacy in the booming town of Ipoh. He was the sixth private practitioner there and the only non-Chinese beside Dr Cassim. Sybil was a great asset to him as she spoke fluent Cantonese and had a working knowledge of other dialects. She visited patients in their homes, conducting deliveries and attended to minor complains, referring complicated cases to her husband.

When Ipoh was bombed on 15th Dec 1941, Dr Khatigasu came out of his clinic on hearing the aeroplanes, and was hit by shrapnel in the groin. He was rushed to hospital for emergency surgery. The next day, as the hospital was evacuated, he and Sybil drove the family out to Papan, 12 km away, where other refugees had swelled the population three fold. They decided to stay there and, seeing the medical needs there, they opened a dispensary. In mid-1942, the Japanese ordered all civilians to go back to their old jobs and Dr Khatigasu decided to return to Ipoh, leaving Sybil to run the Papan dispensary, which was more or less a free clinic.

Tucked away in the foothills, the Papan clinic became a haven for wounded and sick guerrillas. With the income from the Ipoh clinic, Dr Khatigasu was able to buy supplies for the Papan dispensary, especially quinine for malaria. Sybil would attend to guerrillas who came under the cover of darkness. What she could not manage, she left for Abdon late at night or the next morning. Japanese surveillance in Papan eventually caught wind of a Chinese midwife aiding the guerrillas and the news reached Sybil's ears. She received a message inviting the Kathigasu family to flee to the safety in the hills. However, she rejected the idea, concerned that many in the town would be killed if they did.

Eventually Sybil and Abdon were both arrested, the incriminating evidence being a medicine bottle from the dispensary found at a guerrilla camp. Dr Khatigasu was arrested first in Ipoh. When the telephone call for Sybil's arrest came to her in Papan, and news about it got out, the guerrilla chief sent word that he would attack the police force that would take her to Ipoh. Calmly, she said she could have run weeks ago, and the bloodshed of such an attack would only redouble the fury of the Japanese on her family and fellow-citizens, and asked it be called off. In telling her story later, Sybil recounted how, in prison, she was able to make friends and allies out of her guards, in between interrogations and torture by the Japanese. Husband and wife were both tortured, sometimes in front of each other. Even Dawn their 6 year old daughter was

not spared. One day, the bruised and battered Sybil was tied to a post, beaten with sticks by two soldiers when they hung Dawn 10 feet high from a tree under which they emptied glowing coal from a brazier. Nearby was a pile of wood and a tin of kerosene. Sybil had secrets that could have hurt the resistance, but Dawn said "Don't tell, Mummy, I love you and we'll die together. Jesus will be waiting for us". She never breathed a word. In the end, Sybil was sentenced to death and Abdon, to15 years imprisonment.

At the time of liberation, Sybil was in solitary confinement in the Batu Gajah Prison. The MPAJA took her home in a triumphal procession, the motorcade making a detour to Papan, where the whole town cheered her. Dr Khatigasu was awarded the MBE and Sybil received the George Medal, the highest British civilian award for bravery. But her health was broken. She had a broken spine and she could not walk, had persistent pain from a kick to her face besides other injuries. Sybil was flown to London and endured 15 months of incessant pain and repeated operations, as she wrote her book 'No Dram of Mercy'. In June 1948 she died from septicaemia that had spread from her fractured jaw. Dr Kathigasu continued with his clinic in Ipoh. He eventually remarried and died at the ripe old age of 81.

MEDICAL EDUCATION

Within the year after the Japanese took Singapore, they reopened the medical school at the Tan Tock Seng Hospital in 1942. It was named the *Marai Ikadagaiku* and all the students of the King Edward VII College of Medicine were invited to rejoin. Local alumni such as Dr G Haridas, Dr K Vellasamy, Dr BH Sheares and Dr Yeoh Bok Choon were recruited to teach. In March 1943, the interned Professors Monro, English and Mekie were also recruited to conduct the "Certificate" examination for the former final year students who had undergone an intensive six months' course. In all, 29 candidates passed the examinations. (After the War, all of them again passed the qualifying exams of the King Edward VII College in 1946).

Interestingly, the Head of the Medical Services under Japanese Occupation, Dr Kozo Ando, was a graduate of the King Edward VII Medical School in 1912. His father had come from Japan to set up a photography shop in Singapore and Kozo and his brother both graduated from the Medical College the same year. His brother practiced as a GP in Penang, while Kozo became a popular general practitioner in Singapore. He became the third president of the Alumni Association in 1936, after Dr Chen and Dr Haridas. He disappeared from Singapore a few months before the Japanese invasion and returned after the British surrendered.

In February 1944, the Japanese Medical School was moved to the Malacca General Hospital. It remained there till the end of the Occupation. Among the Japanese doctors who taught there was Dr Keigo Shima, who was the warden and lectured in surgery. He was respected by his students. Being a civilian, he was remembered as a doctor and not a member of the Occupation. Dr G Sreenevasan, who was one of the medical students then was especially grateful. His father suffered from a large carbuncle on his back and Dr Shima immediately agreed when asked if he would operate on him.

THE END OF OPIUM

If there was one benefit the Japanese Occupation brought, it was that it practically wiped out opium addiction. People were too poor to buy opium. The Japanese did not have to enforce a ban. When the British returned after the war, opium was made illegal and prohibited.

PSYCHIATRIC FACILITIES

Under the Japanese regime, Mr Matsu a dresser working at the Ipoh General Hospital was appointed Medical Superintendent. He was assisted by Dr Sivacolandu. About 2,000 mentally-ill patients were said to have been brought over to Tanjung Rambutan from the Sabang Mental Hospital in Indonesia and another 200 from the Woodbridge Mental Hospital in Singapore. Even so, several of the outer wards were allocated to the Indian National Army. Many patients died during the Occupation. Conditions were so bad that at the end of the Occupation, there were hardly 150 patients left alive and all were weak and feeble.

THE JAPANESE SURRENDER

The Japanese Occupation of Malaysia came to a sudden end on 15th August 1945. Although a resistance movement had been gaining momentum, through the war in the jungles spearheaded by the Malayan Peoples' Anti-Japanese Army (MPAJA), it was events far away that dictated the surrender of the Japanese. Early in August 1945, the Americans had dropped two nuclear bombs in Japan, that brought Japan to its knees in a quick end. A war fought inch-by-inch over land would have decimated the country further. The attitude of the people towards the Japanese could be judged by the reception the delegates received at the surrender. The Japanese were booed and jeered whilst the Allies were cheered.

Malaya came under the rule of the British Military Administration till the end of March 1946. The occupation had been a nightmare of mounting poverty and disease. It also bred racial discord. Neighbourhood vigilante systems had been set up to identify anti-Japanese activity, and informers took the opportunity to settle personal grudges, and created a climate of suspicion. With the Japanese surrender the MPAJA sought out Malays who had participated in Japanese organisations and took violent action against them. In response Malays also formed armed groups to attack Chinese. The War had left a scar that would never be the same again. Not only was there racial discord, the economy was in shambles. Instead of rice, tapioca had become the staple food. Poverty was widespread and diseases rampant.

Towards the end of this tragic era, the medical profession suffered one more sad loss. In June 1945, because of racial tension between Malays and Chinese in the Batu Pahat - Benut area in Johore, a team of community leaders were sent to the area to promote racial harmony. Dr NK Sharma was scheduled to travel with

the official party but as he was performing surgery, at the last moment, he was replaced by Dr George Sivasamboo Woodhull. Guerrillas ambushed the team killing several of them including Dr Woodhull.

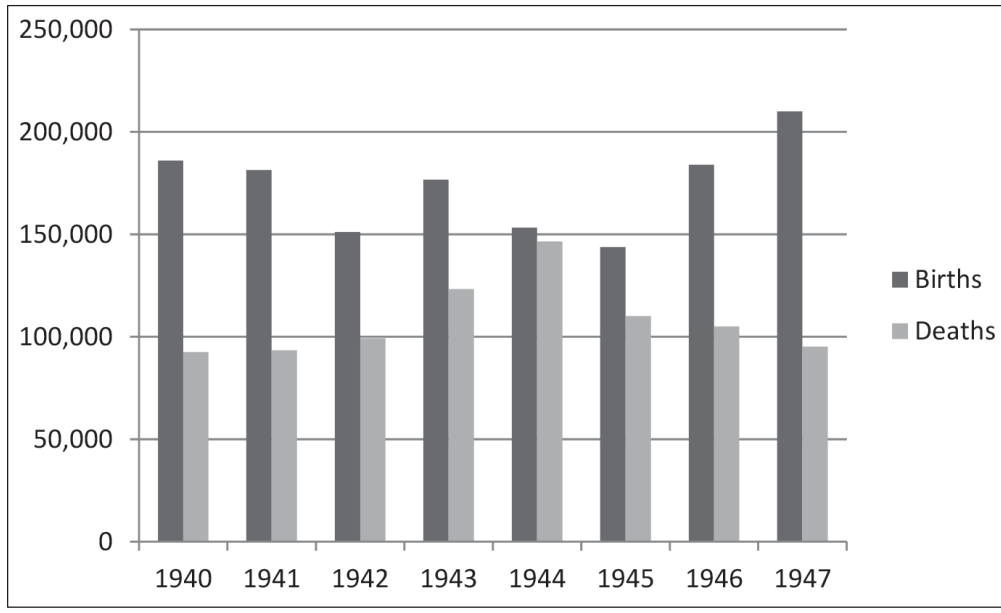
CHAPTER 7 TOWARDS INDEPENDENCE (1946-1957)

AFTERMATH OF THE WAR

Diseases grew rampant during the Japanese occupation, with malaria and beri- beri resurging. Some records were preserved and although some were probably inaccurate, there was sufficient evidence to show how bad things had been. In 1940, the number of births were nearly twice the number of deaths reported. The death rate climbed with each successive year from 1940 until 1944. The number of deaths almost equalled the number of births in 1944. Meanwhile, the birth rate fell.

The number of death rose most in the West Coast states all the way from Johore to Perlis, with Perak and Selangor most affected. The number of death in these states in 1944, was almost double the number in 1940. On the other hand in Kelantan and Pahang the number of deaths in 1944 were actually lower than in 1940, while in Terengganu there was just a slight increase within expected variation.

Figure 7.1 Births and Deaths in the 11 states of Malaya through the Japan Occupation



Note: The excessive drop in the number of births in 1942 and the high number in 1943 can be accounted for by the fact that in 1943 the Japanese introduced a rationing system which made it advantageous to register births. Some births registered in 1943 should be credited to 1942.

The principal causes of death during the Japanese Occupation cannot be completely ascertained, but records of the immediate post-war year give us some indication. Considering only deaths from natural causes, there had been an excess of about 40,000 deaths in 1944, but the number had dropped by 1945.

Only about 22% of these deaths in 1946 were medically certified. Malaria was the cause of death in 2,115 but malaria would also probably have been the cause in some of the 13,034 cases labelled as fever. Tuberculosis accounted for 4,191 deaths in 1946. Beri-beri was responsible for 1,219 deaths. 502 of these were in the former Federated Malay States, which recorded 331 deaths from ber-beri in 1940. Smallpox caused 659 deaths in 1946, chiefly in the in Terengganu, Kelantan, Kedah and Perlis. Before the war, smallpox deaths had become almost negligible.

In addition to natural deaths, it is estimated that between 50,000 to 60,000 lives were lost, mainly from the many executions. There was also a heavy loss of life amongst those sent to Thailand as forced labourers. The estimated population of Malaya in 1940 before the War was 4.775 million. From the census of 1947 it was estimated that the population after the War was 4.975 million. This gives an increase of 200,000. The population increase calculated from the number of births and records of natural deaths gives a total of about 260,000. The missing 60,000 are those unrecorded deaths.

THE MALAYAN UNION

Despite welcoming back British rule after the War, in the eyes of many Malaysians, British superiority and prestige had been dented. Respect for them in Penang was also brought down a notch or two when, in the evacuation at the beginning of the Japanese invasion, British government personnel were given special preference, leaving local civil servants in a lurch. The Japanese had accelerated the political consciousness of the locals, especially the Malays, that was hardly noticeable before the War. Meanwhile in Britain, in 1943, during the war, the Government had announced that "the main aim of the government as regards the political future of Malaya after its liberation will be the development of its capacity for self-government within the Empire". The plan was for Penang and Malacca to be joined with the Malayan Union, while Singapore was to be a separate colony.

Dato Onn bin Jaffar united many of the opponents of the Malayan Union into one party he called the United Malay Nationalist Organization (UMNO) and surprised the British Government by the strength of the opposition. As a result, they suspended the citizenship clauses for immigrants, but went ahead with the other proposals. On 1st April 1946, the Malayan Union was established with Sir Edward Gent as Governor. The Malays boycotted the Advisory Councils and the Sultans did not attend the swearing in ceremony. The Governor soon realised the Union could not work without the support of the Malays. The proposals were favourable to the

Chinese and Indians, but their leaders did not give the Union the backing the British expected, as they were most interested in citizenship, and the matter had been dropped.

Meanwhile, in 1946, Singapore was placed under a Governor and had its own Executive and Legislative Council, and eventually its own Medical Services.

In order to resume planning for all government services, a new population census was quickly organised and conducted in 1947. It showed a total population in Malaya (excluding Singapore) of 4,905,999, an increase of 29% over the total in 1931.

Table 7.1 Population of Malaysia in 1947 (% increase from 1931)

Perlis	70,490	(43)	Selangor	710,788	(33)	Pahang	250,178	(39)	Sarawak	546,385
Kedah	554,441	(29)	Malacca	239,356	(28)	Terengganu	225,996	(26)	Sabah	256,469
Penang	446,321	(31)	N.Sembilan	267,668	(14)	Kelantan	448,572	(24)	Labuan	7,672
Perak	953,938	(21)	Johore	738,251	(46)					
Total	**2,025,190**			**1,956,063**			**924,746**			**810,526**

THE FEDERATION OF MALAYA

In view of the opposition he faced, Gent had no option but to withdraw the Malayan Union plan in favour of the *Persekutuan Tanah Melayu*, a federation proposed by Dato Onn. The powers of the Sultans and the position of the Malays were not only restored, they were strengthened. On 1st Feb 1948, a Federation of 11 states, consisting of the 9 sultanates together with Penang and Malacca, was established under a High Commissioner. However, The Malayan Communist Party, which was the metamorphosed form of the MPAJA, took up an armed struggle to overthrow the Government and to establish a Communist State in Malaya.

Their leader, Chin Peng, and the inner circles of the Malayan Communist Party were mainly Chinese, inspired by the Communist Party in China. The party tapped and terrorised the rural Chinese population into supplying them with food, men and money. Their tactics were guerrilla hit and run attacks to disrupt the economy. The Government suffered initial setbacks, including the murder of the High Commissioner, Sir Henry Gurney, in 1951. However, large scale resettlement schemes for over 500,000 rural Chinese into 480 guarded New Villages around certain towns deprived the insurgents of their support. The Police Force set up of the Special Branch to obtain information on how the Communists were successful in their endeavours. It paid dividends. By 1952 the country was already fairly secure. But, it took 12 years before the insurgency could be declared over in 1960.

In 1951, Tunku Abdul Rahman succeeded Dato Onn as the President of UMNO. Onn was censured at the UMNO special assembly in 1950 for allowing the

blanket extension of citizenship to all Chinese immigrants and he resigned the presidency. Federal elections were held in July 1955 and the Alliance won 51 of the 52 seats contested.

With a view to ending the Emergency after the 1955 elections, the Chief Minister, Tunku Abdul Rahman, engaged the Secretary-General of the MCP, Chin Peng, in negotiations to end their armed struggle. The MCP had contended that they were fighting the colonialists. The Tunku, however, went representing a locally elected government. Talks were held in Baling on 8th February 1956 with the intention of granting an amnesty to the MCP in order to end the Emergency, but no agreement could be reached. Their refusal to give up their armed struggle, greatly undermined the legitimacy of the MCP. The strong election win in 1955 and outcome of the Baling talks on the other hand, strengthened the hand of the Tunku in negotiating independence for Malaya. By 1958, only about 850 MCP members were active, and over half had moved over into southern Thailand with Chin Peng.

One doctor who suffered a tragic death during the communist insurgency was Dr Ong Chong Keng of Penang. He was a Municipal Councillor in Penang as well as a member of the Legislative Assembly for Malaya. One night, during the height of the Emergency, he was lured out to a lonely spot in the 'black area' of Jelutong and was shot dead. What made the deed more despicable was that he was called out on the pretext that a seriously ill patient was in need of his urgent attention. He gained the ire of the terrorists because he had supported a move that the population should have identity cards. He was an eloquent and noble doctor and a leader who would, no doubt, have shaped the country as it moved towards independence, had he lived.

It was however, the European community that suffered the most during the Communist Insurgency. The communist terrorists, 'CTs', as they were called, targeted the white planters, not sparing their families. As a result, many decided to pull up their roots and return to the West. The Emergency period, in fact, put the nail in the coffin of Malaysia having any significantly large European presence.

SARAWAK

Charles Vyner had received a British representative for Sarawak in 1941, placing it in a position very similar to the Unfederated Malay States. After the Japanese Occupation, he signed a preliminary agreement to cede Sarawak to Britain in 1945. Opposition arose from Anthony Brooke, his nephew who had been nominated the next Rajah and from some local leaders who held high official positions and were worried about their standing. Malcolm MacDonald, the British Commissioner- General for South East Asia made frequent visits to gauge local reaction and to persuade people about the benefits of British rule. Jugah anak Barieng emerged as a leader among the Ibans in this process.

SABAH

The British North Borneo Chartered Company ceded all its rights and powers to Britain in 1946, after the directors had obtained the best possible financial settlement for their shareholders. Jesselton (Kota Kinabalu) had been flattened by Japanese bombing and the destructive occupation meant massive reconstruction was needed, which was beyond the resources of the Company. With British resources, roads and rail services were developed to tap the state's natural resources, particularly timber.

POPULATION GROWTH

Population growth in Malaysia from this time forward was principally through natural increase. The massive immigration from China and India came under tight regulations. The rise of the birth rate after the war was stunning. From a dip to less than 150,000 births in 1945, over 180,000 births were recorded in 1946 and the number reached 201,712 in 1948. The birth rate that year was 44.8 per 1,000 among Indians, 43.9 among Chinese and 37.5 among Malays. On the other hand, there were only 81,172 deaths in 1948; quite a significant fall from 146,476 in 1944. The mortality rate of 19.5 per 1,000 in 1947, dropped even further to 16.4 in 1948; the lowest ever on record.

Among the principal causes of death in 1948, malaria accounted for 1,301 cases a sharp drop from 2,169 the year before. However, deaths from fever of unknown origin numbered 9,943 and may include malaria cases. Tuberculosis was emerging as a major problem accounting for 3,515 deaths. Violence accounted for 2,204 deaths and pneumonia for 1,738. Smallpox (72) and beri-beri(421) were quickly under control. There was outbreak of cholera or plague. The deaths from smallpox came from an outbreak in which there were only 521 cases.

Deaths from other infectious disease were now becoming noticeable, in comparison the malaria. Dysentry/diarrhoea caused 746 deaths among 6,513 cases. There were 918 cases of typhoid with 184 deaths. There were 636 cases of diphtheria with 181 deaths. There were 483 cases of typhus, with 26 deaths. Polio caused 20 deaths from among 148 cases.

MATERNAL AND CHILD HEALTH

There was a total of 18,073 infant deaths in 1948 (accounting for 22% of all deaths). Infant mortality rate was highest among Malays (111 per 1,000), followed by Indians (88) then Chinese (67), and lowest among Europeans and Eurasians (30). Infant mortality (Table 7.2) was highest in the state of Terengganu at 167, and above 110 in Perlis, Kedah and Kelantan. It was lowest in Selangor (88) and Johore (83). In the 1947 census, the population consisted on 2,402,841 Malays, 1,882,874 Chinese, 534,148 Indians, 9,155 Europeans, 9,989 Eurasians and 38,671 of other races in

the 11 states of the Federation. Reliable statistics were also emerging for maternal mortality. There were 1,476 maternal deaths that year, and 1,176 in 1948. The maternal mortality rate in 1948 was 3.2 per 1,000 live births among Chinese, 8.4 among Malays and 5.5 among Indians. It was highest in Perlis (11.2) and Pahang (10.3) and lowest in Malacca (3.4) and Penang (4.2).

In the light of the number of infant deaths occurring, maternal and child health services were emphasized. Administratively, Maternal and Child Health were State Health Services as opposed to the Federal Medical Services. The service was active in all states, and had a total attendance of 583,755 at Child Clinics in 1948. That year 245,003 home visits were recorded. Midwives, or *bidans*, were recruited for a 2 year training course from Form 3 or 5 school leavers. In 1953, Staff Nurse Midwifery training, which consisted of a one-year post basic programme, was started in Penang and later expanded to other major hospitals.

Obstetrics

Obstetrics had been recognised as a special field of study under a professor in the King Edward VII Medical School from 1922. However, in practice, obstetric surgery fell under the work of surgeons. Even in the United Kingdom, the establishment of the Royal College of Obstetricians and Gynaecologist in 1929 was met with objections from the Royal College of Surgeons. Right up to the 1930s, obstetric work was done by all medical officers and though some took a major interest in it, they were never specially qualified for it.

The first specialist in Malaysia to hold the MRCOG (Membership of the Royal College of Obstetricians and Gynaecologists) from London was an Australian lady named Dr Marjorie Jean Lyon. She worked in Johore Bharu from 1937 until the War and returned for another period of service till 1950. Dr Benjamin Sheares of Singapore and Dr Por Peng Teik of Penang have the distinction of being the first Malaysians to obtain the MRCOG in 1948. In the post-War years, Dr Joseph Aeria, Dr Awang Hassan, Dr S Kanapathipillai and Dr VJ Seevaratnam were sent for training for the Licentiate in Midwifery in Dublin. The first two then served in Johore and the latter in Penang and Perak respectively. There were Maternity Hospitals in Penang and Johore Bharu. In Kuala Lumpur, the government made use of the Chinese Maternity Hospital. Elsewhere, there were maternity wards in all Government Hospitals. Hospital care for deliveries quickly gained acceptance. A total of 32,615 women were admitted to maternity wards in 1948. However, maternal deaths did not come down so quickly. That year there were 273 maternal deaths in hospitals, accounting for 23% of all maternal deaths recorded in the country.

Dr Benjamin Henry Sheares (1907-1981)

Dr Benjamin Sheares belonged to an era in which Malaysia and Singapore shared a common intertwined history. He was born into a middle class Eurasian in Singapore in 1907. He attended the Methodist Girls' School, St. Andrew's School and Raffles Institution before enrolling in the King Edward College of Medicine in 1923. He was awarded four medals and a scholarship for his brilliant academic achievements. He graduated in 1929 and was posted to the Medical Units of the Singapore General Hospital. In 1931 he was transferred to the Obstetric and Gynaecology (O&G) Unit at the request of the professor, Dr JS English, as he had passed his final exams with distinction. He was the professor's only assistant and was on continuous day and night calls until 1937. He had to be available by phone call wherever he went; a way of life many doctors in Malaysia were to experience, for many years to come. In 1937 he was posted to the Kandang Kerbau Hospital (KKH) and was on call on alternate months. During the Japanese Occupation, he was appointed the local Medical Superintendent, subordinate to a Japanese officer. During this time he introduced and popularised the lower segment Cesarian section then, which was a simple but great technical improvement that hastened patient recovery.

After the War he was made acting Professor of O&G and he recommended that the KKH be converted to an O&G Hospital. Sheares helped design the new hospital wing and labour wards. The KKH was to become the largest maternity hospital in the world in the late 1950s. In April 1947, as Professor English returned, Sheares was released to take up his delayed Queen's scholarship. He obtained his MRCOG in January 1948. There were no Gold Medals awarded then, but he received a letter stating he topped the list of candidates in that examination. He wanted to study for the FRCS but received a telegram from the Governor of the Strait Settlements that Professor English was retiring and he was to return. However, Professor English and the Principal Medical Officer favoured a British Lady Medical Officer over Dr Sheares for the post. But with references from his MRCOG examiners he got the appointment to the Chair of O&G, the first local to do so. Professor Sheares was an inspiring professor, a meticulous person and he led with distinction. He was a gentleman at all times. He taught many doctors who eventually became pioneers in both in Malaysia and Singapore.
260 medical students petitioned him not to retire in 1960 but he did. After the death of Yusuf Ishak , the first President of Singapore in 1971, Dr Sheares was appointed President of Singapore and served as Singapore's President until his death in 1981.

MEDICAL FACILITIES

In 1948, there were 62 General and District Hospitals in Malaya, excluding Prison Hospitals and Quarantine Centres. The largest, in terms of the number of patients admitted were Ipoh (10,319), Alor Star (9,435), Penang (9,050), Kuala Lumpur (8,878), JohoreBharu (8,743), Taiping (8,124), Malacca (8,038), Seremban (8,580), Pudu Road KL (6,207), Klang (5,579), Sungai Petani (5,477) Muar (4,723) and Kota Bahru (4,663). But such figures are not really the best indicator of work load, as Alor Star Hospital was actually 7thin terms of the average number of in- patients a day.

The network of government hospitals were already forming the backbone of medical care in the country, which resulted in not much need for either private

of charitable hospitals. Most people who were willing to accept hospitalisation had access to it. In terms of utilisation of hospital facilities, the admission rates of the population to hospital was highest in Negeri Sembilan but significantly lower for the states of Kelantan and Terengganu (Table7.2). (These admissions exclude those to mental and leper institutions). The high hospital admission rate in Negeri Sembilan, however, did not translate either into lower death rates nor lower infant or maternal mortality rates.

Table 7.2 Hospital Admissions, Death rates and Infant Mortality per 1,000 population in 1948

	Admissions Rate	Death Rate	Infant Mortality	Maternal Mortality
Overall	41.0	16.4	89	5.8
Kedah	36.4	18.9	135	6.5
Perlis	38.4	15.3	119	11.2
Penang	50.0	15.7	101	4.2
Perak	46.6	15.0	100	6.1
Selangor	40.7	12.9	88	5.2
Negeri Sembilan	80.4	15.7	109	5.4
Malacca	33.8	15.9	104	3.4
Johore	39.1	13.5	83	4.6
Kelantan	14.0	22.2	116	8.3
Terengganu	18.5	26.5	167	5.4
Pahang	60.0	17.6	107	10.3

Note : The exceptionally high admission rate for Negeri Sembilan is mitigated when Malacca (which has a low rate) and Negeri Sembilan are combined for the reason that people from the rural areas of Malacca might cross the state border to nearby district hospitals rather than go into Malacca hospital. Still, the two states combined have the highest hospital admission rate (58.3).

If we expect the rate of serious illness requiring hospital admission is the same throughout the country, the figures mean there was a shortfall of about 12,000 admissions in Kelantan and about 5,000 in Terengganu. This was probably a combination of both a lower acceptance of hospital care and also a problem of accessibility, as many Malays lived in remote villages. In the same vein, few Orang Asli were admitted to hospital.

Sarawak

During the Japanese Occupation, the Kuching and Sibu hospitals continued to function but fell into disrepair and lacked supplies. The Lau King Hau Hospital in Sibu, was expanded to 50 beds after the War, in 1947. The Sarawak General Hospital in Kuching had 367 beds in 1948, including 100 beds for mental patients and a ward of 20 for tuberculosis. Nurses were trained at the Kuching Hospital and in 1954, Sibu supplemented the supply of nurses with a new nurses' training school. The

standard of training of nurses was recognized by the general Nursing Council in London in 1961. Training in midwifery was started in 1952 and was a great success. This allowed the Midwives Odinance to be enacted in 1955 prohibiting unqualified persons from practising midwifery.

The post-war era also saw Maternal and Child Health Services expanding rapidly in Sarawak. Maternity sections were opened in the Kuching and Sibu hospitals in 1947, and the arrival of a health visitor in 1949 saw the setting up of antenatal and child health clinics. The first was a sub-clinic for Malay villages near Kuching, then a Bidayuh settlement 50km away. By 1955 there were 7 clinics in Kuching, 5 in Sibu and others throughout the state.

In Miri, the Royal Dutch Shell oil company ran a 124 bed hospital, primarily for its own employees but its facilities were made available to the public. The government reimbursed the company for costs incurred. In 1950, a 42 bed tuberculosis hospital was built and run by Shell with the government agreeing to pay a sum annually for its services to the public. Both hospitals were eventually taken over by the government in 1960.

Sabah

After the Japanese Occupation, two major hospital projects were begun. The 100 bed Duchess of Kent Hospital was opened in Sandakan in 1952 and five years later, the larger 218 bedded Queen Elizabeth Hospital was opened in Kota Kinabalu.

MEDICAL PERSONNEL

As a fraternity, doctors felt no borders between Malaya and Singapore. They were a mixture of graduates from many countries. Of the 749 doctors in both territories in 1948, 305 were graduates from UK and other Commonwealth graduates excluding India. On the hand there were 274 graduates from Singapore, 85 from Hong Kong, 66 from India and 19 others who came from other countries. If there feelings of a division of 'us and them', it was between the Asian doctors and the Westerners.

In 1948, the government medical services (Singapore excluded), consisted of 461 senior medical posts (including dentists and nurses). 38 were 'super-scale positions' of which 17 were administrative posts. 21 were specialists, including 2 physicians, 5 surgeons, a dental officer, an ophthalmologist, a radiologist, a paediatrician, a venereal disease specialist, a tuberculosis specialist, a leprosy specialist, a psychiatrist and 6 research/medical science specialist (including a malaria officer and a nutritionist). There were 83 Medical Officers under the 'Malayan Establishment', (no longer restricted to Europeans) and 166 'Locally-recruited' Medical Officers (no longer called Assistant Medical Officers). In addition there were 31 posts for dental

surgeons, 7 science officers (biochemists/entomologists/pharmacists) and 81 nursing officers (from the Principal Matron down to Nursing Sisters).

In actual number of doctors, there were only 249 medical officers in 1948 in Malaya. Considering that the population had increased from 3.8 million in 1936 to 4.9 million in 1948, and the number of medical officers was certainly not keeping up with the growth of the population. (The number of medical officers had been 227 in 1936, but that included Singapore) Furthermore, as medicine developed and advances in medicine meant diseases could be better investigated and managed, the doctor population ratio ought to have actually increased. For example the number of operations performed was increasing. That meant the workload especially of hospital doctors was slowly becoming more taxing. The fact that there were not enough doctors to fill all the posts compounded the difficulties.

In Sabah, the Medical Services were re-organised in 1948, after the Japanese Occupation. It was headed by a Director of Medical Services with a Deputy in Jesselton (Kota Kinabalu). There were between 10-15 medical officers all over the colony. The Sabah Medical Services appointed a head matron in 1952 and had a staff of 6 nursing sisters.

The Sarawak Medical Services establishment at that time consisted of a Director and his Deputy, 9 medical officers and 1 lady medical officer. Between 1954 and 1955 the first local doctors joined the service. They were Dr TMG Jacques, Dr Chong Chun Hian and Dr Wong Soon Kai. Dr Elsie Yim was the first lady medical doctor. On a poignant note, Dr Ong Guan Bee, who became probably the most illustrious doctor Sarawak ever produced had his application to serve in Sarawak rejected not once, but twice.

Dr Ong Guan Bee (1921-2004)

GB Ong, as he was fondly known, was born in Kuching, Sarawak in 1921. He had his early schooling there. He graduated from the University of Hong Kong in 1947 and continued there with his early surgical training. He spent a stint in the United Kingdom and obtained the FRCS of England and Edinburgh and returned to Hong Kong in 1953. He was first consultant surgeon at the Kong Wah Hospital and then the Kowloon Hospital before being appointed to the Chair of Surgery at the University of Hong Kong at Queen Mary Hospital in 1964.

Professor GB Ong distinguished himself leading his department of surgery. He pioneered numerous new techniques such as the transphenoidal approach to the pituitary gland, the transoral approach to the upper cervical spine, transhiatal dissection of the oesophagus and oesophago-gastric anastomoses in the neck, the Roux-en-Y choledochojejunostomy, retroperitoneal approach to the common bile duct and urinary bladder reconstruction using the isolated stomach. In the course of his career, he operated brilliantly, taught passionately, wrote extensively and travelled widely. He earned a huge international reputation and was a most sought-after speaker at major international surgical conferences. He was visiting professor to a few leading medical schools where he demonstrated his innovative technical skills and inspirational teaching abilities.

Professor Ong mooted the idea of forming an association of surgeons in South East Asia in 1975 and saw it successfully launched in 1976 in Singapore. Of course, he was the first president. The organisation subsequently became the Asian Surgical Association. When he retired from public service in 1982 he had published over 250 scientific papers, more than 10 books and monographs and performed over 10,000 major operations.

During the course of his career, GB received several notable awards, including the Tan Sri title from the Yang Di Pertuan Agong, the OBE from Queen Elizabeth II, the First John Bruce Gold medal, the Royal Australasian College of Surgeons Medal, the Abraham Colles Medal, the AM Ismail Gold Medal and many honorary fellowship from professional colleges and societies. The University of Hong Kong conferred the honorary Dsc on him in 1980. Many surgeons retire quietly but GB continued active private surgical practice in Hong Kong for many years till he was diagnosed with liver cancer in 1999. He underwent treatment, including surgical resection and bore his illness with great courage; finally succumbing to metastases of the disease in 2004.

MEDICAL ORGANISATIONS

Activities of the Malaya Branch of the British Medical Association and the Alumni Association ceased during the Japanese Occupation, under the harsh military rule. Even the publication of the medical journal was suspended. These associations were revived after the war. One of the first issues the Alumni Association fought for was equal pay for local doctors. Whilst the Japanese had only one scheme to employ all doctors, as soon as the British returned in 1945, Asian Medical Officers reverted to their subordinate roles. Local doctors like Dr Tan Chee Khoon also fought for equality within the Malayan Branch of the BMA.

When the unification of the medical services came about, and all doctors were made Medical Officers, the expatriates still received a special expatriate allowance. When Independence came, many were able to get a generous parting settlement called the Malayanisation Bounty. In the case of some younger officers, it amounted to more than $100,000. It was a princely sum, as house doctors then were paid only $401 a month (The one extra dollar was so that the salary was not subject to the Employees' Provident Fund(EPF) payment!)

Dr David Tan Chee Khoon (1919-1996)

If there was one life that was intertwined with both the political and medical developments in the country it was David Tan Chee Khoon. He was born in rural Cheras, then 17km from Kuala Lumpur. He was the second son of parents who had emigrated from China at the turn of the century. The family were firm Methodists. David grew up in a poor family and had to wake up at 5.30am to feed the farm animals before cycling off to tap rubber before school every day. He learned to love reading when he got a copy of a thick volume of *The British Empire* at the age of 11, which he read cover to cover. He started school at the Pudu English School, going on to Kajang High School and finishing at the Victoria Institution. His gift for public speaking emerged during school debates. He lost his left eye in an accident at 13 yrs old and that almost denied him a place to study medicine. His headmaster appealed successfully for him.

medicine and enrolled in 1938, but his studies were interrupted by the War. He escaped death narrowly, as he was among the group of medical students gathered for their colleagues' funeral which was hit by a bomb.10 more students were killed in that incident. He cycled home to KL two days after the fall of Singapore. In 1944 he married Liew Fong Ying. They had 3 sons and 3 daughters. Returning to college after the war he played an active role in student affairs. He held various post in the Medical College Union, finally becoming president. He graduated in 1949.

After working 3 years in the Kuala Lumpur General Hospital, Tan set up his general practice in Kuala Lumpur. He joined the Labour Party of Malaya in 1952, but only stood for parliament in 1964 after many years of dedicated work in politics. He resigned from the party when he supported the National Language Bill and came under fire from more extreme members of the Labour Party. He went on to form Parti Gerakan Rakyat together with Dr Lim Chong Eu and other colleagues. After the party performed well in the 1969 elections, differences in the central committee led to the resignation of several leaders including Dr Tan Chee Khoon. He thought of retiring from politics, but was prevailed upon to form Parti Keadilan Masyarakat (Pekemas). In the years that followed he became the leader of the opposition and a highly respected voice in parliament.

Tan's involvement in development in medicine are almost too numerous to mention. He was one of the leaders of the Alumni Association petitioning equal pay for local graduates in the early 1950s.He joined the Malayan Branch of the BMA as a houseman, attended the annual general meeting that year and spoke about the inequality whereby local doctors were left with 'the crumbs under the table'. He lobbied for leave extension for colleagues needing them, to pass post graduate exams. One colleague he helped went on to become Director of Medical Services and another was later awarded a Hunterian Professorship.

Chee Khoon was involved in the MMA from its founding, and continued till he was president in 1967. In 1989 he was made an honorary member. The Guild of Graduates elected him to be representative on the Council of the University of Malaya in 1959 and he was elected Vice-Chairman in 1967 and Chairman in 1971. He was conferred the Honorary Degree of Doctor of Laws by the university that year. Tan was also a pioneer in private practice, obtaining a grant of land for a private hospital in 1967. Tun Razak the prime minister officially opened the Sentosa Medical Centre in 1972. This led Tan to be involved also in the Private Hospitals Association of which he was president from 1975 to 1986.

After his retirement, Tan wrote a column in the Star newspaper. He was awarded the title Tan Sri 1980 by the Yang Dipertuan Agong. He suffered a stroke in 1993 which left him paralysed and he died three years later.

RESEARCH

The IMR celebrated its jubilee (50th year) in 1950 and published a review of its past. It had been in the forefront of research in malaria and beri-beri in its early days. One of its early successes was the use of 'Field' stain for malaria diagnosis (after Dr JW Field 1899-1981, Director IMR; commemorated in postage stamp IMR Diamond Jubilee 1976). By 1915, the IMR had started to produce anti-typhoid

vaccines. In the 1920s Dr AT Stanton did significant work concerning melioidosis and Dr W Fletcher contributed to discoveries about typhus and leptospirosis. In the 1930s the IMR did notable work in filariasis. A Virology and Zoology division was established in 1923. A serology/immunology unit was established in 1928. Then in 1954 the first strains of dengue virus were isolated from patient samples. That year the influenza A virus was also isolated for the first time and the IMR was designated the WHO Influenza Observation Centre.

However, as part of the Malayan Medical Services, the IMR also did much routine diagnostic work and produced vaccines. At its jubilee, it had 15 officers and 45 technical assitants. It had divisions for pathology, bacteriology, biochemistry, entomology, malaria and in 1946 added a division for nutrition. In 1947 the US Army Medical Research Unit established a partnership with the IMR and this led to four decades of collaborative research in scrub typhus and malaria. In 1948, clinical research by this unit showed that chloramphenicol had dramatic success in curing scrub typhus.

Filariasis

Filariasis in Malaysia was first discovered in 1904 in the Kuala Lumpur Hospital by Dr Daniels, the Director of the IMR. In the next few years it was thought to be only brought by immigrants from China and India. However in 1927, Lichtenstein discovered indigenous filariasis and by 1936 Dr AN Kingsbury was able to list out the endemic areas which were the low reaches of the Perak, Pahang and Bernam rivers together with the coastal areas of Province Wellesley, Kedah and Johore plus the Puchong Forest Reserve in Selangor. It is noteworthy that the Kelantan river delta was surprisingly free of the disease. In 1940, an adult worm described by SS Rao and PA Maplestone was named *Wuchereria Malayi*, but later renamed *Brugia Malayi*.

As regard to control of the disease, a preliminary blood survey of filariasis was carried out in East Pahang in 1953. The led to a shift of research from malaria to filariasis in 1954. This work continued with the establishment of the Kuantan Branch of the IMR in 1960. Based on these studies, a memorandum was submitted to the government in 1961. This resulted in the National Filariasis Programme with the formation of ten teams based in the endemic states. The IMR created the Filariasis Division in 1967 headed by Dr CP Ramachandran. Dr Mak Joon Wah succeeded him and continued to do landmark work. He was the first to successfully culture the larvae outside the animal host and to show the usefulness of the leaf monkey for drug trials.

PRIVATE MEDICAL PRACTICE

There were about 180 doctors in private practice in 1948. Most had continued working through the War despite the great difficult getting medical supplies. However,

it appeared that most doctors were able to purchase supplies. By and large doctors did not suffer as badly as the general population, as their services were always needed. After the war, prospects in private practice were bright again. Despite the withdrawing British presence, a few doctors such as Dr SC McPherson, who was in the British army, chose to stay on in Malaya and a start private practice when he was demobbed from the army. McPherson later became the personal physician to Tun Razak and was one of the few privy to his terminal illness in 1976. Private practice was so attractive that even specialists like Dr Thiruchelvam joined the ranks.

The inability of government services to hold on to such talent like a loss to the country, but this continued to be a feature of medicine in Malaysia right up till the twenty-first century. This brain drain certainly hampered the development of specialist services the hospitals had to offer.

Many doctors in private practice, however, became leaders in society, active in local Sanitary Boards, in service clubs and charity hospitals. By 1953, there were as many doctors in private practice as in government service. As each doctor was independent, there was no supervision nor regulations about what doctors in private practice could or could not do.

MEDICAL EDUCATION

The University of Malaya

In the aftermath of the Japanese surrender, the buildings of the Medical College were returned to the college. On 17th June 1946, 200 of the pre-war students returned. That year, the Asquith Commission recommended that the medical school be made a University College affiliated to London University as a first step towards university status. In 1948, the Carr-Saunders Commission received petitions from the students representatives and Alumni Association that a University of Malaya with full degree granting powers be created immediately. It was a move felt long overdue, especially with intervening war years. On 8th October 1949 the University of Malaya was founded with pomp and ceremony. Raffles College became the arts and the science faculties, while the King Edward VII College became the medical faculty. That year, there were 82 medical and dental students and 80 students for arts and science.

In 1950 the University of Malaya conferred the MBBS(Malaya) degree on the first batch of 14 graduates. The number of students being trained, however, was unrealistically small in comparison to the needs of the country. The BDS(Malaya) was also conferred on 6 graduates. In 1954, it was decided that a new campus in Kuala Lumpur would be opened, under a common university council and senate. The Kuala Lumpur campus was opened in 1957 with 300 students.

Soon after the war, the practice of giving Queen's scholarships for undergraduates to study in Britain stopped. Instead, the Queen's Fellowship for post-graduate studies was introduced. Under the scheme, doctors like B Sheares, TJ Danaraj, S Loudenadin, AA Sandosham, SMA Alhady and AM Ismail obtained their post-graduate qualifications.

In the development of pharmacy, a two year diploma course was initiated in 1950 at the university. There had been a one year Diploma of Pharmacy course at the medical school before from 1935. In 1957, a degree course in Pharmacy was commenced along side the diploma. The School of Pharmacy was established. In 1961, the diploma course was phased out.

Housemanship

In 1953, new legislation was introduced stipulating that graduating doctors had to do one compulsory year of housemanship before they could be registered as doctors. The general hospitals with specialists, namely Penang, Ipoh, Kuala Lumpur, Malacca and Johore Bahru were accredited for such training. It was the defining time when Medicine, Surgery and Obstetrics/Gynaecology were seen as separate specialties. During that year, a doctor had to do 6 months of 2 of the 3 specialties.

PSYCHIATRIC FACILITIES

Major Dr Parson took control of the Central Mental Hospital in 1945. He was assisted by two psychiatrists, Dr RA Macnab and Dr MAX Cocheme, along with Mr HJ Herbert the Chief Male Nurse. Miss Chew was appointed the Matron, the first Malaysian to take the post. From 448 patients in 1946 the number of patients quickly rose to 2,750 in 1950. To relieve congestion, the Tampoi Mental Hospital was re-opened in 1952. Dr Lenox was appointed the Medical Superintendent there. By 1957, there were 1,200 patients in Tampoi.

In 1954 the Mental Health consultant sponsored by the WHO reported that psychiatric nursing and training practices were unsatisfactory in the country's two mental institutions. As a result, a commission was formed to enquire into the situation. It was noted that the number of doctors at Tanjong Rambutan remained the same since 1928. There were only 5. The Medical Superintendent was the only qualified psychiatrist. The Commissioners compared the over-crowded A-wards to cattle sheds in a veterinary station! Patients sat around with absolutely nothing to do, with no hope of improvement because no one had time to treat or examine them. They had no recreation or amusement or any sort and had only low wooden sleeping platforms.

In 1955, the first batch of young Malaysian students were sent to England for specialised training in psychiatric nursing. That year Dr M Subramaniam and Dr Tan Eng Seong were sent on scholarships for further studies in psychiatry (the Diploma in Psychiatric Medicine DPM). Dr Subramanaiam returned first and was

appointed the Senior Consultant. Dr Tan who returned later was posted to the Tampoi Mental Hospital.

In 1956, the Ministry of Health began recruitment of trainees directly for training as Assistant Psychiatric Nurses. In 1968 Psychiatric Nursing was made a compulsory subject within the curriculum for General Nursing. By 1974 over 200 psychiatric nurses and 90 Hospital Assistants had been trained, at Tanjung Rambutan and Tampoi respectively.

THE ORANG ASLI

British policy towards the Orang Asli in the 1930s had been one of minimal contact and minimal public services. Some like HD Noone, a government Anthropologist had described them as simple children of the earth who should be protected from outside influences so that their way of life would not be disrupted by economic pressures and social problems. Others, such as Dr CC Brown, Chief Medical Officer of Pahang in 1938, gave missionaries medical supplies lasting 4-5 months in aid. The authorities however, did not prevent Malay chieftains from regularly extracting tribute from the Orang Asli nor Chinese merchants from selling them things at inflated prices.

Things changed during the Japanese Occupation when the MPAJA was forced to live in the jungles. They established camps where contact with Orang Asli was intensified, using them to serve as porters, guides, intelligence gatherers and food providers. When the MPAJA turned into the MCP during the Emergency, it became strategic policy for the government to disrupt this relationship. At first, it was thought best to remove the Orang Asli from the jungle and resettle them close to civilisation. As a result, hundreds died from the mental and physiological shock. Many just ceased to have the will to live. British policy makers then decided that it would be more effective to send the Orang Asli into the jungle in a series of fortified jungle posts. In 1953 the administration of Orang Asli affairs was made a federal office. In the late 1950s they were even recruited to form an anti-guerrilla fighting force called the *Senoi Praak*.

Medical Services for the Orang Asli

Medical services for the Orang Asli were not organised by the Ministry of Health, but instead, began only in 1954 under the Department of Orang Asli Affairs of the Home Ministry. Two medical officers, Dr M Bolton and Dr Lichtenstein were appointed to the work and they recruited 14 Field Assistants, who were posted to 13 jungle posts to provide basic medical services. The two doctors travelled by helicopter, land vehicles, boats or on foot, visiting these posts regularly. Initially a 12-bed hospital was set up in Kuala Lipis but the need for a bigger hospital became apparent. In 1957, a hospital was set up in Gombak, 20 km from Kuala Lumpur.

By 1957 there were 135 jungle posts, 70 of them manned either by an Orang Asli medical orderly, or a midwife. Each post had two beds for sick patients, a dispensary and a radio transmitter. When the orderly thought a seriously ill patient needed hospitalisation, he consulted the Gombak Hospital, which then sent out either a land vehicle, boat or helicopter. The first success of the medical service was the eradication of yaws by 1956.

The Gombak Hospital had 450 beds. There were 4 wards for tuberculosis, 3 general medical and surgical wards, an acute ward, 3 maternity wards and a paediatric ward. Besides the senior medical officer, there were 4 other medical officers, 2 dentists, 5 nurses. Initially, many of the staff were expatriates, but by 1975 most were Malaysians. The department had 278 medical orderlies, most of whom were Orang Asli scattered among the jungle posts. The medical orderlies underwent a six-month training programme at the Gombak Hospital before they were sent out. Both men and women were trained as orderlies and one third of them were also trained in midwifery. Being Orang Asli themselves they are better accepted when they return to serve in outlying areas and were able to get their own people to accept modern medicine.

Foreign aid played a big part in the building and maintaining of the Orang Asli Medical Service. The British VSO, New Zealand VSA, Canadian CUSO, Japanese OVC, German VS and American Peace Corp and even the US Army contributed.

When the Orang Asli medical services began, yaws, tuberculosis, malaria, leprosy, amoebic dysentery, worm infestations and malnutrition were the main problems. Yaws was eliminated, the rest were controlled by 1975, with malaria and worm infestation being the most resistant. It was found that the Orang Asli who were urban dwellers and those in the deep jungle were comparatively better off than those who lived in the fringes of the jungle. The latter had parasitic disease from contaminated water, and malnutrition. Money earned from tapping rubber was often spent on tobacco, sweets and cakes. Those in the deep jungle were healthier, having a better diet, cleaner water and less worm infestation.

THE ERADICATION OF YAWS

With the lapse of the yaws campaign and the setback of the Second World War, yaws emerged again as a prevalent disease among rural Malays. Dr MacGregor, the Director of Medical Services, remarked that in some parts of the country, particularly in the East Coast, almost every child was affected. Dr Viswanathan was briefly involved. He was then an ophthalmologist and was called upon to attend to the Chief Minister of Terengganu who had an eye problem. When flown there for the visit, he observed to his horror, that yaws was still almost universally prevalent among the rural population. On his return to Kuala Lumpur he brought the matter up with the British Military Authorities.

The introduction of procaine penicillin dramatically changed the prospects of yaws eradication. It made only one injection necessary. Built upon this discovery, between 1954 and 1963 the Malayan Government with the assistance of the WHO and UNICEF carried out the Yaws Elimination Campaign. It started in Kelantan and Terengganu where the prevalence was greatest and subsequently it extended to other endemic states including Pahang, Kedah and Perak.

The campaign consisted of, mass treatment of open cases, latent cases and contacts and a consolidation stage of resurveys and treatment. Initial studies showed that in the districts of Besut in Terengganu and Pasir Putih in Kelantan the most highly affected areas, about 20% of the population had yaws. At the peak, a total of 104,202 cases were treated in 1948. It declined to 43,822 cases in 1953. Resurveys in 1962 and 1963 showed incidence rates had dropped to less than 0.5% in all areas.

Yaws was also prevalent in Sarawak. In 1947, 15,136 cases were diagnosed and treated with arsenical drugs. When penicillin was introduced, a mass campaign to eradicate the disease completely was launched in 1954. The incidence was high especially along the Tinjar River. By 1959 it was reported that yaws was no longer a problem. Yaws was also common in the interior of Sabah and efforts were carried out to eradicate it, following the success of similar campaigns in Malaya and Sarawak.

IODINE-DEFICIENCY GOITRE

Another endemic problem that was identified in Sarawak, mainly as a result of the work of Dr Ivan Polunin, around the post-war years was the high prevalence of goitres due to a lack of iodine in the diet. This occurred mainly among natives in interior areas especially in the Second and Third Division of Sarawak due to the low content of iodine in the water. In 1958 the Sarawak Medical Department installed the first salt iodizing plant in Sibu to treat all salt sent to the interior of the Third Division. Following its success, similar plants were installed in Kuching and Marudi.

LEPROSY – The Dapsone Era

By 1946, the number of patients at the Sungai Buloh Settlement had climbed back to 1,229 and reached 2,401 in 1954. Dapsone, like the sulphonamides, was a chemical that came out of research into aniline dyes. It was first synthesized in 1908, but used only in veterinary medicine. Its use in leprosy began in 1941. It began to be used locally from 1948, and slowly displaced other agents. Before the war, Dr Ryrie had built up a foundation for research. From it, the “Research Unit” was set up in 1950. In the next 30 years, the unit gained a worldwide reputation through its work on many clinical drug trials, immunological investigations and drug resistance.

In this post-war period, it was estimated that, out of a population of 4,877,678, there were about 3,800 leprosy cases in the Semenanjung, in the 1947 census. As before, the ethnic Chinese constituted the majority, making up 75-80% of the total. Males outnumbered females, in a ratio of more than 3:1. These figures, however, do not take into account the large undiagnosed pool. Hence the true prevalence is not known.

Although segregation was no longer compulsory, the authorities still continued to treat most leprosy patients in leprosaria. From new admission figures it is estimated that the number of patients increased to about 6,000 in 1957, of whom 3,357 were in the various leprosaria. Sungai Buloh, the largest leprosarium, had 2,435. The Pulau Jerejak centre continued to be used till 1969, after which it was closed and made a prison centre.

As segregation was more and more discredited, out-patient clinics for leprosy treatment were opened, beginning in Penang in 1955. It was only towards the end of the 1960s that treatment of leprosy was fully integrated into the country's medical and health services.

In Sarawak, a the leper settlement that was 33km from Kuching was getting overcrowded in the post-war period. Plans were made in 1954 to build a new centre in the northern part of the Rajang delta, where the incidence of leprosy seemed to be the highest. However, with the good response seen from dapsone therapy, plans for leprosy moved from containment of the disease, to eradication, with domiciliary treatment. Patients who completed treatment were educated about their condition and rehabilitated. A ceremony akin to college graduation was held where the Governor of Sarawak, shook hands and gave out 'beautiful Leaving Certificates'.

MALARIA

In Peninsular Malaysia, a steady and reassuring decline of malaria was seen after the Japanese occupation. From over 16,000 cases in 1951, it reached a nadir of 6,000 hospital admitted cases of malaria in 1958. However, the story in Sabah and Sarawak was a world apart. It was more chilling in Sabah. Before any organized anti-malarial activity was started in 1956, it was estimated that there were as many as 250,000 cases of malaria in a population of nearly 500,000; that is, half the population was malarious. Following the eradication programme from 1960, the number of cases dropped to about 13,000 in 1970. In Sarawak, following an epidemic of malaria in 1946, a WHO assisted Malaria Control Pilot Project was launched. It started first in the Baram area in 1953 and by 1959 had extended to cover the whole state. From about 40,000 cases annually in the 1950s the number of malaria cases dropped to 1,500 in the 1960s when the Malaria Eradication Project was launched.

TUBERCULOSIS

(Bacillus Calmette-Guérin) BCG innoculation began in Malaysia in 1951. It was well received by the public and slowly increased in momentum. It came at an opportune time. While malaria was in decline tuberculosis was becoming more prevalent. Tuberculosis patients had come to occupy more than 25% of the hospital beds and consumed almost 10% of the total health budget. Furthermore the prevalence of the infection among children was alarmingly high. Case finding studies put the prevalence at 1% to 3% of the population. That meant that there were 70,000 to 210,000 people living with tuberculosis. The number of deaths from tuberculosis had risen from about 700 in the 1920s to become the biggest killer in the country, causing more than 3,500 deaths a year, which was about 5% of all deaths.

About 15,000 new cases of tuberculosis appeared yearly, which meant that for every death five new cases swelled the ranks of the 70,000 to 210,000 already prevalent. It was estimated that, of these only about 40,000 cases were undergoing treatment which had a success rate then of 60%. So large was the pool of infectious cases that one child in every four got infected with tuberculosis before the age of 5 years. By the age of 15 years, three out of four were found to be infected. Fortunately though, not all these developed the disease.

Although tuberculosis was usually a disease of townsfolk, in Malaysia it was found that our rural areas were affected almost as seriously as our towns. The kampong folk in Kedah, Kelantan and other East coast states had a prevalence as high as in the towns. Even the Orang Asli had a prevalence as high. Malays, Chinese, and Indians contracted this disease with equal facility and spread it as readily as they contracted it.

MERDEKA

In January 1956, Tunku Abdul Rahman headed the Merdeka Mission to London. In cordial discussions, agreement was reached for Britain to grant full independence to the Federation of Malaya on 31 August 1957. In March 1956, an independent Commission appointed under Lord Reid set to work out the Constitution for a self-governing country. The Commision published its report in February 1957. It provided for the Head of State, the Yang Di-PertuanAgong to be elected by the Sultans among themselves to serve a five year term. He would be a constitutional monarch under which the Prime Minister would head the executive. At one minute past midnight on the night of August 30th 1957, the Queen's representative handed the Constitutional Instruments to Tunku Abdul Rahman, the first Prime Minister, who then proclaimed 'Merdeka'.

SECTION 3

INDEPENDENT MALAYSIA

From a life shaped by British colonial masters, independence allowed Malaysia's internal politics to shape its own character. Considering its ethnic mix, many would have thought the country would be too politically volatile to not ignite. However, though ethnic riots did flare up in 1969 negative racial sentiments and prejudices had existed beneath the surface, if not openly, for some time. Besides that, Malaysia has been remarkably violence-free and has sustained a fairly impressive steady economic growth.. Malaysia has fulfilled much, if not all of its potential and avoided catastrophic setbacks. Between 1967-1999, Malaysia was one of the few Asian countries able to achieve an annual economic growth of over 7% for more than 25 years. It made tremendous progress in poverty reduction. Subsequently, a large Malay middle class emerged.

Economically, after developing its rubber industry and exploiting its natural resource of tin, discoveries of petroleum offshore on the East of the Semenanjung and off Sarawak and Sabah continued to give the country a bonus. At the same time, agriculture was diversified and manufacturing industries were developed. Alongside this, human capital and service industries grew. Such development not only brought about a better life for the people of Malaysia, it began to attract a new wave of immigration. This time the labour force came from Indonesia, Bangladesh and other countries in the region.

CHAPTER 8 FROM MALAYA TO MALAYSIA

FORMING MALAYSIA

Tunku Abdul Rahman first publicly raised the proposition of a larger federation between Malaya, Singapore and the Borneo territories of Sabah and Sarawak in 1961. The idea however, was immediately denounced by President Sukarno of Indonesia as neo-colonialist. He claimed that Malaya had no right to Sabah and Sarawak. The Philippines also registered an objection on account of its territorial claims over certain parts of Sabah. President Macapagal claimed that the Sulu Sultanate had merely rented and not ceded any territory to the British North Borneo Company. However, in August 1961, Tunku Abdul Rahman and Lee Kuan Yew, Singapore's Chief Minister, agreed that Malaya and Singapore should merge.

Sarawak and Sabah were less ready for the federation. In 1958, the governor of Sarawak had introduced the concept of a federation which composed of North Borneo, Sarawak and Brunei. Soon after, political parties began to form.

Brunei, which had shown little interest in the federation of the Borneo states, caused that plan to fail. Leaders like Jugah, in Sarawak, were also at first, not enthusiastic about Tunku's proposal, and felt the Borneo territories should move closer to each other before entering a bigger federation. Talks in London in November 1961, however, received a positive British response and resulted in an independent enquiry, called the Cobbold Commission, chaired by a former Governor of the Bank of England. It was set up to assess the opinions of the people of Sabah and Sarawak concerning the merger. Jugah eventually supported the federation, after clauses to protect the indigenous customs of the native peoples of Sarawak were included in the new Constitution. In July 1963, representatives from Sarawak and Sabah, including Jugah and Donald Stephens, together with Tunku Abdul Rahman and Lee Kuan Yew, flew to London to sign the Malaysia Agreement.

The name 'Malaysia' was actually already a term in general use, like the 'the East Indies'. It fitted the new country in being wider and more inclusive. However the opposition from Indonesia turned quickly into an armed Confrontation.

SINGAPORE LEAVES

Lee Kuan Yew was keen to join Malaysia because he saw the need for access to the Peninsula's raw materials and markets for Singapore to prosper. Furthermore, he knew Britain would not grant the island independence on its own. Also, in many ways, joining Malaysia was a reunion of sorts, as prior to 1948, Singapore's history, administration and culture had been intricately bound to Malaya.

As events turned out, there was not much time for the Medical Services of the two countries, which had been separated in 1948, to become integrated again and as a result medical services were not greatly disrupted.

The events that led to the separation of Singapore sparked off when Malayan parties fielded candidates in the Singapore elections. After that, the PAP fielded candidates in the Peninsula in the general election of 1964. In 1965, the PAP announced it would form a coalition of 5 opposition parties to be named the Malaysian Solidarity Convention. They openly argued that special privileges for the Malays were not the solution to improving their social and economic condition. Many in UMNO saw this as anti-Malay and that it threatened racial harmony. After meetings with his cabinet, Tunku Abdul Rahman publicly announced the expulsion of Singapore from the federation on 9 August 1965. Following this, PM Lee explained on television, genuinely distressed, that although he was convinced the disagreement was not so serious, he believed that separation was inevitable.

Table 8.1 Population of Malaysia in 1957 (% increase from 1947)

Perlis	90,885	(29)	Selangor	1,012,929	(43)	Pahang	313,058	(25)	Sarawak	744,529	(36)
Kedah	701,964	(27)	Malacca	291,211	(22)	Terengganu	278,269	(23)	Sabah	439,517	(71)
Penang	572,100	(28)	N.Sembilan	364,524	(36)	Kelantan	505,522	(13)	Labuan	14,904	(94)
Perak	1,221,446	(28)	Johore	926,850	(26)						
Total	**2,586,395**			**2,595,514**			**1,096,849**			**1,198,950**	

POPULATION GROWTH

At independence in 1957, the Federation on Malaya had a very high population growth rate. The 11 states had a population of 6,909,009 people and a birth rate of 46.2 per 1,000. Indians continued to have the highest birth rate at 50.5 per thousand, but Malays (48.1) now surpassed the birth rate of Chinese (43.3). The birth rate for 'other races' was the lowest, at 30.5. The death rate continued to decrease, and was 12.4 per 1,000; down 23% from 1948. In approximate terms, there were about 100,000 deaths a year during the Japanese Occupation. The number of deaths per year dropped to below 80,000 in 1957. This resulted in a phenomenal population growth rate of 3.4%. Deaths in estates were now well under control. In fact, estates had a much lower death rate (2.8 per 1,000) compared to the general population.

In 1957, malaria only accounted for 85 deaths. Fevers of unknown origin still claimed 27,175 lives. Pneumonias accounted for 2,287 deaths, and tuberculosis accounted for 1,257. Plague, cholera and smallpox were absent.

Table 8.2 Leading Causes of Death in Malaysia

1948	(%)	1957	(%)
Ill Defined Causes	28,861 (36)	Fever of Unknown Origin	27,175 (29)
Old Age	10,946 (14)	Infantile Convulsions	8,131 (10)
Fever of Unknown Origin	9,943 (12)	Prematurity	2,426 (3.1)
Neurological Diseases	3,735 (4.6)	Pneumonia	2,287 (2.9)
Tuberculosis	3,515 (4.3)	Violence	2,024 (2.6)
Violence	2,204 (2.7)	Diarrhoea	1,948 (2.5)
Prematurity	1,973 (2.4)	Tuberculosis	1,257 (1.6)
Diarrhoea	1,856 (2.3)		
Pneumonia	1,738 (2.1)		
Malaria	1,301 (1.6)		
TOTAL	81,172		78,116

MATERNAL AND CHILD HEALTH

In 1957, maternal mortality stood at 2.4 per 1,000 live births (down from 5.8 in 1948). Infant mortality stood at 75 per 1,000 live births (down from 89 in 1948). Infant deaths however, remained high. 28% of those who died that year died as infants. As a proportion of total deaths, infant deaths increased compared to 1948. Among the 21,885 infant deaths, causes peculiar to infancy; immaturity and convulsions accounted for 2,426 (11%) and 8,131 (37%) deaths, respectively. Although differences by region were obvious (being higher in the less developed East Coast states) it was the overall differences in races that drew more attention. Infant mortality was twice as high among Malays (96) compared to the Chinese (47) with the Indians (76) falling in between. Other races (34) fared best.

Fig 8.1 A Group Of *Bidan Kampung*, Traditional Birth Attendents with their Delivery Kits Attending Monthly Supervision Class.

Maternal and Child Health centres continued to be expanded and attendance increased. Attendance at clinics increased 3.8 fold to 1,461,844 compared to that in 1948. The number of home visits more than doubled to 528,712 in 1957, compared to 1948. The number of nurses and midwives trained increased and met the targets set.

Concerned about the high birth rate in the country, the government accepted the need for voluntary family planning. Voluntary organisations like the Selangor Family Planning Association had been formed in 1953 by Dr AE Duraisamy, a general practitioner, and other civic conscious friends. It was a trend that was followed in other states. This lobby eventually influenced the government to adopt a national family planning programme. In 1966 the government established the National Family Planning Board under Dr Ariffin Marzuki to both provide education and birth control facilities throughout the country in a more aggressive manner as part of health care in all government Health Centres.

HEALTH PRIORITIES

Health expenditure took up 8% of the national budget and amounted to 2% of the Gross Domestic Product(GDP) in 1961. However, over the decade the allocation decreased a little. In percentage terms, it amounted to 5.6% of the government budget and 1.5% of the GDP in 1970. The First Malaysia 5-Year Plan (there had been 2 previous 5-Year Plans called 'Malaya' instead of 'Malaysia') from 1966-1970 allocated RM150.4 million to health and medical services. This amounted to 4% of the total expenditure for the 5-Year Plan.

The comparatively poorer health indicators among rural Malays set the priority for the Health Ministry in its planning. The network of District Hospitals covered most parts of the country geographically, even if the facilities in many of these small hospitals were rudimentary. They would grow and develop in time. The need was to get to the more remote areas. The plan was to set up Rural Health Units, serving a population of 50,000 each. A Rural Health Unit comprised of one Main Health Centre with four Health Sub-Centres and 25 Midwives Clinics cum quarters. There would be one midwife for every 2,000 of the population. The target was to reach the 5,000,000 rural population. That meant 100 Rural Health Units. By 1962, 30% of the targeted clinics had been built.

THE NATIONAL TUBERCULOSIS CONTROL PROGRAMME

With Merdeka, came a sense of urgency for tuberculosis control. It was a political issue included in the Alliance Party election manifesto. The post for a Senior Tuberculosis Specialist was created, to which DR JS Sodhy was appointed. WHO advice was sought. Dr HW Wunderly was the chief WHO consultant on tuberculosis.

In 1961, the National Tuberculosis Control Campaign was launched. In the same year, the Lady Templer National Tuberculosis Centre in Cheras, Kuala Lumpur was opened.

The campaign consisted of a three-pronged attack. First, there was a training program to equip the health services with the technical personnel, such as chest specialists, nurses, mass X-ray operators, and laboratory technicians. Second, was a BCG vaccination drive aiming to protect at least 75% of the population below 20 years was launched. Random surveys of youths under 20 years showed that coverage with BCG rose from 66% in 1970 to 82% in 1976. After this tuberculin testing was abolished, and direct BCG vaccination became the practice. Finally, there was a case-finding campaign, including the use of miniature chest X-rays (MMR) with a target of detecting at least two-thirds of the infectious sources and rendering at least 95% of them non-infectious with adequate treatment.

The results from the mobile MMR deployed throughout the country were disappointing. They detected fewer than the static units in the larger hospital, accounting for only 13% of the total of radiological cases detected, despite actively registering 14,000 individual in the mass radiological screening campaign a year. From 1969 the case-finding programme was only based on sputum examination of symptomatic patients. The mobile MMR units were phased out.

The programme indirectly spearheaded the advance of specialist surgery, namely cardiothoracic surgery. Dr AL Shield already ran a thoracic surgery unit in Malacca Hospital in 1947. This was replaced in 1955 by the Lady Templer Hospital in Cheras exclusively for the surgical treatment of pulmonary tuberculosis. The unit was set up with assistance from the Australian government, which initially even provided nursing staff. Dr HM McGladdery performed nearly 3,000 major chest operations during his tenure there between 1958 and 1969.

In Sarawak, a similar but separate Tuberculosis Control Project was started in 1961. In Sabah, the tuberculosis control programme began in 1960. These programmes were later integrated into the National Tuberculosis Control Programme in 1969 and 1979 respectively. Though tuberculosis was a very serious health problem in East Malaysia it did not reached the proportions it did on the peninsula. In Sabah, for example, in the early 1960s the picked up incidence was about 2.5 per thousand population or 1,300 cases a year.

After one decade, in 1970, the number of tuberculosis deaths had dropped to 1,069 or 12 per 100,000. The prevalence rate was estimated at 0.3% or 300 per 100,000.

MEDICAL FACILITIES AND SERVICES FOR ALL

Prior to 31st Aug 1957, the Medical and Health Services were the responsibilities of the various state governments. By virtue of the new Constitution introduced at Merdeka, Medical and Health Services became a Federal Service. However, municipalities, or town councils, retained financially independent staff and health programmes, in addition to the Ministry of Health. At independence, the Federal government service had an establishment of 473 medical posts (not including dentists, pharmacists and nurses) of which 85% were filled. 107 were superscale posts, 314 were timescale medical officers, 50 were for house doctors and 2 for research fellows. There were superscale specialist posts for 9 physicians and 3 more tuberculosis specialists, 13 surgeons, 8 radiologists, 7 ophthalmologists, 2 specialists each for the psychiatric and leper establishments, 3 pathologists, 7 research officers and 14 other specialists in Federal Institutions.

Concerned about the shortage of doctors, the Federal Government agreed to recruit 100 doctors from India on contract for three years. Officers went to India in 1957 and selected 87 doctors of which the Medical Council approved 82 for registration. They arrived the next year. This practice of employing doctors on contract from India continued through the years, as the shortage was present perennially. Some of these doctors, though not many, became permanent residents in Malaysia. Universities too, from time to time, employed lecturers this way.

Although the British Administration may not have at the very beginning, planned to build hospitals with the intention of providing the whole population with medical service, over time it turned out to be so. At Merdeka, there was a fairly wide network of government hospital throughout the country. There were 69 General and District Hospitals, an increase of 7 from 1948. Together they had a bed strength of 12,720. There were very few hospitals in private hands. Bed occupancy was high, with the average number of in patients being 10,592 (83%). The hospital utilisation rate was significantly different among the various races. 83,562 (31%) patients admitted were Indians, 121,001 (45%) were Chinese, 60,806 (22%) were Malays and 6,121 (2.2%) other races. This gave a rate of admission of 120 per 1,000 for Indians, 52 for Chinese, 50 for other races and 19 only for Malays. Malays, however, did not lag too far behind in terms of number seen as outpatients. Out of 3,667,822 outpatients, 1,526,603 (42%) were Malays, 1,399,742 (38%) were Chinese, 589,668 (16%) were Indians and 151,809 (4%) were others races.

The workload of the hospitals increased dramatically. Although the number of inpatients increased only 32% from 1948, the number of surgical operations went up by 270% in the same period. The number of outpatients seen, increased by 185%. The number of Xray examination also increased by 600%.

In addition to the acute beds in the General Hospitals and Districts Hospital, the 5 leper institutions had 3,417 beds and the 2 Mental Hospital had a further 4,200

beds. Plans were made to expand the Kuala Lumpur Hospital which had become the busiest in the country, and to build a new 500-600 bed hospital in Petaling Jaya to be used in conjunction with the Faculty of Medicine of the University of Malaya.

Sarawak

In Sarawak, the Lau King Hau Hospital in Sibu expanded further to 280 beds in 1962 and had radiology and operating theatre facilities, making as well equipped as the hospital in Kuching. The Sarawak Hospital in Kuching also expanded to 500 beds in 1963. In addition there was a 100 bed Mental Hospital, Hospital Sentosa, in Kuching. Meanwhile, the Methodist Mission opened a 40 bed hospital in Kapit in 1960. Originally staffed by the Mission, its drugs and dressings were supplied by the government medical stores free of charge. Eventually, the government took over the hospital. In Simanggang, where a medical officer had been stationed since 1949, a 100 bed hospital was opened in 1958. In Limbang, the dispensary was converted into a hospital in 1961. In 1962, the Sarikei opened and helped reduce the congestion in Sibu. At independence through Malaysia in 1963, Sarawak had a complement of 63 doctors, 32 were in government service, 21 were private general practitioners, 6 were employed by Sarawak Shell and there were 3 missionary and 1 Peace Corp doctor.

Sabah

Sabah had two general hospitals in Kota Kinabalu (Jesselton) and Sandakan in 1963. It had 7 other 'cottage' hospitals in Tawau, Lahad Datu, Kudat, Beaufort, Tenom, Keningau and Labuan, 128 health clinics, 32 static dispensaries and 4 mobile dispensaries. In addition, it had the Buli Sim Sim mental hospital in Sandakan. In 1971, the Bukit Padang Mental Hospital, Hospital Mesra, was opened to provide psychiatric services for the whole state. There were only 36 doctors in the state before independence and 2 dental surgeons, but the number of doctors increased to 51 by the end of 1964, giving a doctor to population ratio of less than 1:10,000.

MEDICAL PERSONNEL

In January 1957, Malaya had 827 medical practitioners registered with the Medical Council, just 78 more than there were in both Malaya and Singapore in 1948. During that year, 75 more were added, but 52 were removed, giving a total of 857 on the register at the end of the year. That worked out to a doctor to population ratio of 1:7,326. There were 401 doctors in government service while 456 were in private practice. 272 doctors were Indians of which 60% were in government service. There were 259 Chinese of whom only 23% were in government service. There were 42 Malays and 33 Eurasians (69% and 42% in government service respectively). Of the 251 Europeans, 56% were in government service. In addition, there were 38 medical graduates provisionally registered.

With such a small number of doctors, the fraternity was quite closely knit and every doctor more or less knew or at least knew of most of their other colleagues. Many in government service aspired to be specialists. There were scholarship programmes for post-graduate training which led to qualification from the various specialty colleges in the United Kingdom, and those interested waited their turn. At first, there were only specialists in the largest 5 or so hospitals.

Over the 1960s, the number of specialists grew rapidly. Soon, arrangements were made for training in Malaysia to be recognised towards qualification for examinations of the various Royal Colleges in the United Kingdom. The setting up of universities further accelerated the training of specialists. In the 1970s, medical officers in the universities were recruited under the Academic Staff Training Scheme and were sent overseas, on scholarship, for their entire training and certification.

Physicians

The early expatriate physicians were Dr RA Pallister followed by Dr HA Reid in Penang. Dr Reid gained a reputation for his work on snake bites and he developed a snake anti-serum in collaboration with the Commonwealth Serum Laboratories. Dr EA Hardy and Dr PG Griffiths served in Kuala Lumpur. In Malacca, there were Dr KS Alstead and Dr JM Taylor, succeeded by Dr PL de V Hart. Dr F Lunking was in Seremban. Dr C Sinnadurai served in Alor Star. Dr Haji Megat Khas was an early post-war Malaysian physician in Perak.

Dr Megat Khas bin Megat Omar (1908-?)

Megat Khas was the first Malay doctor in Malaya to become a physician. He was born in the Istana Talang, Kuala Kangar, a direct descendant of Megat Terawis, the first Bendahara of Perak. He graduated from the King Edward VII college in Medicine in 1932 and was appointed the Assistant Medical Officer to Larut that year. In 1940, he was awarded the Queen's Scholarship to study Child Health at the Institue of Child Health in London in 1940. On his return with the MRCP, he was posted to the Ipoh Hospital in 1951. That year, he was also elected president of the Alumni Association. He retired as State Physician in 1957.

From 1959 locals with MRCP qualifications began to fill the posts. Dr Lim Kee Jin qualified that year and was posted to Johore Baru. Dr Lee Chin Thuan was posted to Ipoh and Dr RP Pillay to Taiping. Physicians were then posted for the first time to other hospitals. Dr T Devaraj was sent to Kuantan and Dr JS Eapen to Kota Bharu in 1960. The other early local physicians were Dr V Thuraisingam in Penang, Dr Khoo Boon Kheng in Alor Star, Dr SR Christopher in Seremban, Dr KK Pillay in Malacca, Dr SS Gill and Dr Cheong Pak Soon in Kuala Lumpur.

In Sarawak, Dr Sim Swee Liang was the first to qualify as a physician, obtaining the Memebership of the Royal Australasian College of Physicians(MRACP) . However, he had to wait in line to be appointed physician, as Dr MB Watts, an

expatriate held the post. In Sabah, Dr Alex Lo was the first physician to qualify, followed by Dr Khoo Kay Keng.

Paediatricians

Dr Gopal Haridas developed paediatrics in Singapore from the adult medical wards. However, paediatric work in Malaysia developed in close relationship with the Maternal and Child Health Services. Dr Cicely Williams arrived to work in Kota Bharu in 1936 and practiced paediatrics from the community perspective. Progress was disrupted during the Japanese occupation, but Dr Williams returned as a WHO consultant to continue child health work, as well as establish training for nurses based in Penang before leaving for Africa. Her successor was Dr Elaine Field. She came in 1949 and promoted breast feeding, health education, and helped establish the Federal School for the Deaf. Dr Field also set up the premature baby isolation unit in Penang Hospital.

Dr Abdul Wahab Mohd Ariff, one of the doctors who worked under Field, later became the Director of Planning and Development at the Ministry of Health. He saw to it that hospitals built in the 1970s were equipped with children's wards and Isolation Units along the principles set up by Dr Field in Penang in 1955.

Dr Harbans Virik who obtained her MRCP in Paediatrics in 1958, became head of paediatrics in 1960. She was also greatly influenced by Field, saying she learned from her "the importance of preventive paediatrics as the basis of Paediatrics". Virik took the step to allow mothers to accompany their sick babies in the wards. Dr T Pathmanathan, another pioneer, strove to establish links between the hospital and public health community programmes as well as those for rehabilitating the handicapped and mentally disabled child. Dr Gwen Smith, Lecturer in Paediatric in the University of Malaya in Singapore started paediatric work in Assunta Hospital, Petaling Jaya in 1959. She helped form the Spastic Children's Association of Selangor in 1960 and the Selangor Association for Retarded Children in 1974.

Dr Cicely Delphine Williams (1893-1992)

Dr Cicely D. Williams is sometimes listed among the most influential physicians in history. She was born of English parents in Jamaica. She was the first Jamaican born woman, and one of the first women to earn a medical degree; graduating from Oxford University in 1923. Williams trained further at the London School of Hygiene and Tropical Medicine, completing her course in 1929. She then joined the Colonial Medical Service and was posted to the Gold Coast (Ghana). There, she correctly diagnosed protein deficiency as the cause of a common illness in young children and introduced the name "kwashiorkor" (or "displaced child" in the Ga language) into the medical community in an article in *The Lancet* in 1935.

Her claims were not well receive by her colleagues and superiors who thought that kwashiorkor was pellagra. Her desire to combine preventive medicine with her work led to clashes that resulted in her transfer 'in disgrace' to Malaya. In Malaya, where the infant mortality rate was very high, Cicely Williams emphasize nutrition, education,

and the prevention of childhood diseases. She worked in Kelantan and Terengganu, running and building primary health care centres. She was incensed to learn that companies were employing women dressed as nurses to go from house to houseconvincing new mothers to feed their newborn with sweetened condensed milk in preference to their own milk.

When the Japanese invaded in 1941 she was interned at Changi, and when the war was declared over in 1945, she was in hospital near death. In 1948, Williams was made head of the new Maternal and Child Health (MCH) division of the World Health Organisation, and came back to Malaya to head all maternal and child welfare services in South-East Asia. In 1950 she left Malaya to oversee the commission of an international survey into kwashiorkor across 10 nations in sub-Saharan Africa.

From 1953–1955 Cicely Williams was a senior lecturer in Nutrition at the London School of Hygiene and Tropical Medicine. In 1960 she became Professor of Maternal and Child Services at the American University of Beirut. In her time there she worked with the United Nations Relief and Works Agency UNRWA) with the Palestinian refugees in the Gaza Strip.

Dr Williams officially retired at the age of 71 but continued actively travelling and speaking into her early 90's. She was awarded an honorary Doctorate of Science from the University of Ghana in 1986. She was a vocal proponent of breastfeeding and campaigned against misinformation from multinational corporations that marketed substitutes. She is also celebrated for having developed integrated and curative health services for children and mothers. Her biography has been published more than once in *Retired, Except on Demand: The Life of Dr Cicely Williams*, by Sally Craddock in 1983and *Primary Health Care Pioneer: The Selected Works of Dr Cicely D. Williams* in 1986 by Naomi Baumslag.

Surgeons

Of the pre-war expatriate surgeons, only Dr SJ Campbell and Dr CP Allen return to service after the Japanese Occupation. Dr Thiruchelvam had his qualification recognised eventually. Dr CV Jumeaux obtained his FRCS in 1949 and returned to serve in Kuala Lumpur. He became head of the department when Allen retired in 1955. Registrar posts were created in 1955 in the larger general hospitals and meant for young doctors training for high qualification. In practice, medical officers not in these posts also prepared themselves for their higher examination, not only in surgery but in all other specialty fields. The Royal Australian College of Surgeons began to conduct the Primary Examinations for the Fellowship in Surgery in Singapore in 1957. This made it easier for medical officers. They were able to go overseas only for the Final Fellowship examination. The Royal Colleges of England, Edinburgh, Ireland and Australia periodically assessed the Registrar posts of the general hospitals and found them suitable for training. Such accreditation made medical officers eligible to sit for the Final Fellowship examinations.

The next batch of surgeons included Dr SMA Alhady who obtained his Fellowship in 1955 and was posted to Penang. Dr TA Paraman headed the second surgical unit in Kuala Lumpur, Dr KA Menon served first in Ipoh. Dr Peter

Vanniasingam also served a short time in Ipoh before serving many years in Penang. Dr M Balasegaram was the first surgeon to be posted to Kota Bharu in 1960 but was quickly transferred to Seremban in 1961. Observing a high incidence of liver trauma, he undertook research liver surgery, including experimental animal work and designing his own liver clamps. For his work he was awarded the Hunterian Professorship of the Royal College of Surgeons of England in 1969. The next year he received the Jacksonian Prize and the Chienne Memorial Lecture award from the Edinburgh College. He delivered the Abraham Colles Lecture in the Irish College in 1974.

The first surgeon posted to Sarawak was Dr MBR Roberts (Sr) in 1955. His son Dr MBR Roberts Jr was later the first paediatrician in Sarawak. Dr CJ Cumming Smith began a long and illustrious surgical career in Sarawak in 1958. Another distinguished surgeon was Sir James Fraser who was posted to Sibu. He later became the President of the Royal College of Surgeons of Edinburgh and during his tenure as President in the early 1980s the Sarawak General Hospital achieved recognition as a centre for training in General Surgery for the Edinburgh Fellowship. Dr Wong Soon Kai, was the first local surgeon and he practiced in Sibu his home town setting up his own private nursing home in 1970. In 1974 he became a Minister in the state cabinet and though he gave up full time practice, it did not stop people from consulting him for a second opinion.

Dr Khushru Metha was the first surgeon to serve in Sabah. When he arrived in 1951, there was practically no facilities, no operation theatre and no equipment, just a temporary building in Karamunsing. He is remembered donating his own blood to his patients. He was able to move to the new premises of the Queen Elizabeth Hospital(QEH) in 1957 and retired in 1967 after breaking his wrist in a fall. The second surgeon in Sabah was Dr John Michael Donovan Crook. He served in Tawau from 1965 then moved to QEH in 1967 and stayed till 1983.

Orthopaedic Surgeons

Up till the Second World War, orthopaedic surgery was the province of general surgeons. In 1949, Dr JAP Cameron who had obtained a Masters in Orthopaedics from the University of Liverpool in 1938 was posted to the Kuala Lumpur Hospital. He established the tradition of Malaysians training in Liverpool for the MChOrth. He also founded Orthopaedic Surgery as a separate department in the major hospitals. The first local doctor to tread that path was Dr Abdul Majid Ismail. He obtained his Fellowship from Edinburgh after a stint there from 1953 to 1955 after which he returned to Seremban Hospital as a general surgeon. In 1957 he went to Liverpool and obtained his MChOrth. When Dr D Gunn who was Head of Orthopaedics left in 1958 to take up the Chair of Orthopaedics in Singapore, Dr AM Ismail filled this position.

Dr Pretam Singh who obtained his FRCS and MChOrth in 1964 worked with Dr AM Ismail for three years before setting up the Orthopaedic Department in Ipoh in 1967. Dr Mahmood Merican who obtained similar degrees in 1963 took over from Dr AM Ismail when the latter was appointed Director of Planning and Research in the Ministry of Health in 1969, two years before he became the Director-General of Health. Dr Ratnasingam started the Orthopaedic Department in Malacca in 1966 and Dr Khaw Joo Hwa and Dr David Sam Willie started the services in Johore Bahru and Penang respectively, in 1968.

Dr Abdul Majid bin Ismail (1921-2013)

AM Ismail or "Coco" Majid, as he was affectionately known by his friends, was born into poverty in Kampung Bahru, Kuala Lumpur and raised there at first, by his maternal grandparents. When he was old enough for school, he joined his parents in Sentul, where his father was a machinist at the Central Railways workshop. He attended the Segambut Malay School. In 1932 he started his English education at the Maxwell English School and then continued his education at the newly built Batu Road School in 1934. In 1936 he was given a place in the Malay Boy's Hostel and enrolled in the prestigious Victoria Institution. He was the top Malay student in the Senior Cambridge Examination in the school in 1939. He said that he was then called to the British Resident's Office in Kuala Lumpur and met with the secretary Raja Tun Uda, He was told he should study medicine in Singapore and the Selangor State Government would give him a scholarship. Thus "The oracle hath spoken" he said, and his future was decided.

It was when ragging was going on in 1940, that he got the name 'Coco'. The movie 'Jungle Princess' starring Dorothy Lamour was playing at the local cinema, and one bright spark named Omar Din thought up of re-enacting the film. A fellow freshie named Sarathee, who later died in the Japanese bombing of the campus, dressed up as the Hollywood star with a sarong around her chest and a scarf, and Abdul Majid was her pet chimpanzee. Such a nickname may sound rather degrading but it is a testimony to the mutual respect yet, jovial camaraderie that this generation of doctors shared. Tan Sri Dr Abdul Majid happily carried this tag all his life. Perhaps it was the tragic war that followed soon after, that had something to do with it; shaping their outlook to life. His studies were disrupted in 1942 but he resumed his studies in 1946 and graduated in 1950.

He returned to the Kuala Lumpur Hospital to do his housemanship, and in 1953 was awarded the Queen's Scholarship to pursue his Fellowship of the Royal College of Surgeons Edinburgh. When he returned, he was made State Surgeon in Negeri Sembilan. The following year he went to Liverpool to study for the Master's in orthopaedic surgery. Upon his return, he became the first local consultant orthopaedic surgeon for the Federation of Malaya. In 1969, he was appointment the Director of Planning and Research in the Ministry of Health and in 1971 he was made the Director- General. During his tenure as Director-General, he oversaw the building of over 1,000 midwifery clinics, 26 main health centres and about 100 sub-health centres. The polio vaccine and BCG vaccine for tuberculosis were introduced, and malaria control brought the number of cases down from 300,000 to only about 3,000.

In his respected position, he was able to facilitate the further training of many junior colleagues. He was also pivotal in founding the College of Surgeon in Malaysia

in 1972 and became its first president. In recognition, the college set up the AM Ismail oration 1974, which is delivered annually at its scientific meeting. He helped move for the various Royal Colleges to conduct their examinations in Malaysia and the anaesthetists made him an Honorary Member of their society for his contributions. For all his services nationally, he was awarded the title Tan Sri. In retirement, he recorded his memories in a book he entitled "An old man remembers".

Obstetricians

Dr Derek Llewellyn-Jones obtained his MRCOG in 1956 (in addition to the MMSA and MAO he already had) and was appointed the chief obstetrician in Kuala Lumpur. Based on his pioneering work and meticulous annual departmental reports, the Royal College recognised the unit as being adequate for six months of training out of the mandatory two years required by the College. Candidates then had to complete 18 more months in recognised hospitals in the United Kingdom to be eligible for the MRCOG examination. His was the first unit to be granted this recognition in Malaysia and Singapore. Llewellyn-Jones also ventured into popular medical publishing writing a book entitled 'Everywoman'. Its success led him to also write 'Everyman', Everyboy' and 'Everygirl'. However, his biggest success was 'Everywoman', which was translated into Malay as 'Rahsia Wanita'. In 1963 the Kuala Lumpur Maternity Hospital was opened, on the grounds next to the main hospital with two units, headed by Dr Llewellyn-Jones and by Dr S Lourdenaden.

Around this time two ladies, Indian nationals serving in Malaysia, Dr Sri Devi Biswas and Dr Bimla Mehra obtained their MRCOG in 1959. Next in line were Dr Ariffin Ngah Marzuki and Dr Thomas Ng Khoon Fong in 1960, followed by Dr A Tharmaratnam in 1961 and Dr S Lourdenaden, Dr Yeoh Oon Hock and Dr AV Shenoy in 1962. In 1963, Dr Sundraletchumy Maheswaran the became the first Malaysian woman to gain the MRCOG. Dr S Dharmalingam, Dr John Loh Kim Yew and Dr RS McCoy also qualified that year. Dr Chong Chun Hian was the first Sarawakian to obtain an MRCOG in 1961. By 1970 there were over 20 more added to the fraternity.

Dr Jayaratnam was the first Obstetrician to be posted to Sabah, sent there during the colonial era. After the Federal Ministry of Health took charge, Dr N Kanalingam was seconded there in 1972. Dr Jagjit Singh Sambi was the first Obstetrician to be seconded to Sarawak in 1968. During his time, the O&G department in the Kuching hospital was recognised as a centre for post-graduate training by the Royal College of Obstetricians. Another MRCOG, Dr Chong Chun Hian was groomed to be the Director of Medical Services in Sarawak.

Ophthalmologists

Dr A Viswalingam trained in ophthalmology on his Sabbatical in 1922 and on his return the next year set up the government ophthalmologic services at the Tanglin Hospital. Besides him in the pre-war era, Dr NK Sharma (Johor Bahru), Dr

MR Bhandari (Alor Star), Dr Tara Singh (Taiping), Dr GS Vengkatesan (Ipoh) and Dr S Ramamirtham (Malacca) were known to practice ophthalmology, but there were no specialty degrees then. After 1945, a number of expatriate doctors with the Diploma in Ophthalmology (DO), such as Dr HJ McPherson (Kuala Lumpur), Dr PI Franks (Johor Bahru) and Dr BM McOwan (Seremban) established Ophthalmology Departments in the large general hospitals. Dr PJ Kuruvilla was the first ophthalmologist who opened a private practice in Batu Road, Kuala Lumpur.

Dr Keshmahinder Singh holds the distinction of being the first Malaysian to hold the Fellowship of the Royal College of Surgeons for Ophthalmology (FRCSOphth). He qualified in 1957 and played a leading role in developing the speciality. By 1967 he was joined by five more, namely Dr Hooi Man Lin, Dr Vincent Ooi, Dr Lim Huck Boon, Dr S Selvarajah and Dr S Chandran. However, many continued to pursue the DO, such as Dr Mohd Noor Marahakim, the first bumiputra and founder of the UKM Ophthalmology Department and Dr Gita Bhandari, the first lady ophthalmologist.

Dr Richard Dingley was the first Ophthalmologist in Sarawak, working there in the late 1960s. He regularly did clinics up the Rajang River, often on horse back.

Otorhinolaryngologists (ENT)

Another group of surgeons who had their own specialty qualification were the otorhinolaryngolists or ear, nose and throat (ENT) surgeons. The first in Malaysia was Dr Lam KL. He returned from Singapore in 1958 and set up the ENT unit in Kuala Lumpur. Next was Dr Harnam Singh who was sent on a scholarship in 1963 and returned from the UK in 1965 to serve first in Johore Bahru. Dr Lam left for private practice and Dr Harnam was posted to KL in 1967. He too resigned for private practice in 1970 but by then ENT surgery in government hospitals was already established. At the University Hospital, foreign ENT specialists, notably Dr Umapathi Prasad was recruited.

Anaesthetists

In the first half of the twentieth century, the anaesthetist at an operation was usually the assistant of the surgeon. It was not uncommon even for the surgeon himself to induce anaesthesia first and then perform the operation while a hospital dresser maintained the anaesthetic. In this way many dressers or medical assistants continued to perform this service in rural hospitals, especially in Sarawak, for many years to come. The earliest medical officers who practiced mainly in anaesthesia were Dr DAB Hopkins, Dr E Morrion, Dr EG Hudson, Dr JG Lomaz and Dr BEG D'Bras. Dr JF Nunn who came to Penang in 1949 as medical officer had a great interest in anaesthesia and he developed the Nunn bag which came to be widely used in anaesthesia here. He returned to England to become a professor in anaesthesia and author of a well known textbook on anaesthesia (together with Cecil Gray) as well

as an authority on ancient Egyptian medicine. The pioneer local doctors were Dr Fred Pais and Dr PT Arasu. Dr Pais however, had an unfortunate incident with the surgeon Dr CP Allen and was transferred to Kuala Lipis with 24 hours' notice. He resigned and moved to Singapore. Dr Arasu was offered a scholarship, but only to do the Diploma in Anaesthesia and the Part 1 of the Fellowship. He refused the offer and went into private practice. Dr Frank R Bhupalan was subsequently given the scholarship.

Dr JG Lomaz who practiced anaesthesia in Kuching from 1949 applied to train in Liverpool in 1952 and obtained his Fellowship of the Faculty of Anaesthetists of the Royal College of Surgeons of England (FFARCS) in 1953. He was the first with such a qualification and served in Kuching, in Johore Bahru and Kuala Lumpur before emigrating to Australia to be the Director of Anaesthesia at the Royal Alexandra Hospital for Children in Sydney. Dr Bhupalan who was sent to Liverpool also in 1956 distinguished himself by winning the Nuffield Prize in the Part 1 examination. Later on, other Malaysian doctors continued to be sent to the unit headed by Professor Cecil Gray and so another "Liverpool Connection" developed. Other pioneers that followed were Dr Law Gim Teik, Dr T Sachitanandan and Dr Goh Kay Wah.

Radiologists

Dr Harold Mowar was appointed the first radiologist in Kuala Lumpur in 1920. He died in 1923 and Dr CF Constant was appointed the following year. Dr Constant served till 1935. After the War, Dr William Young, who was among the doctors interned in Changi prison during Japanese occupation, became radiologist in Kuala Lumpur. In those days visiting radiologists from Singapore helped run the service. Dr Young was responsible for the training of the first batch of local radiologists. Among those sent for training in the United Kingdom was Dr Omar Din, Dr Chin Let Kong, Dr Jaafar Abdullah, Dr K Kulaveerasingam, Dr Hussein Ghani, Dr Mukherjee Ismail, Dr Ismail Saad, Dr R Balasundram and Dr Raja Abdullah bin Raja Badiuzaman. By around 1960, radiology was available in every state capital.

Oncologists

The earliest x-ray machines for radiotherapy were available in Singapore as far back as 1914, a Crookes tube. Radium sources were also later used in gynaecological malignancies and skin lesions. In the 1950s an external beam Philips 50kV machine and two Muller (200kV and 250kV) machines were installed in the Kuala Lumpur Hospital, in a wooden building between the Maternity Hospital and Neurosurgical Unit. Dr Gerald Lynch, an Irish radiotherapist and Dr Kunden Lall shuttled between Singapore and Kuala Lumpur to provide their services. In 1960 Dr SK Dharmalingam returned after training at the Middlesex Hospital and was appointed the first Malaysian Consultant Radiotherapist. In addition, there were a few expatriate staff, from countries as diverse as Korea, Pakistan and Britain, serving in the department in those early days. Nuclear medicine started in 1962 after the first technician Anthony Ng completed his training in Melbourne.

In 1967 construction began for a RM3,000,000 Institute of Radiotherapy, Oncology and Nuclear Medicine within the premises of the Kuala Lumpur General Hospital. It was completed in November 1968 and housed 180 beds. It had its own operating theatre for brachytherapy, a special laboratory, a pharmacy and an outpatient department.

Psychiatrists

The health services already had specialists in charge of the psychiatric hospitals from before the war. The need was great, in view of the massive social problem mentally ill patients posed. They were always a very small band and tended to be outside the main stream of other doctors in hospitals. They had lots of patients. By 1957 there were 3,900 inpatients in the Central Mental Hospital which had a bed capacity of 3,000. (The highest population was reached in 1969, when there were 4,922 patients). More patients were discharged and the first out-patient clinic was opened in Ipoh in 1958. A psychiatric unit with in-patient and out patient services started in Penang in 1959.

This was the age when the very profound effect of pharmaceutical developments in psychiatry became apparent. As it had happened in Britain, the introduction of the phenothiazine group of major tranquillizers enabled psychotic patients who previously had to be restrained or incarcerated to be sedated and calmed until many could be managed outside institutions. Psychiatrists too could then take their practice to general hospitals.

Besides Dr M Subramaniam and Dr Tan Eng Siong, Dr M Mahadevan joined the early band of Malaysian psychiatrists. A number of the psychiatrists and orderlies came from India under contract employment. In 1971, with the intention to give the psychiatric hospitals a new image, the Tanjung Rambutan hospital was renamed Hospital Bahagia and the Tampoi Hospital named Hospital Permai.

In Sabah, the small Buli Sim Sim mental hospital was replaced by the Bukit Padang Mental Hospital in 1971 with a complement of 302 beds.

Mahadevan Mahalingam (1925-)

Mahadevan grew up in Kuala Lumpur and was educated at the St. John's Institution. He admits to not being an exemplary student and being made to write "make me a doctor" a hundred times as punishment. His medical studies, unusual and unlike most, began during the Japanese occupation at the medical school the Japanese set up in 1944 known as "Malacca Ika-Dai-Gako". His studies were disrupted when the Japanese lost the war. His family fortunes tumbled with the return of British Administration, as his father, Mahalingam, was regarded a collaborator. He was however, able to continue his medical studies at the Mysore Medical College through a scholarship awarded by the Maharajah of Mysore. He confessed he was better known there for his interest in horses than his studies.

After graduation, Mahadevan worked under Professor John Dunn at the University College in Dubin developing his interest in psychiatry; hypnosis, in particular. He proceeded after that to Harvard in the United States on a fellowship in psychiatry under Professor Chester Pierce. On returning to Malaysia he eyed an academic position at the newly set up University of Malaya, but was disappointed. However, the Prime Minister then, Tunku Abdul Rahman persuaded him to take up the Directorship of the Central Mental Hospital in Tanjung Rambutan and he stayed on in Malaysia.

There he started halfway homes and psychosocial rehabilitation services. His love for horses led him to start riding for the disabled. He pioneered pet oriented therapy long before it became widely recognised. It was also Mahadevan who introduced the fourth Prime Minister, Dr Mahathir Mohamad, to horse riding. Mahadevan remained unmarried all his life but was often found in the company of beautiful women among the rich and famous.

In 2001 Mahadevan was awarded the Panglima Setia Mahkota(Tan Sri) title. He was also honoured by the Harvard university for his contribution to the development of Psychiatry in Malaysia. As the Central Medical Hospital (renamed Hospital Bahagia) was located in Perak, most of Mahadevan's services occurred there and on the 25th anniversary of Sultan Azlan of Perak's reign, he received a special Dato Seri Azlanii award. He wrote his memoirs in a book, teasingly entitled 'Mad Heaven'

Pathologists

In the early years laboratory medicine was tied in with research and almost exclusively done at the IMR. As the burden of servicing the hospitals increased the IMR set up branch laboratories in Ipoh in 1929 and in Penang in 1954. In the early 1960s the Kuala Lumpur Hospital started its own independent laboratories facilities right next door to the IMR. When the university medical faculties were started, they set up their own pathology departments. Soon decentralising laboratory services extended to other big hospitals.

The core group of pathologist were initially at the IMR. Though they took special interests in various fields from chemical pathology, to immunology, haematology, bacteriology, virology and basic anatomic pathology, many were originally basically general pathologists. Dr Ungku Omar who became director in 1967, specialised in Clinical Chemistry. Dr HS Ahluwalia was the earliest histopathologist, serving both in the IMR and government hospitals from 1965. At the University of Malaya, Dr Alan BP Ng who was appointed the first Professor and Head of Pathology in 1964, was renown worldwide, for cytopathology in cervical cancer.

Nurses

1957 saw legislation for Nurses Registration passed. There were 1,611 Staff Nurses registered, 200 were in non-government service. In addition, there were 515 State Enrolled Assistant Nurses. The government establishment had 254 posts for nurses of Ward Sister and Matron grade in the medical services. There were in

addition, 66 nurses posts, in the health services for such senior grades of nurses. There were posts for 1,077 staff nurses, 947 midwives, 284 student nurses and 1,237 assistant nurses. There were also posts for 1,055 hospital assistants (formerly called dressers) and 36 for senior grades. In addition there were dental nurses. There was a shortage of nurses, for a time, due to the limited number of places in nursing schools. But the shortfall was not severe. By 1961 there were 1,435 staff nurses, 1,097 enrolled nurses and 1,631 midwives in service.

Dentists

The Registration of Dentists Ordinance was enacted in 1948 resulting in the setting up of the Dental Board to regulate the registration of Dental Surgeons. A separate section of the register was created for apprentice trained dental practitioners and referred to as Division II Dentists.

By 1957, 100 dentists had been registered. That year there were 11 new registrations and 6 removals that year giving a total of 105 at the end of the year. 70 were in government employment and 35 in private practice. In addition there were 482 dentists nominated by the Central Malaya Chinese Dentists' Association registered under Division II. Entry into Division II of the Register was closed in 1972, one year after the Dental Act of 1971.

The pioneer in post-graduate dental training was Dr Abdul Karim bin Nawab Din who obtained his Fellowship of Dental Surgery of the Royal College of Surgeons (FDS) in 1949. He was posted to Johor Bahru and was a visiting Lecturer in Oral Surgery, at the University of Malaya in Singapore. He became Chief Dental officer, Malaya on the retirement of Dr Mummery in 1954. Dr Tan Miang Haw was the first specialist in Orthodontics and Dr Ibrahim Yassin the first in Public Health Dentistry.

Pharmacists

At the beginning of 1957, there were 64 pharmacists, but with 8 leaving and one death together with 5 new persons registered, the total at the end of the year were 60.

Ancillary Staff

By 1957, there were posts also for 198 Health Inspectors, 113 laboratory assistants, 75 dispensers, 70 radiographers, 13 physiotherapists, 6 occupational therapists and a few dieticians and almoners.

THE ARMED FORCES MEDICAL SERVICES

The Medical and Dental Corp of the Armed Forces was established by government gazette in 1967, exercising provisions of the Military Forces Ordinance of 1952. The colonial government already had a military hospital in Kinrara, Selangor from the 1940s, catering for British troops and their families. The British vacated Kinrara in 1967 and the building was occupied by the 1st Field Ambulance. Col Dr RS Corbitt was in command in 1967. The first Malaysian to be commissioned a Medical Officer in the Armed Forces was Dr DA Lopes in 1960. In 1969, he took over leadership of the Armed Forces Medical Services with the rank of Brigadier General.

The government approved National Service for Medical Officers in 1966 and 15 Medical Officers were recruited and sent for orientation in Port Dickson. They served for one year. Some extended their services, under a Short Service Commision, in order to obtain postgraduate scholarships. National Service was however revoked in 1972 and replaced instead by the Ministry of Health seconding Medical Officers as part of their compulsory government service. In addition the Ministry of Defence made available scholarships for undergraduate medical studies for career medical officers of their own. The military also offer its doctors postgraduate specialist scholarships.

The Armed Forces Hospital in Terendak, Malacca, a 140 bed hospital, was opened in 1964 originally as the Commonwealth Military Hospital, financed by the British, Australian and New Zealand Governments. Besides commonwealth troops, it also served civilians in the area. With the withdrawal of Commonwealth troops the hospital was closed in 1970 and handed over to the Malaysian Government. Lieutenant Colonel Dr JCK John was the first Malaysian to assume command of the hospital, which has grown to be a fully staffed and multidisciplinary specialist hospital over the years.

Besides Terendak, the Armed Forces Hospital in Kinrara was established in 1983, with Colonel Dr Long Seh Chin as Commanding Officer. The first haemodialysis unit in the Armed Forces was set up there in 1984. The twenty first century saw rapid urban development in the Kinrara area. A decision was then made to construct a new Armed Forces Hospital for Kuala Lumpur in Wangsa Maju. The third Armed Forces Hospital is in Lumut, Perak at the Royal Malaysian Navy Base. It started operations in 1996, equipped with CT and MRI scanners, Intensive Care, Haemodialysis and a Lithotripter. It is the only government hospital in the country with a Recompression Chamber.

In 1997, Sultan Azlan Muhibbudin Shah of Perak was designated the Colonel-in-Chief of the Armed Forces medical services and they were renamed the Royal Medical and Dental Corp. Apart from its hospitals, Field Ambulances, Field Surgical and Transfusion Teams were established. In 1980 these were re-organized into Medical

Battalions located at Kuching, Sungai Petani, Kluang and Kuantan to support the infantry divisions. These are equipped with mobile modular field hospitals, and have been deployed for UN peace keeping duties in Somalia and Bosnia Herzegovina. In 1992 a Para Medical Company was formed to support the Rapid Deployment Force. It is based in Terendak headed first by Lieutenants Colonels Dr Wu Soo Fah a general surgeon and Dr Ponijian Pardi and anaesthesiologist. All the medical staff are qualified paratroopers and are required to maintain a high level of physical fitness. The unit can be air dropped and rapidly deployed.

To complement doctors, the military trains its own Medical Orderlies. The Armed Forces Medical Company was first established in Kinrara but moved to Terendak in 1970. Its first Commandant was Lieutenant Colonel Dr SA Peter and is now known as Institut Latihan Kesihatan (INSAN). It conducts many courses, including the Malaysian Nursing Board Diploma in Nursing.

THE INSTITUTE FOR MEDICAL RESEARCH

After Merdeka, the IMR made a transition to local leadership. In 1960, Dr JA Chelliah was appointed to the Director's post. He was followed briefly by Prof AA Sandosham. In 1967, a young and energetic Dr Ungku Omar was appointed Director and he began an era of great change. He was a graduate from the University of Malaya in Singapore in 1957 and obtained his Phd in Clinical Chemistry in 1965. Emphasis was placed on rural health research and training activities were accelerated. More international collaboration was established. In 1967, the IMR was designated the national centre for the Central Coordination Board for Tropical Medicine by the Southeast Asian Ministers of Education Organisation, Tropical Medicine network. As such it undertook 6 months training courses for doctors, veterinarians and scientists from South East Asia leading to the postgraduate a Diploma in Applied Parasitology and Entomology.

In 1966 the Division of Vaccine Production was set up by the IMR at the Ministry of Health Medical Stores in Petaling Jaya under Dr Lim Teong Wah. It produced vaccines for rabies, cholera, smallpox and typhoid. Together with Dr Reid in Penang, the IMR established a snake farm in Perlis to produce anti-venom. In 1967, The IMR established the Division of Stomatology under Dr K Ramanathan to do research on oral diseases and to provide histopathology services for the whole country.New divisions for Oral Pathology, Cytology, and Helminthology and Protozoology were also established. The Division of Filariasis and Malaria Research split to become independent divisions. The Division of Medical Zoology also spilt into one for Zoology and for Acarology.

A school for Medical Laboratory Technology was established to conduct a three year course for Medical Laboratory Technologists and a one year course for Junior Laboratory Assistants. In 1970 the Ministry of Health began to decentralise its laboratory services which allowed the IMR to concentrate more on research. In

the early 1970s, the IMR was also made the Western Pacific region centre for research and training for tropical diseases of the World Health Organisation (WHO). However, Ungku Omar died suddenly of a heart attack in 1969 only after two years at the helm.

THE MALAYSIAN MEDICAL ASSOCIATION

At Merdeka, the Malaya Branch of the British Medical Association was the only professional medical association in Malaysia for all doctors. Recognising a need for a inclusive Malaysian organisation for all doctors, a group of doctors led by leaders of the Alumni Association held an inaugural meeting to form the Malayan Medical Association in (MMA) November 1958. Doctors from both Malaya and Singapore were elected office bearers, but the Registrar of Societies of Malaya objected. As a result two separate associations were formed, one for Malaya and one for Singapore.

A Special General Meeting was held in October 1959 to amend the constitution to confine membership of the MMA to doctors registered with the Medical Council of Malaya. At that meeting Dr SG Rajahram was elected President, Dr Mohd Din bin Ahmad as President-elect, Dr T Visvanathan as the Honorary General Secretary and Dr Abdul Majid bin Ismail as the Honorary Treasurer.

In the first few years, the council met in various locations and the 'secretariat' was manned by just one or two staff. Membership began to grow and by the end of 1960 there were 539 members. They were organised into three branches under conveyers. The Northern Branch under Dr SMA Alhady had 236 members, the Central Branch under Dr JS Sodhy had 225 members and the Southern Branch under Dr Lim Kee Jin had 78 members. While the branches coordinated activites at the local level, at the national level committees were formed for Ethics, Medical Legislation, and one more to plan for a medical school in Kuala Lumpur.

In 1960, the Medical Journal of Malaysia became the official journal of the MMA. That year Dr S Paramapalam started a newsletter as well but it was discontinued because of financial constrains after just three issues. It was revived in 1969 by Dr Lim Kee Jin and became a monthly publication named Berita MMA. In 1961, the MMA published its ethical code.

The MMA also sought to maintain relations with the Ministry of Health. It was represented on numerous Statutory Boards like the Prisons Board, National Family Planning Board, Malaria Advisory Board and Estate Hospitals Board to mention a few. By 1970 the MMA had 1,249 members, about 80% of doctors registered with the Medical Council.

THE ACADEMY OF MEDICINE

The Academy of Medicine was founded in Singapore in 1957 to assure the maintenance of a high standard of practice of medicine. Professor Gordon Arthur Ransome, then Professor of Medicine in Singapore was its first Master. It was decided that in the context of Malaysia, one organisation, embracing all medical specialties would be more appropriate than separate independent colleges for each specialty. Following the separation of Malaysia and Singapore, an autonomous Academy of Medicine of Malaysia was registered under the Societies Act in December 1966. The motto it adopted was "Terus Maju" and Dr Mohd Din bin Ahmad, the first Malaysian Director-General of Health was elected its first Master.

Membership was open to doctors who had specialist qualifications and published at least one academic paper. One important activity of the Academy was to provide a forum for members and colleagues to share their experiences in research, clinical work and related para-medical fields. The first Congress of Medicine was held in Singapore in 1962 and initially planned as a biannual event. When these Congresses became a success, they were held annually from 1969, alternating between Singapore and Kuala Lumpur.

MEDICAL EDUCATION

Even before the separation of Singapore, there had been moves to establish a medical university in Kuala Lumpur. It was natural progress for a growing nation. The decision to have a new campus of the University of Malaya in Kuala Lumpur (UM) was made in 1954 and it was opened on 16 September 1957. Initially the two governments agreed there be a common university council, senate and Vice- Chancellor. In 1962, it was decided they be made separate universities. The university in Kuala Lumpur retained the name the University of Malaya and the university in Singapore was renamed the University of Singapore. But the fraternal bonds were so strong that even into the twenty first century, the Alumni Association remained one.

The University of Malaya, Kuala Lumpur

The project of building the Medical Faculty was a delicate work of timing. The architects were appointed in October 1962. Professor TJ Danaraj was appointed the foundation dean in February 1963 and brought with him his experience as the dean of the Medical Faculty in Singapore. That year, the first class of the new Faculty, consisting of 40 students were admitted to a one-year pre-medical programme in the Faculty of Science. They entered the first year in 1964 together with 24 pre- medical students from Singapore. The construction of the Faculty and the University Hospital began in July 1963 had to keep ahead of the students as they moved up in their studies. The complex had the Faculty building with the basic science departments

at one end linked to the teaching hospital at the other end. As it turned out some unforeseen seaman's strike overseas delayed the arrival of some equipment and called for an innovative plan. Batches of 8 students accompanied with one lecturer were sent out to rural district hospitals for clinical training. Further clinical training was conducted at the General Hospital in Kuala Lumpur until the University Hospital was ready to take in patients in 1967. The rural posting however, became a permanent feature. Permanent buildings with classrooms were later erected for this adjacent to the Banting District Hospital.

The University Hospital was officially opened by the Yang DiPertuan Agong in August 1968. In January 1969, the General Medical Council of the United Kingdom inspected the medical school and granted recognition to the degree awarded by the Faculty. The first batch of 63 students graduated in 1969. The Dental faculty was established in 1972 and produced its first graduates in 1976.

Fig 8.2 The first batch of 63 doctors to graduate from the newly inaugurated Faculty of Medicine, University of Malaya 1969.

Dr Thumboo John Danaraj (1914-1996)

TJ Danaraj was born in Ipoh, the second of a family of 10 children. He attended the Anglo-Chinese School and finished school while still too young to enrol in the King Edward VII medical school. He therefore went to teach in Teluk Anson for 2 years. In 1932 he was awarded a Perak State Scholarship to study medicine in Singapore. He graduated in 1938 and was posted first to the Singapore General Hospital, then to Malacca, Dungun, Kemaman and Butterworth. He married a fellow medical classmate, Winifred Lewis in 1940. They had two children. Danaraj was in Butterworth at the start of the Japanese invasion, where he found the workload light, even as the only doctor in the Hospital. On December 15th 1941 on orders, he hastily led a medical convoy down to Singapore. They reached just before Singapore fell. After a few months there he and Winifred were sent to Perak where he worked as a public health officer in the Kinta District.

After the War, Danaraj and Winifred returned to work in Singapore. He started as a lecturer in 1947 and obtained his doctorate in medicine (MD) in 1950 for studies on tropical eosinophilia. He passed his Membership of the Royal College of Physicians of Edinburgh exam in 1953 and was appointed Senior Lecturer and Consultant at the Singapore General Hospital. He then went on to become Dean of the Faculty of Medicine in Singapore.

In 1963, Professor Danaraj was appointed the foundation dean of the new Faculty of Medicine of the University of Malaya in Kuala Lumpur. He boldly pushed the concept of having the Faculty of Medicine linked to the teaching hospital. He took the risk of having the first batch of student starting their pre-clinical years even as the hopistal was being built. To his credit, the feat was accomplished with minimal glitches. Winifred who had received her Masters in Public Health from Harvard in 1952, followed Danaraj in becoming Professor of Public Health in Singapore in 1960 and then in Kuala Lumpur, and assistant dean in 1967.

Danaraj retired and was made Emeritus Professor in 1975. Besides being such an able administrator, many of his students remember him as an outstanding teacher and physician. Retirement was not the end of Danaraj's career. He went on to become the Advisor to the foundation Dean of the King Abdul Aziz University in Jeddah, Saudi Arabia. After this assignment he returned and continued teaching in the University of Malaya as long as his health permitted. Winifred, who had retired with him, died in 1977 of breast cancer. In 1980 the Yang Di Pertuan Agong conferred the title 'Tan Sri' on Danaraj.

Danaraj found happiness again when he married Professor Wong Hee Ong, a cardiologist and colleague who had been with him and his wife from the founding of the University of Malaya in Kuala Lumpur. She founded the coronary care unit and had been his co-worker in research in Takayasu's arteritis. She supported his work both in Malaysia and in Jeddah and cared for him till the end.In 1989, TJ Danaraj was awarded the joint medal of the Royal College of Physicians of London and the Academy of Medicine of Malaysia. He was the first recipient of the medal. After his death, the Library of the University was named in his honour in 2005.

Medical Students Abroad

The shortage of doctors and places for medical studies spurred an increase in the number of Malaysian students going abroad for medical studies. From the days of the Queen's scholars some had gone to Britain. A few continued to go privately, but it was expensive. A few went to Hong Kong or Taiwan. But the largest flow that came to dominate the scene was the path to India. Many Indians in Malaysia continued to have contacts with relatives in India, and it was very natural for arrangements to be made for their children to pursue medical studies there. Over time a few universities became the favourite destinations. The foremost was the University of Manipal.

One problem that arose was that there were so many different colleges the quality of each could not be assured. Therefore, the Ministry of Health had to come up with a list of recognised medical colleges whose degrees would be accepted for

registration with the Medical Council of Malaysia. This however, did not stop some student from going to un-recognised colleges. A solution had to be found.

TRADITIONAL CHINESE MEDICINE

Over the years and through the War, the popularity of Chinese traditional medicine did not diminish. This was because the Chinese in general never felt they had to choose which medicine they had to believe in. They were pragmatic in seeking to get better in an illness and had no qualms in seeking western medicine one day and traditional Chinese medicine the next, often to the annoyance of doctors. If there was any concern on their part of doing anything inappropriate that arose, it was the concern whether one can take allopathic/conventional medicine together with traditional Chinese medicine. This widespread, but unfounded concern probably arose out of both conventional and traditional doctors who were frustrated at the syncretic behaviour of these patients. Each tried to warn patients not to patronise the other side and to be compliant with their medication.

Nevertheless, as a result of a wide section of the population willing to patronise traditional Chinese medicine, the Chinese Medicine Training Institute in Kuala Lumpur, or Zhoung Hua Medical Training Centre, which opened in 1955 had trained over 200 practitioners by 1975. The Institute took in about 50 students a year (selected from about 80 applicants). Courses ran for four years. Graduating students were presented certificates after passing an examination. Institutes in Penang and Ipoh trained about another 80 students. It is estimated that there were over 1,000 Chinese medical practitioners in 1975, in addition to many more selling Chinese medicine in shops who had no training.

The Tung Shin Hospital in KL employed several traditional Chinese doctors, but many of doctors had solo practices, sometimes in association with a medical hall. Many practiced part time. The range of treatment varies, from prescriptions only to acupuncture-moxibustion, dietary advise, psychological support and even referral to government hospitals. It was estimated that 20-25% of their clientele were non-Chinese.

Chinese medicine practitioners have even had their own association in Perak,called the Perak Chinese Physicians and Druggist Association, from as far back as the 1940s.

PRIVATE PRACTICE

Despite a chronic shortage of doctors in Government service, half the doctors registered with the Medical Council in Malaysia were engaged in private practice. Many who started in government service, left after a few years. The prospects of a good practice lay open in almost every town in the country, although it was not so in rural areas. Primary medical care was the other side of health care,

one which the government did not undertake to provide. The financial cost for this was of course prohibitive. The urban population were economically more able to and willing to consult a reputable and familiar doctor in private practice, such that it afforded general practitioners a good living. There was a growing trust in conventional Western medicine, and almost any doctor could earn a better income in private practice than in government service. By 1969, two-thirds of the doctors registered with the Medical Council were in private practice.

For the economy of the country it was not a bad thing. Doctors providing private medical care not only relieved the government from paying their salaries, they also contributed to revenue by paying income taxes. Doctors' clinics were usually packed, such that they saw so many cases, making the cost of a consultation within the reach of most. As regards to serious illnesses that required hospitalisation, it was a different matter. There were no private hospitals to provide this and such services would have been beyond the means of most of the population. In this regard, the network of government hospitals, for which patients did not have to pay the full cost, served the country well.

For many years the good will of being in the same medical fraternity maintained good relationships between doctors on both sides of the divide. Doctors in private practice could refer their cases needing further investigations and management to a government hospital and private practitioners relieved the government clinics from too heavy a load. However, the divide had the potential to cause disunity in the profession and to some degree in later years it did.

Charity at Work

It is important to note that although doctors in private practice were rich, their services were not beyond the reach of the poor. Consultation with medicine in one package for most times was not expensive. In addition, many doctors were known to treat poor patients for free. It would be hard to single out any doctor to make a hero in this regard, but it would be illustrative to tell a story of a nurse who already is a hero.

Sybil Kartigasu writes in her book, "One morning, a distraught Chinese asked me to see me urgently, and implored me to come to his wife, who was in difficult labour and been bleeding since midnight. He was a poor vegetable farmer who lived about a mile from the town." It was during a time the Japanese had imposed a curfew and she had to make her way pass road blocks. She continued, "I arrived at the house only just in time to save the woman's life, though she lost her child. It was weary work, and I was not able to leave until six in the evening. The blockade was still on, but I was allowed to pass without comment. The Doctor (Kartigasu) visited the patient the next day, and prescribed the necessary treatment. Her husband was very poor, their home a single rented room; I refused to take any fee, though the man offered me all he had."

Stories like this were repeated a thousand times over. Private general practitioners could afford to be generous as their work afforded them a good living. However, this was not to last forever. By the 1970s and 80s the field became nearly saturated and more competitive.

THE MALARIA ERADICATION PROGRAMME

Despite the early success of malaria control in Malaysia, complete eradication did not appear imminent. In fact, after reaching a nadir of less than 6,000 cases of hospital admitted malaria cases in 1958, the incidence began to rise.

The idea of eradicating malaria on a world-wide scale arose following the discovery of the insecticidal action of DDT by Paul Muller of Switzerland in 1939. The experience of DDT in Greece during the Second World War led the WHO to accept the feasibility of the proposition of global malaria eradication at the Eighth World Health Assembly in 1955.

Malaysia however, unlike some of its neighbours, did not initiate a nation-wide campaign until 1967. This delay may at first appear strange, considering that Malaya had been a pioneer country in malaria control. For one thing, Malaya was preoccupied with waging a war against Communist terrorists and it was not till 1959 that the state of emergency was lifted. For another, some Malaysian malariologists, like Sandosham were not convinced then that such a campaign would work in Malaya. Sri Lanka a country with many similarities and adopted the program almost achieved eradication but experienced a resurgence afterwards.

Therefore before launching an eradication program in Malaysia, a Malaria Eradication Pilot Project was carried out in an area measuring 501 square miles around Kuala Selangor between 1960 and 1964. Transmission of malaria was arrested in the area by October 1963, even among the Orang Asli. Some believed this demonstrated a practicable and effective way of interrupting malaria transmission applicable for the whole country. However, the validity of these results, were questioned because the small size of the pilot area and the pattern of vector distribution which was not entirely representative of the country.

Despite some misgivings, Malaysia officially launched its eradication program in 1967. The total number of malaria cases then was greater than 35,000 a year with over 150 deaths. Fifteen years later in 1982 a third of the country was still in the attack phase and more than 11,500 cases were recorded in that year. It had cost $120 million and no eradication was in sight.

Dr Arthur Anantharaj Sandosham (1905 - ?)

'Sandy' as Dr Sandosham was fondly called, was born in Karur, South India, the year the first medical college opened in Singapore. His parents came over to Province Wellesley when he was eight years old. He finished his Senior Cambridge examination with honours at the Penang Free School and won a scholarship to study medicine in Singapore. He graduated in 1930 with distinction in medicine, winning the Lim Boon Keng Medal, but chose to specialise in Parasitology. He married Emily in 1931. He obtained his Phd from the London School of Tropical Medicine and then taught at his alma mater. He became professor and chairman of the Department ofParasitology in 1951. He was the first master of the King Edward VII Residential Hall. He was reknown for his effortless wit and humour which extended into the classroom. He became an authority of malaria and published extensively.

In 1959 he was made Principal of the University of Malaya in Singapore and was acting Vice-Chancellor for a short time, declining an appointment for a 5 year term. On retirement in 1960 he joined the WHO in Manila as Director, for a very short term, before joining the IMR in KL in 1961 as its senior Malaria and Filariasis Research Officer. He was made Director also for a short stint but continued at the IMR in the capacity of Dean of Faculty in charge of the post graduate Diploma in Applied Parasitology and Entomology till 1970.

Dr Sandosham was very much involved in medical associations and was president of the Alumni Association as well as of the Malaysian Medical Association. He was editor of the Medical Journal of Malaysia and the Southeast Asian Journal of Tropical Medicine and Public Health. He also wrote a regular section of humour in the MMA newsletter, called Sandy's Spice where he continued share his outrageous jokes which many remember him for.

VECTOR BORNE DISEASES

Even as the incidence of malaria continued to decline, in the 1970s another mosquito borne disease grew in importance. Dengue fever, which had been recorded since 1902, rose in incidence. Between 1963 and 1972 only 194 cases of dengue were noted, but it was only in 1971 that dengue fever was made a notifiable disease. However an alarming outbreak occured in Kuala Lumpur in 1973 spreading to many urban areas. 1,487 cases were recorded that year with 54 deaths. Children were more commonly affected. The outbreak carried on to 1974 where there were 2,200 cases and 104 deaths. The next year the incidence decrease somewhat only to peak again in 1978. Dengue, was carried by the *Aedes* mosquito instead of the *Anopheles*.

Nevertheless, the similar mode of disease transmission of both diseases, led the Ministry of Health to put them under the same department. The Malaria Eradiacation program which was launched in 1967 was absorbed into the Vector Borne Disease program. Besides malaria and dengue, filariasis and Japanese encephalitis were put under the umbrella.

CHOLERA

From the year 1947 to 1960 there were no recorded cases of cholera in Malaysia. Then almost like a new disease, cholera due to *Vibrio cholerae El Tor* appeared in 1961. It came first to Sarawak from Sulawesi when 62 cases were found in the Sarawak Bazaar in Kuching. By October after 4 months there had been
301 cases but it dragged on for three more years, affecting states in the Semenanjung and Sabah as well. One difference was that the mortality rate was not as high, but the disease never seemed to be eradicated. Cases appeared to peak again in 1969 and major outbreaks occurred in 1972, 1974 and 1978. This cholera, the seventh pandemic, became an endemic disease.

Better medical care may have partly been responsible for the low mortality, which never exceeded 5%, compared to 60-80% in the outbreaks from 1900 to 1946, but the disease itself was different. However, perhaps because there are more survivors, cholera never quite disappears. Even in the twenty-first century there continues to be a few hundred to a few thousand cases. During peak years there may be more than 10 deaths, but usually most years the number of deaths are in single digits.

OCCUPATIONAL HEALTH

Among the laws that were enacted in Parliament that affected medical practice in the newly independent Malaysia was the Factories and Machineries Acts in 1967. It made it a legal requirement for medical practitioners to report all cases of notifiable industrial diseases to their employers. The factory owners were then in turn required to report such cases to the Chief Inspector of Factories and Machinery Department within 14 days of receiving such notification. The Act was later amended in 1978 so that medical officers notified the Chief Inspector directly, even as they notified the factory owners.

The schedule of notifiable disease included dust diseases of the lung, chemicals workers came in contact with including pesticides, potential infections like leptospirosis, physical agents like heat, radiation and noise. It also included decompression sickness for those working underwater. The schedule listed 15 categories.

The Occupational Health Unit of the Ministry of Health was established in 1971. It had two divisions, one for safety of workers and another for general environmental health issues. The unit now has departments in all states.

PUBLIC HEALTH

The second Five Year Rural Development plan (1961-1965) saw a need for an institution that would be able to review and coordinate the health training programmes to cope with the expanding health services. The Institute of Public Health or *Institut Kesihatan Umum* (IKU) was established in 1964 by bringing together two existing training schools. The first was the School for Health Visitors established in Penang in 1954, which trained nurses in maternal and child health especially for home visits in rural areas. The programme was based on a UK curriculum and graduates were awarded certificates by the Royal Society of Health, London. The school was transferred to the old Bangsar Hospital in Kuala Lumpur in 1962. The second was the Health Inspectors Training School established in Jalan Young (Jalan Cenderasari) in 1959. This school also followed a one year programme from which successful candidates received diplomas from the Royal Society for the Promotion of Health (RSH), London.

Dr Raja Ahmad Nordin was appointed the first head of the new college in 1966. That year, a new eight storey building at the Jalan Bangsar campus, whose foundation stone was laid in 1964, was ready to house the two training schools. The new college was first named the College of Public Health or *Maktab Kesihatan Umum* but was changed to its now familiar name in the early 1970s. It was at first put under the Administration of the Selangor medical services but transferred to be directly under the Ministry of Health in 1969 as it continued to expand in size.

It was from the IKU that national health programmes such as the Malaria Eradication programme, the National Environmental Sanitation Programme and Applied Food and Nutrition Programme were initiated. In response to these needs the divisions for Malaria Eradication Training and Epidemiology, Nutrition and Maternal and Child Health were created in the college. In addition to training, the institute also offered consultancy, technical support and research.

CHAPTER 9 DEVELOPING THE NATION

Even up to 1970, Malaysia was largely a nation of rural people. Kuala Lumpur, the largest city did not even have a million people. None of our urban centres were ancient cities more than 100 years old. Malaysia however, had many small urban centres. In the Semenanjong these towns together had an urban population of 2,527,988 people. In contrast the rural population numbered 6,263,702 people. Sabah and Sarawak had an even small percentage of urban dwellers. By 1970, the total population had grown to 10.4million.

Table 9.1 Population of Malaysia in 1970 (% increase from 1957)

Perlis	121,062(33)	Selangor	1,630,357(61)	Pahang	504,945(61)	Sarawak	975,918(31)
Kedah	954,947(36)	Malacca	404,125 (39)	Terengganu	405,368(46)	Sabah	655,295(49)
Penang	776,124(36)	N.Sembilan	481,563 (32)	Kelantan	684,738(35)	Labuan	(inc in Sabah)
Perak	1,569,139(28)	Johore	1,277,180(38)				
Total	**3,421,272**		**3,793,225**		**1,595,052**		**1,631,213**

After Merdeka, Tun Abdul Razak, the Deputy Prime Minister went about energetically implementing development programmes. In the first two 5 year 'Malaya' development plans, agriculture and rural developments consumed the lion's share (about 50%) of government allocations. Rural development was Tun Razak's focus. He travelled widely throughout the country, especially in rural areas, finding out the facts and checking on work done.

Tunku Abdul Rahman, on the other hand preferred to rule rather than run the administration. He had an easy going nature, yet judged people well. He wished Malaysia to be the happiest country, and he wanted to be the happiest Prime Minister in the world. In his own words he said, "what I gave to one, I also gave to others. In this way, we made everybody happy. This has always been my aim." However, this was not to be.

POLITICAL TENSIONS

The third general elections on 10th May in 1969 was a jolt to the nation. Having done well in previous elections, the Alliance government was shocked by the results of the plebcite. It lost its two thirds majority. The states of Penang, Kelantan and Terengganu fell to opposition parties. The opposition also made substantial gains in Perak, Pahang, Selangor and Kedah.

THE MAY 13th RIOTS

What happened next was the most painful event in the memory of Malaysian history. The discord was internal and right at the core of the fabric of Malaysian society. In the immediate aftermath of the elections, opposition parties organised victory celebrations in the major towns. Their supporters taunted government supporters with insults. The UMNO Youth Executive Committee met on 12th May and planned to have a parade the next day, gathering at the residence of the Selangor *Menteri Besar* in the morning. As the crowds gathered, emotions ran high. Rioting broke out in the Chow Kit area in Kuala Lumpur. By midnight, a state of Emergency was declared. About 6,000 people, mainly Chinese were made homeless, and at least 196 people were killed (other reports claim as many as ten times more).

A National Operations Council, headed by the Deputy Prime Minister, Tun Abdul Razak, took power. In September 1970,Tunku Abdul Rahman retired in favour of Abdul Razak.

THE NEW ECONOMIC POLICY

To address the social troubles, the government formulated the New Economic Policy (NEP). Despite the election result being a show of dissatisfaction among the non-Malays, the problem, according to the government, was that closing the economic gap between the Malays and the non Malays was not happening fast enough. In the process of forming Malaysia, a major consideration had been the racial disparity among the ethnic groups in the country. Malays were concentrated in traditional villages, engaged mainly in agricultural activities, while the Chinese dominated Malaysian commerce. Indians were either working the plantations, or as labourers in municipalities while those better off were professionals such as thoseof doctors and lawyers or clerks and supervisors. The main objective of the NEP was to eliminate the association of race with economic function, and to eradicate poverty irrespective of race, through a rapidly expanding economy. The Second Malaysia Plan initiated more aggressive programmes aimed at actively establishing a Malay entrepreneurial class, with a target of a 30% share of the economy for the *bumiputera.*

In the 1970s, Malaysia also committed itself to a transition from being reliant chiefly on mining and agriculture to a more diversified economy with emphasis on the development of manufacturing. Central planning was a major factor in the Malaysian economy, as government expenditure was often used to stimulate the economy. The following years saw remarkable growth in the manufacture of electrical and electronic items, textiles, rubber products, chemical and metal products. The discovery of oil off the coast of Terengganu and Sarawak brought a new source of revenue to the government and to the state-owned petroleum enterprise, Petronas Corporation, which was formed in 1974. In the 1980s, oil and gas was also found off the coast of Sabah. Oil and gas revenue went to the Federal coffers with the states involved only getting 5% of the income.This was to be a significant sector

of the economy of Malaysia and a windfall for decades to come. Foreign investments flourished in the Free Trade Zones such as in Penang.

THE BARISAN NASIONAL

On the political front, Tun Abdul Razak sought to be inclusive. In 1972 he enlarged the Alliance Government by inducing the *Persatuan Al-Islam SaMalaysia* (PAS), People' Progressive Party (PPP) and Gerakan to join the government. He also brought in the Sabah alliance and a state coalition in Sarawak to form the National Front or *Barisan Nasional*. UMNO, however, remained the core and the big brother. By 1974, the political situation had settled down peacefully enough for Tun Razak to call for general elections, in which the *Barisan Nasional* won handsomely, gaining back a two-thirds majority.

Another legacy of Tun Razak from this period was the national language policy. Beginning with Standard One students in primary schools Bahasa Malaysia became the language of instruction in 1970. Sabah followed in 1971 and Sarawak in 1977. Chinese and Tamil primary schools were allowed to continue in the vernacular stream. This was the most significant change in education since Merdeka. At the time the Razak Report (named after Tun Razak when he was Education Minister in 1956) provided for Malay, English, Chinese and Tamil to be the medium of instruction in schools at the primary level, and for Malay and English to be used at the secondary school level. It did at that time recognise the eventual objective of making Bahasa Malaysia the main medium of instruction.

Dr Lim Chong Eu (1919-2010)

Lim Chong Eu was the second child and eldest son of Dr Lim Chwee Leong. His father was from Singapore and a graduate of the second batch of students from the King Edward VII College of Medicine. Chong Eu was born in Penang where his father settled down in private practice after being posted there as an assistant surgeon. He attended Hutching's Primary School and then the Penang Free School. At home, he learned about malaria parasites and hookworms from his father and helped him make stains for microsocpy. He won the King's Scholarship in 1937, which was awarded to the best student in the country for the Senior Cambridge examination. He actually studied law at Gray's Inn for a while before he went on to study medicine at the University of Edinburgh. He was there through the war years and graduated in1944. After the war, he took the first ship to China to serve in its reconstruction. He served as a medical officer in the Chinese Army Medical Service in Chungking and then joined the teaching staff of the newly established Shanghai Medical College of the Chinese National Defence Ministry. He married Goh Sing Yen in China and returned with her to Penang in 1947. The couple eventually had four children. Chong Eu said he returned mainly to be with his father, who was ill. He joined his father's private practice and like his father he actively participated in further medical education programmes organised in the Penang Hospital and was involved in the Penang Medical Practitioners Society, serving as president in 1955.

He took an interest in politics and was appointed to the Penang Local Council in 1951, and in 1955 was appointed a member of the Federal Legislature. He joined

the MCA in 1952. In 1958, he challenged Tun Tan Cheng Lock and won the MCA presidency. He quit the MCA presidency in 1959 over what he believed was unfair treatment of the MCA, by the Prime Minister Tunku Abdul Rahman. In 1960, Chong Eu left the MCA and in 1962, he formed the United Democratic Party serving as secretary- general first and as president in 1966. In 1968, he became one of the founding members of the Party *Gerakan Rakyat Malaysia*. Gerakan won the Penang State Government in 1969 and joined the ruling Barisan Nasional after the May 13th riots.

With the victory of Gerakan, Dr Lim Chong Eu became the Chief Minister of Penang in 1969. He held the post till 1990, even after he stepped aside as Gerakan president in 1980. He is best known for his foresight in promoting the electronics industry and overseeing the emergence of Penang's Free Trade Zone (FTZ) which evolved into one of Asia's most powerful electronics hubs. But with dissatisfaction growing slowly among the Chinese in Penang toward the Barisan National, he lost his state seat in the 1990 general elections to Lim Kit Siang.

In retirement, he caught up with family time and reading. He travelled widely and researched his roots, going back to over 93 generations of LIms. He was conferred not only the highest award by Penang, he was made a Tun with the Seri Setia Makhota award by the Yang DiPertuan Agong. He even published a fictional story in 2010 entitled 'The story of the white tiger'. He lived till a ripe old age of 91 years and died after a short illness.

SABAH AND SARAWAK

Health services in Sarawak and Sabah were brought under the Federal Government at the beginning of 1971. The State Ministry of Health was dissolved and the Director of Medical Services in Kuala Lumpur took over the responsibility for government policy and programmes for health matters.

HEALTH INDICATORS

The high birth rate in Malaya at independence (46.2) decreased rapidly to 33.9 in 1970, but from then on continued to decrease only gradually. The fertility rate for women, *ie.* the total number of offspring they have in a lifetime, in Semenanjung Malaysia was recorded as 5.0 in 1970, with slight differences among the races. The rate was 5.2 for Malay women, 4.8 for Chinese women and 4.9 for Indian women.

At the same time the average life expectancy at birth, in West Malaysia increased from 56 years in 1957 for males to 64 year in 1970. Women, as usual, had a longer life expectancy of 69 years in 1970 compared to 58 years in 1957. Life expectancy in Sarawak and Sabah was shorter. In Sarawak the figure for men for 1970 was 51 years and 53 years for women. Sabah fared even worse. Life expectancy at birth for males was 49 years and was lower for females (45 years), a situation that usually indicates a high maternal mortality rate. There were no figures for comparison for Sarawak and Sabah in the decades before 1970.

TUBERCULOSIS

When the National Tuberculosis Control Programme was launched in 1961, cases were treated by medical officers on an individual basis. The main regimen was isoniazid with para-aminosalicylic acid or thiacetazone with streptomycin. In 1969, at a conference it was agreed that treatment should be standardised and integrated into the general health services of the country. Treatment was to be made available in every medical and health facility and not just in Chest Clinics in hospitals. The standard treatment regimen was a fully supervised initial phase of daily streptomycin with isoniazid for 2-3 months, followed by the same drugs twice weekly for a year and finally isoniazid for 6 months. This made for a 20 month course of treatment. After 2-3 years, it was noted that only 43% completed treatment and 10% died.
30% abandoned treatment prematurely, and 12% were still on treatment after 2 years.

Steps were taken to improve outcomes, including the training of staff in motivating patients and in defaulter detection. American Peace Corp workers were deployed as organisers and activators. The Malaysian Association for the prevention of Tuberculosis (MAPTB) provided socio-economic aid and fostered community participation and state tuberculosis managerial teams were formed with the chest physician or general physician as leader.

With these measures, the 1972 cohort showed 60% completing treatment, 12% abandoned treatment and 10% died. With evidence showing 1 year's treatment was adequate it was decided to reduce the treatment course accordingly in 1973. By 1976 treatment completion rates of 69% had been achieved. Malacca which had good health infrastructure, good roads and active assistance from the local branch of the MAPTB had 90% on fully supervised regimens and 80% successfully completing therapy.

In 1978 the National Tuberculosis Conference decided to conduct a pilot study, of a treatment regime consisting of 2-3weeks fully supervised daily streptomycin, isoniazid, rifampicin and pyrazinamide (SHRZ) followed by 3-4 months of twice weekly medication. This shorter duration chemotherapy achieved a relapse rate of only 1.5% at 2 years. With this, 78% of patients successfully completed treatment.

By 1986, 25 years after launching the National Tuberculosis Control Programme it was estimated there were only 37,162 cases of tuberculosis; 28,300 in the Peninsula, 4,950 in Sarawak and 3,912 in Sabah. Over 90% of children were immunised with the B.C.G. vaccine, exceeding the target. 3,945 new cases were detected, but disconcertingly over 80% were sputum positive, moderate to advanced stages. There were only 320 deaths from tuberculosis in Peninsula Malaysia. The risk of infection for the population was now less than 1%. Tuberculosis had ceased to be a menace.

DRUG ABUSE

With the opium trade ban after the Japanese Occupation, opium use began to decline, but did not disappear overnight. The supply of the drugs found its way to users in various illegal ways, under the control of criminal groups. As in any 'trade', the suppliers would seek to expand their market. It became apparent in the 1960s, that besides old men who were addicts from the previous generation, a new group of drug users were becoming the major demographic group of drug abusers. These were young drug users. They used a wider range of drugs, including cannabis, or *ganja* which was grown locally, heroin which was made from opium and several synthetic drugs diverted from the pharmaceutical industry.

Figures from drug seizures in the early 1970s showed the amount of raw opium and morphine seized remained relatively steady, but heroin, in contrast, leapt from merely 8 ounces seized in 1970 to more than 50kg in 1975. In 1970, about 2,300 tablets of psychotropic drugs were seized, but by 1975, some thirty times that amount was seized.

In the early 1970s psychiatrists began to take note of a new trend among drug dependents seeking treatment. Dr Tan Eng Siong reported the trend observed in Penang in 1973. Most were males, often single, unemployed or in the lower social classes. Those under 30 years old were more likely to use heroin instead of opium. Malays and Indians now formed 15% of these dependents seeking treatment although Chinese (67%) still constituted the majority. In a prison survey, all races were found almost equally represented, although Malays and Indians were more likely to use *ganja* while the Chinese leaned more towards heroin. Dr MP Deva also noted the rising trend among Malays in Kuala Lumpur, where in 1970, there were no Malay opiate dependents among those seeking treatment, but the number rose till they formed 40% of the group in 1976, outnumbering the Chinese.

To gain a better picture of the drug menace, the National Centre for Research on Drug Dependence was set up at the Universiti Sains Malaysia in its Penang campus under Dr V Navaratman. Studies found that experimentation of drugs occurred among a small minority in secondary schools. Younger students were more inclined to try sedatives and other pharmaceuticals, while older students were more likely to try *ganja*. Approximately a quarter of these continue to try at least four different kinds of drugs, including opiates.

In the mid-1970s, the Dangerous Drugs Ordinance of Malaysia was amended to cope with the new rising tide of drug abuse. It included a mandatory death sentence for those who were caught with more than 15 grams of heroin. The government took a serious enough view to form a Cabinet Committee on Drug Abuse to address the issue more forcefully. The Ministry of Education was involved in taking the message into schools. In drug treatment and rehabilitation, through amended laws the Ministry of Social Welfare administered rehabilitation programmes. Drug dependents

convicted of criminal offences were committed to rehabilitation centres (*Pusat Serenti*) under the Prisons Department. Many volunteer organisations also set up shelters for drug addicts wanting to break their dependence. The largest government sponsored organisation, *Persatuan Mencegah Dadah Malaysia* (PEMADAM), was formed in 1976 under the sponsorship of the Prime Minister, who appoints the head of PEMADAM. After care was recognised as an essential component of the work, as getting back into society was usually a bigger challenge for former drug users than just breaking the physical dependence on drugs.

HEALTH FACILITIES

In 1970, there were 1,167 Rural Health Centres and 196 travelling dispensaries. By 1974, the Rural Health Units covered about 40-50% of the targeted population, up from 8% when the program first began in 1960. The bulk of the rural health network had been established by 1977. The focus then shifted towards identifying those who were left under-served and meeting their needs, as well as getting the population to utilize the services available. Where static health facilities could not reach the under-served, mobile teams visited remote villages. This was an era of continued rapid expansion of rural health facilities, especially in East Malaysia. In Sabah and Sarawak, this sometimes involved helicopters. Partnership with the people meant village development committees were mobilized; for example, in the construction of wells, piped water supply from rivers and latrines. Health staff provided technical assistance and funds, but labour was provided by the villagers. Partnership with traditional birth attendants or *bidan kampungs* happened in the form of giving them short courses in hygiene and equipping them with basic instruments.

SPECIALISTS SERVICES

By 1972, there were over 20 specialists units for medicine, surgery and Obstetrics/Gynaecology spread throughout the country. There were 14-16 units for anaesthesia, maxilo-facial surgery, radiology and pathology. There were 7-9 units for orthopaedics, psychiatry, chests diseases and dermatology. There were 4 ENT units. There were single units for neurology, radiotherapy, urology, neurosurgery, paediatric surgery and plastic surgery. For these specialties, specialist services were extended to Sarawak and Sabah through visiting consultants. Dr Perdamen Singh, radiotherapist in Kuala Lumpur started to visit Kuching in 1971. Dr S Kandiah also conducted regular visits for plastic surgery from 1976.

MEDICAL PERSONNEL

Even with the establishment of the University of Malaya in Kuala Lumpur producing nearly 100 graduates a year, and medical graduates returning from training overseas, Malaysia was taking a long time catching up with the needs of medical manpower. By 1970, the number of doctors had increased 2.7 times from 1957 to 2,370. The doctor:population ratio of Malaysia which stood at 1:10,000 in 1949,

dropped to 1:4,400 in 1970. On the other hand, a developed country like Britain, already had a doctor to population ratio of 1:880 in 1950. Furthermore, there was a rather uneven distribution of doctors in the country. Selangor had a doctor:population ratio of 1:2,060 but the ratio was 1:9,000 in Kedah and Terengganu and 1:11,000 in Kelantan. With 63 doctors the doctor to population ratio in Sarawak was 1:12,700. (21 were in private practice, 32 in government service, 6 were employed by Sarawak Shell, 3 were missionary doctors and 1 a Peace Corp doctor.)

Private practice still proved to be a too attractive a field and by 1970, 64% of doctors were in private practice. There were 1,513 doctors in private practice compared with only 857 in government service. The shortage of doctors in the government hospitals prompted the Medical Act of 1971 that made government service compulsory for 3 years for all new graduates.However, that could not be the only answer.

The Medical Act of 1971 also came up with a solution for graduates from abroad. The Act recognised a schedule of colleges whose degrees were acceptable and entitled their graduates to be registered with the Malaysian Medical Council. However, that left out many colleges as 'un-recognised' medical colleges. The Act, therefore, in Article 13.3 provided for graduates of such colleges to be provisionally recognised, during which they would serve an additional two years in public service. This was in concept, additional training, or 'more housemanship' to bring such graduates up to par. However, there was no exit examination after the two years, and during this time these doctors drew a salary two rungs lower than 'recognised' housemen. Inevitably, this gave rise to dissatisfaction. In view of the chronic shortage of doctors, it might be expected that, very little training or supervision for doctors actually took place. Doctors in the scheme felt they were just doing the same work but given less pay. Through the SCHOMOS (Section for house officers, medical officers and specialists) branch of the MMA, doctors such as Dr P Krishnan argued the cause of equal recognition for equal work.

UNIVERSITI KEBANGSAAN MALAYSIA

Due to the rapid population growth Malaysia was experiencing and the perennial shortage of doctors, a second medical faculty was urgently needed.

Tun Abdul Razak, cherished a dream of an institution of higher learning for students who had their entire education in Malay. The idea to establish Universiti Kebangsaan Malaysia (UKM) as such a university was mooted at a meeting in the Dewan Bahasa in 1968. Plans were made for three main faculties; Science, Arts and Islamic Studies. 192 students were admitted to the three faculties at its temporary facilities in Lembah Pantai, Petaling Jaya in 1970.

The idea to include a Medical Faculty came from Dr Ungku Omar, the Director of the IMR, who brought to the attention of Tun Abdul Razak, that only

about 4% of the doctors in Malaysia then were Malays. The UKM faculty was to be a medical school, where students coming from the Malay medium schools could pursue medicine.

Dr Amir Abbas was seconded from the Ministry of Health and appointed the foundation dean in 1972. International assistance and collaboration was also sought to strengthen the faculty and develop the curriculum. A sizable number came from Indonesia through the Indonesian Consortium of Medical Sciences. In addition, to overcome the problem of the shortage of academic staff, a training programme was established. Doctors were recruited from the Ministry of Health and sent overseas, mainly to the United Kingdom to pursue their postgraduate qualifications. Between 1973 and 1979, 74 academic staff trainees came back with postgraduate qualifications in various disciplines.

The 1960s and 70s was an era of new thinking in medical education and Dr Amir Abbas undertook to study how to set up this new medical school using these ideas. With assistance from the World Health Organization (WHO), members of the faculty were sponsored to attend courses at the Tertiary Education Research Centre at the University of New South Wales, Australia. The new thinking was that training in medicine should be less disease-oriented and hospital based, and more community-oriented and problem-based. The dean prepared a comprehensive report often referred to as the 'Amir Abbas Report'. It included ideas like early clinical exposure, problem-based learning and the establishment of a medical education unit to develop the curriculum. However, due to time pressure and inadequate expertise in developing a new curriculum, in the end, the traditional medical course, used in the University of Malaya was adopted. Nevertheless, the faculty continued to expose its staff to developing medical education, and later on in 1981, Dr Sharifah Hapsah obtained a Masters degree and took charge of the Medical Education unit. She went on to get her Doctorate in Medical Education.

While this was going on, the first batch of 44 medical students were enrolled in 1973. The pre-medical year of science was conducted in the Faculty of Science. The five year course following that was conducted at the Medical Faculty building built adjacent to the Kuala Lumpur General Hospital which served as the teaching hospital. The Tanjong Karang District Hospital was designated as the base for the teaching of community medicine. Again, like it was for the University of Malaya, buildings had to be put up in record time. Some temporary wooden buildings were erected. The Dean's Office was housed for some time in the MMA building. The lecture hall was borrowed from the Tunku Abdul Rahman Institute of Neurosciences of GH KL. It was in 1977 that buildings for the pre-clinical and clinical faculties and the dean's office were finally ready.

There was a change in leadership in 1975 when Dr Abdul Wahab bin Mohd Arif replaced Dr Amir Abbas as dean. It was the year the first batch of students moved into their clinical years. Following negotiations with the Director-General of

Health, it was agreed that specialists working for the Ministry of Health in GH KL would be involved in the clinical teaching of UKM medical students, although UKM would have its own clinical departments.The departments of Medicine and Surgery were established in 1975 and others came very soon after. These departments took a share of patients that were admitted to GH KL. In 1978, Dr Ismail Saad, the third dean took the helm, and the first batch of medical students graduated in 1979.

The new faculty was pressured to grow fast. In 1975 the intake of students was increased to 77. The intake was further increased to 166 in 1978 and 192 in 1979. The composition of students changed over time. There were no non-*Bumiputera* students in the early years, but gradually the quota for non-*Bumiputera* students was increased.

Bahasa Malaysia in Medicine

It was decided that the UKM pre-clinical years would be taught in Malay. The faculty set up a committee to standardise the translation of medical terms into Bahasa Malaysia. Technical terms were largely retained in English, except that their spelling were made to conform to the rules set by Dewan Bahasa dan Pustaka. The local staff who found teaching in Bahasa Malaysia difficult managed with a mixture of English and Malay. Non-Malay speaking contract lecturers were allowed to teach in English, which the students could cope with. As the faculty had a policy to invite external examiners, mostly from English speaking countries, oral examinations were often in English. Students however, were allowed to request that the question be translated into Malay. Nevertheless, most answered in English, as textbooks of the medical sciences were mostly in English. The situation for clinical studies was a move even more towards English, as many UKM clinical academic staff were foreigners who came through aid from the Commonwealth Fund for Technical Cooperation in London and were either British, Australian or Canadian In ward work, most senior doctors were educated in English and retained their notes and communication in English and the medical students followed suit. This was not only the case in GH KL but all over the country.

PRIVATE HOSPITALS

Private hospital actually had a very early beginning in Malaysia. Chinese miners provided rudimentary hospital care in the nineteenth century which State Surgeons found deplorable. Rubber estates also had hospitals, which the owners were happy to slowly close down when government hospital facilities became available for their workers. But, even after Merdeka, most large estates still maintained their small hospitals. Some hospitals, like the Ghee Hin hospital in Penang actually became part of the government hospital.

Among the earliest hospitals that survive as private hospitals till today are the Tung Shin Hospital in Kuala Lumpur and the Lam Wah Ee Hospital in Penang.

The Lam Wah Ee (Southern Chinese) hospital was founded in 1883 by a group of 12 Cantonese community leaders offering traditional Chinese at Muntri Street in Penang. It was handed over to a few Hokkiens in 1885 but was jointly managed with the Cantonese from 1886. The hospital was so successful that it later became a training institution for practitioners of Chinese Medicine. Also along Muntri Street in Penang, in 1924, a mission clinic was started by the Seventh-day Adventist Church. It was run by an American doctor to help the sick of all races and religions, with the "poor treated free". Over the years, other charitable hospitals were established like the Perak Chinese Maternity Hospital in Ipoh in 1904, the Chinese Maternity Hospital in Kuala Lumpur, the Kampar Chinese Hospital, Sitawan Maternity Hospital and later Assunta Hospital in Petaling Jaya, Fatimah Hospital in Ipoh and Mount Miriam Hospital in Penang.

Figure 9.1 Lam Wah Ee Hospital, Muntri Street, Penang 1955.

The idea for Mount Miriam hospital arose in 1963 from the first Catholic Bishop of Penang, Francis Chan, who suffered from terminal cancer. He was cared for by the Grey Sisters and he invited them to open a nursing home for cancer patients. The idea for Mount Miriam hospital arose in 1963 from the first Catholic Bishop of Penang, Francis Chan, who suffered from terminal cancer. He was cared for by the Grey Sisters and he invited them to open a nursing home for cancer patients. Bishop Chan passed away in 1967 and the Grey Sisters withdrew from the project but the Sisters of the Franciscan Missionaries of the Divine Motherhood carried it on. Building construction began in 1973 with donations by well-wishers and was completed at a cost of RM2.5 million in 1974. The hospital commenced operations in 1976 with Dr. Peter Tan Ewe Aik as the first doctor and Mother Baptista Hennessy as the first nurse administrator. The first patient was admitted in June 1976 and for the next three years, the hospital was concerned mainly with terminal cancer patients. Mount Miriam Hospital is a non-profit organization specialising in providing cancer care. Radiotherapy was started there, the first in Penang, in 1979 with the purchase of a Theraton 780 Cobalt 60 machine. Although it is a private hospital, it raises funds for patients with financial needs.

Sensing the need to have some legal framework for private hospital and to hold them accountable under the Ministry of Health, the Minister called for the

formation of an association of these private hospitals in 1970. The inaugural meeting was held in September 1970 in Ipoh with participation from 3 missionary and 5 Chinese community hospitals. In 1971 the Private Hospitals Act was enacted and gazetted. That year the Association of Private Hospital Malaysia (APHM) held its first AGM and Dr AWE Moreira was elected president. The main activity of the association during its first two years was to help the Ministry formulate the Private Hospitals Regulations, which was gazetted in 1973.

Up till the 1970s, for-profit private practice had almost exclusively been clinic work. However, as medical technology progressed, more expensive investigations and imaging facilities became available, and facilities for coronary care, intensive care and newer surgical techniques were developed. Understandably, there was a cost involved. The rich in Malaysia, always aware, began to seek and to demand these services. They were wary of government hospitals which had to cater for a large number of patients. They wanted to avoid queuing for appointments for surgery, and they could afford to pay for private medical care. Medicine had changed from the turn of the century where infectious diseases and nutritional deficiencies were the main diseases that a doctor in a clinic could treat with an injection or a course or medication. Heart attacks, strokes and cancer required much more support in terms of care and technology.

In 1975, with the impending completion of two new private hospitals in Kuala Lumpur, namely the Pantai Medical Centre and the Sentosa Hospital, the APHM awoke from hibernation. Dr Tan Chee Khoon was elected its second president and he held the reins till poor health led him to pass the reins to Dr Mahmood Merican in 1988. The next twenty years saw a steady increase in the number of specialist private hospitals. Most of the first few hospitals were jointly owned by the doctors who practiced there themselves. The Penang Medical Centre was established in 1978. The Ipoh Specialist Centre and the Johore Specialist Hospital both opened in 1981. The Johore Specialist Hosptial, unlike the others, was owned by the state economic development agency.

By 1981, there were 69 registered private hospitals and nursing homes, including 5 new ones that year. 48 of them had fewer than 20 beds, most of them being maternity homes. Only 10 actually had more than 50 beds, the largest being Assunta Hospital in Petaling Jaya with 430 beds. These 69 private facilities provide a total of 2,200 beds in comparison to a total of 35,133 hospital beds of all sorts (21,415 acute hospital beds) in government hospitals.

In addition, there were 65 estate hospitals with 2,056 hospital beds serving a population of 250,766 estate workers and dependents. They were manned by 5 full time doctors and 63 visiting medical officers together with 127 medical assistants. These were old hospitals and were slowly closing down as government hospitals and rural clinics extended their reach to the whole population.

PRIMARY MEDICAL CARE - FAMILY MEDICINE

During the time specialist colleges were being established, it was recognised that the general practitioner who is the primary contact of the patient ought to be recognised as a specialtist as well. In the United Kingdom, the Royal College of General Practitioners was founded in 1952. General practice was recognised as the province of the doctor who provides personal, continued care. He makes the initial decision on every problem his patients present to him, consulting with specialists when appropriate. His diagnoses will be composed in physical, psychological and social terms. He intervenes not only therapeutically but also educationally and preventively to promote his patients' health. Because his patients belong to family units, such a practice is sometimes also called Family Medicine. In addition, it is also called Primary Medical Care. The Family Physician sees his patients in his consulting room and may attend to them in their homes, or even in hospital. He may work alone, but increasingly it is recognised that there are benefits in group practice with paramedical support staff, better equipment and secretarial staff.

In Malaysia, private practitioners provided the bulk of general practice care. In the early days, Private Medical Practitioners Societies, such as those in Penang and Perak provided the general practitioner with their continuing education. In the 1960s it was recognised that general practitioners needed to acquire a set of knowledge specific to their needs. Dr R Sathiah who was President of the MMA in 1963 mooted the idea of a national academic body for General Practitioners (GPs), but the idea took time getting off the ground. In 1972, the MMA Council established a committee to study the feasibility of setting up a College of General Practitioners. Dr Tan Chee Khoon was invited to chair the committee but he could not because of his political involvement and the mantle fell on Dr Sathiah. Some of the proposals of the Sathiah Committee for the college for undergraduate instruction had to be deleted. It was allowed to function solely as a postgraduate institution for General Practitioners. On that basis, the College of General Practitioners of Malaysia came into being in 1973. It had 157 founder members. Dr Sathiah was elected President at the first Annual General Meeting in 1974 but he died that year.

The college conducted its first diploma examination for Membership of the College of General Practitioners (MCGP) in 1979. The vision of the specialty was encapsulated in a report by Dr MK Rajakumarin 1979 entitled "Specialisation in Primary Health care, Training for the New General Practice in Malaysia". From 1982, the MCGP examination, which had external examiners from Australia became a Conjoint examination, conferring two diplomas, the MCGP and FRACGP.

The reality of general practice, however, did not quite match the ideal envisioned. Many doctors who completed their compulsory government service continued to leave to set up their own practice without any specialist training in Family Medicare. Only a minority worked for the MCGP. During this era, the market for private clinics in the large urban centres began to become saturated. In order to

reach the income they envisaged, many GPs began to open their clinics for longer hours. It became common for clinics to have night sessions. Often at first it was till 9pm. Then, in order to outdo others, some clinics would open till 11pm; and eventually GPs formed small group practices to have their clinics open for 24 hours!

All this surely meant, an infraction into the lifestyle a GP desired. Not many doctors find attending to patients all day long their favourite pastime. The solution to this problem was to find locum doctors to help man the extra hours the clinic was opened. The salary of doctors in the government service was such that, it was not difficult for private practitioners to find junior doctors still under bond in compulsory service to work for them after their office hours. Despite the long hours many government doctors put in, there were those young and energetic enough to take on the challenge. There were others more senior who managed to get into a less stressful post who were also available for such locum work

For much of the rural population, primary medical care meant the network of rural health clinics that the government had developed since Merdeka. A review of the program jointly conducted with the WHO in the 1970s came up with a recommendation that the three tier system of 50,000 population units, under which there were sub-centres for populations of 10,000 and midwife clinics for populations of 2,000 be changed. Instead health centres should cater for 15,000-20,000 people, under which '*klinik desa*' or rural clinics staffed by two *jururawat desa* (rural community nurses) served 3,000-4,000 people; a two-tiered system. The health centres should each have a doctor and a dentist, besides nurses and support staff. By the late 1970s over 50% of the rural areas in the Peninsula were covered, but progress in Sabah and Sarawak was slower.

During this time, as rural clinics extended their reach, estate hospitals and dispensaries began to cut back their services. Many still had resident dressers and visiting medical officers, but besides treating minor ailments, most other illnesses were referred to the government clinics and hospitals.

MEDICAL SPECIALIST SOCIETIES

After the decade when the first medical specialist with post-graduate qualifications returned with qualifications from the UK, the 1970s was the era when each specialty started to form its own association. Although there already was the umbrella of the Academy of Medicine, the two major specialties formed the College of Physicians and the College of Surgeons in 1973. Besides feeling a need to look after their own special interests, physicians and surgeons looked to Britain as a model where almost all of them qualified from. They hoped that as in the United Kingdom, the colleges would be able to direct and control specialist training in Malaysia.

Wanting to bring the final surgical examination of a Royal College to Malaysia, Dr Balasegaram had initially made plans to form a local chapter of the Royal College

of Surgeons of Edinburgh. However, other surgeons questioned why it should be Edinburgh and a rival group formed the Malaysian Surgical Association. As a result the fraternity was divided. As a compromise, Tan Sri Dr AM Ismail suggested a merger, forming the College of Surgeons of Malaysia. However, this meant the final Fellowship examination could not be brought to Malaysia at that point.

Another force motivating the formation of medical specialist societies was the desire each group of specialists had, to promote their own personal professional development in their specialty field. The *raison d'etre* for almost every specialist organisation was to organise an annual scientific meeting. Each society had its own unique development and only a sampling of their stories are recorded here.

Some specialties had made their start in the 1960s.One of the earliest groups were the anaesthetists. A small group, just enough for a nucleus, gathered in the home of Dr MC Poopathy in Ipoh in 1964 to form the Malaysian Anaesthetic Society. The society became a member of the World Federation of Societies of Anaesthesiologists (WSFA) in 1968. In the late 1970s the society changed its name to the Malaysian Society of Anaesthesiologists. One member, Dr Lim Say Wan, distinguished himself by being elected the President of the WFSA from 1992 to 1996. Such professional societies, in general terms, allowed Malaysian doctors to engage doctors with similar interests in the region and throughout the world, not only to promote scientific exchange, but in training and maintaining professional standards. Besides their own society, anaesthetists could also become members of the College of Surgeon as members of the Faculty of Anaesthesia within the college from 1975. The society, like many others, continues to exist alongside the College of Anaesthesiologists which is part of the Academy of Medicine.

The Ophthalmological Society was formed within the Malaysian Medical Association in 1964 mainly through the efforts of Dr Keshmahinder Singh. The society formed strong ties with the Ophthalmology Society in Singapore which thrived under the able leadership of Professor Arthur Lim. The Annual Malaysia-Singapore Joint Ophthalmologic Congresses was inaugurated in 1981 and Malaysian benefited from the world class faculty brought to these meetings.

The Malaysian Orthopaedic Association was formed in 1967 with Dr Abdul Majid Ismail as Founder President. It was neither in the MMA, nor part of the Academy of Medicine, but it used the services of the Academy secretariat. Within the Academy, Orthopaedic surgeons come under the College of Surgeons and are largest in number next to general surgeons.

The Malaysian Radiological Society was formed in 1973 with 11 radiologists. Dr SK Dharmalingam was its first president, and Dr Joginder Singh was secretary. The 1970s and 80s were the decades of great advances in radiology with ultrasound and CT scanners augmenting the traditional arsenal of plain and contrast x-ray films.The society joined the Academy of Medicine in 1999 and became the College of Radiology.

The Dermatological Society of Malaysia had its beginning in 1974 following the first Regional (Asian-Australasian) Conference of Dermatology in Singapore that year. The pro-tem committee consisting of Dr BA Adam, Dr Cheah Tjeng Siong and Dr DS Nagreh drew up a draft constitution. The inaugural general meeting was held later that year at the MMA House and the six founding members elected Dr Lee Kwok Ching, the Senior Consultant Dermatologist, president. The society was registered in 1976. Annual dermatology conferences were started rather late in 1984. The society helped formed the patient self-help Psoriasis Association of Selangor in 1985. Another spin off from the society has been the Malaysian Society of Hair Sciences in 2001. In 2002, the society obtained its own premises in Pantai Panorama, Kuala Lumpur, dubbed "Rumah Dermatology".

The Malaysian Urological Association also has its beginning in 1974. The association also established the Malaysian Urological Foundation for charitable and educational purposes. 10% of the proceeds of the annual Malaysian Urological Conference is given to the Foundation.

In child health, the Paediatric Society was founded in 1975 with Dr MJ Robinson as president. The society was renamed the Malaysian Paediatric Association in 1979 with Dr Sam Abraham as president.

An inaugural meeting of 20 ENT surgeons met to listen to Dr IM Farquahson speak about the British Society of Otorhinolaryngology in October 1979. Following that, they proceeded to form the Malaysian Society of Otolaryngology (MSO). They adopted the constitution and logo and elected Prof U Prasad the president in January the next year. In 1981, the society's executive committee decided that ENT surgeons call themselves ENT/Head and Neck Surgeons to express that their interest extended to areas like thyroid surgery.

Prof MP Deva mooted the idea of forming the Malaysian Psychiatric Association in 1976 but the meeting he called in 1976 was not well attended. However, it did not take long to marshal up support and the association was formally inaugurated by the Minister of Health in 1977. The society started to organise the biannual conference on Psychological Medicine in 1988, which later became an annual affair.

VOLUNTARY SOCIETIES

In line with doctors forming societies for their specialties, the public, along with doctors, grew to be involved in many health matters through voluntary societies as well. The Malaysian Association for the prevention of Tuberculosis (MAPTB) was formed in 1948 with Mr Khoo Teik Ee as president. It opened branches in several states over the next two year. Even Sabah opened a branch in 1952. A Diagnostic Center established by the MAPTB in Setapak in 1963 and named after Dato Sir EEC(Clough) Thuraisingham who was its longest serving President (28years). The

organization undertook education and publicity activities and raised funds to build TB wards in government hospital as well as provide X-ray machines and laboratory equipment. It also started a Treatment Allowance and Dependant's Relief Scheme to help patients financially. The MAPTB was able to fund its activities through a Government approval public lottery which raised over RM3,000,000 those early days.

The Malaysian Association for the Blind (MAB) was founded in 1951 on the initiative of Major DR Bridges who was blinded in Burma, in the Second World War while serving in the British Army. After rehabilitation in Engalnd he was sent to work in Malaysia as a welfare officer. He started the Gurney Training Centre for the blind in Kuala Lumpur in 1952 and a school for the blind in Johor Baru the following year. He established the Taman Harapan Agricultural Training Centre in Temerloh, Pahang and the Kinta Valley Workshop in Ipoh, Perak in 1958. He set up job placement services for the blind in Kuala Lumpur before he left Malaya in the early 1960s. The MAB continued to develop many projects, under the leadership of Tun Hussein Onn after Bridges left. Tun Hussein was the President of the MAB from 1975 to 1990 from when he was Prime Minister till well after his retirement from politics. The most publicly visible project in his tenure was the Tun Hussein Onn Eye Hospital in Petaling Jaya, which was opened in 1986. Another major milestone was the MAB complex, which was completed at the former Gurney Training Centre in Brickfield, Kuala Lumpur in 1996. The building houses the majority of the services available under one roof. This includes the Braille Library, the Placement Service, the Social Activity Centre as well as the Pre-School Programme for Blind Children. The sports and recreational facilities include a gynamsium and jogging track.

Many organisations were also formed for children with disabilities. Dr Samuel CE Abraham, a paediatrician, was one who left his mark in a number of them. He helped in the founding of the Selangor Spastic Centre and the Johore Spastic Centre in the 1960s. In 1991 he co-founded and was the first chairman for Dignity and Services for Persons with Learning Disorders, besides contributing to other charitable works throughout a long career. There were also other organisations like the Selangor Association for Retarded Children which was formed in 1974.

The first association for mental health was not surprisingly formed in Perak where the largest mental hospital was located. The Perak Society for the Promotion of Mental Health was established in 1970 under the patronage of the Sultan of Perak.

Seeing the need for public support for specialist dialysis treatment for kidney failure the Rotary Club of Petaling Jaya helped launch the National Kidney Foundation in 1975. The list of voluntary organisations that promote health has grown long over the years and would be truly too long to list. It is nevertheless important to note that they play a role in supporting patients coping with a wide array of diseases and disabilities.

SUBSPECIALTIES

As the number of specialists in the main specialties grew, opportunities developed for doctors to pursue interests in sub-specialties.

'The Curious Case of De-subspecialization'

In one sense, certain sub-specialties had existed for a long time. Perhaps the first specialty that had required doctors to be exclusively focused was psychiatry, in view of the large number of patients. Psychiatrists were segregated to their field even before physicians, surgeons, obstetrician/gynaecologists were specialised, Another small group of specialist isolated to their special institutions similar to the psychiatrists were the 'leprosologist'. However, since leprosy was a disease that medical efforts successfully eradicated, 'leprosologists' quickly worked themselves out of a job. Yet another group of specialists who were also slowly working themselves out of a job were the 'venerologists' a term we also hardly hear of today. In the 1920s there were special Seamen's Clinics at ports and some doctors employed largely to treat prostitutes. However as antibiotics became more and more widely used the prevalence of 'venereal' or sexually transmitted disease became less of a disease burden and few doctors needed to be exclusively employed in such clinics. As it happens, these two sub-specialties had one thing in common - the major manifestations of the diseases they were concerned with were in the skin. As such, these sub-specialties were absorbed into the field of dermatology.

Subspecialty Development

On the opposite end, with the development of medical technology, changes in disease patterns and a growing population, a whole new array of new sub- specialties were created. Many sub-specialties had small beginnings and years of slow growth, but occasionally events led to spurts of growth. The beginnings are recorded here but much remains to be seen in the future.

Cardiology and Cardiothoracic Surgery

In the cardiac sciences, cardiothoracic surgery began in the Lady Templer Hospital along with surgical treatment for tuberculosis. In the late 1950s McGladdery had begun doing operations like closed mitral valvotomy and ligation of patent ductus arteriosus. A cardiothoracic department was also set up in the Penang Hospital in 1969. In the University Hospital Professor Wong Hee Ong set up the coronary care unit in 1967 and also a cardiac catheterisation laboratory. Professor Yong Nen Khong the Head of Surgery pioneered the open heart surgery programme. There they began to train cardiologist and cardiac sugeons.

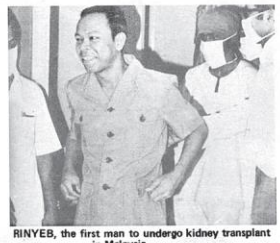
Neurology and Neurosurgery

Services in the neurosciences began when Dr Roy Clifton Selby arrived at the Kuala Lumpur General Hospital under the United States CARE/MEDICO programme in 1963. He developed a neurosurgical unit within two years and undertook training of neurosurgeons and neurologists. Over 5 years he sent 5 doctors overseas for training. Three returned after completing their training. The first was Dr N Arumugasamy in 1969. The second, Dr A Mohandas, contributed to work on Brain Death criteria during his training in the United States. He returned in 1971 and was a dedicated surgeon who unfortunately died early in 1993. The third, Dr Swaran Singh was sent to Penang, but emigrated to Australia in 1982. Selby returned to the United State after his short stint here and Arumugasamy took his place. Neurology started with the arrival of Dr Hans Isler from Switzerland and was followed shortly in 1971 by the first local neurologist in the person of Dr C Balaratnam. In 1973 the neurosciences received a boost when their premises within the Kuala Lumpur Hospital, named the Tunku Abdul Rahman Institute of Neurosciences were opened. Besides neurosurgery and neurology, psychiatry shared the facilities consisting of 80 beds for each with 12 additional Intensive Care beds.

Plastic Surgery

Plastic surgery in Malaysia began with the visits of Dr Bernard L Morgan from Jacksonville, Florida of the United States in the early 1960s during the tenure of Dr SMA Alhady as chief surgeon. Morgan offered to take two local trainees into his residency training programme and Dr V Sivaloganathan was sent in 1965 followed by Dr Sivanantharajah Kandiah six months later in 1966. Sivaloganathan returned in 1969 and worked in the University Hospital under the umbrella of the surgical department but resign for private practice in 1973. S Kandiah returned to the Kuala Lumpur Hospital in the aftermath of the May 13th riots and his plans to set up a plastic surgery unit were derailed. He was sent instead as reconstructive surgeon to the Sungai Buloh Leprosarium where a rich pool of work awaited him. After much effort, one year later he was given some space a weekly operating session and a hospital attendant to conduct clinics in the Kuala Lumpur Hospital. He conducted clinics together the maxillofacial surgeon, oral pathologist and radiotherapists for oral cancer patients and with the dental surgeon and orthodontist for cleft lips and palates. He had to fight hard till eventually a new plastic surgery department was set up in 1974. Dr S Kandiah identified, trained and sent Dr Lal Kumar, Dr V Surendranathan and Dr Yusof bin Said for overseas stints to be the next generation of plastic surgeons. By the late 1970s plastic surgery was carried to regional centres by visits of specialist from Kuala Lumpur. Kuala Terengganu, Johor Baru, Kuching and Kota Kinabalu were the first centres targeted.

Reliving 40 years: Dec 24, 1975



RINYEB, the first man to undergo kidney transplant in Malaysia.

KIDNEY TRANSPLANT SUCCESS

New lease of life for Mara officer

KUALA LUMPUR, Tues. – A Mara officer from Sarawak, Martin Rinyeb, 30, has received the best Christmas present of his life – a new kidney from his younger brother.

He made medical history by becoming the first patient in Malaysia to successfully undergo a kidney transplant operation, performed at the General Hospital here on Dec. 15.

The five-hour operation was performed by a team of seven doctors from the hospital's Urology Institute, led by consultant urologist, Dr. Hussein Awang.

At a Press conference today, Mr. Martin faced a battery of reporters and cameramen and spoke with great emotion of his debt to his brother.

"He has given me a new lease of life," said Martin, who moved around unassisted in the conference room.

His brother, who refused to be named, is recovering in the hospital. He is a 22-year-old student at the Mara Institute of Technology.

Dr. Hussein said Martin, suffering from chronic renal failure, had been in an artificial kidney machine undergoing dialysis since May this year.

BY S. THANASEGARAN

PROBLEM

He added that Martin would be discharged from the hospital soon, probably in a week.

A member of the medical team which did the transplant said a small problem now left was to make sure there was no tissue rejection by the patient's body.

"So far there has been no rejection," he added.

The spokesman said Martin is now almost normal and is being treated with special drugs to prevent tissue rejection.

Martin, a land Dayak, is now able to walk eight days after the operation.

● TURN TO PAGE TWO

Nephrology and Urology

In the 1970s, however, it was the renal sciences that made the most notable development. The impetus for nephrology can be traced mainly to the development of technology. Medical science had succeeded in artificially performing the function of the kidneys by removing the waste products in blood by haemodialysis enabling patients whose kidneys had failed, to be sustained through a temporary illness or even kept alive on a long term basis. In 1964 the Ministry of Health purchased its first Haemodialysis machine (a Kloff) at the request of Dr G Sreenevasan who had justreturned from the United Kingdom after training in urology. This was chiefly used to treat patients with acute failure and over 4 years, 85 haemodialysis treatments were performed.

In 1966 the plight of a young teacher named Harry Kydd, aged 25, caught the public's attention. Dr SS Gill who had experience with chronic dialysis while working in Seattle, persuaded the Rotary Club of Petaling Jaya to help raise funds to buy a dialysis machine. The machine bought through public donations was placed in Assunta Hospital under Gill and enabled Kydd to survive on chronic dialysis for a few months.

In 1968 discussions in the Ministry of Health led to establishing the Urology and Nephrology Unit in the Kuala Lumpur Hospital. When new buildings for the hospital were opened, the old Ward 4 was given to the Unit. Chronic haemodialysis was started in 1969 with modified Keill dialysers. In 1970 the Biosystems multiple dialysis unit became the mainstay of the haemodialysis programme.

Between 1970 and 1971 proposals were laid out for an Instutite for Urology and Nephrology to be built at the old site of Ward 2 in the Kuala Lumpur Hospital. The building with 128 beds, half for nephrology and half for urology, was completed in 1974. With the establishment of these specialties, the Institute undertook teaching of medical students from the Univeristy of Malaya during their clinical years. Research was also emphasised and the urologists studied urinary calculi; work which led to Dr G Sreenevasan being invited to deliver the prestigious Hunterian Lecture of the Royal College of Surgeon of England in 1973.

Physicians that pioneered nephrology were Dr Florence Wang, who trained in the United States and joined the University Hospital in 1972 and Dr Abu Bakar Suleiman, who spent time training in the United States and Melbourne. He returned to head the Nephrology Unit in 1975. Meanwhile his cousin Dr Hussein Awang took over the Department of Urology upon the retirement of Dr Sreenevasan.

The highlight of the developments in renal medicine in the 1970s, in the public eye must be the first renal transplantation. In December 1975, Martin Rinyeb from Sarawak received a kidney donated by his brother. The operation was a success and he survived for 31 years before he died in 2006 from septicaemia.

THE DEATH OF TUN RAZAK

Midway through the 1970s a momentous event occurred that had much influence on the future direction of Malaysia. Tun Abdul Razak died of leukemia in January 1976. His first deputy Tun(Dr) Ismail had died before him and Tun Razak brought in his brother-in-law and son of UMNO founder, Hussein Onn to be his deputy. When Hussein Onn took over the leadership, the choice before him for deputy prime minister marked a generational change. The generation who were in the cabinet at Merdeka had passed on. Hussein had to choose one from among the vice-presidents of UMNO. They were Gaffar Baba, Tengku Razaleigh Hamzah and Dr Mahathir Mohamed. He chose Dr Mahathir. It was a bold choice as Dr Mahathir had once been expelled from UMNO by Tunku Abdul Rahman in the aftermath of the May 13th riots.

MEDICAL MANPOWER

As a result of compulsory government service by 1976, 56% of the 2,757 doctors registered with the Malaysian Medical Council were employed in the public sector (up from 36%). 395 new doctors were registered with the Medical Council that year. 116 were local graduates, whereas 238 came from foreign medical colleges. In addition, 41 foreign nationals on contract were also registered. In contrast, that year 182 doctors resigned from public service to go into private practice. Over the next 5 years a total of 2,413 new doctors registered with the Medical Council. However, over the same period a total of 1,011 doctors resigned. During this period, the number of local graduates rose slowly to 156 in 1980. Nevertheless, the number of foreign trained doctors still exceeded that, averaging about 220 a year. The need to train more doctors locally was obvious.

UNIVERSITY SAINS MALAYSIA

Barely six years after UKM recruited its first batch of medical students, it was heard in late 1978 that the government had decided to set up another Medical Faculty. In January 1979 Deputy Prime Minister Dr Mahathir Mohamed announced that the University Sains Malaysia (USM) would be invited to submit a report on

the logistics of setting up Malaysia's third medical college. Dr Mohd Roslani Abdul Majid was appointed the foundation dean in June 1979. He was a pathologist from UKM and was the Academic Deputy Dean. Roslani was passionate about implementing the problem-based medical curriculum and succeeded where UKM had not. In one sense, the investment UKM made in developing a problem-based medical curriculum was not wasted. Although it was not implemented in UKM, Roslani carried that with him to USM. The catch phrase for the curriculum was SPICES, Student-centred, Problem-based, Integrated, Community-oriented, with Electives, and Scientific principles.

The goodwill between UKM and USM was manifest in the way Roslani went to the UKM Faculty with the expressed intention of recruiting academic staff on secondment. Dr Ong Kok Hai, a microbiologist, Dr Syed Mohsin Sahil Jamalullail, a pharmacologist and, Dr Saidi Hashim Tahir, a chemical pathologist were the first three who agreed to go with him. Dr Saidi was made responsible for the academic programme, Dr Ong was entrusted with physical development and Dr Syed looked after staffing. Soon several others joined the team taking up different responsibilities.

The pioneer batch of 64 students commenced in 1981. USM made it a point to interview all students before they were selected, unlike UM and UKM which took in students purely based on academic examination results. Once again the urgent need for buildings was a problem. Although USM had its main campus in Penang, it was decided that the medical faculty would be located in Kelantan. Several state governments had lobbied hard for siting the medical school in their state and Kelantan could point to the fact it fared poorer in many health indicators and had the least favourable doctor:population ratio. In addition, Tengku Razaleigh the finance minister and a very influential politician was from Kelantan. The Federal Government approved the acquisition of 76 hectares of land adjacent to the proposed Kota Bharu General Hospital at Kubang Kerian for the USM Medical School. The new general hospital buildiing which was already designed and set to be built would be made the teaching hospital, while the Ministry of Health would continue to general hospital in the town.

Meanwhile, the new USM School of Medical Sciences began temporarily in Penang. Wooden long-house type buildings, bungalows from the British Army from pre-war days at its Minden campus were used. Modest buildings costing RM22,000,000 were built, as well as a block at the Penang General Hospital to house some teaching and laboratory facilities.

In 1983, the hospital constructed under the Ministry of Health was completed and handed over to become the University Sains Malaysia Hospital. The first batch of clinical students were sent over in 1984. Their hostels were constructed in under one year. In a few years the entire faculty moved over from Penang and by 1989 the first phase of construction was completed.

Right from its inception, USM was geared to think not only of being a university for undergraduate medical training. It had a big vision and headed there by organising conferences on medical science and education, establishing a medical journal, a diploma course in nursing and setting up a Dental School and Allied Health School. It held courses for medical laboratory technologists and planned post-graduate medical courses.

CHAPTER 10 THE MAHATHIR ERA

In 1981, Hussein Onn surprised the nation by announcing he was stepping down as prime minister. There were no scandals or upheavals. He cited health reasons for retiring, having undergone a coronary bypass operation in London in January that year. The decision revealed his basic nature of a quiet unambitious man. He had been thrust into leadership and dutifully discharged his stewardship, but as soon as had a reason to step aside and saw the opportunity to enact a good succession, he proceeded with it.

Dr Mahathir Mohamed came from a different mould from his predecessors. The previous three prime ministers came from the ruling elite, close to the palace in Kedah, Pahang and Johore respectively. Tunku Abdul Rahman, was in fact, closely related to the Sultan of Kedah. Dr Mahathir, on the other hand was the son of a school master. Also unlike the first three prime ministers, who studied law, he was a doctor by training.

When Dr Mahathir came to office, he brought a new dynamism. He made government workers clock in to office in the morning. He was a man in a hurry. Bureaucratic inefficiency irked him and he took action to lessen delays in government approval of application for business. Curious by nature, he personally looked into implementation of government projects and prodded his Cabinet members to do the same. He changed the time-zone for the Semenanjung pushing it half an hour later to be synchronous with East Malaysia. He asked the nation to 'Look East' to Japan as a model for development, instead of being enchanted always by Britain, the old colonial master who used to rule the waves. He was the first prime minister not educated in England.

Dr Mahathir bin Mohamad (1925-)

Mahathir's father, Mohamad Iskandar, was an English educated school master from Penang who was invited to Kedah start an English school. He was the founder principal of the Sultan Abdul Hamid College in Alor Star, where Mahathir himself underwent his secondary school education. His mother, Wan Tempawan, was from a Kedah family that served the government and royal household. She could read the Quran and taught her children to read it herself.

The Japanese occupation interrupted Mahathir's school days but he was old enough then to take the opportunity those years at trade. He was also able to hone his culinary skills by going into the food business. Kedah was under Thai rule.One evening when he was near the Alor Star police station, he heard the Thai anthem being played. He stood to attention where he was, as the Thai flag atop the police station was lowered. An old man pedaled by on a bicycle oblivious to the anthem and everybody standing still. As soon as the anthem ended, a Thai soldier ran after him and kicked the old man on the side of his head causing him to fall and lie still on the street. The

soldier stalked off and eventually some people helped the old man up. Mahathir writes in his autobiography "I stood there transfixed, all kinds of thoughts pounding in my brain. I was not angry at the soldier. I just detested the fact that foreigners could kick our people and we could do nothing about it…and that incident remains etched indelibly in my mind to this day."

After the war Mahathir wasted no time getting involved in politics, becoming a member of the first Malay political party in Kedah – SABERKAS. However politics had to take a back seat when he quickly completed his schooling and gained admission to the King Edward VII College of Medicine in 1947. Unverified sources say the British authorities already had their eye on him and made sure he did not proceed to Britain for legal or political studies but instead gave him a Federal Bursary to study medicine.

Very soon after enrolling, a girl caught his eye. Though he had an aversion to dead bodies and struggled to overcome these feelings he quietly approached this girl's workbench at biology and usurped her laboratory partner's job of retrieving frogs and such specimens from the 'tong' for her. He wooed her with dedication and they were married after graduation. Dr Siti Hasmah bt Abdullah Ali has been Mahathir's beloved wife since. Siti Hasmah has been a doctor and has in her own right had an outstanding career in government service. She has also stood unquestioningly by Mahathir through all the controversial incidents of his career. But when asked by a cheeky correspondent whether she was the driving force behind Mahathir, her reply was "my husband is one person who does not need a driving force, nor is he influenced by anyone."

Many of Mahathir's college mates who for many years enjoyed close bonds of fellowship with him, remember his political zeal. Normally unassuming and approachable, he would become emotional in heated debates, with other aspiring politicians in the college, when discussing race and religion. He would vehemently condemn the colonial rulers for the disparity in education and economic standing between the races in Malaysia. He found an outlet for his ideas writing a regular column for the Straits Times under the pen name CheDet, with topics such as "Changing Malay marriage customs", "Malay padi planters need help", "Malay progress and the University" and the like. He was honest. When someone squealed that many of the bursary holders were receiving funds from home, which they were not allowed to have, some blatantly lied when confronted but Mahathir admitted honestly or naively that he received
$15. His allowance of $25 was promptly cut to $10.

Upon graduation in 1953, Dr Mahathir was posted as medical officer to Pulau Langkawi. He was only there for six months before marriage but that time endeared the island to him. In 1957 he resigned from government service and set up private practice in Alor Star. Marina bt Mahathir was born that year, followed by three brothers. Later, Mahathir and Hasmah adopted three other children, the younger two, from Pakistan. In
1964, Mahathir stood as an UMNO candidate for Alor Star in the general election and was elected to parliament. He was a vocal backbencher and labeled a Malay 'ultra' by Lee Kuan Yew. Standing again for election in 1969 in the Alor Star seat which had a sizable Chinese constitutency, Mahathir lost. There was a swing among Chinese voters nationwide which led to the May 13th riots immediately after the elections. He writes that the taste of defeat was painful and he was angry with the Chinese. He also wrote angry letters criticizing the Tunku's leadership. Adamant, he refused to retract his statements and was expelled from the UMNO supreme council and then from UMNO itself.

In the political wilderness, Mahathir wrote 'the Malay Dilemma' espousing his views on why the Malays were backward and needed affirmative action. His book was banned, but his political wilderness did not last long. The Tunku resigned, not entirely without pressure from Mahathir's views and stand which had traction within UMNO. Tun Razak opened the door for Dr Mahathir to rejoin UMNO in 1972 and he won the highest number of votes in the election for the UMNO Supreme Council that year. He was made a senator in 1973 and he won the parliamentary seat for Kubang Pasu unopposed in the 1974 general elections, as PAS was then with the *Barisan Nasional* coalition. He was made Minister for Education and then, very significantly in the UMNO elections of 1975 he won one of the three slots for Vice-President of UMNO. This placed him among the eligible candidates for Deputy Prime Minister, when Tun Dr Ismail the Deputy PM died in 1976. Tun Hussein picked him over Ghafar Baba and Tengku Razaleigh and that ushered him into the UMNO Deputy Presidency.

Dr Mahathir served for 22 years as Prime Minister. He said he always remembered his mother's advice to never overstay his welcome, and stepped down in 2003. He was immediately conferred the title Tun, together with Siti Hasmah, his wife. He was made advisor to the Langkawi Development Authority, Proton and Petronas. However, he did not sit quietly in retirement.

He wrote his memoirs. Changes that his successor, Abdullah Ahmad Badawi, made to some development projects he had initiated, especially a bridge to replace the Malaysian half of the causeway to Singapore, sparked his anger and turned him into critic of the government. He resigned from UMNO vowing only to return when Abdullah was removed. That happened after the 12th General Elections in 2008 and he rejoined the party.

Table 10.1 Population of Malaysia in 1980 (% increase over 1970)

Perlis	148,276 (22)	Selangor*	2,492,638 (53)	Pahang	798,782 (58)	Sarawak	1,307,582 (34)
Kedah	1,116,140 (17)	Malacca	464,754 (15)	Terengganu	540,627 (33)	Sabah	1,011,046 (52)
Penang	954,638 (23)	N.Sembilan	573,578 (19)	Kelantan	893,753 (31)	Labuan	Inc in Sabah
Perak	1,805,198 (15)	Johore	1,638,229 (28)				
Total	**4,024,252**		**5,169,199**		**2,233,162**		**2,318,628**

*includes Kuala Lumpur 977,102

POPULATION GROWTH

Table 10.1 shows that in the 1970s the areas of largest population growth occurred in Selangor, Pahang and Sabah. The slowing of growth in Perak, Malacca and Negeri Sembilan which are closest to Selangor, suggests that most migration into the Klang valley came from these states. By 1980, Selangor had outstripped Perak in population. However as the Federal Territory of Kuala Lumpur with a population of 977,102 had been carved out in terms of administration, the rest of the state had a population of 1,515,536 which was still slightly less than Perak. The change of the economy to manufacturing, together with the growth of the service sector was driving urbanisation in the Klang valley. Selangor alone (including Kuala Lumpur) had a population equal to that of all of Malaya, Singapore, Sabah and Sarawak at the beginning of the century and the Kuala Lumpur Hospital had as

many doctors as the whole country then.

Pahang and Sabah were two other states that saw a population growth of greater than 50%, over the previous decade. They were underpopulated for their size and population growth was above natural increase. In Sabah, this growth was the result of immigration, both legal and illegal, from the neighbouring areas of the Philippines and Indonesia. In the case of Pahang it was the development of agricultural land schemes.

CHANGES IN THE PATTERN OF DISEASE

As the nation developed, people lived longer. Infections, such as malaria, were the chief cause of death in the nineteenth century. Most were successfully controlled in the first half of the twentieth century. This exposed the next tier of diseases causing untimely deaths; infant and maternal diseases. Through aggressive rural health programmes, such tragedies were also slowly curbed. As a result, a new set of problems surfaced as the leading causes of mortality.

There was good news to celebrate. The total death rate per 1,000 fell from 12.4 in 1957 to 6.9 in 1970 and to 5.82 in 1980. Despite the growing population, the actual number of deaths in 1970 and 1980 in Peninsula Malaysia remained similar. Data concerning the cause of death were the responsibility of the police, in the past, as there were no medical personnel in attendance at most deaths, hence accurate diagnosis of causes of death were not available. However, with the expansion of medical services a larger proportion of deaths were medically certified. By 1970 about one third of deaths were medically certified and a clearer picture emerged.

Deaths from cardiovascular diseases were obviously rising rapidly. However, because over 40,000, or 60%, of deaths were not medically certified, we cannot

Table 10.2 Leading Causes of Death 1970 and 1980 in Semenanjung Malaysia

	1970	1980
Medically Certified Deaths	**20,686**	**24,075**
Perinatal Deaths	3,426 (16.6%)	2,684 (11%)
Cardiovascular Diseases	2,286 (11%)	5,433 (22.6%)
Other Infectious Diseases	1,830 (8.8%)	1,098 (4.6%)
Pneumonias	1,129 (5.5%)	1,097 (4.6%)
Tuberculosis	1,069 (5.2%)	596 (2.5%)
Cancer	1,621 (7.8%)	2,444 (10%)
Accidents	1,648 (8.0%)	2,324 (9.7%)

determine the true pattern. Undiagnosed fever still accounted for over 9,000 non-medically certified deaths in 1980. Cardiovascular diseases and cancer were beginning to rise in importance but they were not yet the leading causes of death.

CARDIOVASCULAR DISEASES

Cardiovascular diseases ranked third among the causes of death in Malaysia in 1950 but by 1970, they had risen to become the most common cause of death. By 1998, cardiovascular diseases accounted for nearly 30% of the all medically inspected deaths. Cardiovascular diseases are dominated by 3 major diseases. Coronary artery disease account for slightly more than 1/3 of the group. Cerebrovascular disease accounts for another 1/3 while hypertension and heart failure from various causes account for the remaining 1/3. In all these diseases, atherosclerosis constitutes the major underlying pathology. Two other important cardiovascular diseases are the rheumatic heart diseases and congenital heart diseases. But together they accounted for only about 3% of cardiovascular deaths.

Myocardial infarction and other forms of coronary artery disease had risen from being 3.0% of medically-certified deaths in Malaysia in 1965 to 11.3% in 1989. All the races were similarly affected by the rising trend, but Danaraj and Muir found that Indians, especially Indian Muslims, had a higher risk of deaths from myocardial infarction. Pallister in Penang also observed that Indians seemed to have about 1.5-1.8 times the risk greater than Chinese or Malays. Ethnically, coronary heart disease increased from 3.7% of deaths in 1970 to 10.5% in 1989 among Malays. Among Chinese it rose from 3.9% in 1970 to 10.4% in 1989 and for Indians it climbed from 7.0% in 1970 to 15.4% in 1989.

Strokes or cerebrovascular disease rose from being 6.6% of all medically inspected death in 1975 to 8.9% in 1989. Women outnumbered men by a ratio of 1.2 in respect to cerebrovascular deaths. In fact, the number of women dying of strokes outnumbered the number of dying of coronary deaths.

The National Morbidity Survey of 1986 – 1987, a large study involving a random sample of 26,005 respondents found that the prevalence of hypertension (defined as >160/95mmHg) was 2% in the 25-34 year age group and rose to 14.5% in the 65+ age group. Only 38% were aware of their condition. The overall prevalence rate was 7.3%, and the study estimated that 360,000 persons in Malaysia above the age of 25 years had hypertension. The National Health and Morbidity Survey of 1996 found a rising overall prevalence of hypertension. 12% of the population had blood pressure above 160/100mmHg and 32% had blood pressures above 140/90mmHg. In a hospital hypertension study, Lim TO found that complicated hypertension was seen in 10% of 1,066 medical admissions. All had uncontrolled hypertension, 85% had hypertensive heart disease, 33% had cerebrovascular disease, 30% had ischaemic heart disease and 2% had malignant hypertension.

THE ECONOMY

Per capita gross domestic product (GDP) in Malaysia had grown 31% in the 1960s and an amazing 58% in the 1970s, but this proved unsustainable and scaled back to 36% in the 1980s.

The rapid economic growth however, led to a variety of problems. Shortage of labour resulted in an influx of millions of foreign workers, and as many as 50% were thought to be illegal workers. However, the rate of poverty in Malaysia also fell dramatically. NEP policies continued to be enforced overtly in the form of race-based quotas for low-cost housing units, university places and business equity ownership.

BAHASA MALAYSIA

By 1980 the effects of the national language policy were noticeable. From just less than half the Chinese and Indian population being able to speak Malay in 1970, 73% of Chinese and 86% of Indians were conversant in Malay in 1980. However, the effect was even greater in East Malaysia. Only 5% of Ibans spoke Malay in 1970 but it rose to 38% in 1980. Among the Bidayuh and other pribumi in Sarawak and Sabah over 70% were conversant in Malay. It became the *lingua franca* for different ethnic groups to interact in and by the end of the twentieth century usage of Malay was almost universal in East Malaysia.

It was different however in the Semenanjung. The Chinese reaction to Malay being made the medium of instruction in national schools was to retreat into Chinese medium schools, which the political agreement the MCA brokered and protected. The Indians to a lesser extent also did the same thing preserving their vernacular schools. The policy thus failed to achieve its aim of national unity through the whole country speaking the same language. Although most Chinese and Indians could speak some Bahasa Malaysia, few mastered it and continued to converse with each other in their own language. Bahasa Malaysia was used only when they had to communicate inter-racially and most were not comfortable doing so. The biggest loser however was English. Although many of the middle class among all the races remained proficient in English overall the standard of English in the general population declined drastically.

THE HEALTH BUDGET

The position of the Minister of Health in the Cabinet, by tradition from Independence, went to an MCA appointee. By and large, the medical and health services of the country never became a political issue. No political movement ever rose up to make demands about the type of health care they wanted. In general it can be said the population was pleased with what the government offered. Throughout the first few decades there were never any major policy changes, no scandals nor irregularities. Health Ministers just oversaw the programmes the Director General of Health and his officers planned. Policies and programmes came mainly from health professionals but the minister spoke for the government when health matters concerning public arose. The government provided basic health and medical services practically without cost to the population from taxes which were expanded at an incremental rate as a growing allocation was made available.

The Ministry of Health received an allocation of 4.4% of the national budget, that hit the one billion ringgit mark for the first time in 1981. In percentage terms the allocation from the national budget to the Ministry of Health had actually been decreasing steadily from 8% in 1961 when it amounted to RM112,000,000. In relation to the GDP, the government health expenditure had slowly increased from 1.5% in 1970 to 3.7% in 1981. Through the 1980s the Ministry of Health continued to receive between 4.1-4.5% of the government budget, but in terms of the GDP it decrease to below 2% through the 1980s.

In per capita figures, expenditure for health rose from RM13 per capita in 1961 to RM 71 in 1981 and remained at about that level through the 1980s. Of the RM1,000,000,000 allocation for health, RM892,000,000 was for operating expenditure and RM120,000,000 for development. The largest chunks of the budget were for medical services (58%), health services (25%), dental services (5%) and training (5%).

HEALTH INDICATORS

In terms of health facilities there were 355 government health centres, each covering an average of 26,000 people. There were 1,806 rural clinics or midwife clinics each covering an average of 4,300 people. 76% of pregnant mothers were covered by the health services. 51.2% of births occurred in hospitals. 47.7% of pregnant women had home deliveries, of which 66% were attended to by government midwives and 18.5% by registered '*bidan kampung'*. The maternal mortality rate had fallen to 0.69 per 1,000 among Malays, 0.1 among Chinese and 0.35 among Indians in 1982. On average (0.59) it was 5 times lower than at Merdeka. Even in Sabah and Sarawak the maternal mortality rate was low between 0.2-0.3 per 1,000, in fact better than in Peninsular Malaysia. 80% of children born had the first dose of polio and triple antigen immunisation but only 69% completed polio and 65.5% completed the triple antigen immunisation in 1981. Life expectancy at birth was 68 years for men and 73 years for women.

THE INSTITUTE OF PUBLIC HEALTH

The Institut Kesihatan Umum (IKU) continued to be the nerve centre for public health through the 1970-80s. Hostel facilities were built in the early 1970s and the institute developed a vibrant community and campus life. The core of training for nurses and health inspectors were for maternal and child health services, nutrition and malaria eradication. From 1971 the Public Health Nursing course examination was conducted in Bahasa Malaysia, graded in Malaysia and was no longer sent to London for verification. Dr Raja Ahmad Nordin who had become the Director General of Health in the 1970s moved to upgrade the Public Health Inspector's training curriculum to a 3 year course and appointed Dr Indra Pathmanathan to lead the team developing the new curriculum. The initial 2 years were residential at IKU followed by a final year of structured supervised field training. The first intake of the 3-year course was in 1975. The intake of students increased from about 30 to

over 80. In 1988 ties with the Royal Society of Health were severed and the Malaysian Health Inspectors Board took over being the examining authority. The profession had traditionally been a male preserve but in 1999 the first batch of women were accepted into the training course. The 12 pioneers comprised 10% of the batch.

The Health Education Unit of the Ministy of Health was established in 1968. Initially it produced educational materials related to diseases such as cholera and typhoid. Dr Raja Ahmad Nordin's Master's degree was in Health Education and it was natural he had a special interest in it. Not only was health education integrated into the curriculum of health inspectors and public health nurses, a new category of staff known known as Health Education Officers was created. University graduates were enrolled in a 21 month programme training them to the equivalent of a postgraduate Master's level. The first small batch of 5 students was enrolled in 1976. Efforts were made to recognise this qualification but it was hindered by the fact the IKU was not a university. Eventually accreditation was achieved through the Universiti Kebangsaan Malaysia (UKM) Faculty of Allied Health Sciences.

Another need the IKU had to address was that of young doctors who were posted to rural health centres as medical and health officers and expected to lead the rural health team. They had no experience working in rural health services and were thus not properly equipped for their task. The IKU started a one-week orientation course for them which included management principles, interpersonal and group communication, team work and community organisation. Gradually the IKU conducted management courses for more advanced level of health managers. This led naturally to training for hospital managers.

In 1985, the Ministry of Health began a programme to improve the quality of care in hospitals using the Quality Assurance Programme (QAP). The IKU was given the role to design and run the workshops and dialogue sessions for the concept of quality in health care. A two pronged approach was introduced: a 'National Indicator Approach' which would be 'top down' and a 'Hospital-Specific Approach' which would be 'bottom up'. In the beginning only a few clinical disciplines were involved but within a few years almost every programme under the ministry of health was covered. The QAP was never directly under the IKU but it played a supporting role.

Although the IMR was designated for research, its strength was in biomedical research but not in health systems. When Dr Khalid Sahan, as Director General of Health was concerned that the smaller district hospitals were underutilised while larger general hospital were overcrowded. He threw the IKU a challenge if it could draw together a small research team from its various divisions, supplemented by some seconded officers, to conduct a study on hospital utilization. The study was completed in 1983 on schedule and he set the IKU on to more work on health systems research. The team led by Dr Indra Pathmanathan was then given the task of conducting the First National Health and Morbidity Survey in 1986.

MEDICAL FACILITIES

Excluding 7 special institution for Psychiatry, Leprosy and Tuberculosis, the Ministry of Health had 89 hospital throughout the country with 21,997 acute bed (up from 12,720 in 1957), including 582 tertiary level specialist beds in 1981. The distribution of beds was not even throughout the country, the average was 1.52 per 1,000 for Malaysia. Sabah (1.69) and Sarawak (1.54) fared fairly well. Kelantan (0.89) had the lowest number of acute hospital beds for its population. Bed occupancy was 68.5% overall but was more congested in the general hospitals. Patients often preferred to get admitted directly to larger hospitals instead of the rural hospitals where there were no specialist services. By racial distribution, Malays had hospital admission rates (57 per 1,000 – compared to 19 in 1957) similar to Chinese (56 per 1,000- compared to 52 in 1957) but Indians still were admitted most frequently (132 per 1,000 – compared to 120 in 1957). Admission rate of Chinese to government hospitals had actually fallen from 1975 indicating that many of them were seeking treatment in private hospitals. Total government hospital admissions a year exceed 1,000,000 in 1985 for all of Malaysia. That year for Sabah and Sarawak admission exceeded just over 100,000 each.

Sabah

By the mid 1980s Sabah had just over 300 doctors in the state. Like in West Malaysia just under half were in private practice concentrated in the large towns. Sabah had three general hospital and 12 district hospitals, in addition to a network of health clinics. What made it unique was a high prevalence of communicable diseases. This was due to the presence of a large number of immigrants. In 1987, 71% of diphtheria, 82% of neonatal tetanus and 24% of tuberculosis cases were found among these migrants.

MEDICAL PERSONNEL

The Ministry of Health had 304 gazetted super-scale medical specialist posts in 26 different disciplines in 1981. However, only 129 of them were filled. In addition to these specialists, there were 76 qualified and gazetted Malaysian specialists not yet promoted to these posts and 61 foreign nationals who was medical specialists working on a contract basis, giving a total of 266 doctors with specialist qualifications. Besides the major disciplines where there were at least more than 10 specialists, the sub-specialities represented included Radiotherapy, Urology, Neurosurgery, Cardiothoracic Surgery, Plastic Surgery, Paediatric Surgery, Haematology, Cardiology, Neurology and Forensic Medicine. Most of these had just one or two specialists in them. In addition to these specialists, the public service also included doctors in the university medical faculties. They were accounted for in the Ministry of Education.

In 1980, there were 3,858 medical practitioners registered with the Medical Council of Malaysia, with 46.6% of them in the private sector. The private sector continued to grow especially in specialist hospital services and the percentage of doctors in private practice reached a peak in 1986, at 58.4%. There after, the percentage in the public sector started to increase. By 1994 54.4% of registered medical practitioners were in private practice. From about 300 new doctors a year in the early 1980s, there was an increase to over 500 new doctors annually in the 1990s. Even though all new doctors joined the public service about half that number resigned each year. The medical fraternity grew so large now it was impossible to know everybody and the camaraderie doctors once knew faded. Medicine also progressed across so wide a field that it was rare that one individual stood out significantly. It was also more likely that contributions to medical advances in the country was now made through teamwork than by individual effort.

At the junior level there were posts for 1,985 medical officers in the Ministry of Health in 1981 but only 1,314 (66%) were filled. There were also 473 dentists 11 oro-maxillary surgeons and 9 orthodontists. The Ministry of Health had 190 pharmacists, 7,148 (87%) staff nurses, 5,669(87%) assistant nurses, 3,065(93%) trained midwives, 1,748(90%) medical assistants, 302(80%) junior grade hospital assistants,647(106%) dental nurses and 700(85%) dental assistants. (The figures in brackets being the percentage of the number of posts filled). The other categories of professional health staff were Laboratory Technicians 612(77%), Assistant Laboratory Technicians 767(76%), Assistant Pharmacists/Dispensers 733(88%), Health Inspectors 527(84%), Radiographers 241(81%), Physiotherapists 56(62%) and a few Pharmacy Laboratory Assistants. In addition there were 378(65%) (*Jururawat Desa*) rural nurses, a post that was to be phased out.

As regards to dentists, the percentage in private practice kept increasing over the years. In 1980 44% of the 691 dentists in the country were in private practice. By 1990 it was 53% and this continued to rise in the 1990s to 56.5% in 1994. The same was true for pharmacists. Only 33% of the 483 pharmacists were in private practice in 1980. By 1994, 74% of the 1,510 pharmacists were in private practice.

ALLIED HEALTH PERSONNEL

The shortage of doctors and the need for more medical colleges may have caught public attention, but alongside the development of Malaysia's health facilities, the Ministry of Health had largely met the needs of the nation in the allied health personnel such as nurses, health officers, radiographers and medical laboratory technicians.

By 1981 there was a capacity to train 712 staff nurses a year. The 5 nursing schools in the Johore Bahru, Malacca, Kuala Lumpur, Ipoh and Kota Bharu hospitals took in 600 nurses. The Queen Elizabeth Hospital in Kota Kinabalu took in 72 and the Sarawak General Hospital in Kuching took in 50. There was post-basic training for staff nurses for midwifery, health, orthopaedics, paediatrics, ward management,

coronary care, psychiatry, ophthalmology and operating room scrub nurses. Most of these courses were in the Kuala Lumpur Hospital. The largest group for midwifery training were done in all the hospitals that trained staff nurses with the exception of Malacca. Training for psychiatric nurses of course continued in the special institutions.

The annual intake for assistant nurses training in the 14 hospitals in the Semenanjung totalled 470, and 100 more in Sandakan. In addition there were courses for rural nurses (*Jururawat Desa*), community health nurses and midwives. 200 medical assistants were enrolled for training in Seremban, Kota Kinabalu and Kuching. 60 hospital assistants for the psychiatric hospitals were trained at Tanjung Rambutan and Tampoi. Radiographers were trained in Kuala Lumpur and Miri. 240 assistant pharmacist and pharmaceutical laboratory assistants were trained in Petaling Jaya. 20 physiotherapists were trained in the Kuala Lumpur Hospital. There was an intake for 120 health inspectors and 30 special anti-malaria inspectors a year at the Public Health Institute in Kuala Lumpur. The IMR trained 200 laboratory technicians and assistants. 20 more were trained in Kuching. 80 dental nurses and 25 dental technicians were trained at the Dental School in Penang.

The UKM started a four year course leading to a Bachelor in Optometry in 1982. There had of course been opticians in Malaysia and many had gone abroad for training but this was the first local training programme for optometrists in Malaysia. In 1991 the Optical Act was passed to regulate the practice of optometrists and opticians in the country.

Outside of these, the Assunta Hospital in Petaling Jaya has a nursing school. It was set up in 1961 by the Franciscan missionaries of Mary and named the Tun Tan Cheng Lock School of nursing. More private nursing schools only began to open in the 1990s.

MEDICAL EDUCATION

Despite setting up three medical colleges over 17 years from 1964 to 1981, Malaysia still faced a chronic shortage of doctors. One solution might have been to continue to open yet more medical schools. However, the medical fraternity was already murmuring over the quality of medical graduates that might be produced with such a rapid proliferation of medical colleges. Doctors who qualified in the days when there were few places available for medical studies, were the crème-de-la crème who were successful in the fierce competition to get in to the Medical Faculty in Singapore or Kuala Lumpur. They could be expected to have an elitist view about entry into the medical profession. There was also the question whether any more new medical colleges could be adequately staffed. Even if one wanted to hold the position that the authorities had managed to get not only qualified but eminent staff to fill teaching posts in the medical faculties, it was obvious that the argument would lose more credibility with each successive new medical faculty opened.

It was just a problem of not having enough doctors from before Merdeka. The specialists that were available were already stretched thin providing the services

needed in the many hospitals spread throughout the country. It was felt they could not be spared from service in order to train new doctors. In setting up the UKM and USM medical faculties, the government had resorted to recruiting foreign specialists around a core of locals, many of whom were young *bumiputera* specialists. It would have perhaps been unwise to spread the available medical educators even more thinly to open more medical schools.

In the 1980s, therefore, the strategy the government employed was to increase the intake of the three medical faculties. Increasing the student:teacher ratio would arguably cause the quality of teaching to suffer, but that seemed to be the lesser evil, compared to opening more medical schools. The intake of UKM was increased from 77 students from 1975 to 192 in 1979 and small increases over the years until it was 215 in 2008. Likewise the intake of UM was expanded from about 120 to 200.Meanwhile many more students went abroad for medical studies not only to India but to Indonesia, Ukraine and Russia as well.

POST-GRADUATE MEDICAL EDUCATION

In comparison to its neighbours, Malaysia fell behind in the development of post-graduate medical education. By 1983, the autonomous Thai Medical Council oversaw residency training programmes conducted for 28 specialties and sub-specialties lasting 3-4 years. In the Philippines, the Philippines Medical Association through affiliate Specialty Boards was responsible for accreditation and certification of specialist training in both private and government hospitals. In Indonesia, the Consortium of Medical Science under the Ministry of Education was responsible for residency training in 17 specialties. In Singapore a committee on Postgraduate Medical Studies had been formed in 1961 with representatives from the professional organisation and the Faculty of Medicine. This led to the establishment of the School for Postgraduate Medical Studies in 1969. Courses leading to examinations for Masters of Medicine were started for Internal Medicine, Surgery, Paediatrics, Obstetrics and Gynaecology. A course for anaesthesia was added in 1971 and for Public Health and Occupational Medicine in 1973.

In three of these Southeast Asian countries post-graduate medical education was profession based and in the other it was university based. Malaysia took a long time to decide between the two.

Almost all the leading medical specialist in Malaysia had their training and qualification from the Royal Colleges of Britain or Australia. As a result there were strong institutional as well as personal links. Therefore, it was natural the medical profession wanted to follow the British system of post-graduate training. As a matter of fact, many arrangements had been made to enable training positions, called Registrar posts,in hospital units in various large hospitals in Malaysia to be accredited as fulfilment of requirements for the Specialist qualifications of the Royal Colleges examinations. Several of the Royal Colleges of the United Kingdom and Australia conducted some of their examinations in Malaysia. The natural progression many

doctors saw, was to form the local equivalent of the Royal Colleges and conduct our own training and certification.

These reasons by themselves were sufficient for doctors to want a profession based system even though Singapore had chosen the university based model. However, another reason our doctors wanted such a system was that most of our specialists were scattered in Ministry of Health hospitals throughout the country in public service and not in the universities, nor concentrated in Kuala Lumpur. In Singapore all the doctors were in one place. The senior specialists in Malaysia feared they would lose their influence in medical training if a university based system was adopted.

To prepare for certifying post-graduate training, the physicians and surgeons, the two largest groups of specialists formed the College of Physicians and the College of Surgeons of Malaysia in 1973. General Practitioners also formed a college.However, progress was slow. Finally, a Colleges Bill was tabled in Parliament. However, after its first reading the bill was quietly withdrawn in 1974.

Meanwhile the universities pursued post-graduate training. The University of Malaya began, a Masters of Psychological Medicine under Prof Tan Eng Seong and a Masters of Public Health under Prof Winifred Danaraj, in the 1973-1974 session and a Masters of Pathology programme under Prof Lau Kam Seng in 1975 External examiners from the UK were pleased with the standards and candidates from the Western Pacific region were sent by the WHO to attend these courses. They tactfully stayed away from programmes for Internal Medicine, Surgery and the main clinical disciplines. In 1979 the Vice-Chancellor of UKM announced their intention of starting post-graduate training.

In 1980 the MMA president, Dr Ezanee Merican approached Dr Tan Chee Khoon to head a committee to inquire into the problems of post-graduated medical education in Malaysia. He managed to bring together the representatives of the three colleges as well as the deans of the three Medical Faculties.

However, UKM did not wait. They were bolder and had little regard for what the Colleges were doing. Professor QM Iqbal took the lead, designing the course for Orthopaedics. The first group of post-graduate students were registered in the 1981-1982 session. There were six for Orthopaedic Surgery and three for General Surgery.

Meanwhile the committee under Dr Tan unanimously decided that there should be a National Board of Post-Graduate Education. The board would certify training as well as see to accreditation and all post-graduate activities would be encouraged. The report was accepted by all parties and Dr Tan was optimistic that it would work. However three years later he lamented the lack of progress in his speech when he gave the 5^{thr}Tun(Dr) Ismail Oration of the Academy of Medicine. He cited certain individuals in the Universiti Kebangsaan Malaysia who were determined to have post-graduate medical education based in their university. He spoke true to his nature,

frankly ‘without fear or favour’. In view of the lack of unanimity amongst the medical profession, the government appointed the Inter Agency Planning Group of the Prime Minister’s Department to study the problem and to submit a report. The group recommended that Malaysia adopt the “Singapore System” and hence it came to be that post-graduate medical training in Malaysia became university based.

Step by step UKM developed its post-graduate programme. The course for Otorhinolaryngology started in 1982, Ophthalmology and Radiology in 1983, Paediatrics in 1984, Psychiatry, Anaesthesiology and Obstetrics & Gynaecology in 1985, Internal Medicine in 1986 and Pathology in 1989. These were 4 year programmes which, besides teaching, candidates had to log experience, write dissertations, do research as well as sit for two major exams. The other two universities followed suit.

Universiti Malaya started its post-graduate Masters programme for Anaesthesia in 1987. The programmefor Paediatrics started in 1988, Orthopaedics in 1989 and Ophthalmology in 1992. The university did not lose sight of family medicine or primary care. It set up a Department of Primary Care in 1987 and offered a Masters programme.

Similarly, USM started its Paediatrics post-graduate programme in 1991, its Pathology in 1992, Anaesthesia in 1993, Ophthalmology in 1997.The Ministry of Education set up the Board of Postgraduate Studies in 1985 to monitor the curriculum and training in the three universities. The universities themselves usually got together to conduct conjoint examinations so as to maintain uniform standards. When all the three universities had set up their programme conjoint boards were formed for each discipline. The boards met to streamline training and hold similar examinations for the trainees. Within each programme, however, each university had freedom to structure the training. Some courses were ‘in-house’ only while some were ‘open’, meaning the trainees could be placed in other hospitals for work and experience and required to attend teaching in the university only from time to time.

Meanwhile in Ophthalmology the Diploma in Ophthalmology (DO) ceased to be recognised as specialist qualification in 1990.

During the 1990s, surgical training in the United Kingdom evolved. Having been trained in a surgical unit recognised by a surgical college in Britain no longer met the requiredments to sit for the exit exam to be recognised as a qualified surgeon. The British surgical colleges developed a more structured curiculum, requiring candidates to keep a log book and meet specific targets in procedures and experience. The old FRCS examination was therefore no longer deemed sufficient. It was renamed the MRCS (Membership of the Royal College of Surgeons) examination and considered the entry requiment for surgical training in the United Kingdom. This effectively closed the door for doctors training in Malaysia to qualify as a surgeon by this route.

SUB-SPECIALTIES

The Paediatric Sciences

One of the important early advances in paediatrics in Malaysia developed in the field of Haematology and Oncology. Professor D Sinniah at the University Hospital introduced chemotherapy for childhood acute lymphoblastic leukaemia (ALL) in the 1970s. In 1975 Dr Lin Hai Peng was sent for training at the Royal Hospital for Sick Children in Glasgow. He was soon followed by Dr Raja Khuzaiah. Upon their return, two centres for treatment of childhood cancers were established, one at UM and the other at UKM. An important milestone in the history of Paediatric Oncology took place in 1987 when the country's first bone marrow transplant was performed using a matched sibling donor for a child with ALL in 1987 at the University Hospital.

Another pioneer sub-specialty unit that began in the 1980s was neonatology. The first unit was developed by Dr Abdul Kadir Husin at the Department of Paediatrics at UKM. In Special Care Nurseries (SCN) neonates were ventilated and care for by neonatologist instead of anaesthetists as was done previously. These units were later re-named neonatal intensive care units (NICU) and established in all major hospitals. In 1993 Professor Boo Nem Yun was appointed the first professor of neonatology in Malaysia at the UKM.

Paediatric surgery also made notable advances in this era although it never developed into a separate department. Of course, to begin with in the early days, general surgeons performed all the operations children required. However, certain special operations, especially those for the newborn, required special expertise. Dr Karpal Singh who from the time he was Senior Registrar in GH KL from 1967 took care of most of the paediatric problems. He was sent for training at the Royal Children's Hospital in Melbourne and obtained an additional Fellowship in paediatric surgery from the Royal Australasian College of Surgeons (RACS). Much of his neonatal work was for anorectal malformations, but also intestinal atresias and Hirshsprung's disease. In the late 1970s when Karpal resigned to join private practice, Dr Mahmud Mohd Nor took over Surgical Unit 3 which was designated for paediatric surgery in GH KL. Another surgeon who took an interest in paediatric surgery was Professor K Somasundram at the University Hospital, There he successfully separated the first pair of Siamese twins in 1981. Another pair were also operated on in 1982 and both pairs survived.

Figure 10.1 Newspaper Report of Separation of Siamese Twins

Reliving 40 years: March 6, 1981

UH SURGEONS SEPARATE SIAMESE TWINS

By I. RAJESWARY

PETALING JAYA, Thurs. — University Hospital surgeons today successfully separated Siamese twins who were joined at the pelvis.

The operation is believed to be the first of its kind in Asia.

The babies, both girls, were separated by a team of 12 doctors led by Prof K. Somasundram, the head of surgery at the hospital.

The operation began at 8a.m.

At 6.30p.m., the first baby was wheeled out. The other followed half an hour later.

The babies' parents watched the operation on closed-circuit TV in the hospital, while an Asian Institute of Broadcasting Development team recorded it on film.

Part of the film was shown on TV tonight — the first time RTM ever telecast a local surgical operation.

The twins were born to the wife of an odd-job labourer in Ipoh on Aug. 12 last year. They are believed to be the first Siamese twins born alive in the country.

They were moved from the Ipoh General Hospital to the University Hospital and kept under intensive care.

Hospital sources said the operating team took almost four months to prepare for the operation.

The University Hospital team at work yesterday

A surgeon at work during the delicate operation

After the operation, Prof Somasundram said there were no complications during the operation, and the "healthy, normal babies" were doing fine.

He said the twins were separated by "cutting across the abdomen in a delicate operation which involved the separation of various organs."

"The twins are now normal and have an identical set of organs," he said.

However, he said, the operation was not all.

"Anything can happen tonight or tomorrow. All we can do is pray. I will give the details tomorrow morning," he said.

At midnight, a source at the Intensive Care Unit said the babies were "okay."

"Earlier, tonight, Prof Somasundram told Bernama that the operation was "something we will never do again in our lifetime."

He said this type of Siamese twins was very rare, and only three other such operations had been reported in the world.

Of these, two in the United States were successful, while the third in Nigeria failed, he said.

In the early 1980s plans were begun for the construction of a paediatric unit on the grounds of the Kuala Lumpur Hospital. It was not envisaged as a fully fledged independent hospital but would include both the medical and general surgical aspects of paediatrics. Following protests from Dr M Sivanantham, the head of orthopaedics that orthopaedics was excluded, space was made for it to share wards with general surgery. However provision was not made for other sub-specialities. Construction of the building began in 1984 but was stopped after piling works when it was discovered the ground was too soft to take the proposed building. A few floors had to be scrapped and work recommenced in 1989 for a three storey building. The new Institute of Paediatrics was completed and began operations in May 1991.

Dr Mahmud Mohd Nor and Dr HK Goon his successor as head of paediatric surgery, were both from the UKM. The unit, therefore, continued to be jointly run by UKM and the Ministry of Health. The next generation of paediatric surgeons were sent to the major general hospitals; Dr Thamin Ansari to Penang, Dr VP Barthwal to Kuantan and Dr Lai Fui Boon to Johor Baru, but development of the specialty suffered setbacks as many of them resigned; mainly for private practice. More than once the successor sent also resigned after a short while.

Haematology

Unlike the heart, renal and neuro- sciences that straddle the medical and surgical disciplines, haematology straddles the laboratory and medical disciplines. On the laboratory side, the IMR laid the foundation. Dr PWG Tasker studied anaemia in the 1950s and showed that nutritional deficiencies were the main cause. In the 1960s, Dr Lie-Injo Luan Eng pioneered research in the thalassaemias and haemoglobinopathies. Among many discoveries, she was the first to describe Haemoglobin Bart's that characterises homozygous alpha^{O} thalassaemia and had the

distinction of publishing a paper about it in the journal *Nature.**

In 1978 Dr Khalid Hassan headed the Division of Haematology at the IMR and introduced blood marrow cytogenetics and molecular pathology for studies in haematological malignancies. He also pushed for scholarships for training in MRCPath Haematology in the United Kingdom. During this time in the Kuala Lumpur Hospital Dr Galdys C Lopez and Dr Gnanasothie Duraisamy built up the National Blood Centre that oversaw blood transfusion services for the country.

In clinical haematology, paediatricians in the UH treating leukaemia succeeded in doing bone marrow transplants in 1987. Dr John Joseph Bosco developed adult haematology in the Department of Medicine and also achieved success in bone marrow transplant in adults in 1993. Clinical haematology was started under general medicine in Kuala Lumpur Hospital in 1986 under Dr V Purushothaman and became a special department in 2003. Bone marrow transplant services was established in KL General Hospital in 1999. By the middle of the first decade of the new century there were 8 centres, both government and private institutions, doing stem cell transplants and over 1,000 cases had been done with about a 60% success rate.

The Heart Sciences

In cardiology, 1982 saw the establishment of a dedicated Department of Cardiothoracic Surgery at the GH KL, led by Dr Rozalli Wathooth. A few months later the first successful coronary bypass graft surgery was done in Malaysia. As coronary artery disease was becoming so prevalent, such surgery spread very rapidly. In a matter of a few years, UH and the Subang Jaya Medical Centre were offering these services. Within ten years a number of private hospitals all over the country were also performing such operations, not withstanding the support services required such as intensive care beds. On the 'medical' side, percutaneous coronary angioplasty (PTCA) was first performed in 1984.

In 1989, Tun Dr Mahathir Mohamad, the prime minister suffered a heart attack. He chose to be treated here in Malaysia at the GHKL. He underwent coronary bypass surgery successfully under Dr Yahya Awang. That year also, the idea of a dedicated Cardiothoracic Hospital was mooted and, not surprisingly, received strong support from the prime minister. A parcel of land next to the GHKL was earmarked and the hospital was modelled after a hospital in Vienna. It was completed within 18 months, opening its doors in 1992. The Institut Jantung Negara (IJN) was a 275 bed hospital. It had 4 operation theatres, 3 cardiac invasive laboratories, an 18 bedded intensive care unit for post-surgical care and a 12 bedded coronary care unit. It was the first experiment for the government in corporatizing health care.

**Lie-injo LJ and Ti TS. The fast moving haemoglobin component in hydropsfoetalis.Nature 185:689 1960.*

The IJN was a wholly government owned company, built at a cost of RM151 million, operating three classes of wards and having a standard fee schedule. Private patients made direct payments, the government paid for its employees and dependents. The under-privileged were entitled to subsidies.

Between 1982 and 1987, the Department of Cardiothoracic surgery performed 1,100 cardiac operations. In the first 10 years of its operation the IJN performed 23,626 surgical procedures. In 1993 it performed about 400 cases of Coronary Artery Bypass Graft (CABG) operations. The number rose to almost 1,000 in 2003.

The Renal Sciences

In Urology, technological advances brought new treatments. The first ureteroscopic removal of a ureteric stone was performed in 1986 and extra-corporeal shockwave lithotripsy (ESWL - disintegrating stones using shock waves through the skin) was introduced in 1989 with the purchase of a Siemens lithotripter for the Institute of Urology. In 1993 the first laparoscopic nephrectomy was performed. Decentralisation of urology began when Dr Sahabuddin Raja Mohamad was posted to Penang Hospital in 1991, The following year Dr Pang Kim Weng was sent to Johor Bahru. Next urological services were started in Kota Kinabalu and then Kuching. The Institute of Urology served as the training centre for urologists and 3 to 5 candidates were trained each year.

A landmark for the Malaysian Urological Association was winning the bid to host the 6th Asian Congress of Urology in 1998. The congress itself was held in 2002. It was in the era of explosive growth of information technology and a highlight of the meeting was the presentation of live surgery via video link with Maine Hospital in Frankfurt to the Institute of Urology in Kuala Lumpur; demonstrating laparoscopic radical prostatectomy using a new generation of robots. This led to two robots being purchased, for Kuala Lumpur and Johor Bahru.

The Surgical Specialties

The Ministry of Health records for 1990 show that a total of 447,421 surgical operations were carried out that year throughout all the government hospital. Orthopaedics actually edged out general surgery as the discipline with the most number of operations (Table 10.3). Obstetrics and Gynaecology had a combined total slightly more the half of the big two. Ophthalmology was next, followed Urology, Otorhinolaryngology (ENT) and Plastic Surgery.

Table 10.3 Operations Done in Ministry of Health Hospitals in Malaysia 1990.

Type of Operation	Peninsular Malaysia	Sabah	Sarawak	Special Institutions	Total (Percentage)
General Surgery	107,292	16,743	13,484	517	138,036 (30)
Orthopaedic	123,782	9,706	5,521	59	139,068 (31)
Obstetric	25,913	1,752	2,582	0	30,247 (6.8)
Gynaecology	30,827	5,326	6,248	0	42,401 (9.5)
Ophthalmology	24,538	2,318	1,205	0	28,061 (6.3)
Urology	14,101	1,544	1,748	0	17,393 (3.9)
Ear, Nose and Throat	7,527	1,429	1,062	0	10,081 (2.2)
Plastic Surgery	3,156	822	388	0	4,366 (0.9)
Neurosurgery	1,563	132	92	0	1,787 (0.4)
Cardio-thoracic	1,386	40	39	0	1,465 (0.3)
Others	32,576	1,897	47	59	34,579 (7.7)
Total	372,662	41,709	32,416	635	447,421(100)

Dr Balasegaram Manickavasagar (1929-2014)

Balasegaram, the eldest of ten siblings, was born into a family in Batang Berjuntai, Selangor where his father had migranted from Jaffna in Sri Lanka to work. Getting an education was not easy for Bala. Manickavasagar, his father, knew the importance of an English education, because it was on that account he secured his job supervising an oil palm factory. Bala was sent off to board in order to get and English education before he was 5 years old. He had to move from one place to another to get schooling, but he had an outrageous ambition to be a doctor.

By the time the Japanese invasion came, Bala was a young man of 12 years, disciplined and focused on his studies. He not only topped the class in all the schools he was moved to, he had even managed a household in Kuala Lumpur which his father rented to house his other siblings for their education.

The Japanese occupation was a time devoted just to survival on the estate with his family. Some resistance fighters had made contact with the estate and in 1944 the Kempetai got wind if it. Manickavasagar was taken for interrogation and never came back. A week later Bala was also instructed to go for questioning but after a few days of terrifying interogration he was allowed home.

More than a year later, after the Japanese surrender, Manickavasagar returned, emaciated, one of only a handful of survivors. Balasegaram returned to St. John's Institution, his last school before the war. He was placed in Standard 6 where he was before the war. Within two months, after two examinations he was moved up to Standard 8. In November 1946 he sat for his senior Cambridge examinations and passed with Grade 1 but was bewildered and disappointed to learn he did not qualify to study medicine because he did not have Science and Latin. He was offered engineering but determined, he went back to his books.

Meanwhile, things had not gone well for his parents. His father lost his job and moved the family back to Sri Lanka. Even in such circumstances, Bala obtained his dicstinctions in Science and Latin, but now finance stood in his way to study medicine. Sabapathy, his brother-in-law, stepped up to offer to fund his studies. Unfortunatlely, Sabapathy died of leptospirosis the next year. Bala managed, fittingly in the events that unfolded, to win a state scholarship to continue his studies, graduating in 1955.

He was posted to Kuala Lumpur hospital for housemanship. Mt Thomas Thornton the surgeon, inspired Dr Balasegaram with his surgical technique, clinical teaching and patient care. Bala who had not previously considered surgery was bitten by the 'surgical bug' in a few months. Even after he had to leave the surgical unit for the outpatient department, he would sneak back to the department and help, even doing operations. He started preparing for surgery by studying for the 'Part 1' specialist exam. When he got the chance to get back into the surgical department, he practically lived in the hospital, volunteering to do the night calls for the registrar of the other unit, besides doing his own calls.

Ever conscious of his family ties he regulary visit his uncle and aunt whose daughter, Jeyaletchimy caught his eye. He began to court her in 1957 and married Jeyaletchimy in 1958. They have six children, five girls and one boy. He qualified as a surgeon in 1959 and did much of his work in Seremban, where he was a tireless worker. He ran a tight ship, mentoring many young doctors, putting patients first but on the other hand was demanding on doctors. He was in the hospital every day, Sundays included. He did anatomical studies of the liver and fashioned instruments to aid his work. His liver clamp to control bleeding was manufactured by a London surgical firm and named after him. His research into liver surgery led him to be honoured with the Hunterian Professorship (a distinguished lecture) of the Royal College of Surgeons of England in 1969, the first Asian accorded that honour. He won other prizes as well from the colleges of Edinburgh and Ireland.

He retired in 1983 and continued a tiring routine in private practice. Liberal use of painkillers for headaches led to end-stage-renal-failure and he was on kidney dialysis by 1969. His nephrologist found him an exemplary patient and he lived to be one of the longest surviving patients on dialysis passing away in 2014 at the age of 85, the age he was determined to reach. After his death the College of Surgeons set up an award in his name with the theme of mentoring as he was remembered by many surgeons for that.

Orthopaedics

As Director-General for the Ministry of Health, Dr Abdul Majid Ismail was able to champion the cause of setting up the National Institute of Orthopaedics and Traumatology. It was established in 1976 with Dr M Sivanantham as head. New buildings on the grounds of the Kuala Lumpur Hospital were completed and commissioned in 1979. The School of Physiotherapy and Post-Basic Orthopaedic courses were established in the Institute in the 1970s. Hand and microvascular surgery services were started in 1985 when Dr V Pathmanathan returned after being trained in the Jewish Hospital in Louisville, Kentucky, USA under Dr Harold Kleinert.

Out of the orthopaedic and plastic surgery unit, Dr V Pathmanathan established the Hand and Microsurgery Unit in 1990. In addition, Dr Lee Chong Meng who was sent to the Wrightington Hospital for Joint Disease in Wigan, England on his return set up the Joint Replacement Unit in 1993.

A landmark in this field was a whole limb transplant in a newborn from a twin sibling who died from congenital defects. Dr. V. Pathmanathan, transplanted an arm on to four-week-old Chong Lih Ying who was born with a deformed limb. The 15-hour operation was performed on May 18, 2000. She was the first, and the youngest, person in the world to undergo a transplant for a whole limb. Chong's donor, her twin, was born with a severe brain abnormality and with no hope of survival. The transplant scored another first as both donor and recipient were identical twins with identical blood group and cell make-up thus not requiring any lifelong immunosuppressive therapy.

RESEARCH

The IMR

It appeared, in the 1980s, that the IMR was slowly working itself almost out of a job. Pathological laboratory services had been started in the large general hospitals in the 1960s and 1970s. The setting up of the universities also meant both laboratory work and research were undertaken in these medical faculties. At the same time the research fields that the IMR excelled in, such as malaria, filiariasis, beri-beri and other 'tropical diseases' were becoming less important. The IMR however did achieve many successes.

In the 1970, the focus of the IMR research was redirected at investigating nutritional disorders, nutrition biochemistry, community nutrition status, rural health problems, dengue, scrub typhus, leptospirosis and other viral diseases, zoonotic diseases, cancers and abnormal haemoglobinopathies. In 1983 a new Malaysian species of schistosome, which had been first discovered at the autopsy of an Orang Asli woman in Pahang in 1973 was recognised as *Schistosma malayensis*. With the emergence of the Acquired Immune Deficiency Syndrome (AIDS) the IMR virus laboratory was designated as the National Reference Laboratory for AIDS Diagnosis.

In 1986, the Division of Malaria Research and Filariasis Research were combined. In 1989 the US Army Medical Research Unit closed its operations in Malaysia, after 40 years of collaborative research with the IMR. In 1990, the vaccine production unit of the IMR closed down and the Snake farm ceased production of anti-venom.

The direction of the IMR was changed from disease-oriented research to a problem-solving approach. New areas of research included allergy, behavioural and health systems research, non-communicable diseases and community health. In 1994

the IMR was re-organised into 3 research departments besides support services and administration. The Department of Tropical Medicine comprised of the divisions of Acarology, Bacteriology, Medical Entomology, Parasitology and Virology. The Department of Clinical Pathology had divisions for Biochemistry, Endocrinology, Haematology, Immunology, Molecular Pathology and Stomatology while the Department of Community Medicine comprised of the divisions of Epidemiology and Human Nutrition.

The Universities

Professors in the medical universities contributed to research in both basic sciences and clinical science. In the UM, under Professors Lau Kam Seng and K Prathap the Department of Pathology published a wide range of work ranging from blood disorders, parasites and other infectious disease to endemic cancers such as liver cancer, nasopharyngeal carcinoma. It had a considerable head start compared to UKM and USM. These universities suffered more pressure from staff shortage which made it necessary to confine research to a back seat. The priority of the new faculties was education. In time though, they caught up with research. The University of Malaya started its Masters in Pathology in 1975, UKM and USM only managed to start their Masters in Pathology programme only more than ten years later.

Clinical research, covered a wide range, depending on the interests of the clinicians and their training. Important research findings concerning diseases prevalent here ranged from systemic lupus erythematosis to multiple sclerosis.

PRIVATE HOSPITALS

Private hospitals were mainly concentrated in the urban areas and catered to the segment of the population with growing affluence. By 1990 there were 174 private hospitals/maternity/nursing homes in Malaysia. The total bed count more than doubled the figure in 1981, totalling 4,675. Kuala Lumpur and Selangor accounted for the largest concentration accounting for 67 such facilities and 2,055 beds. Kelantan and Terengganu had the fewest private hospitals with less than 20 beds in total in each state. Sabah and Sawarak however were not far left behind. Sabah had 8 private facilities with 201 beds and Sarawak 13 facilities and 165 beds. A total of 876 doctors worked in all these private facilities throughout Malaysia, together with 1,295 staff nurses and 1,653 assistant nurses plus other ancillary staff. This growth of private health care meant that although the number of medical specialist in the country was increasing, the crippling shortage of specialists in the government hospitals continued. The market for private general practitioners was filling up but senior government specialists were constantly leaving for the private sector and even newly qualified specialist did not stay long in government institutions. Unfortunately this exodus of specialists, although not a loss to the country, impeded the development of specialist services in government hospitals.

Dr N Kanagalingam started the first private medical centre in Sabah in 1976. It was first purely a maternity centre called the Luyang Clinic and Nursing Home. It moved to bigger premises and added other specialties in 1980 and became the KK (Kota Kinabalu) Specialist Centre. The Sabah Medical Centre was the first large private hospital established in East Malaysia. It opened its doors in 1986 with 300 beds and had CT scan and MRI scan. In 1988 it set up Open Heart Surgery in collaboration with the Institut Jantung Negara(IJN).

In Sarawak, two small nursing homes were started in Kuching in the late 1960s but they closed down due to financial losses. It was not until the early 1980s that two obstetricians attempted again to set up maternity homes. This time they turned out be very successful and in 1986 two surgeons joined them. Following this success, a group of different specialist formed a company and together with the Sarawak SEDC started the Normah Medical Specialist Centre in 1988. Like in Sabah, the demand for cardiac surgery led to co-operation with a visiting surgeon. In this case, links were established with Dr Saw Huat Seong from Singapore. With the success of Normah Hospital, a second large private hospital was set up in the mid 1990s in Kuching; the Timberland Medical Centre.

POLITICAL TURMOIL

In 1986 the early rumblings of a political storm sounded. A rift between Tun Dr Mahathir and his Deputy Tun Musa Hitam appeared. The latter resigned from his government appointment, but was persuaded to retain the UMNO Deputy Presidency by a delegation of UMNO Supreme Council members who hoped to see the two top leaders reconcile. There was no reconciliation. Instead Tun Musa teamed up with Tengku Razaleigh to contest as a team in the 1987 UMNO elections.. In the ensuing UMNO elections Mahathir and Ghafar Baba both won narrowly, but UMNO was split down the middle.

This was not the end of the debacle. Eleven UMNO members filed a suit at the High Court to nullify the results of the General Assembly citing 53 UMNO branches not being properly registered. They wanted the courts to require UMNO to hold its elections again but to much surprise on all sides, the High Court judge ruled that under the Societies Act the existence of unregistered branches meant the UMNO itself was an illegal party.

The huge party, with over 2,000,000 members and 2,000 branches had its assets frozen. The two competing sides raced to register a new party that could inherit the mantle of the old UMNO. Team A was first to the door and formed UMNO Baru. The diehards of Team B however rallied around TengkuRazaleigh when he formed a new party called *Semangat 46* (spirit of 46, recalling the year UMNO was formed). Musa Hitam however, stayed out and retired from politics.

CHAPTER 11 THE CLOSE OF THE TWENTIETH CENTURY

The last decade of the twentieth century was really a continuation of the Mahathir era. Tun Dr Mahathir became the longest serving Malaysian prime minister. He dominated his cabinet such that there were no dissenting viewpoints visible. He succeeded in improving the efficiency of the administration and services of the bureaucracy. Inspired by Japan, he implemented the 'Malaysia Incorporated' concept through which he managed to change to some degree the civil service mentality of being masters who needed to be served, to a new mindset of being partners with businesses to prosper the nation. However, from this partnership with business, many charges of cronyism surfaced. He had great dreams and plans for Malaysia to stand tall among the nations of the world. He wanted the country to rank among the developed nations of the world, and he encapsulated that dream with the catch phrase '*Wawasan 20/20*' or Vision 20/20. He set a target for Malaysia to reach that goal by the year 2020.

THE ECONOMY

The New Economic Policy(NEP) which began in the early 1970s reached its expiry date in 1990. Its success or failure is the subject of much debate. The end of the century however, certainly saw the rise of a large Malay middle class. The NEP was officially retired in 1990 and replaced by the National Development Policy (NDP). Despite the improvement in the economic power of Malays in general, the government still maintained a policy of discrimination, that favoured ethnic Malays over other races in the areas of employment, education, scholarships, business, access to cheaper housing and assisted savings. This special treatment festered resentment among non-Malays. Ethnic Chinese control in many essential or strategic industries such as petroleum retailing, transportation, agriculture and automobile manufacturing shifted into the hands of *bumiputeras*.

GDP growth for the whole decade rose again to 59% in the Nineties, led primarily by export-oriented industries. For example, in 1990, exports totalled RM94,700,000,000, consisting of manufactured goods (18.7%), electronics(13.8%), oil& gas(14.4%), rubber and palm oil(8.1%), timber(4.3%) and others(40.7%). After the Asian economic crisis in 1987, from 1988 to 1997, the economy experienced a period of broad diversification and sustained rapid growth averaging 9% annually.

By 1999, GDP(nominal) per capita had reached US$3,238. Manufacturing grew from 13.9% of GDP in 1970 to 30% in 1999, while agriculture and mining which together had accounted for 42.7% of the GDP in 1970, dropped to 9.3% and 7.3%, respectively, in 1999. Major products include electronic components such as semiconductor devices, electrical goods and appliances making Malaysia is one of the world's largest exporters of these products.

Some of the more visible projects from that period are Putrajaya (the city built to house the government administration), the new Kuala Lumpur International Airport, the Petronas Twin Towers and the Multimedia Super Corridor. Concerns were raised about the sustainability of the rapid growth and the ballooning current account deficit. The mainstream opinion prevalent at that time was that the deficit was temporary and would reverse once imported equipment started producing for export. In spite of that, measures were taken to moderate growth, especially when it threatened to overheat into the double digits. As was widely expected, the current account deficit did narrow steadily, year to year, from 9% to 5% of GDP. Government debt in proportion to GDP fell from 80% in 1990 to just above 30% in 1997. In most years, the government budget was balanced or in surplus, enabling the public health sector to be comfortably provided for.

Table 11.1 Population of Malaysia in 1991 (% increase over 1980)

Perlis	184,070 (24)	Selangor*	3,434,311(38)	Pahang	1,036,724 (30)	Sarawak	1,648,217(26)
Kedah	1,304,800 (17)	Malacca	504,502 (9)	Terengganu	770,931 (43)	Sabah	1,736,902(74)
Penang	1,065,075 (12)	N.Sembilan	691,200 (21)	Kelantan	1,181,680(32)	Labuan	54,307
Perak	1,880,016(4)	Johore	2,074,297(27)				
Total	**4,433,961**		**6,704,310**		**2,989,335**		**3,439,426**

*includes Kuala Lumpur (1,145,075)

From the population figures in Table 11.1 it can be seen that although Kuala Lumpur and Selangor continued its inexorable urbanization growth, what is more astounding is the population growth in Sabah. The population there nearly doubled in a decade. Sabah always had fewer people than Sarawak in the past, but in the 1980s, it grew so rapidly that it surpassed Sarawak. The reason for the great increase was of course immigration. Illegal migrants from the Southern Philippines and Eastern Kalimantan crossed the porous coastal boundary and melted into the land as they spoke the same language. Government authorities took no action despite the Sabahans' protests.

In the Semenanjung, most noticeable change was the decline of the population in Perak. A 4% growth over a decade was less than expected from just natural increase. Tin had run out and emigration was palpable. People were not only moving to the Klang valley, many Chinese were moving to Singapore and abroad. Overall, it was noted that the population increased the least in the states with a higher Chinese population.

With development, population growth slowed down. Malaysia's birth rate decreased to 28.0 per 1,000 in 1990, compared to 46.2 at Merdeka. The death rate decreased even more to 4.7 per 1,000 (only about one third the rate at Merdeka). The fertility rate of women (average number of children a woman would have) was

3.3. Infant mortality was down to 13.3 per 1,000 (down from 75 at Merdeka) and the maternal mortality rate stood at 0.19 per 1,000, more than 10 times lower that the rate at Merdeka.

MORTALITY TRENDS

Among the 34,278 (41% of all deaths) medically certified deaths in 1990, cardiovascular diseases (9,631[28%]), cancers (3,714[10.8%]) and perinatal deaths (3,021[8.8%]) increased in numbers.

As there was still no legal requirement in Malaysia for deaths to be certified, a large number of deaths continued to be certified by non-medically qualified persons. However, even the causes of death in these records changed (Table11.2). Among these, heart attacks or sudden deaths increased significantly. Even diabetes was increasingly recognised as a cause of non-medically certified death. Cancers, as expected, rose progressively. On the other hand, fevers of unknown origin decreased markedly, but old age and other undetermined causes of death remained high. Therefore, we cannot rank the order of the leading causes of deaths with certainty. But it was obvious that sooner or later cardiovascular diseases and cancers would top of the list.

Table 11.2 Non-Medically Certified Deaths in Malaysia 1980-1990

	1980	1989	1990
All Accidents (Other)	1,503	(701)	(682)
Road Accidents		1,070	1,084
Suicide	141	113	36
Maternal Deaths	110	36	24
Infections (mostly notifiable)	635	599	570
Abdominal Pain	833	579	613
Other Fevers	9,829	3,015	2,971
Cancer	1,180	2,147	2,562
Heart Attack/Sudden Death	31	1,481	1,794
Diabetes		467	514
Old Age (undetermined)		23,667	23,637
Undetermined Cause	24,959	8,658	7,209
Others	901	6,180	7,270
Total	40,137	48,713	48,966

MEDICAL FACILITIES

Throughout the 1980s, the Ministry of Health was allocated between 4-4.5% of the national budget. It rose to 5% in 1989 and up to 5.7% in 1993. In absolute terms, the operating budget slowly rose to 1.25 billion ringgit in 1989. Thereafter, it rose quickly to reach nearly 2 billion by 1993. It was the development side of the allocation for the Ministry of Health that received the bulk of that increase, rising from under RM250,000,000 in the 1980s to above RM500,000,000 from the early 1990s. The number of outpatient attendances and inpatient admission in government hospitals recorded a steady increase annually. The state general hospitals were upgraded from time to time. The Klang Valley, which was developing very rapidly needed new hospitals. Modern general hospitals were built in Kajang, Selayang, Serdang, Sungai Buloh and in Putrajaya, the new administrative centre. A few new hospitals were also built at the district level. In addition, the UKM medical faculty received a new hospital in Cheras, Kuala Lumpur.

The new Klang Valley general hospitals were made tertiary centres for some of the specialties. The Selayang Hospital was made the national centre for digestive diseases, with disciplines such as Gastroenterology, Hepatology, Hepatibiliary and Colorectal surgery located there. The Sungai Buloh hospital, near the old leprosarium was made the centre for Infectious Diseases. The Ampang Hospital was designated the centre for Clinical Haematology.

The number of government acute hospital beds stood at 26,306 in 1990 and rose to 34,118 in 1999. In addition, there were 7,094 hospital beds in special institutions catering for mental health, leprosy and tuberculosis. Overall, bed occupancy for acute beds remained about the same compared to ten years ago (65% average for Malaysia in 1990) but it rose to be highest in Sarawak (80% in 1990).

MEDICAL PERSONNEL

Slowly, over the 1980s, subspecialty services had began to be carried out in general hospitals in Penang, Johor Bahru, Ipoh and Kota Kinabalu. There were 410 specialist doctors in 1990. The number of medical officers more than doubled in 10 years to 3,259 in 1990, but still, only 76% of the posts available were filled.

Table 11.3 Manpower in public and private sectors

	Public Sector	Private Sector
Doctors	3,021	3,991
Dentists	691	781
Pharmacists	399	840
Nurses	14,476	2,298

There were 7,012 registered medical practitioners, which meant slight less than 50% were in government service. The doctor to population ratio in 1990 was 1:2533, improving slowly. There were now 1,472 dentists, 16,774 nurses and 10,973 assistant nurses in both private and government service.

By 1990, the three medical faculties were producing about 300 new doctors a year. In addition, about 200 were returning with medical degrees from other countries. As the nation developed, the target was set to have one doctor per 1,500 population by the year 2000. The ultimate aim was to have a ratio of 1:800 by the year 2020.

Meanwhile, the 'Article 13.3 doctors' issue was resolved. The 'Article 13.3 doctors' were provisionally registered doctors who had qualified from colleges not in the recognised schedule of the Medical Act of 1971. Previously, they had to undergo two additional years of compulsory public service, supposedly under supervision. In 1993, Regulations concerning examinations for those with unscheduled medical degrees were passed in Parliament and subsection 13.3 of the 1971 Act, deleted. Henceforth, those with such degrees had to sit for an examination and the local universities held courses to help these graduates prepare for the exams.

MEDICAL EDUCATION

With a growing population, the need for more doctors inevitably meant more medical schools were needed. In the 1990s, a new batch of medical schools were opened. Universiti Pertanian Malaysia (UPM) which had been founded to develop studies in agriculture, was expanded to include a medical faculty. To reflect its wider mandate, it changed its name to University Putra Malaysia, keeping its initials. Its base campus for agriculture was in Serdang but its medical faculty was started in the Kuala Lumpur Hospital, conveniently taking over the premises of the UKM, which had just received its purpose built hospital and facilities in Cheras. In addition, medical faculties were started at the International Islamic University, University Malaysia Sarawak (UNIMAS) and University Malaysia Sabah (UMS).

A new feature in medical education in the 1990s was the setting up of private medical colleges. It was recognised that Malaysians were able and willing to pay for medical education, as many were already sending their children to foreign medical universities. In addition, the government lent its support, seeing tertiary education as something the country could greatly benefit from, for both economic and social advancement. The first private medical college to start was the International Medical University (IMU), set up in 1992. This was followed by the Melaka Manipal Medical College, the Penang Medical College, the Perak Medical College all in1997, and the Asian Institute of Medical Science and Technology (AIMST) in Kedah in 2001. These colleges trained not only doctors, but all the allied health professionals as well.

Some colleges did not do well. In Ipoh, the Asean Sheffield Medical College sent its first batch of students to Sheffield in 1997. However the private company managing the college failed, and the Perak state government had to form a corporate body to take over the college in 1998, renaming it the Perak Medical College. In 2001, the college entered into an agreement to use the University of Malaya medical programme temporarily, until it developed its own curriculum. To add his support, the sultan of Perak conferred the college a royal title in 2004. In 2006, Majlis Amanah Rakyat (MARA) acquired a majority stake in the college through its subsidiary University Teknikal MARA Sdn Bhd, making it a branch campus of Universiti Kuala Lumpur. Universiti Kuala Lumpur launched its own medical programme in the college in 2006. In 2007, the college was officially named the Universiti Kuala Lumpur Royal College of Medicine, Perak.

Dr Abu Bakar Suleiman (1944 -)

Dr Abu Bakar, the eldest of four siblings, was born in Johore Bahru in 1944. His birth was attended to by Tun Dr Awang, who was later to be Governor of Penang. His father, Suleiman, was a law graduate from Cambridge University and a close friend of Tunku Abdul Rahman in their student days. Suleiman's father, Dato Abdul Rahman Mohamad Yasin, treasurer in the Johore government valued education such that he sold off personal land to finance an education for all his children. On Suleiman's return he worked with the Johore legal service.

His father was the elder brother of Tun Dr Ismail, who became deputy prime minister. The two brothers led the Malay Graduates Association, which gave the Tunku crucial support in UMNO. Suleiman was made minister for the interior when self-government first came to Malaya pre-Merdeka. He later became High Commissioner to Australia but died an untimely death in 1963 while delivering a speech in Melbourne.

At the time Abu Bakar was to start school, his father was posted to Batu Pahat and living in rented quarters. Abu Bakar therefore enrolled at the Nee Heng Primary School in Johore Bahru while he lived with his grandparents. Bakar transferred to the Batu Pahat High School two years later when his father was settled in Batu Pahat. After primary school, Abu Bakar spent 1 yr in the Malay College in Kuala Kangsar before moving to St John's Institution in Kuala Lumpur for 3 years and finally finishing his last two years in Geelong Grammar school. Throughout his varied school life he was impressed with the good committed teachers he found.

Abu Bakar chose to study Medicine at the Monash University in Melbourne and there he met Sukanya Tangtatsawas, the daughter of a Thai banker, who was studying dietetics. He says it took him three years to convince her father to let him marry her. They were married in 1971 and have two children.

Dr Abu Bakar graduated in 1968. He did not take his uncle's advice not to enter government service. He began his career as a Medical Officer with the Ministry of Health in 1969 and subsequently completed training in Internal Medicine obtaining his Master of Medicine from University of Singapore in 1974 and also passed his Membership examination of the Royal Australasian College of Physicians. The next year he was a visiting fellow to the Division of Nephrology of Georgetown University Hospital, Washington DC as well as Prince Henry's Hospital of Melbourne, Australia. In 1976, he returned to be the Consultant Nephrologist and Head of Department of Nephrology of Kuala Lumpur Hospital.

He was later made a Fellow of the Royal Australasian College of Physicians and an honorary fellow of the numerous Medical Colleges and Academies. He was awarded an honorary MD from Monash University in 1997 and was bestowed its Distinguished Alumni Award in 2007.

In 1987, Dr Abu Bakar was appointed Director of Medical Services of the Ministry of Health and became the Deputy Director General of Health in 1989. In 1991, he attended the Advanced Management programme in Harvard Business School and then rose to be the Director-General of Health in the Malaysian Ministry of Health from 1991 to 2001. His tenure was marked by his pioneering pursuit of quality assurance and clinical governance. Besides overseeing the running of health services, he took a special interest in information technology, telehealth and medical school accreditations.

When he retired from government service in 2001, Tan Sri Abu Bakar was appointed President and Chief Executive Officer of the International Medical University, where he is now also President.

He is, and has been, President of a wide range of national medicalorganisations. He served as President of the Malaysian Medical Association (MMA) in 1986-87. Following that he was Master of the Academy of Medicine from 1990-1998. He has been President of the Malaysian Society of Transplantation, founder-President of the Malaysian Society of Nephrology, and President of The Association of Private Hospitals Malaysia. He is currently the President of the National Kidney Foundation and The National Diabetes Institute. He is Chairman of Medical Defence Malaysia, a non- profit organisation providing medical indemnity insurance for doctors in Malaysia. He is also the President of The Malaysian Health Informatics Association, and is an Advisor to the Malaysian Society for Quality in Health. He has been Chairman of the Medical Sciences Division at the Academy of Sciences Malaysia and on the Consultative Panel on Healthcare at National Productivity Corporation. He serves as the Chairman of Ministry of Health Committee on Living Unrelated Donor Transplantation. He serves as a Member of National Health Welfare Fund, Member of Malaysia-Indonesia Business of Council, Subcommittee on Human Resource, Education and Healthcare, president of the National Medical Foundation and IMU Foundation.

Tan Sri Abu Bakar was also appointed Director of KPJ Healthcare Bhd in 2001. He served as the Chairman of KPJ Healthcare Medical Advisory Committee until 2010 when he moved over to the Pantai Hospital group. In the restructuring of the company, Tan Sri Bakar was made Chairman of Integrated Healthcare Holdings Sdn Bhd.

Nursing

Private nursing colleges also began to grow in numbers in the 1990s, driven largely by the need for nurses in private hospitals. Many nursing colleges expanded from nursing courses to other health sciences, and then to degree courses. The Pantai Hospital started the Pantai College of Nursing and Health Science in 1993. This was later absorbed into the International Medical University. Similarly the Gleneagles Hospital started an Academy of Nursing, which later became the Berjaya College of Nursing and Health Sciences. The Subang Jaya Medical Centre established its Sime Darby Nursing and Health Science College in 1995 and the Adventist Hospital in Penang did the same at about the same time. The nursing diploma usually formed the core programme for these colleges, but it was also the platform from which

other diploma programmes were built on, such as pharmacy, physiotherapy, medical imaging, dental technology and medical lab technology. Hence, the colleges were usually named Nursing and Health Science colleges.

Besides colleges that grew from private hospitals, private colleges which offered studies in business, engineering and technology also ventured into the health sciences. Examples of such colleges are SEGi University College and Unversity College Sedaya International (UCSI). Other colleges were more focused on the health sciences such as MAHSA, Masterskill and Nilai University College, all founded in about 1997. The next move was for these colleges to start degree programmes and become university colleges and even have a medical school.

Nevertheless, the Ministry of Health remained the largest trainer of nurses and allied health professionals with colleges in every state except Perlis.

HEALTH CARE FINANCING

Medical services from the Ministry of Health in Malaysia are practically free. Although a token fee is collected, revenue from all the hospitals and clinics account for only about 4% of operating costs. For example in comparison to RM 1,588 spent in 1992 revenue from patient collection was only RM64.6 million.

Apart from the Ministry of Health, the government actually also provided funding for medical care via the Ministry of Education, in terms of the three university hospitals. The Ministry of Defence also provided medical care in the form of the Armed Forces medical services.

In addition to public funded health care, the Malaysian population had been paying 'out of their pocket' for private general practice medical care for many years mainly for primary care. With the rise of private hospitals, these expenses began to rise significantly. In the first decade of private hospitals almost all individuals paid directly; literally out of their own pockets, but soon private health insurance stepped into the picture. A World Bank Report showed that, in the mid 1980s, 45,000 private health insurance policies were purchased, from an assortment of 65 insurance companies, to cover about 250,000 individuals, in Malaysia. This represented coverage of only 1.5% of the population.

The American model of 'managed care' was also introduced. This had its origins in the United States in 1929 when a group of farmers banded together to buy shares for a new hospital. It provided shareholders with medical care at a discounted rate. The system developed to have many variations, but in essence, for payment of a fixed fee, members were entitled to medical services from doctors and hospitals which received a predetermined fee, from a schedule of fees. These 'Health Maintenance Organisations'(HMOs) chose their service providers and negotiated the costs to their advantage. On the other hand, it also kept costs down by limiting the choice and extent of coverage for its members. Compared to the usual health insurance

plans, this system curbed excessive hospital bills, but it often resulted in members of the plan feeling restricted and their needs not well met. Some were run as non-profit organisations, but the aggressive ones were for-profit. Some of these successful and large HMOs eventually ran afoul of public opinion when it was revealed that their senior managers were enriching themselves excessively.

Malaysia faced the dilemma of what sort of heath financing model to pursue. For years, it was tax funded, and it had served the country fairly well. This was when most of the population was poor and uneducated, and were in no position to demand better medical care. The tax funded system also built up a strong base of health care. This included rural clinics and maternal and child health programmes, as well as preventive measures taken for vector borne diseases and immunisation. But now, a larger segment of the population was becoming affluent. Medical technology was also becoming increasingly expensive as science pushed the frontiers of what could be treated.

Looking at other countries, there were four sources of funding health services employed. They are taxation, social insurance, private health insurance and out-of-pocket payments. In Europe, countries like Sweden and the United Kingdom used taxes to fund more than 80% of all health care, with people using very little health insurance or out-of-pocket funds. In Germany and France, about 60% of funds came from social insurance, with a mixture of the other sources accounting for the rest. In the United States, about one third each came from private health insurance, out-of-pocket payments and taxation. Malaysia had to consider which path to follow. The European models were clear and comprehensive but difficult to follow. The United States was not homogenous, having different practices in different states. They had experimented with many different ideas and were generally resistant to government control. There was no shortage of some US system trumpeting their success as the path to follow. Overall, it is to be noted that the US had the highest spending on health care among all nations, reaching nearly up to 14% of their GDP, and yet in many health indicators, the US ranks much lower than other countries.

In 1983, the government launched its Privatisation Master Plan. It included the privatisation of health services in its plans. However, it moved cautiously. The Mid-term Review of the Fourth Malaysia Plan (1981-1985) called for a study to determine ways how to increase efficiency and equity in developing alternative ways of financing health services. First, the National Health Financing Study was undertaken in 1984-1985. This was followed by a feasibility study on a National Health Security Fund (1987-1988) and a National Health Plan Study (1990-1992). In 1995, the government undertook a study on ‘Corporatisation of Fourteen Government Hospitals’ and then obtained an Independent Consultant’s Report in 1996. The last report recommended a ‘gradualist’ approach, through putting in place the necessary database and control processes to ensure any changes made would be affordable, efficient and equitable. It also recommended proper public education and incremental health financing projects to ensure a smooth introduction of reforms.

Seeing that government action was impending, the MMA produced a report in 1999, under the leadership of Dr RS McCoy, to give its input. However, as the years ticked by, other matters overtook the government's concern, and no major changes in health financing were introduced, to the relief of many in the profession. A poorly managed reform where costs increased, with benefits only for corporations running the services, without improving efficiency and productivity and yet maintaining access for the poor, was a nightmare many feared.

RESTRUCTING RESEARCH

In its Fifth Malaysia Plan (1986-1990), the government decided to inject a huge sum of money in research through the Ministry of Science and Technology programme named the Intensification of Research in Priority Areas (IRPA). RM400,000,000 was earmarked, but the first grants did not come in till 1998. This windfall was an unexpected challenge for the research community. The health sector was to get about 10% of the total sum, but such grants sought results, and measurable impacts are hard to lay hold of in the health research. Beside measuring output in research publication, measures taken in health generally take a long time between implementation and its end result.

Inevitably, a focus on measurable outcomes forced research institutions to turn to developing drugs, vaccines and diagnostic kits. The IRPA programme intentionally looked for products to commercialise. As a result, the USM produced diagnostic kits for typhoid, dengue, Campylobacter and Hepatitis C. The UM produced a kit for meliodosis and UKM developed a kit for beta-thalassamia trait and glucose-6-phosphate deficiency. The IMR came up was a rapid insecticide kit and a microbiological larvicide called MOSBAC based on a local strain of *Bacillus thurigiensis.*

The Ministry of Health restructured its organisation for research in 1994. The Director General Dr Abu Bakar Suleiman created three divisions in the Ministry under one Deputy Director General each. Traditionally the two divisions were the Curative (or Medical) services and the Preventive (or Health) services. The third was for Research and Technical Support. The Research and Technical Support branch brought research under one umbrella together with the support services of engineering, pharmacy and development.

Under research, a new network was formed. The 'National Institutes of Health' (NIH) was to consist of three existing institutions; the long established IMR which focused on biomedical research, the Public Health Institute (IKU) which had expanded to health education, health systems research and management training, and the Clinical Research Centres (CRCs). The first CRC was established in the Kuala Lumpur Hospital, but spread out as a network with centres in all major government hospitals. They were units under practising clinicians where any clinician could turn to for support in order to carry out clinical research. In addition, three new institutes

were set up, namely, the Institute of Health Management (IHM), the Institute for Health Systems Research (IHSR), and the Institute of Health Behavioural Research (IHBM), which had all grown out of IKU. The Ministry wanted Malaysia to be in touch developments in all areas of health care, not just biomedical or clinical research but also with how the new information technology age changed health delivery. Bringing all these institutes under the NIH was to foster research dialogue and the exchange of ideas between researchers, as well as with policy makers and managers in the Ministry. Dr Mani Jegathesan from the IMR was appointed the first Deputy Director General for this division.

Dr Manikavasagam Jegathesan (1943-)

Dr Mani Jegathesan, or Jega as he is popularly called, was born in Kuala Kangsar in 1943. His father NM Vasagam, a civil servant and a 440yd champion runner in the 1920s, had four sons who were all national athletes or sports administrators. Vasagam himself was the founder secretary of the Malaya Amateur Athletic Union and the Malaya Olympic Council in 1955. Jega was the fourth son. He received his early education in the Batu Road School and then at the Victoria Institution before finishing at the Anglo Chinese School in Singapore. He entered the University of Malaya in Singapore in 1962 and graduated in Medicine in 1967.

Dr Jegathesan lightheartedly moans sometimes that one brief moment's fame for something done in 10 seconds can overshadow everything else done over a lifetime. He achieved national fame even before he became a doctor; as an athlete. He was Malaya's 400meter champion when he was only 15 years old. While still a school student, the next year, he represented Malaya at the Rome Olympics in 1960. He became the 'fastest man in Asia' in 1966 winning the 100 meter and 200 meter races at the Bangkok Asian Games while still a medical student and was dubbed the 'flying doctor'. In that games he won a third gold medal in the 4x100meter relay. He participated in his third and final Olympic Games in Mexico in 1968 where he ran a time on 20.92 seconds in the semi-finals of the 200meter race, a record which still remains unbroken in the Malaysian athletics record book. He retired from athletics in 1968.

Upon graduation, Dr Jega did his housemanship in the Kuala Lumpur Hospital. After that he was roped into the IMR, he said, not because he had a special interest but because it was a convenient opportunity for him to remain in Kuala Lumpur. He married Tan Lee Hong in 1969 and they have 3 children. DrJega obtained his Diploma in Tropical Medicine and Hygiene from the Mahidol University in 1969 and the DCP from the University of London in 1971.

That year, Dr Jega succeeded Dr Bhagwan Singh as head the of the Bacteriology Division of the IMR. During his tenure, he initiated the Diploma in Medical Microbiology course, and served as the foundation dean of the SEAMEO-TROPMED programme. He obtained his Fellowship in Pathology, (FRCPathUK) in 1984 and was made the Head of Laboratory Services Hospital Kuala Lumpur in 1985. In 1988 he was appointed the Director of the IMR. In 1994, he became the Deputy Director General of the Ministry of Health for Research and Technical Support. He published over 100 academic papers in infectious diseases and medical microbiology throughout his career and he was bestowed the National Science Award in 2005

He retired from civil service in 1998 and was appointed an Adjunct Professor at University Putra Malaysia and University of Malaya. He was made a Fellow of the Academy of Science Malaysia in 1995. In 2011, he was made Pro-Chancellor of the Universiti Sains Malaysia.

He continues to be active in the sporting scene as Deputy President of the Malaysian Athletic Union and the Olympic Council of Malaysia. He is also President of the Malaysian Association of Doping Control Officers, Chairman of the Medical Commision, Olympic Council of Asia, Hon. Medical Advisor and Chairman of the Commonwealth Games Federation and sat on other medical commissions forinternational sports bodies. Dr Jega was at the Olympics again in 1996 in Atlanta as Deputy Chef de Mission of the Malaysian contingent, and in 2004 as the Chef de Mission at the Athens Olympics. In 2010, Dr Mani Jegathesan was awarded the Tan Sri title by the Yang Di Pertuan Agong.

MEDICAL SOCIETIES

The main medical specialist societies were formed in the 1970s. As the number or specialties and sub-specialties increased, more medical associations and societies were formed. Many sub-special interest groups, like oncology and gastroenterology bridged different disciplines. Some sub-specialties, for example infectious diseases, cardiology and gastroenterology had a large membership, although many others were small.

The National Heart Association of Malaysia was formed in 1978 with Tan Sri Dr RP Pillay as pro-tem president. Over the years, it grew to have nearly 200 members organising conferences that attracted between 1,500 to 3,000 delegates. There were associations as diverse as the Malaysian Society of Hypertension, the Malaysian Society of Haematology to the Malaysian Colo-rectal Society. The Malaysian Society of Infectious Disease and Chemotherapy was formed in 1986 and it hosted the 1st Western Pacific Congress on Infectious Diseases and Chemotherapy in Kuala Lumpur in 1989. This was an era of great progress in new antibiotics and plenty of pharmaceutical industry interest. The meeting had over 500 delegates from 34 countries.

Besides common scientific interests, these societies were interested in credentialing doctors for procedures related to their special fields, such as in endoscopy. Another large interest group was the Malaysian Society of Gastroenterology was founded in 1994, under the umbrella of the Academy of Medicine, bringing together both physicians and surgeons. Besides annual meetings on the Gut, the society organised endoscopy workshops twice a year, biannual Liver Updates and set up a Liver Foundation in 1996.

OCCUPATIONAL HEALTH

The National Institute of Occupational Safety and Health (NIOSH) was set

up in 1992. The institute conducts a variety of courses and trains many different categories of health staff in its branches in the different states. It also conducts examinations to certify doctors, nurses as well as industrial workers such as forklift drivers, crane operators and scaffolding erectors. As Malaysia industrialised, work place accidents also increased. It was estimated that in 1994 an average of two workers died at work each day in Malaysia. That year, the legislature passed the Occupational Safety and Health Act.

Records of workplace accidents began to show a decline after 1993, falling from 21.4 per 1,000 workers that year to 6.7 in 2004.

RESURGENCE OF TUBERCULOSIS

The incidence of tuberculosis(TB) all over Malaysia declined steadily from 1970 till 1990. The credit for this belongs not only to the National Tuberculosis Control Program but also to better housing and improvement in the environment. Anticipating further decline and a diminishing importance of TB, the National Tuberculosis Centre in Jalan Pahang, Kuala Lumpur was renamed the Institute of Respiratory Medicine. However, from early 1995, it was noted that tuberculosis was on the rise again. From an incidence of 59.8 per 100,000 in 1994 it edged up to 65.6 in 1999.

There were two prominent factors at work. First, was the emergence of the Human Immunodeficiency Virus (HIV). Policy dictated that TB patients were screened for HIV. In 1990, only 6 out of 10,873 TB patients were co-infected with HIV. In 1999, 933 cases out of the 14,389(6.5%) TB cases were HIV positive. The second factor was the large number of immigrant workers in Malaysia. As many as 14.2% of foreign workers screened, were found positive for TB. With stricter controls by FOMEMA, the agency set up to oversee recruitment of foreign labour, the number found at screening decreased. However, the fact that there were as many immigrant workers who came illegally, as there were who came through the legal channels, many TB patients remained undetected on entry. Sabah had the highest incidence rate of TB with 120 per 100,000 cases annually.

Directly Observed Treatment, short course (DOTS) which had been found to be the most effective strategy, was incorporated into the National Tuberculosis Control Programme in the late 1990s. A major problem encountered in the control of TB was the non-specificity of tuberculosis symptoms in the population. Pulmonary TB producing a cough was not the only form of TB.

THE RISE OF DENGUE FEVER

Dengue fever came into prominence in the urban areas of Malaysia in the 1970s with cyclical epidemics that were noted to occur every few years. Moving into the 1980s, not only did the number of cases increase, the four year cyclical

pattern appeared to have given way to peaks of infections coming closer together. Initially, dengue was mainly a problem in states such as Penang, Kuala Lumpur and Malacca. In the 1980s, there were times Perlis and Kelantan recorded higher incidences than Penang. Terengganu, Sabah and Sarawak, at first appeared to be spared, but by the 1990s Sarawak too was almost equally affected. Finally, by the 1990s even Sabah was affected. However, it was the Klang Valley (Kuala Lumpur and Selangor) that was the focus of the disease. Over 50% of the cases each year occurred there.

Except for a peak in 1982, the incidence of dengue fever remained below 10 per 100,000 persons throughout most of the 1980s. In the late 1980s however, the incidence of dengue rose to nearly 40 per 100,000 and has never dipped below 20 per 100,000 since. At the end of the 1990s dengue incidence in Malaysia rose almost every year to reach 120 per 100,000. In absolute numbers, from just above 6,000 cases in 1995 the number rose to greater than 13,000 in 1996 and above 18,000 the next year.

The number of deaths from dengue haemorrhagic fever and dengue shock syndrome, was on average, less than 10 cases a year in the 1980s. 1991 was a peak year with 40 deaths, but that was just a fore warning of the coming storm. After a few years where the number of deaths declined, deaths climbed to nearly 60 in 1998.

Despite the efforts of the Vector-Borne Disease Control Programme, which included inspecting premises for *Aedes* mosquito breeding places, and fogging homes around notified dengue cases; the Ministry of Health appeared helpless before the onslaught the rising tide of dengue fever. Malaysia was however, not alone, for even Singapore shared the same experience. Hope for finding a solution to the disease was placed on development of a vaccine. Being a viral disease, hopes were high in view of successes with vaccines for numerous other viral disease such as smallpox, polio and hepatitis A and B. However, the dengue vaccine proved elusive, perhaps due to the fact that there were four serotypes of the virus changing roles in importance with different outbreaks.

THE NIPAH VIRUS

In October of 1998, a mysterious outbreak of an encephalitis illness broke out at pig farms in Perak. At first, Japanese encephalitis was suspected. Japanese encephalitis was already a notifiable disease, first noted in Malaysia in 1952. But that was a mosquito borne viral disease that did not fit the way this new disease appeared to be transmitted. The fatality of the outbreak was high, 15 of the 25 cases in Perak died. Illegal movement of pigs from Perak to the Eastern corner of Negeri Sembilan resulted in the spread of the disease to the area with the largest concentration of pig farms in the country. It soon became apparent that direct contact with infected pigs was the means of disease transmission and proper quarantine successfully prevented any further spread of the virus. Serological studies found the virus was

related to the Hendra virus. Soon, the virus itself was discovered by Dr Chua Kaw Bing. It was a new virus and named the Nipah virus after the village in Negeri Sembilan from which the virus was isolated. By April 1999 the epidemic was over. In all there were 256 cases and 111(43%) death, including the cases in Perak.

THE ASIAN ECONOMIC CRISIS

The spectacular economic growth Malaysia experienced in the 1990s came to an abrupt end in June 1997. Up till then, Malaysia, together with South Korea, Taiwan, Thailand and Indonesia, had been known as the 'Tiger' economies for rapid progress, becoming power houses of export of manufactured goods. Export earnings in these countries had increased wealth and that wealth was inflated through properties and stocks. The stock markets were especially vulnerable, as they had attracted foreign portfolio investment fund managers who held short term perspectives and were prone to herd behaviour. The situation was made worse in Thailand, where speculators bought foreign currencies at low interest rates to get higher interest rates at home. The 1999 economic crisis erupted when currency manipulators attacked the Thai Baht, betting it would fall in value*. The governments in Malaysia and Thailand had always tried to maintain the exchange rate of their currency against the US dollar by buying or selling its currency to support its value. At first, it was thought that Malaysia did not have the same problem as Thailand. Despite having better fundamentals, the financial 'contagion' effect spread to all the East Asian economies.

As a result, almost overnight, the value of the ringgit fell from RM2.5 to 1USD to its lowest value of RM4.88 to the USD. More than three quarters of the value of the Malaysian stock market was wiped out. Anwar Ibrahim, the Deputy Prime Minister, who was also Finance Minister, managed the crisis by consulting international financiers and the International Monetary Fund (IMF), implementing their advice. But Dr Mahathir held the reins, and with the Malaysian economy sick, he rushed to its bedside. He confessed that he did not understand financial intricacies but he quickly set about to study all he could. At first, he made angry statements, true to his vocal nature, accusing men like George Soros for creating a situation which robbed nations of their wealth. This only made the ringgit fall further.

Dr Mahathir was never comfortable with foreign advisors, Believing that it was the foreigners themselves who were the currency manipulators. In his own words, he 'had no faith in the IMF solutions which Anwar imposed on the country'. He set up the National Economic Action Council (NEAC) to manage the crisis, and had a core group that met for hours every morning. In late 1998 he took action. The trading of Malaysia shares abroad, particularly in Singapore called CLOB was

** Put simply; it can be said that currency manipulators got hold of astronomical sums of Baht on loan, to buy US dollars; when the demand for US dollar in Baht could not be met, the exchange rate of the Baht dropped. They could then sell their dollar back into Baht for a huge profit and pay off their loans.*

stopped. Currency controls were implemented and the ringgit was pegged at RM3.80 to the US dollar.

Dr Mahathir's medicine worked. Although all the Asian economies eventually recovered, the Malaysian economy recovered faster, and the international community credited it Dr Mahathir's unorthodox policies.

POLITICAL DEVELOPMENTS

In the midst of the economic turmoil, there was a crisis on the political stage. The fall out between Tun Dr Mahathir and his Deputy Prime Minister not only riveted the nation, it drew international attention. Anwar Ibrahim joined UMNO in 1981, soon after Tun Dr Mahathir became Prime Minister, and stepped onto the main political stage. He has been a notable figure in national life for nearly a decade, drawing the spotlight to where he stood at the wings. Anwar's rise within UMNO was meteoric. In the 1982 general election, he won a parliamentary seat and was made a Deputy Minister in the Prime Minister's Department. That year he contested and won the top UMNO Youth post. Next, he contested and won one of the three Vice-Presidents posts and in 1993 he declared that he would contest the Deputy President's post. He gained so many nominations that Ghafar Baba, the incumbent, chose not to contest. His move took even Dr Mahathir by surprise. The two had been seen to have a mentor-mentee relationship, and Anwar appeared to be groomed for succession. He had charisma and was persuasive. Dr Mahathir began to be uneasy and soon, things began to unravel.

Anwar spoke against abuse of public trusts, and Dr Mahathir felt he was "spicing his words with veiled hints that it involved me"*. Then, right in the midst of the Asian economic crisis, just before the currency control measures were announced, Dr Mahathir removed Anwar as Deputy Prime Minister. A few days later the UMNO supreme council met and also sacked Anwar from his Deputy Presidency in UMNO. Mahathir had presented a case that Anwar was involved in homosexual activity, an unlawful act in Malaysia. He disclosed that the police had given him reports and he had personally interviewed several witnesses.

Anwar did not go quietly. He had turned down the offer to resign quietly. When sacked he took to the streets to rally public support. He was arrested for inciting violence and was kept in custody for nine days without being charged in court. When he appeared, he had a huge black eye. He was detained and charged with corruption; specifically, for using his position as Deputy Prime Minister to influence the Director of the Special Branch of the Police to threaten Ummi Hafilda to withdraw her letter to Dr Mahathir, accusing Anwar of homosexual behaviour. Later, a second charge of sodomy was entered.

** Mahathir b Mohamed. A Doctor in the House.The memoirs of Tun Dr Mahathir Mohamed.MPH Group Publishing 2011. p412*

Without access to the public or his supporters, Anwar's cause could have been silenced, but his wife Dr Wan Azizah stepped forward to be the focal point for his supporters. A new political party, *Parti Keadilan Raykat* (PKR) was formed.

Malaysia went to the polls again in November 1999. PKR, under Dr Wan Azizah, formed an alliance with PAS and DAP, in which they were able to avoid contesting with one another. The opposition not only held on to Kelantan, it won in Terengganu. UMNO suffered a huge loss of support. Every cabinet member who won had a reduced majority and four lost their seats. Dr Mahathir estimated that Anwar's black eye cost UMNO 300,000 votes. It was the Chinese votes that help the *Barisan* win and retain its two-thirds majority. Many businessmen appreciated the way Mahathir saved them through the Asian Economic crisis.

CHAPTER 12 THE TWENTY-FIRST CENTURY

Table 12.1 Population of Malaysia in 2000 (% increase over 1991)

Perlis	198,335 (8)	Selangor*	5,245,053(53)	Pahang	1,231,176 (19)	Sarawak	2,012,616(22)
Kedah	1,572,107 (20)	Malacca	602,867 (19)	Terengganu	879,691 (14)	Sabah	2,449,389(41)
Penang	1,225,501 (15)	N.Sembilan	830,080 (20)	Kelantan	1,297,526(9)	Labuan	70,517(30)
Perak	2,030,382(8)	Johore	2,565,701(24)				
Total	**5,026,325**		**8,641,436**		**3,408,393**		**4,532,522**

*includes Kuala Lumpur (1,297,526)

POPULATION DYNAMICS

In the decade leading up to the twenty-first century, the decline in the population growth in the East Coast states of the Peninsula was a stiking feature. Socio-economic development had brought about smaller families. Malays from these states were also joining the urban migration. 62% of the population lived in urban areas compared to 38% rural inhabitants. As a result, Kuala Lumpur and Selangor continued its relentless growth, growing even faster than the previous decade.

At the start of the new millennium, the population of Malaysia reached 22,202,614. 65% of the population were Malay and Other Bumiputera, 26% Chinese and 8% Indians. 1% composed of other races. But it was not just natural births that shaped population growth, both immigration and emigration were altering the character of the country.

The World Bank reported that as of 2010, on a conservative estimate, one million Malaysians with tertiary education had left the country*. The number had increased 4 fold over the last 30 years. Singapore alone absorbed 57% of the migrants, with the rest mainly in Australia, Britain and the United States. About 47% of all foreign born residents in Singapore, with a tertiary education, were born in Malaysia. Over 85% of the brain drain involved Chinese. Discontent over the inclusiveness policies of the government was cited as a key factor. Although better career prospects and remuneration were also listed, social injustice was reported as the main reason for leaving among 60% of the respondents.

On the other hand, Malaysia received an influx of about 2.4 million migrants overthe same period of time, placing Malaysia among the largest corridors of human migration. Of these, some 40% had secondary education, while about 40% had no formal education at all. Indonesian born migrants accounted for about 1.4 million of

**World Bank: Malaysia Economic Monitor – Brain Drain. 2011*

these. The large number of low-skilled migrants depressed wages, and in turn, caused productivity and innovation to suffer. It became harder for low income Malaysians to gain higher wages as they kept having to compete with migrants willing to work for less. In addition, despite health screening measures at their home country and a second screening here, these migrant workers, were responsible for a an increase in communicable diseases in Malaysia such as tuberculosis, Hepatitis B, syphilis, HIV, malaria and leprosy. Leprosy, once considered eradicated is now documented regularly. These twin problems handicap Malaysia as it tries to move to become a high income country.

POLITICAL DEVELOPMENTS

Anwar Ibrahim was convicted of corruption in 1999 and sentenced to six years imprisonment. In 2000, he was sentenced to a further nine years for sodomy. Abdullah Ahmad Badawi, who had re-joined UMNO Baru in 1988, was appointed Deputy Prime Minister. This was despite him being in Team B with his mentor Tun Musa Hitam in the fallout of 1987 and sacked as defence minister then. He had served in the cabinet since 1991 and was seen as calm, clean and competent. In the relative political calm of the new millennium, Tun Dr Mahathir surprised the nation at the UMNO general assembly in 2002 by announcing that he was resigning as UMNO president and Prime Minister. It was not anticipated. Even as he was in tears, the leadership surrounded him and persuaded him to make a gradual transition. A few days later he announced that he would step down after a transition period of 16 months.

Tun Abdullah took over the reins at the end of October 2003. Although conservative, cautious and non-confrontational by nature, change came with the new Prime Minister. Abdullah opened up public space for discussion. He took steps to empower anti-corruption agencies and made it easier for the public to reveal corruption. As a result a number of public figures were arrested. It was a move which received wide public support. He went to the polls six months after taking charge and won the largest mandate the *Barisan* ever achieved.

In his consultative style of leadership, Abdullah listened to backlash concerning some of Dr Mahathir's projects and reversed some decisions for development such as an aluminium smelter for Sarawak, double tracking and electrification of the railways along the West coast, very early on in his administration. In 2004, the final straw that brought on Dr Mahathir's ire and criticism was the cancellation of the curved bridge to Singapore when the Customs, Immigration and Quarantine complex to go with it was already being built.

Although the openness Abdullah brought initially won him support, revelations of deficiencies in the government eventually brought him harm. Tun Dr Mahathir opposed and undermined Abdullah's leadership in the elections of 2008. The opposition coalition, of *Pakatan Raykat* (PR), consisting of PAS, PKR and DAP, won its best results

ever. It captured the state government not only in Kelantan, but also in Penang, Kedah, Perak, and Selangor. It was only the solid support for the *Barisan Nasional* in Sarawak and Sabah that kept it in government with a simple majority. In the aftermath, Abdullah's cabinet pledged him support, but the cries from within his party for him to resign grew louder. He stepped down as UMNO President at the general assembly in April 2009, and Najib Tun Razak was elected in his place. Abdullah passed the post of Prime Minister to his successor a few days later.

THE ECONOMY

By 2002, Malaysia had recovered from the Asian economic crisis and registered a GDP growth of 5.4%. Growth remained steady till 2008 ranging between 4.8-6.8% annually. 2009 registered one year of negative growth of -1.6% on account of the global recession, but bounced back to 7.2% the next year.

HEALTH PROFILE

At the start of the new millennium, Malaysia could boast of low perinatal (6.6), neonatal (4.5), infant (6.9), toddler (0.6) and maternal (0.3) mortality rates (per 1,000). Malaysian males enjoyed a life expectancy of 70.2 years and females, 75.0 years. Malaysia's natural population growth was healthy with a crude birth rate of 22.9 per 1,000 and a crude death rate of 4.4 per 1,000. Regarding childhood immunisation, Malaysia achieved 96.8% coverage (all 3 doses) for the triple (Diphtheria/Petussis/Tetanus), 96.7% for polio, 92.2% for measles and 86.2% for Hepatitis B.

MORTALITY AND DISEASE BURDEN

In 2001, the Ministry of Health directed the Institute of Public Health to undertake the Malaysian Burden of Disease Study. This undertaking required determining the cause-specific mortality rates. As not all deaths are medically certified in Malaysia, complete accurate data was not available. Non-medically reported deaths had an unacceptably high number of deaths with ill-defined causes. The study group therefore divided the country into four regions: urban and rural Peninsula Malaysia, and urban and rural East Malaysia and assumed the cause-specific non-medically certified deaths in each region approximated the medically certified deaths in that region. Redistribution of deaths due to ill-defined causes was then done accordingly. The cause-specific mortality rates for Malaysia was therefore determined as follows.

Table 12.2 Cause-specific Mortality in Malaysia 2000

	Total	Percentage	Males	Females	M:F
Infectious Diseases (excl. resp)	13,607	12.3	7,657	5,832	1.31
Respiratory Infections	5,684	5.1	3,162	2,522	1.25
Maternal	231	0.2	-	231	—
Perinatal	2,575	2.3	1,441	1,134	1.27
Nutritional	88	0.07	42	46	0.91
Cancers	12,216	11.1	6,729	5,487	1.22
Diabetes	2,261	2.0	857	1,404	0.61
Mental Disorders	367	0.3	311	56	5.55
Neurological	877	0.8	507	370	1.37
Sense Organs	13		6	7	
Cardiovascular	39,812	36.0	21,705	18,107	1.20
Respiratory	8,882	8.0	5,532	3,350	1.65
Digestive (incl. oral)	5,335	4.8	3,343	1,956	1.71
Urogenital	3,421	3.1	1,781	1,640	1.09
Skin	344	0.3	171	173	0.99
Musculoskeletal	177	0.2	55	122	0.45
Congenital Abnormalities	1,545	1.4	840	705	1.19
Unintentional injury	10,799	9.8	8,532	2,267	3.76
Intentional injury	2,210	2.0	1,603	607	2.64
Total	110,442	100	64,552	45,889	1.41

It can be seen that cardiovascular deaths, consisting mainly of ischaemic heart disease and strokes, is by far the leading cause of deaths in Malaysia. Infectious diseases(chiefly septicaemia) is in second place, followed by cancers, unintentional injury (mainly road accidents and falls) and respiratory conditions (such as chronic obstructive pulmonary disease and asthma). Respiratory infections, which are given its own category comes in 6th place.

Men have a lower life expectancy. Overall there are 1.4 times as many deaths in the year 2000 among males than females. However, in a few disease categories such as mental disorders (M:F=5.5), unintentional violent deaths (3.76) and intentional violent deaths (2.64) men outnumber women even more significantly. In very few conditions, namely diabetes, skin and musculoskeletal disorders, women outnumber men.

Another important way of looking at deaths is to consider Years of Life Lost (YLL). Every individual will die, but it is less a loss when the individual dies old at an age expected he or she is expected to, compared to an individual dying young. The YLL, is an index to measure the impact of young deaths. It considers the number of deaths multiplied by the years lost, (expected life expectancy minus age of death).

YLL= Number of deaths x (Expected life expectancy - Age at death)

Rather than absolute figures, it is more meaningful to look at the disease of which YLL are proportionally higher when compared to its cause-specific mortality rate.

Table 12.4 Year of Life Lost by (Selected*) Diseases in Malaysia in 2000

Table 12.3 Year of Life Lost by (selected*) Diseases in Malaysia in 2000

	Total	Percentage	YLL/ Overall Deaths
Infectious Diseases (excl. resp)	222,833	12.5	1.01
Respiratory Infections	77,646	4.4	0.86
Maternal	6,051	0.3	1.50
Perinatal	77,303	4.4	1.91
Cancers	178,441	10.0	0.90
Diabetes	31,069	1.7	0.85
Cardiovascular	497,668	28.0	0.77
Respiratory	163,936	9.2	1.15
Digestive	78,267	4.4	0.92
Urogenital	49,355	2.8	0.90
Congenital abnormalies	45,407	2.5	1.79
Unintentional Violence	236,668	13.3	1.34
Intentional Violence	46,324	2.6	1.3
Total	1,776,639	96.1*	1

*some categories with small numbers are excluded

The ratio of the total YLL a disease condition accounts for, to total deaths (YLL:Total Deaths) gives us a measure of whether a category of disease accounts for more early deaths than it should. Using this index, Table 12.4 above shows cardiovascular disease, is still the leader, but a little less important, accounting for 28% of YLL instead of 36% of all deaths. Unintentional violence rises to second place accounting for 13.3% of the total YLL. Perinatal deaths and congenital abnormalities, not surprisingly, has the highest ratio. Maternal deaths comes next, followed by the two categories of violent deaths which include road accidents, falls, poisonings, drowning, suicides and other injuries.

Yet another measure of the burden of disease is the number of years people live with the disability the disease brings. For example, a dengue infection leaves very little disability once it is past. Cancer survivors often live normal lives. On the other hand, otitis media that leads to deafness, lasts a whole lifetime. The Years Lived with Disability (YLD) index aims to quantify this factor. It is obtained by multiplying the number of incident cases, with a weightage factor for the disability and the duration of the disability. The scores for the various diseases are given in Table 12.5.

Table 12.4 Cause-specific Years Lived with Disability in Malaysia 2000

	Total	Percentage
Infectious Diseases (excl. resp)	39,188	3.5
Respiratory Infections	51,948	4.7
Maternal	2,484	0.2
Perinatal	40,756	3.7
Nutritional	42,801	3.9
Cancers	7,783	0.7
Diabetes	72,381	6.5
Blood	14,535	1.3
Mental Disorders	235,787	21.2
Neurological	54,398	4.9
Sense Organs	159,500	14.3
Cardiovascular	62,303	5.6
Respiratory	90,292	8.1
Digestive (incl. oral)	42,620	3.8
Urogenital	14,038	1.3
Skin	18,009	1.6
Musculoskeletal	78,577	7.1
Congenital Abnormalities	46,566	4.2
Unintentional injury	35,803	3.2
Intentional injury	1,003	0.09
Total	1,111,629	100

The figures show mental disorders, consisting largely of depression, anxiety, drug and alcohol dependence and psychoses become the largest group (21.2%). Disorders of the sense organs (cataracts, hearing loss and other causes of visual loss) account for the second largest group (14.3%) followed by respiratory conditions (COPD, asthma) (8.1%), musculoskeletal diseases (rheumatoid arthritis and osteoarthritis) (7.1%) and diabetes (6.5%). On the other hand, conditions such as maternal disorders, unintentional and intentional violence rank very low; they do not leave a person with much disability. Cardiovascular diseases and infections are also relatively less important. The list reflects the where the demand for long term medical care, as well as support services lies.

The final index that measures the burden of disease, that aims to sum up the human and economic impact of the various diseases is termed DALY, Disability Adjusted Life Years. It consists of adding the YLL and YLD indices. Here, cardiovascular diseases emerge on top. The list of DALYs for men and women in Malaysia is given below.

Table 12.5 Ranking of Disease Adjusted Life Years(DALYs) in Malaysia 2000

Men		Women	
Cardiovascular diseases	20%	Cardiovascular diseases	19%
Unintentional Injuries	13%	Mental Disorders	9%
Infectious Diseases	10%	Infectious Diseases	8%
Mental disorders	8%	Cancer	8%
Respiratory Diseases	7%	Respiratory Diseases	7%
Cancer	6%	Sense Organ Disorders	7%
Sense Organ Disorders	5%	Respiratory Infections	5%

PUBLIC HEALTH

The Institute for Public Health (IKU)'s character as an educational institution changed in the 1990s. In 1995, the Public Health Nursing (PHN) course was converted to a distance learning course, much to the misgivings of both students and staff. Candidates attended an 8-week module taught at the IKU followed by 32 weeks of practical training in the field. The Health Inspector training course was converted to a Diploma in Environmental Health and accredited to Universiti Teknologi MARA (UiTM) in 1997. In 2004, the Health Inspector training was moved to the Allied Health Sciences College in Sungei Buloh, and in 2006 the PHN training followed suit.

From the 1980s, succeeding Director Generals of Health continued to see the need for health management training for all levels of staff in the medical and health services. Therefore, the IKU which had been conducting such courses had a Division of Health Management set up within it in 1995. Besides that, courses in organization development, group dynamics, problem solving through a team approach were developed. Courses in finance and human resource management were also developed. Plans for a new building for this management training unit for health personnel, within the Bangsar Hill complex were drawn up and in 2000. When it was completed the unit moved out of the IKU to become the Institute of Health Management (IHM).

With the success of the health systems research projects started in the 1980s the Director General of Health pushed more for research evidence to support policy and management decisions. Even the World Health Organization took an interest and partnered in workshops and programmes. Eventually, in the year 2002, the Health System Research training courses moved out of IKU to become the Institute of Health Systems Research. The one year Certificate of Education for Teachers of Health Personnel was transferred to the Training Division of the Ministry of Health. The new institute remained in the premises of IKU until 2004, when it moved in to its own premises on Bangsar Hill.

The Health Education Unit of the IKU, not only trained Health Education Officers (HEOs), it also ran courses for all categories of staff. It developed a wide range of courses and worked with the media. A Patient Education Advisory Committee

was also set up. HEOs formed the backbone of the Ministry of Health's healthy lifestyle campaign started in 1991. Their challenge grows ever larger as non-communicable diseases, such as diabetes, obesity, cardiovascular diseases and cancer continue to become a significantly larger problem in Malaysia. In 2005 the unit moved to become the nucleus of the new Institute for Health Behavioural Research.

MEDICAL PERSONNEL

The number of medical officers in government service doubled again in the 1990s, reaching 6,020 in 2000. The number of medical specialists in 28 gazetted specialties also doubled from 410 to 864 between 1990 and 2000. There were also 724 dentists and 104 dental specialists, 24,525 nurses, 5,334 assistant nurses, 7,330 rural nurses, in addition to pharmacists, physiotherapists and other support staff in the government health service.

Including the private sector, there were 16,146 doctors with annual practicing certificates in Malaysia in 2000, 14,523 in the Semenanjung and 1,623 in Sabah and Sarawak. The geographical disparity is seen in the doctor:population ratio of 1:1,300 in the Semenanjung and 1:3,000 in East Malaysia. 48% of doctors in the Semenanjung were in private practice compared to 36% in East Malaysia.

PRIMARY HEALTH CARE

Under the Ministry of Health, there are over 1,000 primary health care centres. They cover rural areas well, but not so in the urban areas. They are manned not only by many medical officers and nurses, but by over 80 family medicine specialists. They provided services from ante-natal and post-natal care, to immunisation, nutritional support, community mental health follow-up and even out-patient attendances.

Beginning in the 1990s, out-patient departments of government hospitals were moved out from the hospital premises and made part of the Health, rather than Medical division of the Ministry of Health. They formed the primary medical care centres in the urban areas. However, their reach was not extensive. Traditionally, primary medical care was the role of the private general practitioner who acts as the family physician. Private doctors continued to provide the lion's share of this service in cities and most towns.

It was the lack of cheap, or practically free, basic primary medical services in urban areas that the government '1Malaysia' clinics appeared to attempt to fill. It was a brainchild of prime minister Najib Tun Razak. These 1Malaysia clinics led in a way to the peculiar situation becoming a 'problem'. Private primary care physicians felt their livelihood 'invaded'. On the other hand, private primary care doctors served the government well in that these doctors not only provided a service that relieved the government from doing, they paid taxes from their earnings. However, with just

a nominal RM1 fee, the service was welcomed by the urban poor. The question was how extensive these clinics should be and what range of services should they provide. Initially 50 1Malaysia clinics were launched but the number were gradually increased. They were manned by medical assistants and provided basic medical services for illnesses such as cough and colds, minor injuries, wounds and cuts, and provided medication for chronic disease such as diabetes, and hypertension.

Population Growth

As the country reached the year 2010, the population census showed there were 28.3 million people living in Malaysia. 8.2% of the residents were not Malaysian citizens. Of those who were Malaysians, 67.4% was Bumiputera, 24.6% were Chinese, 7.3% were Indians and not forgetting 0.7% were 'others'. The greatest concentration of the population was still in Selangor with a population 5.4million. Sabah had 3.1million and Johor 3.2million. 71% of the population live in urban areas, compared to 62% in 2000. The population growth rate had decreased to 2.0% (compared to 2.6% the previous decade) even as the fertility rate decreased from
3% to 2.3%. Those above 65 years made up 5.1% of the population.

Table 12.6 Population of Malaysia in 2010 (% increase over 2000)

Perlis	227,025(14)	Selangor*	7,106,460(35)	Pahang	1,443,365(17)	Sarawak	2,420,009(20)
Kedah	1,890,098(20)	Malacca	788,706(30)	Terengganu	1,015,776(15)	Sabah	3,120,040(27)
Penang	1,520,143(24)	N.Sembilan	997,017(20)	Kelantan	1,459,994(13)	Labuan	85,272(21)
Perak	2,258428(11)	Johore	3,233,434(26)				
Total	**5,895,694**		**12,125,617**		**3,919,135**		**5,625,321**

*includes Kuala Lumpur (1,627,172)

MEDICAL FACILITIES

In 2010, the Ministry of Health had 131 hospitals with 33,211 acute hospital beds. In addition, it had another 4,582 beds in special institutions. 8 more non-Ministry of Health hospitals (Universities and Military) accounted for another 3,690 acute beds. Private hospitals provided (13,186) 26% of the total acute hospital beds in the country and there were about another 400 beds in maternity homes, nursing homes and hospices.

Medical Clinics were still mainly private clinics (6,442). The Ministry of Health had 2,833 clinics, covering mainly rural areas. In addition, there were 53 1Malaysia clinics and over 163 mobile health clinic teams. Dental clinics were also mainly provided by the private sector(1,512). The Ministry of Health had only 34 dental clinics and 25 mobile ones. There were 3,132,406 hospital admissions in 2010. The private sector accounted for 28% of the total.

INFORMATION TECHNOLOGY IN HEALTH

The development of computers and the internet began to transform the way information was recorded, transmitted and stored throughout the world. In the twenty first century, it started to transform the management of health services all around the world. Population data and hospital records from patient information to medical images could be stored and used online. The Ministry of Health Malaysia developed a Communicable Disease Control Information System (CDCIS) and Maternal and Child Health System (MCHS) to be used in health clinics throughout the country. Under the broad umbrella of the Health Management Information System (HMIS), it developed the Medical Care Information System to collect statistical data pertaining to patient admission into hospitals, daily ward census, operationcensus and bed occupancy. It employed an In-patient Management System (IPMS) designed for patient care management and revenue collection. Out-patient Management System (OPMS) was also developed to be integrated with the IPMS.

Further projects in development included a Medical Practitioner Monitoring System that would register doctors, oversee their annual practicing certificates and record disciplinary action. One project under the Multimedia Super Corridor being considered was a Government Multipurpose Card (GMPC) for the population. It would be a Smart Card that contained an individual's health information that could be used for health services at all health centres. Telehealth projects using teleconferencing for clinics were also planned. A Telemedicine Act was passed in parliament in 1997 whereby doctors might be certified and the practice regulated. But until not has yet to be implemented.

MEDICAL EDUCATION

The number of medical schools in Malaysia continued to grow unabated. There were 9 medical schools in 2002. The number increased to 12 in 2007 and then 16 more medical programmes began between 2009 and 2010.

The new government medical colleges were the Universiti Teknologi MARA (UiTM) at Selayang, Health Sciences Universiti Sains Islam Malaysia in Pandan Indah, Kuala Lumpur, Health Sciences Universiti Sultan Zainal Abidin (UniSZA) in Kuala Terengganu and Universiti Pertahanan Nasional Malaysia (UPNM), Sungai Besi, Kuala Lumpur.

The medical school at the National Defence University (UPNM) was a product of the upgrading of the Malaysian Armed Forces Academy (ATMA) to a fully government-funded university in 2006. The Faculty of Medicine and Defence Health was established in 2009 with Prof Maj Gen Dato Dr Mohd Zin as foundating dean. It enrolled its first intake of 50 students in 2011. It aims to be a research centre in Operational Medicine, Disaster Medicine, Underwater and Submarine Medicine,

Aerospace Medicine and Chemical, Biological, Nulcear and Explosive (CBNRE) Defence.

The list of new private medical schools included, the Jeffrey Cheah-Monash University, Asian AIMST in Bedong Kedah, Allianze College in Kepala Batas, Penang, USCI University, International Medical School Management and Science University, Cyberjaya University University College of Medical Sciences, Royal College of Medicine Perak, Melaka Manipal Medical College, Penang Medical College, MAHSA University College, Newcastle University Medicine Malaysia in Nusajaya Johor, Taylor's University College, Universiti Tunku Abdul Rahman (UTAR), Masterskill University, SEGI University College, Insaniah University College in Alor Star, Perdana University and Lincoln Unversity college.

By 2012, there were 34 medical schools. The government looked at higher education in general as an area of economic growth for Malaysia. The Ministry of Higher Education had approved the registration of medical programmes in 25 universities, 22 university colleges and 5 branch campuses. The Academy of Medicine expressed concern over whether medical standards would be affected. Although the curriculum of the schools were monitored by the Malaysian Qualification Agency and the Malaysian Medical Council, there were many areas of concern. For example, there was a shortage of qualified lecturers. In addition, colleges offered matriculation courses with direct entry to their medical programmes based on non-standardised examination.

Foreign Graduates

Initially, graduates from unrecognised foreign universities had to sit for qualifying examination prescribed by the Medical Council. These examinations were conducted in only 3 universities and candidates were allowed only a maximum of 3 attempts. In 2012, the Ministry of Health reviewed the rules to allow candidates to sit for the examination in 16 universities and for an unlimited number of attempts.

Medical students who went to recognised colleges were exempted from this exam. Some foreign medical universities made it quite a business attracting Malaysian students. Local agents connecting student with universities also thrived. The Crimea State Medical University (CSMU) was a popular destination which attracted hundreds each year. However, this was one example of a problem. The Minister of Health revoked its recognition in 2012, stating that the Malaysian Medical Council had found weaknesses in its regular reviews of the CSMU programme. The university had gained recognition in 2001, but as early as 2003, complaints had been received with regards to the performance of its graduates. The cabinet decision was taken to de-recognise the university in 2005, with a time lag to allow for those already enrolled to finish.

The number of doctors qualifying to practice in Malaysia, as expected, started to rise quickly. From having 1,534 provisionally registered doctors in 2007, the

number rose to 3,714 in 2011. This raised the imminent prospect of medical graduates being un-employed. It also raised the question of how such a large number of junior doctors could be trained and fitted for different medical careers.

Nursing

The growth of the private hospital sector from the 1980s created the need for nurses which private colleges rushed to fill. Many small private hospitals often employed many untrained nursing aides, as they were unable to recruit enough trained nurses. The opportunity for private nursing colleges was obvious. In addition, Malaysian nurses, being well trained and proficient in English found work opportunities not only in Western countries, but also in the Middle East. This brain drain added to the urgent need for more nurses. This huge opportunity had not gone unnoticed.

The number of nursing colleges grew at first a pace behind the need, but the success of those filling the niche attracted many others to follow suit. Besides the 43 government nursing colleges, there were, 13 nursing schools attached to private hospitals, 9 others attached to private universities and 11 more approved by the Ministry of Education and the Ministry of Health in 2010. The government's policy on higher education also benefited the sector. Students enrolling in private tertiary education centres could easily obtain loans to finance their studies under the PTPTN scheme. Private nursing colleges became an attractive business venture.

The Masterskill Education Group became the country's largest operator of non-government nursing colleges. Its growth and prospects led to its listing on the local stock exchange, Bursa Malaysia, in 2010 with a share value on RM3.80, rising to a high of RM4.25 in August. However, more and more private nursing colleges opened, taking in up to 12,000 students at its peak. The market was soon flooded. Estimates put the number of nurses needed by private hospitals in Malaysia at about 2,000 annually. Despite the fact some nurses would seek employment abroad, the surplus of nurses was still overwhelming. Beginning from 2010 and 2011, un-employment among graduates of private nursing schools made headlines. Desperate for jobs, such graduates were even willing to become receptionists and clinic assistants for general practitioners. Many more had no work. Poor student intake at Masterskill college resulted in a net loss in the fourth quarter of 2011. Its revenue was down 40% in the first half of 2012 and its stock value hit a low of 59.5sen in September 2012.

POSTGRADUATE MEDICAL TRAINING

By the twenty-first century, Malaysia's system of postgraduate specialist training was fairly matured. There were 22 programmes run by the three pioneer medical universities; UM, UKM and USM. A few other universities, such as University Islam Antarabangsa (UIA), were making preparations to run such programmes as well. About 700 hundred candidates were enrolled in the various training courses each year, with standardised intakes in June each year. Medical graduates, were considered eligible to enter specialist training after three years of work experience, in addition to one year of housemanship, and had a job appraisal of above 85%, were under 45 years in age and had no disciplinary action against them. The limiting factor for taking in students was the lecturer to trainee ratio which was set by the universities at 1:2, even though the Ministry of Health wanted more specialists.

Candidates were selected through interviews, and sometimes through examinations. Some specialists programmes required working experience in the specialty. All programmes had an exit qualification exam and a part one examination within the programme.

Besides the UKM, which led the way with the first 9 specialist training programmes, UM and USM pioneeed other programmes. UM offered the first Family Medicine programme in 1989, Sports Medicine in 1996, Rehabilitation Medicine in 1997 and Clinical Oncology in 2003. USM initiated specialist programmes in Emergency Medicine in 1998, Paediatric Surgery, Plastic Surgery and Neurosurgery in 2001 and Transfusion Medicine in 2007. No university offered training in all 22 disciplines.

By 2013, UKM had trained a total of 3,086 specialists, UM 2,488 and USM 1,409. All training programmes were standardised at four years. They were structured training programmes with continuous assessment. It was not just a single examination, which recognised a candidate as a specialist when he passed. The emphasis was on clinical and surgical experience. This was integrated with short intensive courses, guided mentoring addressing ethics and professionalism, and also research. Although the universities designed the programmes and certified the candidate's successful completion, 70% of the training was done 'off-campus' in the Ministry of Health hospitals, with the Ministry of Health consultants as honorary lecturers.

Being university based, these programmes were under the purview of the Ministry of Education and the Malaysian Qualifications Agency (MQA). The National Conjoined Board oversaw matters such as admissions and examinations. The deans of the universities took two year turns being chairman of the board. Input was also received from various bodies such as the Ministry of Health and the Academy of Medicine. In addition other stakeholders such as the Malaysian Medical Council, the Deans' Council and the Vice Chancellors of the universities exercised supervision.

Some professional bodies were more involved in the training of their specialties. The Malaysian Urological Association established the Board of Urology in 2000. The Board collaborated with the UKM, submitting a proposal for UKM to award the degree of Advance Masters in Urology with the Board specified training. The first batch of 5 candidates were selected for the MCh Urology in 2003.

Besides local specialist training, British post-graduate degrees continued to be available for a few specialties right into the twenty first century. For Internal Medicine and Paediatrics, the MRCP(UK) and MRCPCH(UK), which consists of a three part examination, continued to be a recognized path to specialization. Malaysia continued to be one of the few countries where all three parts of the examination were conducted. For Obstetrics and Gynaecology, the MRCOG examination required the candidate to sit for the second part in Britain. It also required the candidate to have a holder of an MRCOG certify that he had completed the required four years of training. For the surgical specialties however, the former FRCS was no longer available as they required training only available in the UK.

PRIVATE MEDICAL CARE

By the new millennium, there were over 100 private hospitals in Malayisa. Most came under the umbrella of the Association of Private Hospitals Malaysia (APHM) allowing it to be an important dialogue partner with the government together with the MMA. The government passed the Private Healthcare Facilities And Services Act in 1998 to set standards and to regulate private hospitals. In collaboration, the APHM and Ministry of Health formed The Malaysian Society of Quality in Health to establish accreditation standards for private clinics and hospitals. The regulations of the Act were only implemented in 2004, giving time for all the stakeholders to give input regarding the regulations as well as time for all existing hospitals and general practice clinics to comply with the requirements. As such, the Act was able to come into force in a fairly painless way. Only a few clinics failed inspections and were penalised.

There were in total, 224 private hospitals, maternity homes and nursing homes registered in Malaysia in 2000, but 64% (143) of them actually had less than 20 beds. 40% of these private facilities, however, were located in Kuala Lumpur and Selangor.

By 2005, private hospitals accounted for 10,734, or 37% of hospital beds throughout Malaysia. The private health sector accounted for spending amounting to 9.9 billion ringgit, almost equal to the expenditure of the government health spending of 10.2 ringgit billion. The amount had doubled from 1999, just as government spending had.

A gradual change in the ownership of private hospitals occurred. Most were originally set up as single independent facilities, owned usually by a group of doctors

or a single doctor, among the specialists practicing within the hospital. Over time many were sold to hospital chains. One reason for this was that the doctors who administered these hospitals were growing older and wished to liquidate their assets. Another reason was, with the introduction of the Private Hospitals regulations, running a hospital became more demanding. Many hospitals, especially in Penang however, continued to remain as single institutions but two large chains emerged in the country.

The *Kumpulan Perubatan Johor* (KPJ) group of hospital grew to be the largest group. Starting with the Johor Specialist Hospital, the group started to acquire other hospitals such as Tawakal in Kuala Lumpur, Ipoh Specialist Hospital, Kuantan Specialist. The chain expanded into a brand name with 20 hospitals throughout Malaysia, plus two other hospitals in Indonesia by its 30th anniversary. In addition, it had a nursing college and had plans for a medical school. In addition to acquiring established hospitals, the group built new hospitals and became a public listed company.

The other group of hospitals grew out of the Pantai Hospital in Kuala Lumpur. By 2010, it had become a chain of 14 hospitals. It was also a public listed company but had a more colourful boardroom history. Its ownership changed hands more than once. Khazanah Nasional Bhd, the government's investment arm bought in to Pantai Holdings Bhd in 2006 and soon acquired all of it. It also bought a stake of the Parkway Group, which owned hospitals in Singapore like the Mt Elizabeth and Gleneagles Hospitals. The Gleneagles chain had also extended to Malaysia with hospital in Penang and Kuala Lumpur. In 2007, Khazanah acquired the International Medical University (IMU) in KL and acquired a majority stake in Acibadem, Turkey's largest private healthcare provider in 2012. In addition, Khazanah bought up the Apollo group of hospitals in India. In 2012, Khazanah created and floated IHH Healthcare Bhd, injecting a large part, but not all its stake, in all these enterprises. IHH became the world's second largest hospital group by market capitalisation, next to Hospital Corp of America with over 4,900 hospital beds in 30 hospitals across 8 countries. It was listed on Bursa Malaysia and the Singapore Exchange, raising 5.13 billion ringgit.

SITI SA'DIAH SHEIKH BAKIR (1952-

Siti Sa'diah was the second of 4 siblings and grew up in Mersing where her father was the Chief Clerk in the Police Force. As early as when she was 3 years old she was pining to go to school. She had her wish fulfilled in 1958, one year before she should have started school. Her first school was a Malay school, the Sekolah Bandar Mersing. She topped the class and was promoted to Standard 2 inspite her age. She was then selected to move to the Sekolah Rendah Sri Mersing, an English medium school after Standard 3. Ironically, it was her Bahasa Malaysia results at the MCE school leaving exam in 1968 that let her down, and she had to complete her Sixth Form in a private school. That did not stop her from getting a place to read Ecomonics, in the University of Malaya in 1971. She secured a Johor State scholarship and upon graduation in 1974 she joined the Johor Corporation as a Strategic Planning Officer.

There, she was tasked with conducting a viability study on building a hospital as part of Johor Corp's expansion plans. She knew nothing about hospitals but learned quickly by visiting the only three private hospitals in the country then, Penang Medical Centre, Pantai Hospital Kuala Lumpur and Assunta Hospital Petaling Jaya. She determined that a similar hospital would be viable in Johor, but the recession in 1976 put a hold on Johor Corp's plans. A few years later, with an investment of RM10,000,000, 8 doctors and 60 beds, the Johor Specialist Centre opened in 1981. It was an immediate success.

In 1987, an unexpected offer appeared in the form of Tawakal Hospital in Kuala Lumpur, which had accumulated losses of RM16,000,000. She won the bid for a majority share for the ailing hospital against a multinational corporation. She turned the business around, breaking even within a year and wiping out all losses within four years. With a strong team she changed everything, establishing good corporate governance and sound house rules. A year later, she took over Ipoh Specialist Hospital which was owned mainly by its own doctors. It was not losing money, but its numerous sharholders were unable to forge ahead together. Through Kumpulan Perubatan Johor (KPJ), Siti Sa'diah revitalised the hospital, enabling it to expand much further.

Her next dream was to build KPJ its own big hospital and her eye fell on the Ampang area in Kuala Lumpur, where most of the foreign embassies are located. She said that when she approached her boss Tan Sri Ali Hashim, for RM100,000,000 for the project, he thought she was crazy. The hospital however, was established in 1993, and it proved to be a huge success. She also saw to the problem of shortage of nurses for all these hospitals by starting KPJ's own nursing college. In 1994, Datin Paduka Siti Sa'diah saw to the public listing of KPJ Healthcare on the Main Board of the Kuala Lumpur Stock Exchange.

The next decade saw KPJ grow, through acquisitions and building to become a network of 22 hospitals. By the time she stepped aside as Chief Executive Officer to become KJP's Corporate advisor in 2012, the company realised a profit of RM150 million from a revenue of RM2 billion.

HEALTH TOURISM

Private hospitals in Malaysia not only thrived because of rich Malaysians. In the last decade of the twentieth century, they began to attract patients from abroad. Singapore and Thailand had already prospered in this field, and the quality of care in Malaysia's private hospitals and their competitive cost soon attracted a spill over. Penang and Malacca were especially attractive to patients from Indonesia. In 1998, health tourism registered earnings of RM20,000,000 but was set to increase dramatically. In 2003, the President of the APHM, Dr RidawanBakar was elected President of the Asian Hospital Federation, the first Malaysian to hold the two year term office.

From 2005, medical tourism started to boom in Penang, chalking up an average growth of 20% a year. By 2010, the revenue from private hospitals in Penang exceeded RM200,000,000. Penang accounted for two thirds of Malaysia's medical tourism earnings. In the whole country, health tourism brought in 380,000 patients and generated an income of RM380,000,000. By 2011, it exceeded RM500,000,000.

THE MALAYSIAN MEDICAL ASSOCIATION (MMA)

The MMA celebrated its 50th year in 2009. It had grown to have a membership of nearly 10,000. However, only 20-25% of all doctors were members. Nevetheless, it continued in some ways to remember a common bond for all doctors, such as the a tradition to observe a minute's silence at the start of each Annual General Meeting to name and remember all members who had passed away the previous year.

Its section for government doctors (SCHOMOS) continued to dialogue regularly with the Ministry of Health to advance the concerns of doctors, especially concerning their terms of service and remuneration. Its section for private practitioners (PPS) looked after doctors outside government service and their interests such as medical examinations for foreign workers, clinic requirements and other regulations. On the international scene, a few of its presidents like Dr AA Sandosham (1971), Dr Lim Say Wan (1983), Dr RP Lingam (1993) were also president of the Confederation of Medical Associations in Asia and Oceania. Dr P Krishnan (2001) was president of the Commonwealth Medical Association. Dr Rajakumar was the first chairman of the Medical Associations of South East Asian Nations (MASEAN) and Dr Teoh Siang Chin was also elected to that position in 2007. In 2006 Dr N Arumugam had the honour of serving as president of the World Medical Association.

Continuing Professional Development (CPD)

In line with medical practice throughout the world, it is recognised that all qualified medical practitioners need to be held accountable to continue updating their knowledge. Continuing Medical Education (CME) or CPD programmes have been organised by medical associations in Malaysia from its early days and had received good support from the profession. Sensing the impending complusory certification of CPD, the MMA initiated the MMC-CME Grading System and undertook responsibility for accrediting CME from 1994. However, legislation in Malaysia was slow in coming. Compulsory points for the renewal of the Annual Practicing Certificate was made compulsory only with the amended Medical Act (1971) (2012) but the regulations were yet to be formulated. On its part the Ministry of Health developed a structured electronic CPD system for all its staff in 2007.

RESHAPING THE ACADEMY OF MEDICINE

The Academy of Medicine of Malaysia had been formed as a large umbrella to maintain a high stand of professionalism and ethics among all medical specialists in the country. The 1970s and 1980s however, saw various specialist colleges form, with the hope that the profession would have a say in post-graduate training. Unfortunately, that was not to be. Many specialist societies also sprouted up, like the colleges one great aim was to help medical specialists keep abreast with advances in their various fields. With the growth of sub-specialties, and so many separate

organisations, professional development of medical specialists was in danger of becoming increasingly fragmented. The Academy of Medicine, though, was still a large umbrella, able to speak for the academic interests of all doctors with one voice. One drawback, however, was not all those who possessed a post-graduate medical qualification could be part of the Academy. The constitution of the Academy stated that candidates for membership must at least have published one accredited scientific paper.

In the 1990s, the Acdemy was restructured. First, the two main colleges were amalgamated with the Academy in December 1995. It was decided that the College of Physicians and Surgeons would retain their name and still be called colleges within the Academy. Members of the colleges who were not already members of the Academy were exempted from the requirement to have published a paper. At first, other specialties like Anaethesiologisty, Obstetrics/Gynaecology, Paediatrics and Public Health were represented as Chapters within the Academy. After some time, they too were called Colleges. The College of Family Physicians, however, decided to stay out the Academy of Medicine. Instead, they renamed their college the Academy of Family Physicians in 1995.

In 1999, the Malaysian Society of Pathologist merged with the Academy and became the College of Pathologists. The Malaysian Radiological Association followed suit and became the College of Radiology in 2001. Dental specialists who had been a faculty within the College of Surgeons became an independent college in 2010, and in 2011, Emergency Medicine Physicians were incorporated as a new college.

Although members of the Colleges who had not published a scientific paper were given a blanket exemption to join the Academy when the Colleges were amalgamated, it still remained a requirement for new members. The debate continued. In order to better represent all specialists, Dr Khalid Abdul Kadir proposed the constitution be amended to remove that requirement. For three consecutive years, his proposal failed to get the two-thirds majority required, including 2005, the year he was elected the Master of the Academy. He therefore resigned as Master immediately. The next year, however, the same proposal was brought to the annual general meeting for the fourth time by another person, and the amendment finally carried in 2006, and Dr Khalid Abdul Kadir was also duly elected Master. Thus, membership became available to all recognised qualified specialists.

As regards to organising scientific meetings and conferences, the Colleges and Academy had already used the same secretariat. At first the secretarial staff were housed in one room in the MMA building. In 1990, the government offered the Academy a building in Jalan Folly Barat, near the Parliament House. The government also gave the Colleges of Physicians, Surgeons and Family Medicine a plot of land along Jalan Tun Razak. The Academy Secretariat not only organised all the conferences of the Academy and Colleges, the staff were a team, under Ms Kong, that almost many medical societies turned to for services to organise their scientific and social meetings. The Academy secretariat also provided full services for over

12 associations and societies, as diverse as the Malaysian Association of Plastic, Aesthetic and Craniomaxillofacial Surgeons to the Parenteral and Enteral Nutrition Society of Malaysia.

In 1999, the Academy established its own specialist register and held discussions with the government concerning a National Specialist Register. There was no statute to designate doctors as specialists, but in anticipation of one, such a register would be required. Medical advances demanded that specialists be appropriately trained to be competent to practice at a higher level of care and proficiency in a chosen speciality. Before such legislation was enforced, the register would serve as a means of self regulation by the profession. It would strive to maintain and safeguard the high standard of specialist practice for the safety of the public. The Ministry of Health therefore agreed that until the Act was passed, the Academy would administer and maintain the register. The credentialing of specialists would be undertaken by a National Credentialing Committee under the chairmanship of the Director-General of Health, Malaysia consisting of members from both the Ministry of Health and Academy of Medicine. The National Specialist Registry (NSR) was launched in 2006. There were 55 designated specialties to begin with. Each doctor could only choose one specialty. By the year 2010 there were 66 medical specialties and 8 dental specialties, the latest additions being Geriatric Medicine and Infectious Diseases. That year, there were 3,436 medical specialists and 25 dental specialists registered. 1,273 were from the government sector and 2,163 were in private practice.

In 2003 plans were made for the Academy to put up a building on the land the Colleges had jointly been given. With the Physicians and Surgeons becoming part of the Academy, the Academy had two-third share while the Academy of Family Physicians retained its one-third share. The project started in 2007 and the building was completed two years later.

TRADITIONAL MEDICINE

Conventional medicine had, in the nineteenth century, drawn a clear line against various forms of traditional medicine. In the United States, such medicine men were derided as ‘snake oil’ peddlers. In Great Britain, qualified medical practitioners could be censured by the Medical Council for associating with un-registered self-styled ‘doctors’. However, in the late twentieth century, the scientific world began to investigate some of the claims of traditional medicine. Acupuncture was such a practice that appeared to show impressive results. Homeopathy also continued to have its adherents. Even if a chemical or rational logical reason could not be found for certain claims, such as acupuncture, the efficacy of such practices could be investigated using studies such as clinical trials. Randomised groups of patients could be given different treatments and their outcome analysed. There was also a belief that science could not dismiss what it could not understand, but should be open to evaluate any practice that might bring human benefit. There was a rising awareness that emotional and spiritual support for the sick is sometimes as important

to the healing process as the right medicine. The 'placebo' effect was recognised and the whole spiritual realm beyond that remained unexplored and in certain ways unknown territory.

There were many conventionally qualified doctors moving into different fields of traditional medicine to practice 'holistic' medicine. Traditional medicine practitioners were also eager to gain a foothold in the conventional medical system. In a certain sense, some patients had practiced this 'holistic' medicine all along, consulting all sorts of healers. But in the twenty-first century in Malaysia traditional medicine began to get an official footing. Even the College of Physicians organised an international conference on traditional and complementary medicine in 2003, with participation from the Malaysian Society of Complementary Therapy, the Federation of Chinese Physicians and Medicine Dealers, the Malaysian Indian Traditional Medicine Association, the Malaysian Homeopathy Medical Council and the Malaysian Malay Traditional Medicine Association. However, the president of the conference, Dr Ismail Merican, said the College and Ministry of Health were merely providing a forum for discussion between the various stakeholders and not giving it full endorsement.

Traditional and Complementary Medicine (TCM) services were introduced into government hospitals in 2007. The first unit was set up in the Kepala Batas Hospital, and it was soon followed by hospitals in Putrajaya, Johor Baru, Kuala Terengganu, Sandakan, Kuching, Port Dickson, Alor Star, Kuantan and Kota Bharu. They offered treatment such as acupuncture for chronic pain and stroke, massage for insomnia, headache, stress or mental fatigue, anxiety and depression. Some units offered Malay post-natal and midwifery care and some even herbs for cancer treatment. Many of these were done in conjunction with universities doing studies.

At the same time, regulating TCM meant the government took action against the sale of unregister unlicensed products. Over RM4,000,000 worth of such products were seized yearly.

THE EPIDEMIC OF DIABETES

When Dr RP Pillay and Dr Lim EH reported the first study on the prevalence of diabetes in Malaysia in 1960 they found a rate of only 0.65% (but they excluded known diabetics). Another study in 1962* reported a rate of 3%. In 1986, the first National Health and Morbidity Survey (NHMS) found that 6.3% of Malaysian adults above the age of 35 were diabetic. Ten years later, the NHMS II found the figure had increased to 8.3% among adults 30 years and above. This shocking rise spurred the initiation of numerous national healthy lifestyle campaigns organised by the Ministry of Health Malaysia. A national steering committee was then set up to manage diabetes in primary and secondary care clinics.

**Interdepartmental Committee for Nutrition in National Defence Nutrition survey, September-October 1962, in the Federetion of Malaya. Office of Assistant Secretary of Defence, Washington 25, D.C. 171 1964*

However, in the third NHMS in 2006, the prevalence of diabetes rose unabated to 14.9% among Malaysian adults 30 years and above. These studies nevertheless, were not entirely comparable. In the NHMS I and II, diabetes was diagnosed with a blood sample 2 hours after a glucose load. In the NHMS III diabetes was based on a fasting glucose level. The NHMS III also included subjects from 18 to 30 years. The prevalence of diabetes in this group was 2.4%. In the three NHMS studies the prevalence of known diabetics was 4.5%, 6.5% and 9.5% respectively and in these studies newly diagnosed diabetics formed 1.8%, 1.8% and
5.4% respectively.

Men (11.9%) were slightly more often diabetic than women (11.3%) in keeping with the global trend. By ethnic groups, 19.9% of Indians were diabetic, compared to 11.9% of Malays and 11.4% of Chinese, for those above 18 year in the NHMS III. There was quite a difference in the prevalence in Sabah (4.9%), the state with the lowest figure compared to Sawarak (10%) and Johor (11.1%) the next lowest states. Negeri Sembilan (15.3%) had the highest prevalence. The rise in diabetes is not unexpected, with increasing urbanization, affluence, sedentary lifestyles and a Malaysian diet rich in sugar, carbohydrates and fat.

73.5% of diabetics used government healthcare facilities for their diabetic care. In the Malaysian Burden of Disease and Injury Study, it was estimated that for the year 2000, there were 2,261 deaths attributed to diabetes. Although diabetes was not in the top 10 causes of highest Years of Life Lost (YLL) in men, the disease incurred a huge burden in terms of non-fatal disability, measured as Years Lived with Disability (YLD). Diabetes ranked third in men. The scenario was even worse for women. The NHMS III found that 4.3% of known diabetics were lower limb amputees. 3.4% had suffered a stroke. Significantly, the rate of stroke was 5.5% among Chinese, compared to 3.1% among Indians and 2.9% among Malays. 1.6% of known diabetics had End-stage Renal Disease and were on some of renal replacement therapy. Again, there were some ethnic differences. The rate among Malays (1.2%) was lower than among Chinese (2.3%) and Indians (2.4%). Eye disease from diabetes has not been adequately measured and the NMHS III noted that only 45% of diabetics have ever had their eyes examined.

Diabetics swelled the ranks of people needing renal replacement therapy. The number of dialysis patients increased nearly four times from 6,689 in the year 2000 to 24,773 in 2010 (a prevalence of 762 per million population). New patients needing dialysis rose from 88 per million per year in 2001 to 325 per million in 2010. Diabetics accounted for 58% of new patients accepted for dialysis. Elderly diabetics (>65years old) formed the fastest growing group of haemodialysis patients. The economic burden is worrying and set to be worse. The average cost of dialysis and erythropoietin therapy at the Ministry of Health dialysis centres was calculated to be RM2500 per month for each patient in 2005. This would mean end-stage renal disease was costing the country over RM700 million in 2010.

CANCER

Data concerning the number of cancers cases in Malaysia were initially only available in the annual reports on hospital admissions. The numbers had been slowly rising and by 1988 there were 25,169 admissions to government hospitals for cancer and 2,951 medically certified deaths recorded. Cancer formed 11.4% of medically certified deaths, second only to cardiovascular diseases. In addition, there were 2,023 cancer deaths among the 43,013 (62%) deaths that were not medically certified. Therefore, the Ministry of Health already had their eye on the increasing role cancer played in the changing spectrum of disease as early as the 1980s. More than one attempt was made at starting a cancer registry, but they failed to take off.

Nevertheless, hospital based reports, usually from pathological specimen reports, gave a hint of which cancers were common. The earliest reports in 1958 by Marsden, listed cervix, skin, oral, lymphoma, colorectal, nasopharynx and breast as the commonest cancers. Later reports over the years showed skin and oral cancers on the decline, while breast and lung cancers emerged. Although we had no accurate figures, the pattern of cancers did not appear extra-ordinarily different from what we might expect in our region.

What was expected and seen over the years, was that, for women, cervical cancer was replaced by breast cancer as the most common cancer. Lung cancer also emerged as smoking became more prevalent and diagnosis of lung cancer was made more easily available. Skin and oral cancers had ranked high because of easy accessibility to biopsy for diagnosis. Among skin cancers, the deadly melanoma was rare in Malaysia, as most of the ethnic groups living here are all well pigmented races. Most skin cancers in Malaysia were basal cell and squamous cell cancers that were not difficult to treat. Oral cancers were common, because of the habit of chewing betel nut, especially among Indian women. However, over the years with changes in lifestyle, the habit slowly died out and oral cancers became less common.

Nasopharyngeal carcinoma was, and is, prominent not only in Malaysia, but also in South East Asia. It was rather rare in the rest of the world. Special efforts in case finding in Selangor estimated the age-adjusted incidence for Chinese males to be 16.5 per 100,000 in 1968, compared to 2.3 for Malay men and 1.0 for Indian men. Women tended to have half the rate of men. In Sabah, Kadazans too, appeared to have a high incidence with a rate of 15.9 per 100,000 recorded for males in 1978. Nasopharyngeal cancer became the best studied cancer in Malaysia. The Ebstein-Barr virus was found to be a causative factor, as well as the consumption of salted fish in childhood. Being fairly unique to this region, the disease allowed researchers in Malaysia to be pioneers in the treatment of this malignancy. Dr U Prasad in the University Hospital was able to demonstrate the role that both radiotherapy and chemotherapy could play in the treatment of the disease.

When the National Cancer Registry of Malaysia set up in 1987 was deemed a failure in 1992, the Ministry of Health decided to have different states set up their own registry. The Penang Cancer Registry, started in 1993, was the most successful and was able to provide annual reports from 1994. Kelantan and Sarawak also made some progress, but these were superseded when in 2001 the Minister of Health instructed the Clinical Research Centre (CRC) to reactivate the national cancer registry. Clinicians were now involved in the effort and data collection began for the year 2002. When data for the second year was complete, the findings showed the records were fairly complete, reliable and corroborated with what the Penang Registry found.

It was determined that for the Semenanjung, there were 21,464 cancer cases diagnosed in 2003 (more accurate than the first year 2002 where non-incident cases, ie. those actually diagnosed in 2001 might have been included). The age standardised incidence rate for all cancers was 134.3 per 100,000 for males and 154.2 for females. Breast cancer was by far the most common cancer among women, accounting for 31% of cancers, followed by cancer of the cervix (13%) and colorectal cancers (10%). Among men, colorectal (15.4%) and lung cancer (13.8%) were the most common followed by nasopharyngeal cancer (8.8%). There were many interesting racial differences in cancer. Perhaps the most interesting is the case of stomach cancer where Malays had rates 5 times lower than Chinese. Malays, in Kelantan especially, had the lowest rates, which may be the lowest in the world.

After its start up, the National Cancer Registry was handed over to the Public Health Department in 2006. Unfortunately, poor data collection caused the registry to cease publication after 2006.

DRUG ABUSE

About half a million Malaysians were estimated to be involved in substance abuse in 2001. However, visible progress was evident from all the measures taken to combat the menace. The numbers of new heroin users detected each year reached a peak of above 20,000 in 1997, and started to decline after that. But many cases, up to 45%, according to the National Drug Agency, were repeat or relapsed offenders. By 2007, only 14,489 new cases were recorded. Malays accounted for about 70% while Chinese and Indians accounted for about 10% and 6% respectively. 98% were male and about 70% were aged between 20-39 years. Nationwide, there were nearly 30 rehabilitation centres or *Pusat Serenti*, each able to accommodate up to 500 inmates. The programme cost an estimated RM 50,000,000 annually. These centres initially used a total abstinence approach. It was however found that this approach produced poor results, with up to 85% of drug addicts relapsing after completing their rehabilitation at these centres. The Ministry then instituted the Methadone Maintenance Therapy (MMT) for herion users as a national programme, following some pilot studies which showed promise. At first, it could only be prescribed by gazetted government hospitals and primary health centres but the coverage of the

programme was later extended to certified private medical practitioners.

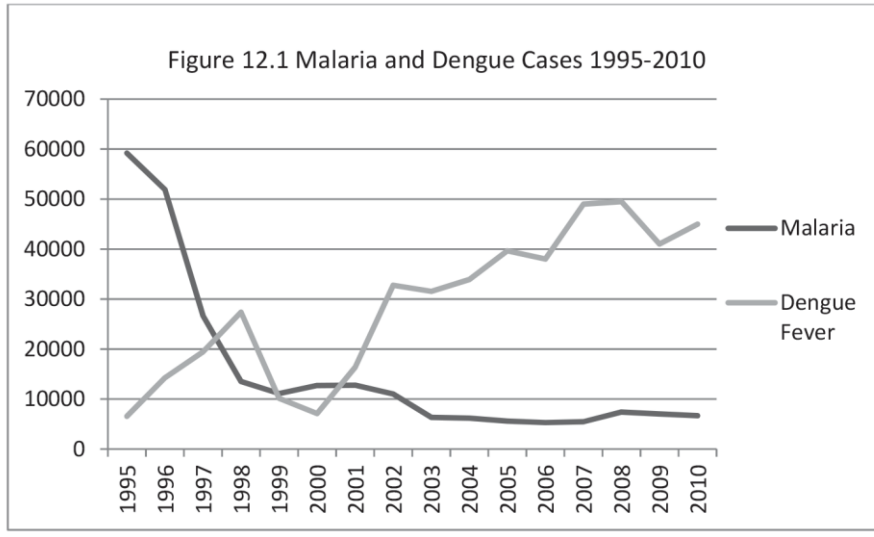
The number of drug users in the country was estimated to be 250,000 in 2010, but was expected to reach half a million by year 2015. Unfortunately, substance intake has taken a different trend with different recreational drugs appearing. For some time 'ecstasy' was a night club favourite. Then, ketamine abuse appeared. Amphetamine and methamphetamine (known as 'syabu' or 'ice') misuse also became widespread. The Royal Malaysian Police has reported about 3 to 10 times increases in the total weights of these confiscated drugs.

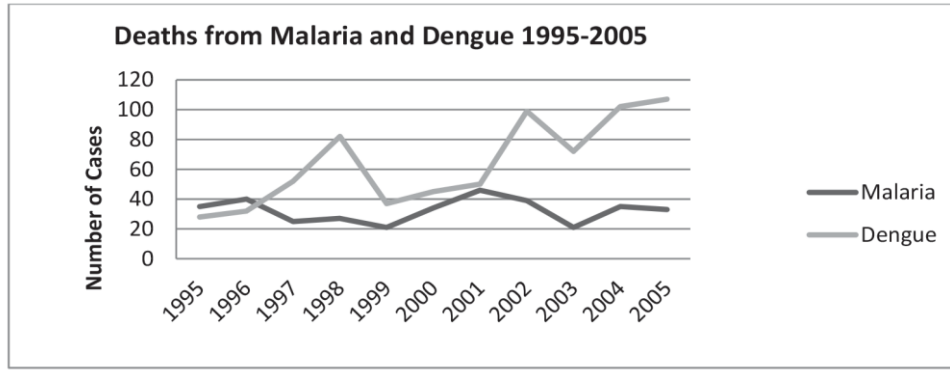
TUBERCULOSIS

By 2008, the incidence of tuberculosis edged downwards slightly to 62.3 per 100,000 population for all cases and 37.8 per 100,000 for sputum positive, infective cases. Malaysia was classified by the WHO as an intermediate TB burden country. Case detection is now in a passive mode, consisting of screening symptomatic patients, and foreign workers. All HIV patients are also screened and they formed 12.6% of new TB cases in 2008. Treatment outcome showed sputum conversion at two months reaching 90% with the current treatment regime. However, multi drug resistance tuberculosis looms as a potential danger. Malaysia stopped the policy of BCG revaccination for primary school children in 2002, in view of evidence that it had low protective efficacy. On the other hand, BCG in infants was being implemented very successfully with coverage very high at 98.9%.

VECTOR BORNE DISEASES

In a reversal of roles, malaria which was for a long time the most important mosquito borne disease, and scourge that ravaged the population, fell to second place behind dengue fever. Dengue became the most prevalent mosquito borne disease in 2001. Even from the 1980s when there were about 50,000 cases of malaria annually, Sabah accounted for a disproportionately large share, of 30-40,000 cases. So it was a matter of time when malaria control was achieved in Sabah. While malaria decline, the number of cases of dengue rose relentlessly, especially un urban areas. Dengue was a viral disease, as opposed to a protozoan disease. It was borne by the *Aedes* mosquito, as opposed to malaria which was carried by the *Anopheles* mosquito. The effort of finding a vaccine for both these diseases remained elusive.





However, malaria had one last interesting story to leave behind. In 2004, a large number of cases, thought to be *P. malariae* infection in the Kapit Division of Sarawak based on microscopic identification of the parasite, turned out to be something different. Patients were mainly adults and had more severe symptoms. Further DNA analysis of the parasite reveal it was *P. knowlesi*. It was long held that there were four human malaria parasites, now there was a fifth. *P. knowlesi* was known to be a parasite of the long-tailed macaque, first isolated in 1931 and first found in a human over 30 years later. The outbreak in Kapit proved not to be an isolated incident. It spread through out Sarawak and was even carried over to the Semenanjung and was reported from all the countries in South East Asia. Studies of achival blood films determined that *P. Knowlesi* malaria had been present in Sarawak as early as 1996. By 2009, *P. Knowlesi* was the second most prevalent *Plamodium* species causing malaria in Sarawak, accounting for more than 50% of malaria cases in some areas of Sarawak. Malaria is now a zoonotic disease with a disease reserviour in monkeys. It has many implications for control of the disease.

END STAGE RENAL DISEASE

With over 25,000 people needing renal dialysis, it has become quite a big service industry. By 2013, 6,157 dialysis patients were treated in government dialysis centres, and there were 560 private dialysis centres catering for another 7,088 more patients. However, 234 of these centres, almost half, did not have a licence to operate. 40 were unlicensed for not having trained staff, 80 for not complying with various requirements, and 114 had structural issues or did not submit their application for approval. In 2013, the Health Ministry issued a freeze on new licences for dialysis centres and announced a program to shut down, in stages, those that did not meet standards. The MOH was of the view that there was already an excess in capacity of haemodialysis and the overriding need was for maintaining standards. There was mention that the survival rate at some unlicensed haemodialysis centres was as low as 50%, whereas the national average was more than 80%. However, it could be argued that centres that had a high death rate might have taken older and very ill patients.

About 5,000 new ESRD patients needed dialysis each year, about half of them going to non-government organisation run centres, to which the Ministry of Health gave out RM45 million. It costs a patient about RM 150 per dialysis session. At the National Kidney Foundation centres patients were charged RM100, with the NKF absorbing RM50 or even more when patients were more needy. When it was pointed out, in the media, that the NKF had RM50,000,000 in accumulated savings, its chairman, Datuk Dr Zaki Morad disclosed that the foundation had an operating expenditure of between RM25-35,000,000 annually. Bearing in mind its turnover he argued that was a prudent measure. Dr Zaki also argued for more dialysis centres to be set up in rural areas, especially in Sabah and Sarawak as traveling distances up to three times a week was a heavy burden for the rural population.

Organ donation

In 2013, there were 239,683 people who had pledged their organs at death. Women constituted 55% of the total. There were 19,836 new donors pledges that year.

IN CLOSING

There can never really be an end to history, as the story continues everyday. We only come to the end of this book, as the story has to stop as we reach the present time. The last word I have to say is that the last few chapters are the hardest to write, as it is difficult to look at what is immediately around you, and know what is going to be important in years to come. Some things that appear important in the present day may be less significant in years to come. In addition, as Malaysia grows and the population becomes so large, many things are happening at once. It is hard to have a pulse on everything. I can only leave this account for others to take up and continue in the future.

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