THE SIGNIFICANCE OF PRIMARY HEALTH CARE DESIGN EVOLUTION TO HEALTH TREND IN MALAYSIA

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Abstract
Primary Health Care (PHC) in any country provides the accessibility and backbone to the nation's health as first point of contact for people and the healthcare system. In Malaysia, besides the mushrooming of general practitioners (GPs) in the private sector found only in urban areas, the public sector healthcare system covers the whole country in many location and forms. The study is thus to rediscover the significance of the design evolution in this sector of healthcare to the health trend of the country that makes Malaysia as one of the worlds' successful developing country meeting the WHO slogan *Health for All by 2000*.

To understand the design of the facilities that support the services, one needs to understand the philosophy of the services and hence an insight into the definition of the terms to physical connotation that accounts for the form, style and configuration of the architecture or facility. As the study is a historical journey leading to current scenario, selective historical health statistics to account for the health trend may be use.

The outcome of the study would be able to provide a clear demarcation on the rationality or whimsical phase of the design evolution that had enveloped the dynamism of the healthcare sector in this part of the world from inception. The study also aimed to provide an insight to the peculiarity of the region with regards to culture, tradition and acceptance of modern medicine in the form of a built facility. These outcomes, however modest should be able to lead and denote the policy makers on the need to address the various factors of the community it is planned and designed to serve more than just providing the healthcare services.

Acknowledgment
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INTRODUCTION

> *"Health care presents a different problem in every country for the way it is organised is a response to geography, climate, historical development, economic situation and social, cultural and political conditions…In developing countries, due to non inherited scheme, healthcare system had to be planned afresh. In advance or developed countries, the way healthcare is delivered ranged from private enterprise to state provision. Appreciation of these differences is fundamental to understanding of the situation which prevails in a country."(Anthony Cox et al, 1990).*

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Indeed the above statement holds true in any situation as it provides a comprehensive picture of the true state of health care services, its systems and its facilities in any part of the world even if the state itself has no structured healthcare services at all to define to. Malaysia (see fig.1), as an equatorial and a developing country in the South East Asian region, with evenly distributed population of various ethnic origin throughout the country, do succumbed to this representation with its own style of management and deliverance pre and post the British rule. However, as an introduction and for the purpose of deliberation among healthcare professionals of the world, some salient definition to provide a common language and understanding of the matter discussed on Primary Health Care and its related features will be addressed.

Fig.1 Relief Map of Malaysia to denote the geographical factors.
http://www.lib.utexas.edu/maps/middle_east_and_asia/malaysia_rel98.jpg

The paper will dwell forthrightly with the definitions as inspired by the WHO, well known organisations, individuals as well as the Malaysian Ministry of Health on PHC

and its relevance to the country's overall health care system as well as the question of architecture and design evolution on the facilities that has provided the infrastructure for the deliverance of its services to the populace.

Insight into the Malaysian vital health statistics, development of its primary healthcare services, its organisations and its referral system will be introduced as a general reflection on the entire health care set up towards understanding the dynamism or status quo of the Malaysian PHC facility design development.

The evolution of facility design in the Malaysian primary health care set up goes hand in hand, among others, with the health trend, technology, socio-political factors, economic viability and urbanisation that could only be deciphered and trace from just after independence in 1957 till today. Apart from literature review from published and unpublished documents of the MoH, the Public Works Department (JKR)[1] and personal experience being in the sector, interview sessions with the current client ministry and architects in the JKR were conducted independently to obtain consistency in the results.

The study focuses on the PHC in the public sector that accounts for over 80% of the country's population and with definite facility design trend. The MoH Malaysia do not governed the services provided by the private sector apart from regulating them on their services and the state of its facilities. These general practitioners (GP) s are commonly found in the urban and suburban area of cities and townships. The private PHC facilities are either located in-house as part of the private hospital outpatient department or in rented shop-lots which are not purpose built nor uniformly designed throughout the country. Undoubtedly, the private sector health care services had increasingly contributed to the well being of its citizenship. However, apart from services, the design of the facilities are governed by the Uniform Building By-Laws 1984[2] and the Private Health Care Facilities and Services Act 1998[3] in terms of its sizes, location, accessibility and other.

The outcome from the study on the design evolution of the public sector physical facilities selected throughout the country are then matched to the health trend in terms health services requirements and the epidemiological trend on outpatient attendances. The number of facilities provided to the population in the vicinity in terms of number

[1] The Public Works Department Malaysia or *Jabatan Kerja Raya Malaysia* (JKR) is a technical department and the implementing agency of the government. Among the units or sections of the JKR is the Medical and Health Works Section which are responsible for most of the health care designs, one off and standardised design found throughout the country. Formed in 1979, although the earlier designs was created by the Building Section, the Medical and Health Works Section had churned out hand in hand with the Ministry of Health Malaysia, conventional projects from a small as Rural Health Clinics to hospitals as well as a project management team on behalf of the government for Turnkey, Design and Built and negotiated contracts for health care projects.

[2] The Uniform Building By-Law 1984 (UBBL) is the Malaysian version of building rules and regulations that is used throughout Malaysia with exception of the State of Sabah and Sarawak for which the State's Ordinance are enforced. The UBBL provide the minimum requirement for different building typology based on function that includes natural ventilation, natural lighting, fire regulation and structural loading.

[3] The Private Health Care Facilities and Services Act 1998 (Act 586) provide the minimum requirement for the Private Sector to set up premises to be use for health care purposes. The Act defines what constitute the function of such named facility and that the facility is subjected for visit accreditation by the MoH regulatory body for Licensing.

of facilities to population will also be noted against national norms. The studies are not able to point accurately to the type of facility design, as the data gathered do not reflect individual clinics nor the design types. However, continuous feedbacks from the client user via the main client agency, the MoH, to the implementing agency - the JKR, had provided the criteria to subsequent revisions on the designs of the latter facility.

It has to be noted that apart from available and non-continuity piecemeal publication of the matter by both agencies, no comprehensive report of the design to health trend has ever been documented. This paper is therefore a preliminary attempt to bridge what seems trivial to implementers indulge busily on day to day work to meet the demanding datelines of the healthcare sector, on how to view the design as an effective tool that would create better environment whilst remaining flexible and robust in meeting the challengers of the emerging new diseases, population lifestyle as health trend.

THE DEFINITION

What is Primary Health Care (PHC)

The World Health Organisation (WHO), defines in the "Alma-Ata Declaration", 1978, *"Primary Health Care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community can afford to maintain at every stage of their development in the spirit of self-reliance and self determination. It forms an integral part of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and the community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process" (Dr. A. K Khokar, 1992)*

On clarification of the role of hospital in Primary Health Care, The New Delhi Declaration in 1985 pertaining to Hospital and Primary Health Care, promotes PHC as in an integral part of the whole health care system of any country with ten priorities that include formulation of health policy centred on PHC; development of health infrastructure with special reference to referrals; development of sensitive indicators; identification of appropriate technology, development of manpower, education and training of all category of staff; community involvement; development of suitable health information system; optimisation of financial support and scarce resources; and the monitoring as well periodical evaluation of outputs and programmes to corrective steps *(Dr. A.K Khokar,1992).*

Valins .M, 1993 described Primary Health Care as a nation's 'first line of defence' in maintaining the health and well being of its people being the first contact point for the patient to the country's health services system. He further defined that the facility designed for PHC provides a range of health care services that include medical consultation, treatment or diagnostics, minor surgery and health education. In certain instances, a rehabilitation unit such as physiotherapy and occupational therapy will

also be provided apart from facilities to facilitate visits from hospital consultants to hold outpatient session in the centre or even in patient short stay beds. The local population PHC served can vary from 10,000-35,000 people and that it only operates during the day with perhaps an overnight stay in some locality or model.

The Ministry of Health Malaysia (MoH), in realising its parallel vision towards Health for All (HFA) in 2000 with the WHO, had utilises the Primary Health Care, as a strategic approach for health care delivery. Through an increasing hierarchical level of services of care (refer fig. 3b), a patient at first point contact with the national health system will be able to be referred to the appropriate level of care based on need. Thus, the MoH focuses on the provision of accessible basic health services to target population groups, urban and rural, with priority to those in the rural areas (*P&P Division. 1986. pg 19).*

How Does PHC Fits Into The Overall Healthcare System Of Any Country

The Health Pyramid (see Fig.2) provide a general scenario on the location of Primary Health Care (PHC) in the overall health care system or services set up of any country that will gradually elevate to Secondary and Tertiary Care. The finer gradation or hierarchy within each band will depend on the method of organisation of ones country health care system and priority *(Cox. A et al, 1990).*

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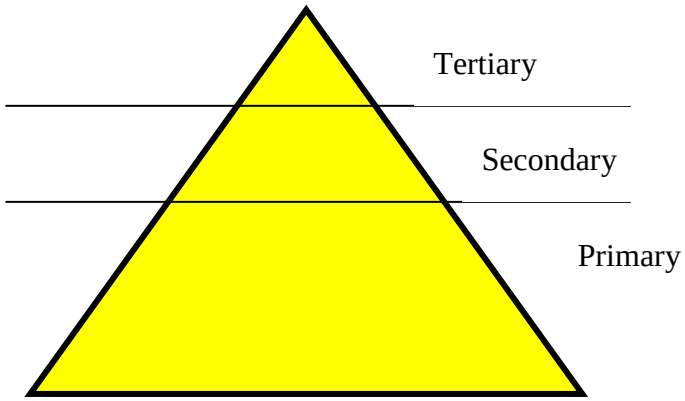

Fig.2 The Health Pyramid *(Cox. A et al,1990).*

Cox .A et al, 1990 mentioned in his book *Hospitals and Health Care Facilities*, that the principle of **referral of patients** from a lower level of care to a higher level is a method of sorting the patients according to their need for specialist diagnosis or the nature or the degree or their disabilities. This hierarchical health pyramid is universally recognised where, on reversal, the direction is meant for convalescence.

At Primary Health Care (PHC) level, the health care services are based in the community and relatively accessible to patients and their families. These facilities are also located at the periphery of the system and include preventive health measures such as immunisation programme, antenatal and childcare and simple diagnosis and treatment. The facilities, where appropriate are operated by doctors, nurses, medical auxiliaries and social workers based in aid posts, dispensaries, clinics and health centres that serves relatively small numbers of people and situated as close as possible to their homes that will enable medical and other health personnel to be in contact

with their patients' habitual environment. In a more urban environment, primary care is provided by a group of general medical practitioners in own set ups or public entity *(Cox .A et al, 1990).*

How Do We Identify Types of PHC In Naming Of The Facilities Providing The Care

Historically PHC forms part of the hospital as a one-stop centre for clinical logistic centred efficiency. These facilities are normally found in the urban areas. However, due to its non-appropriate awesome and sterile hospital environment related to sickness, the new function of the PHC, that includes preventive and promotive care as well as patient centred, warrant a different set up and outlook to its facilities. Currently, facilities for PHC are understood as off site facilities located within the community and servings basic health care to the locals. The facility acts as the resource in providing coordinated and holistic health care services to the people as part of the overall bigger framework of the country's healthcare system (*Vallins. M., 1993*).

Vallins M., 1993 described the naming of the facilities or building types terminology as a process that may differ from one country to another and depending on the funding authorities even though the concept remains similar. In UK, these PHC facilities are grouped into the following terminologies or names i.e. Health Centres, Group Practice Surgery, Medical Care, Doctors Office and others.

How Can We Denote Health Trend from Building Design or Vice Versa

Similar to hospitals, PHC facilities grew and evolved through needs and demands of the health situation of each country. Historically the advent of such centres in the west began in religious or charity buildings to care for the sick, such as monasteries and homes. These functions were adapted in spaces within existing facility without its own entity or building typology until much later. Similarly in Asia, apart from the continuing traditional medicine done in homes, the geographical location, the climatic factor, culture and tradition influence the design of the structure housed to perform western or modern medicine. The material use and the building configuration to provide comfort and access to the user, i.e. the sick and the carer, were shaped to accepted technology and ingenuity of the time. These facilities available today may seem totally utilitarian devoid of any special architectural character or what constitute design as a health care building.

Thus, to evaluate health trend from such building design and vice versa, is to study the past and present uses of spaces made out in a typical facility or facilities to the health services organisation of the country. The study should also note the changes in the health policy and needs parallel to the provision of the typed facility and how they were all eventually translated to space needs and configuration. Health indicators as envisaged by WHO to all its member countries for easy monitoring of the country's health status, can contribute to indirectly gauging the health trend.

How Can We Gauged Health Performance To Facilities or Design of the Facilities

Only in the last two decades we had witness Architecture and its built environment to have any real prominence in the health outcomes. To date architecture to health care had been more of a physical shelter to accommodate the functioning of a system for which if the layout works in terms of certain functional criteria, it is considered efficient and therefore the project is successful. As a facility, its performance is not easily predicted as it is basically built on the brief that was formulated on projected needs of available historical data. It can be said that most health care facility design and philosophy behind the design has been taken for granted as the architects' arena. Thus the forms and looks of the facilities do not demand much architectural character and may even be simply be utilitarian building that meets the obvious function.

Due to limited resources and data, the health outcome of the users could not be totally determined by the type of facility design. If it can, it can only contribute to part of the side effects of the overall environment including the nature of the ailments, the physical and the psychological factor of the facilities, personal care and other. For the moment, the architects may be able to gauge the success of his or her facility design by interviewing the users. Even then, it is still very subjective.

MALAYSIA – THE COUNTRY

Malaysia as a member of the World Health Organisation (WHO), under the Asia Pacific Region, under the strategy of monitoring health status towards the Global Strategy to achieve Health for All (HFA), for the first time in 1982 followed by 1985 and 1988, used the Common Framework (CFM)[4] for evaluation. Since then the global indicators remained unchanged for continuous monitoring and evaluation alternatively by the WHO regional coordinating centres, executive boards and world health assembly. Table 1 provide a forty (40) years scenario of the health status of peninsular Malaysia without the State of Sabah and Sarawak.

Apart from the WHO indicators, Malaysia's MoH also formulate other indicators to monitor and evaluate national strategy such as desegregated values by geographical entities, sex, ethnic, and urban and rural dichotomy *(Unit Sistem Matlumat dan Dokumentasi, Mei 2000.)* as indicated in Table 2 on the urban and rural population.

The concept of development by Malaysian is to witness significance progressive improvements in living conditions and quality of life shared by all members of society as a necessary condition for improved welfare and creation of just and caring society. This development concept was earlier stressed in 1960s and 1970s as issues that place direct emphasis on social factors. These concepts lead to the development of social changes and opportunities towards equitable societies that include both education and HEALTH towards Vision 2020 *(Tan Sri Dr Abu Bakar Dato´Suleiman et al, 2000)*.

[4] These indicators represented the essential minimum for member countries of WHO to evaluate their own national strategy towards FFA goals. With each global monitoring and evaluation, the list of indicators was modified to ensure that it was adequate. These indicators will enable WHO to evaluate HFA strategy globally (*Unit Sistem Dokumentasi.Dan Maklumat. Mei 2000*).

Table 1. Population and Health Status Indicators progression throughout the Malaysia Plan * Peninsular Malaysia only. NA – Not Available. *(Tan Sri Dr Abu Bakar Dato´Suleiman et al, 2000)*

Development Plans	1st Malaya Plan* 1960	2nd Malaya Plan* 1965	1st Malaysia Plan* 1970	2nd Malaysian Plan * 1975	3rd Malaysian Plan* 1980	4th Malaysian Plan* 1985	5th Malaysian Plan* 1986	6th Malaysian Plan* 1990	7th Malaysia Plan* 1996
Population (million)	6.9	8.0	9.1	10.3	11.4	13.0	17.8	20.7	21.2
Growth Rate	3.2	2.8	2.4	2.3	2.2	2.6	2.3	2.8	2.3
Life expectancy at Birth									
Male (yr)	55.8 (1957)	63.1 (1966)	61.6	64.3	66.4	67.7	69	69.4	69.3
Female (yr)	58.2	66.0	65.6	68.7	70.5	72.9	73	74.2	74.1
Crude Birth Rate	40.9	36.6	32.5	30.6	30.3	31.3	26.8	25.9	26.3
Crude Death Rate	9.5	7.9	7.0	6.3	5.5	5.3	4.8	4.6	4.6
Infant Mortality Rate	68.9	50.1	40.8	33.0	24.0	17.0	13.1	10.4	9.1
Perinatal Mortality Rate	NA	39.3	36.9	32.0	26.7	19.3	13.9	9.8	9.1
Neonatal Mortality Rate	30.1	26.5	22.9	20.4	14.8	10.7	8.38	6.8	6.0
Toddler Mortality Rate	8.0	5.8	4.2	3.1	2.0	1.4	0.9	0.8	0.7
Maternal Mortality Rate	2.4	2.0	1.5	0.8	0.6	0.4	0.2	0.2	0.2

Table 2. Urban and Rural Population *(Malaysia Health, MoH 1998,2001)*

Year/ Population location (%)	**1998**		**2000**	
	Urban	**rural**	**Urban**	**rural**
Perlis	33.3	66.7	34.3	65.7
Kedah	40.0	60.0	39.3	60.7
Penang	84.0	16.0	80.1	19.9
Perak	65.0	35.0	58.7	41.3
Selangor	87.0	13.0	87.6	12.4
Wp Kuala .Lumpur	100.0	0.00	100.0	0.00
N.Sembilan	46.4	53.6	53.4	45.6
Melaka	47.5	52.5	67.2	32.8
Johor	54.6	45.4	65.2	34.8
Pahang	33.0	67.0	42.0	58.0
Terengganu	45.4	54.6	48.7	51.3
Kelantan	38.3	61.7	34.2	65.8
Sabah	37.0	63.0	48.0	52.0
Sarawak	47.7	52.3	48.1	51.9
Wp Labuan	-	-	77.1	22.3
MALAYSIA	**57.3**	**42.7**	**62**	**38**

Malaysia's vision for health as stated below, provide the impetus to continuously improve and therefore dynamic:

" Malaysia is to be a nation of healthy individual, families, and communities, through a health system that is equitable, affordable, efficient, technological appropriate, environmentally adaptable and consumer friendly, with emphasis on quality, innovation, health promotion and respect for human dignity, and which promotes individual responsibility and community participation towards an enhanced quality of life"

The approach of the health vision is not static but dynamic. It sets in place a framework to ensure that the health system could develop and adapt to the changing environment. The framework is followed with the health care facilities being

pragmatically planned and developed to provide the support to the vision. The paradigm shift with the concept of wellness towards health care, primary care system and facilities are given due emphasis in the Vision For Health to take the function to ascertain and filter the population prior to them being referred to hospitals effectively.

Strategies in Health Services Development

Malaysian population has grown from 9 million in 1963 at 2.3% annual growth rate to 24,013 million in 2001. Relatively a young population with a large percentage below 15, it is anticipated that the country will remain relatively youthful in 2020 although the elderly group over 64 is increasing at the estimated growth rate of 4% (1991-2000)(*Tan Sri Dr Abu Bakar Dato´ Suleiman et al, 2000*).

Anticipating years leading to 2020, urban migration, urbanisation and foreign workers are among the social economic factors that contribute to the demographic changes in the population, changes in the disease patterns such as emerging diseases brought by lifestyle and international travel as well as patient centred care. Other consideration in the health services development include the appropriate technology assessment, use of information communication technology (ICT), the integration of private and public health care services, further research and development in health, the integration of the alternative medicine as complimentary medicine, the human resource planning of health care professionals to meet the current and future demands; and keeping health care cost effective and affordable.

In the National Health Facility Planning and Development, the identification of priority health problems from analyses and proposals for their resolutions form the basis for action programmes to be implemented during the 5 year Malaysia plan. Inherited from pre independence post war reconstruction of colonial Malaya of Marshall Plan Technique and the first Malaysia Draft Development Plan by the Economic Planning Unit in 1950, these plans were initially directed to spend a development grant of the United Kingdom Colonial Development and Welfare Act 1945 (*Tan Sri Dr Abu Bakar Dato´ Suleiman et al, 2000*). Table 3 shows the financial commitment of the government on health care facilities and providing more than 17-18 % of the total 5-year plan allocation to primary health care.

Table 3. Financial Allocation for Physical Development *(MoH Annual Report 1998 and 2001)*

Year / Facilities Dev	**7th Malaysian Plan (1998)**			**8th Malaysian Plan (2001)**		
	Allocation (RM)	**%**	**No**	**Allocation (RM)**	**%**	**No**
Training	17,476,600	2.4		266,538,000	4.85	47
Public Health	129,651,400	17.6		987,018,000	17.95	1,066
Health Facilities	169,221,000	23.1		-	-	-
Hospitals	318,685,000	43.5		2,330,283,000	42.37	37
Upgrading of Hospital Facilities	-	-	-	1,733,822,000	31.52	286
Consultancy and Feasibility Studies	10,000	-	-	20,000,000	0.36	2
Upgrading and Maintenance	97,942,000	13.4		113,622,000	2.07	1
Acquisition and Maintenance of Land	-	-	-	48,717,000	0.89	4
Total	**732,986,000**	**100**		**5,500,000,000**	**100**	**1,443**

Before independence, the administration and management of health had switches hands between states and federal governments with each constitutional change. In peninsular Malaysia, the management of health became a federal matter just before independence in 1957 followed by the states of Sabah and Sarawak (on Borneo island) at a later date after joining Malaya as Malaysia.

These five (5) year plan strategies are evaluated twice in the process i.e. during the preparation of the plans and the other during the Mid Term Review whilst the plans were being implemented (*Planning and Development Division.1986*). The evaluation includes the review of the provisions of the facilities and other infrastructure. Since independence, Malaysia has placed a cost-effective intervention in health care. The establishment of basic public health and essential clinical services was phased in over time and all the geographic areas. In 1970s, government provides emphasis on health services in the rural areas where 75% of the population lived in many forms and modes. The basic health care services include Rural Health Services that made up of Community/Rural Clinics, Health Centres and Sub Health Centres in a comprehensive network. Mobile and Flying Doctor services are provided for population group in remote areas or those yet without a permanent structure (*Planning and Development Division.1986*)**.**

Fig. 2 Administrative Map of Malaysia
(http://www.lib.utexas.edu/maps/middle_east_and_asia/malaysia_adm98.jpg)

Malaysia as a nation made up of fourteen (14) administrative states, Fig 2. provide the extend of facilities to be distributed to the twelve (12) states in peninsular Malaysia and two (2) states of Sabah and Sarawak on the island of Borneo. The population and population density by states from year 1997 to 2001 varies from the most dense with

5,700 persons per sq km in the Kuala Lumpur Federal Territory in 1997 to 5951 persons per sq. km in 2001; and the least dense with 16 persons per sq. km in Sarawak in 1997 and 17 persons per sq km in 2001. The average number of person per sq km for Malaysia is 73.

The summary of studies done on the *Accessibility and Utilisation of Rural and Urban Primary Health Care Clinics* as reported in *Malaysia Health 1998* denotes patterns where 92% of the urbanites stay within 3 km of a health facility (predominantly private clinics) as compared to 68.7% of the rural population. This finding was an improvement from the studies done in 1996 where 88.5% of the estimated population lived within 5 km and 81.1% within 3 km of static facility; and 89% and 74% of the respondent living 5 km and 3 km respectively to a health facility in studies done in 1986.

The population and health care facilities ratio as shown in Table 4 indicate gradual improvement for patients´ accessibility to nearest health care facilities in the country by states towards a ratio of 2-4,000 population per Rural Health /Community Clinic; 15-20,000 population per Health Centre. The Health Clinic/ Community Polyclinic based in the urban centres will be based on outpatient attendances of 500-1000 per day for peninsular Malaysia and less than 500 in Sabah and Sarawak. The table also indicate the rising population due to migration that increases the population ratio at one place and better at another e.g. Kuala Lumpur or Wilayah Persekutuan.

Table 4. Health Facility to Population Ratio and geographical by States, Malaysia *(Planning & Development Division, 1986 and Malaysia Health 1999, MoH Indicators 2000).*

Year	**1982**		**1997**		**1998**		**2000**	
/Location by States	**HC**	**MC/KD**	**No**	**HC**	**HC**	**MC/KD**	**HC**	**MC/KD**
Perlis	1:20 100	1: 3 700	9	1:24 156	1: 24 644	1: 5 100	1: 22 722	1: 4 480
Kedah	1:28 300	1: 4 100	54	1:28 335	1: 28 793	1: 4 166	1: 30 593	1: 4 457
Penang	1: 32 500	1: 6 900	27	1:45 263	1: 48 719	1: 3 228	1: 45 090	1: 4 197
Perak	1: 24 300	1: 4 700	84	1: 24 938	1: 25 378	1: 2 904	1: 25 728	1: 3 458
Selangor	1: 29 300	1: 5 700	61	1:49 177	1: 53 234	1: 2 951	1: 71 983	1: 3 835
WP/Kuala Lumpur	NA	NA	14	1:98 193	1: 99 343	NA	1: 97 879	NA
N.Sembilan	1: 19 100	1: 3 200	38	1:21 329	1: 21 113	1:4 202	1: 22 023	1: 3 885
Melaka	1: 19 400	1: 4 300	27	1:21 556	1: 21 763	1:4 898	1: 23 485	1: 3 302
Johor	1: 20 600	1: 3 400	87	1:29 355	1: 30 018	1:4 377	1: 31 286	1: 3 495
Pahang	1: 15 800	1: 2 500	66	1:18 773	1: 19 458	1:3 716	1: 19 846	1: 3 184
Terengganu	1: 13 100	1: 2 300	39	1: 25 021	1: 24 490	1:4 150	1: 21 927	1: 3 468
Kelantan	1: 18 900	1: 3 300	58	1: 24 948	1: 25 154	1:4 531	1: 22 671	1: 4 348
Sabah	NA	NA	90	1: 29 598	1: 31 254	1:9 329	1: 29 191	1: 7 153
Sarawak	NA	NA	118	1: 16 563	1: 18 724	1:10 735	1: 10 962	1: 41 358
MALAYSIA			**772**	**1:28 064**	**1: 28 730**	**1: 4 758**	**1: 27 599**	**1: 4 600**

HC-Health Clinic, NA-Not available

The Referral System

The health service delivered through the referral system as shown in Fig. 3a and 3b shows the hierarchical and direct reference of patients from the point of first contact with the system depending on their state of health and ailments. The accessibility of patients direct to the primary health care facilities and services after all general outpatient (GOPD) services from the hospitals moved to the health clinics in 2001

(with exception of those attending the emergency department and private health care) had create a clear picture of the quantum primary care attendances in the public sector.

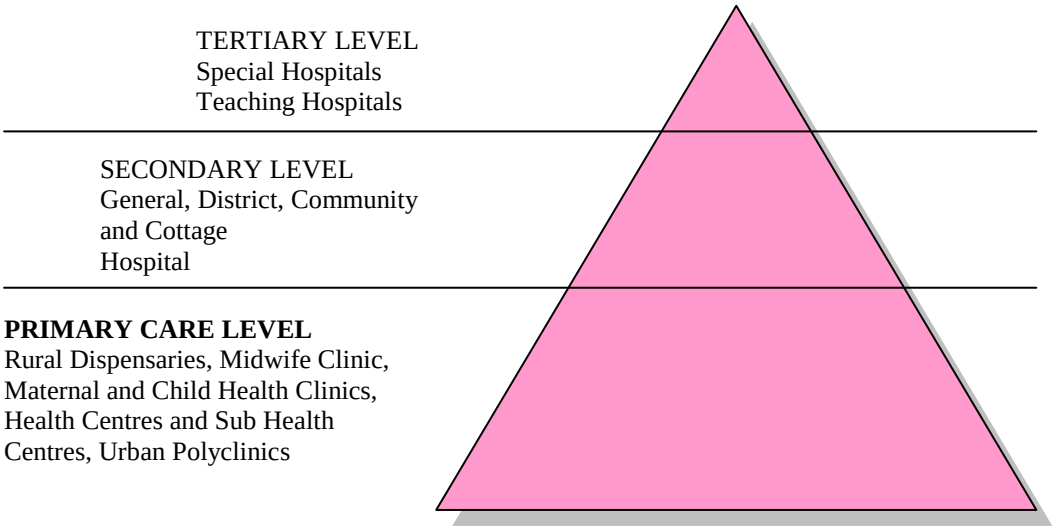

Fig 3a. Increasing Hierarchical Levels of Care

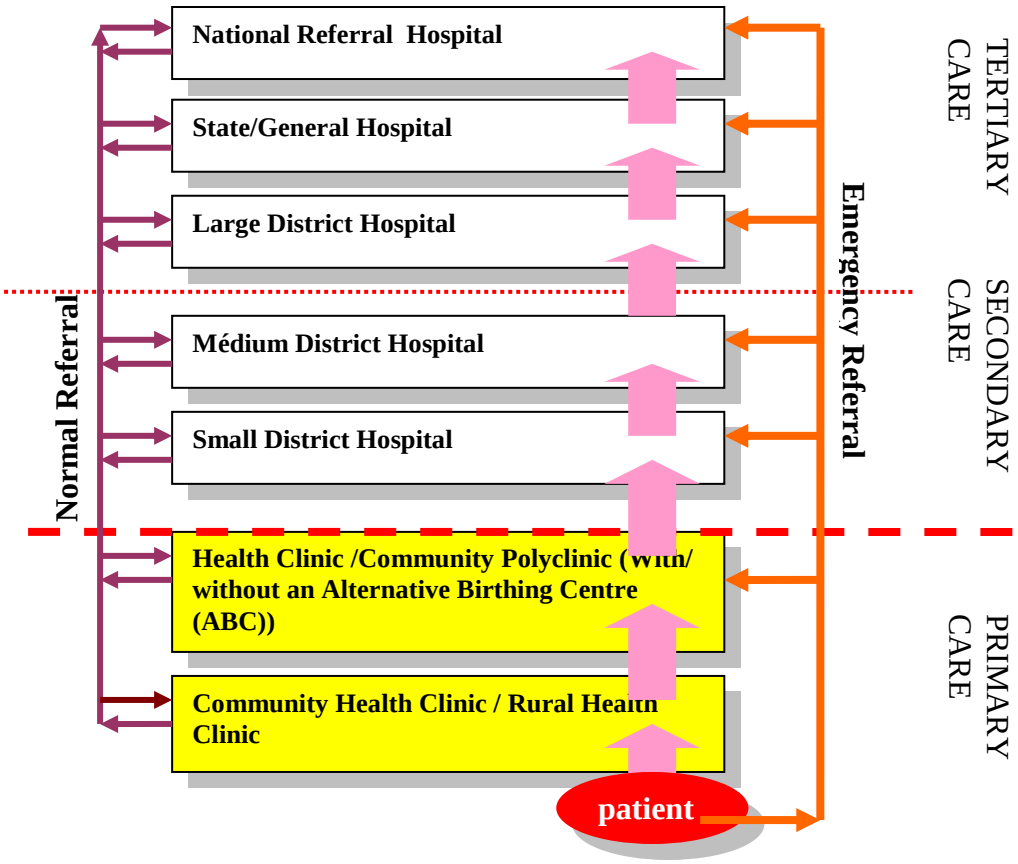

Fig.3b. The National Referral system

Provision of Primary Health Care

Strengthening of inter-sectoral coordination and collaboration in the provision of basic services under Primary Health Care encompassed about thirty (30) health and health related activities agencies in the 1980s. Private health care services need to be coordinated as they also contribute to the PHC development. Other considerations in the distribution of health facilities include locating these facilities at the priority states with lower health status, incorporating them with social cultural values of Malaysians in the facility planning as well as to create a balance between urban and rural based services *(Planning and Development Division.1986).*

Table 4 shows the distribution and development of primary healthcare services by states throughout the years as funds and priorities were identified and implemented. The table also noted the decrease in numbers in some types of facilities due to upgrading of services as well as following the GOPD inclusion in the Health Clinic services in 2001.

Table 4. Distribution and Number of Primary Health Care Facilities by Types, States and Years* *(MoH Annual Report 1997 and 2001)*

Year/ State Facility	**1997**				**2001**	
	Satellite Clinic/Urban Polyclinic	**Health Centre**	**Rural Health Centre/ Community Clinic**	**Dispensary**	**Health Clinic (all types)****	**Community Clinic**
Perlis	1	7	29	0	9	30
Kedah	3	42	225	0	54	255
Penang	6	16	61	0	30	62
Perak	7	61	256	1	81	253
Selangor	10	42	136	2	59	136
K.Lumpur	13	0	0	0	14	0
N.Sembilan	0	32	105	1	38	104
Melaka	4	20	63	0	27	63
Johor	7	74	271	0	89	270
Pahang	1	52	227	4	67	246
Terengganu	1	34	132	0	43	134
Kelantan	1	51	199	0	58	200
Sabah	3	71	188	-	195	22
Sarawak	6	98	97	-	91	195
MALAYSIA	**63**	**600**	**1989**	**8**	**855**	**1940**

** Excluding GOPD of hospital in 1997 and Mobile Dispensary or clinic in 1997and 2001. ** HC or KK comes as Type 1, 2.3,4, 5 and 6 for specific population size and location (refer page).*

Among the causes for attendances to PHC clinics for the past years include antenatal, outpatient, children 0-6 years old, for home visit, school children examined by nurse, family planning attendances *(Malaysia health 1998, Table 4,pg 1997*) in 1997 and women's health, geriatric, rehabilitation, diabetes and others as the services were expanded *(MoH Annual Report 2001, pg 83).*

Health Care Facilities Design Development Process

In meeting the demands of the facilities required to deliver the services at the onset of independence in 1958, standardisation and use of model plans with appropriate technology were put to use. These health facilities became the hallmark of the health services development in the country. The standardisation method had facilitated planning and speeded project implementation throughout the country. These plans or designs were the outcome of a team effort between personnel[5] of MoH and the Public Works Department *(Planning and Development Division, MoH 1986)*. The team also reviewed existing designs and assess needs for new designs when the need arises.

The design evolution of any public healthcare design is generally not immediate to health needs, as it needs to go through the bureaucracy of check and balance before actual implementation. As PHC takes the bulk in quantity of healthcare facilities provision of the country through standardisation of designs in accordance to location and appropriateness of scale in services, each design undergoes scrutiny by the approving committee of the Ministry of Health known as the *Jawatankuasa Khas Ketua Pengarah Kesihatan* (JKKPK) prior to forwarding them the central agencies[6] whom provide the final outcome towards implementation. The design and approving process may take over a year to implement. Thence new designs for each five year development plan has to be forethought and design based on the projected requirements of the MoH in the current development plan for the next development plan.

The health needs to design criteria are discussed in the following section as the highlight of this paper- *the significance of primary health care design evolution to health trend in Malaysia.*

PRIMARY HEALTH CARE FACILITIES AND THE SIGNIFICANCE OF DESIGN EVOLUTION TO HEALTH TREND

Historically in Malaysia, the **Primary Health Care** started with the basic health services initiated through the Maternal and Child Health Clinics (MCH) throughout the country since independence. Built up upon the colonial physical facilities scattered throughout the country through a comprehensive health scheme with federal government, the Ministry of Health Malaysia or *Kementerian Kesihatan Malaysia*, being responsible for the health care of the country. Peninsular Malaysia, in the early 1960s and 70s, the formation of the three (3) tiered and two (2) tiered systems of the **Rural Health Services** and **Urban Polyclinics** came about.

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[5] Personnel involved in planning and design of the standard healthcare facilities for the MoH are Medical Doctors and nurses from the MoH and Architects and Engineers from the Public Works Department (Medical and Health Works Branch-after 1979)

[6] Includes The Economic Planning Unit, Implementation Coordination Unit and Public Services Department of The Prime Minister's Department, the Public Works Department and the Treasury with the purpose of jointly examine the annual estimates for development and operation of Ministeries, Agencies and Departments; to coordinate between developmental estimates and estimates of operating expenditure; as well as to act as watch-dog for the implementation of the stated policies of Government (*Planning and Development Division, 1986. Health Facility Planning and Development in Malaysia. Ministry of Health Malaysia*)

The trend in Sabah and Sarawak, due to its large and spread out condition of the country and population, primary health care facilities till this day, take a slightly different route to the peninsular PHC. Added birthing centres or overnight stay, as static facilities are common accommodation apart from the service of flying doctors and mobile dispensaries. Although the General Outpatient of the hospital is part of Primary Health Care, this paper will not discuss its development but will provide an insight on the impact it has on physically joining the primary care sector.

Fig 3c and 3d provide a graphical picture on the implementation of decentralisation of GOPD then and now in the Urban Primary Care Structure.

Fig 3 c Urban Primary Care Structure to hospital- *then*

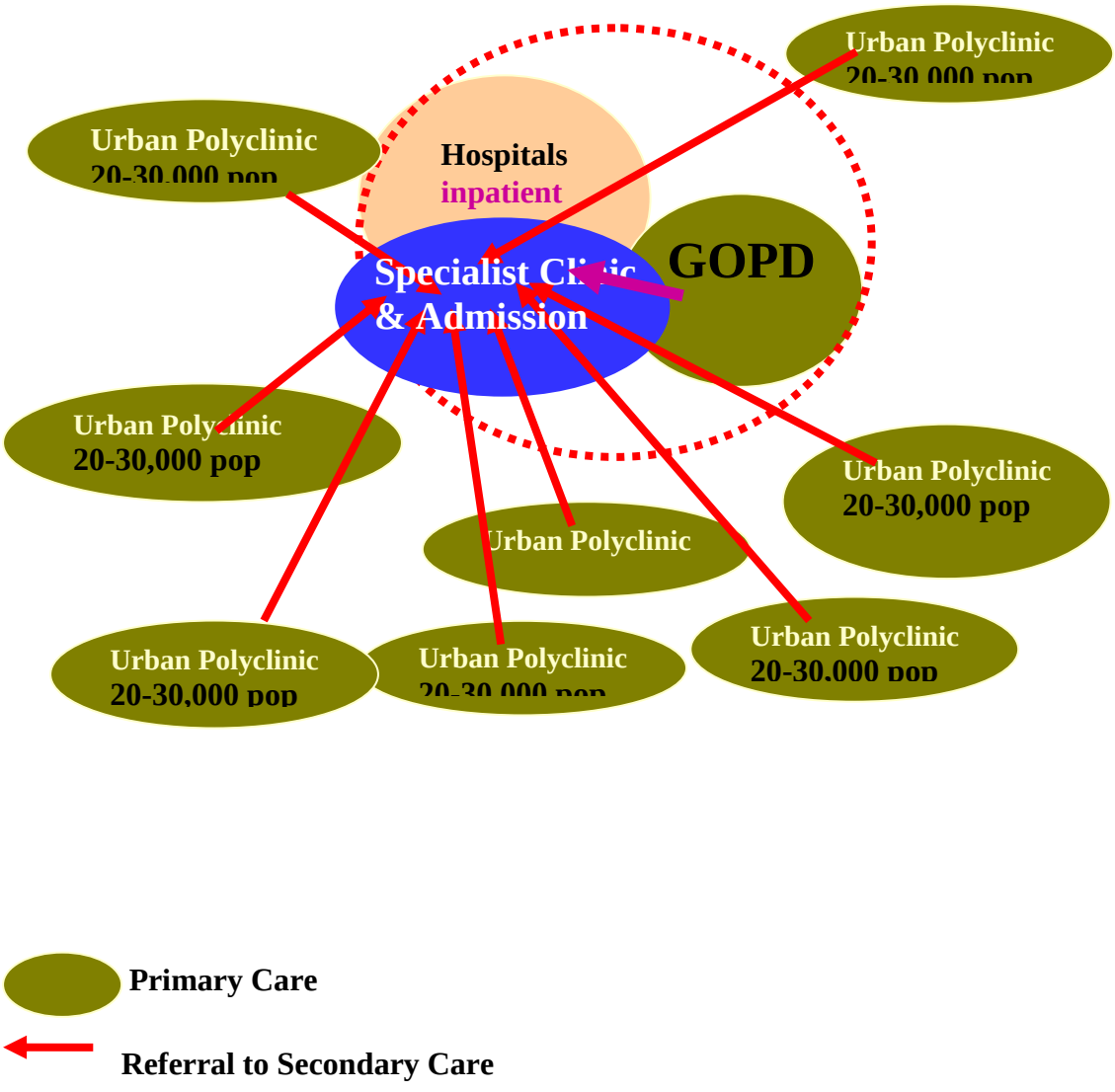
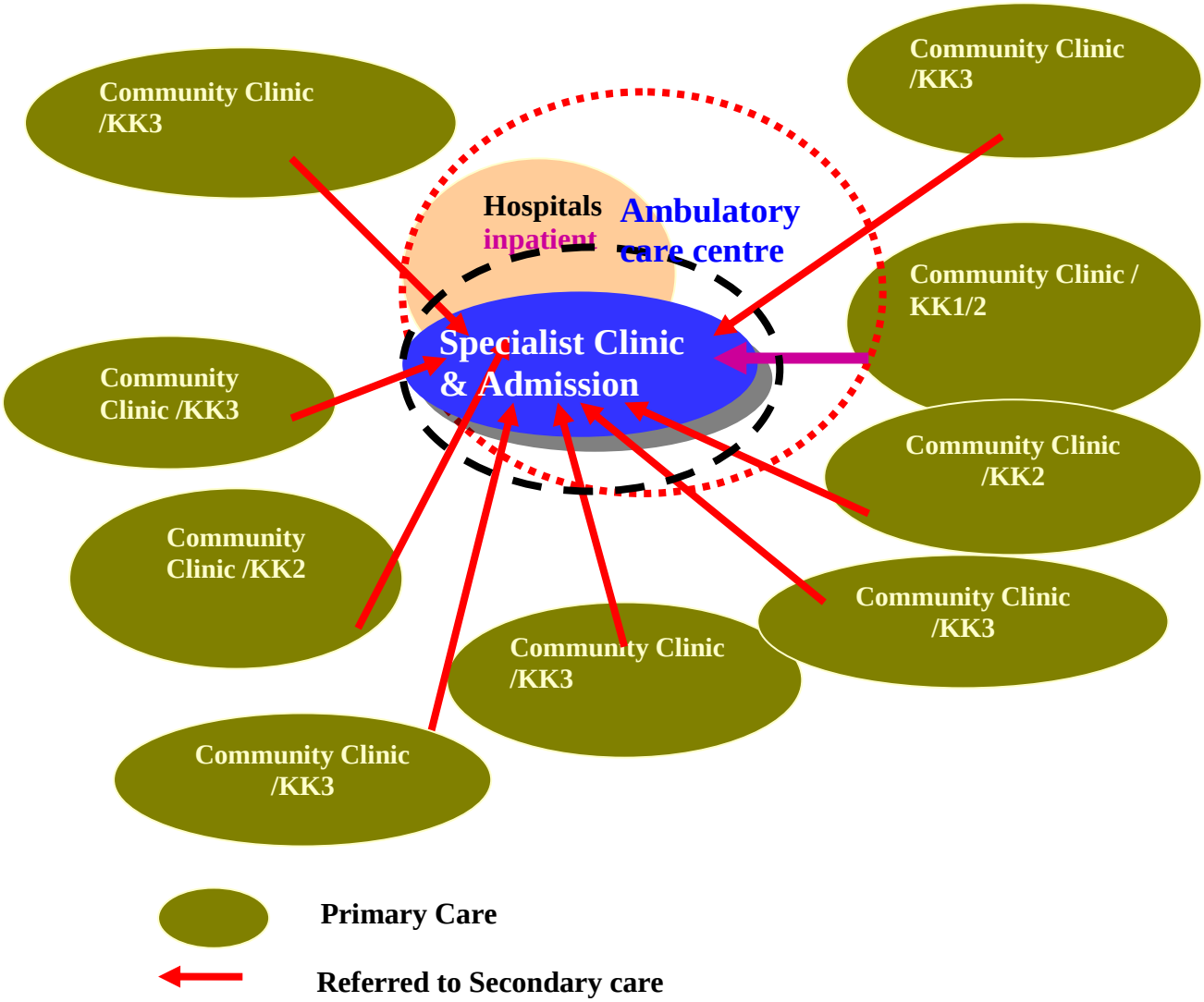


Fig 3 d Urban Primary Care Structure to hospital - NOW



The Primary Health Care Services includes the following eight (8) essential elements i.e. Nutrition, Family planning, Maternal & child health, Basic sanitation, Supply of essential drugs, Control of endemic diseases, Health education and Dental care

The following section will explain the types and evolution of design to health trend, which will hopefully be able to provide vividly the rationale behind the development of existing designs and towards cultivating a thinking process for new ones in handling emerging diseases as health trends of the future.

- **RURAL HEALTH SERVICES – THE 3 TIERED SYSTEM AND 2 TIERED SYSTEM**

In line with the WHO towards better maternal and infant mortality rate, communicable diseases, basic sanitation, clean water supply for most developing

countries, Malaysia embarked upon the structuring of its physical Rural Health Service as an outreach programme for the rural folks towards a comprehensive referral system (refer Fig. 3b).

The Rural Health Services (RHS) provides primary preventive and curative health care to the rural population. The RHS components found in the different levels of RHS services are the services of Maternity - Ante Natal & Post Natal, Child Health, Healthy Citizen, Adolescent, Health, Elderly Health, Food, Rehabilitation, Treatment of light diseases, Home Nursing, Health Education.

The three (3) tier Rural Health Services were the Midwife Clinics cum Quarters (MCQ); the Health Sub-Centres (HSC) and the Main Health Centres (MHC) (refer Fig.5) to serve 2000 population, 10,000 population and 50,000 population in hierarchy. Other than MHC where a doctor and a dentist will reside, other facilities are manned by para medical staff and community nurses cum midwifes.

Fig 4a Government Dispensary upgraded to Health Centre in Fraser's Hill.

Fig 4b. Government Dispensary on Penang Hill.

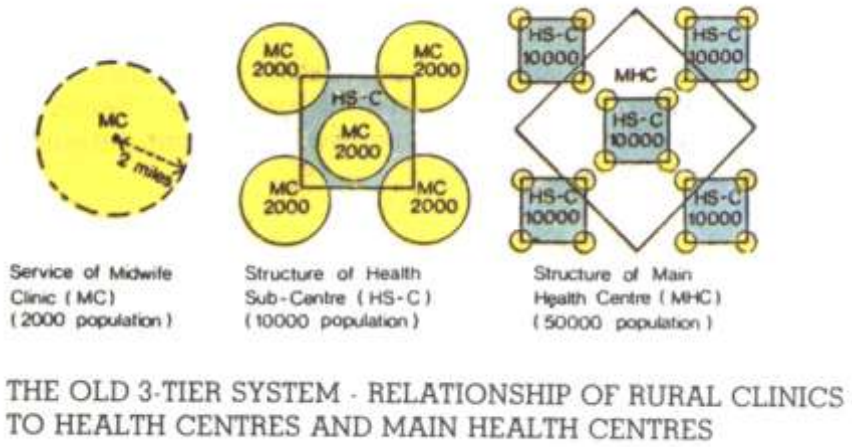


Fig. 5 The Rural Health Services- 3 Tier System pre (1960s-1970)
(Courtesy of Medical and Health Works Branch, JKR)

Apart from embarking on new facilities in the quest for better health condition, existing and inherited facilities were carried on as usual. Dispensaries as seen in Penang hill and Fraser's hill in Fig. 4 remain the testimony of the colonial days designed very much to adapt to the cooler conditions of the hills from masonry.

On studies made by the WHO in 1969, the 3-tiered system was changed to a 2-tiered system (refer Fig. 6) in 1971 parallel to the 2nd Malaysian Development Plan. Under the new arrangement, the Midwife Clinic and Quarters (MCQ) were upgraded to Rural Health Clinic or Community Clinic with separate building for quarters as well and the Health Sub Centres (HSC) were upgraded to a Health Centres. While the new Community Clinic covering the new catchment's of 4000 population within the 5 km or 4 miles radius, the catchments for the new Health Centre is between 15-20,000 population. Physically these changes, though gradual (see Fig.7), include the upgrading of its facilities with additional buildings and the re-training of existing staff with new skills apart from added staffing to be multi skills.

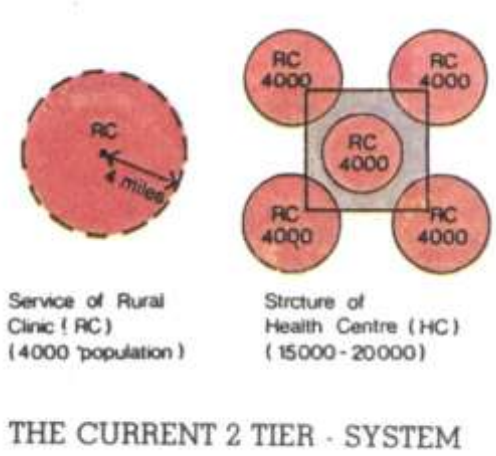


Fig. 6 The 2 Tiered System for Rural Health Care (1971).
(Courtesy of Medical and Health Works Branch, JKR)

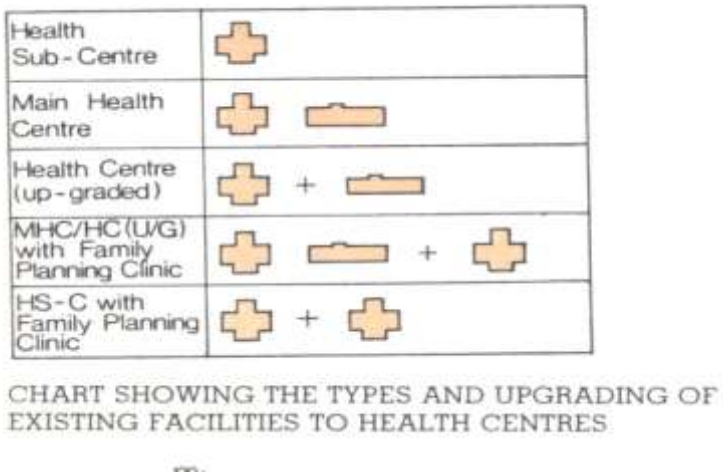


Fig. 7 The chart showing the proposed upgrading of existing rural health service from 3 tiered to 2-tiered system
(Courtesy of Medical and Health Works Branch, JKR)

- **THE BUILDING TYPES AND TERMINOLOGY**

Evolution of Community Clinics

The Midwife Clinics Cum Quarters (MCQ) or *Rumah Bidan dan Klinik (RBK)* is designed to meet the requirements of the activity of a midwife or ´*bidan*´ for ante and post natal care of the mother/patients for a village community. The midwife[7] is required to make a visit at each home within her jurisdiction within a stipulated schedule and note the health status of mother and child, carry out immunisation and does delivery at patients´ home. The midwife is 24 hours on call and thus need to stay close at hand. The medicine and service is given free of charge. Referral is made where relevant for patients to go to the health sub centre or main health centre. To carry out routine calls to homes, the midwife is provided with a bicycle as mean of transport.

The architecture (refer Fig 8 and 9) of the clinic cum quarters[8] to serve a small community of 2000 population and within 2.4 km (2 mile) radius is a simple wooden raised structure of post and beams as well as with an asbestos cement pitch roof. The material used is basically timber for floorboards, internal and external walls. The architecture blends oblivious to the surrounding amidst the cultivated plantation except for the red-crescent MoH signage on beige background to denote it as a government health facility.

Basic facilities such as clean water and electricity were supplied from nearly government source and improvised if location is remote with water from the well and use of gasoline for lighting, sterilisation and cooking. Sewage are treated as soak way or septic tank.

Fig 8 Artist and actual view of the MCQ or RBK setting in the village community.
(Courtesy of Medical and Health Works Branch, JKR)

[7] The midwife of the MCQ is a trained government midwife. Traditional midwife are sometimes trained under the government scheme to provide the comprehensive clinical care apart from traditional rituals. This programme of closing the gap between traditional medicine and modern medicine is still in progress.

[8] Quarters is the term used for accommodation or housing. This term has been used throughout by the government sector inherited from the colonial days to provide housing for the workers while they are in government service. The quarters design and sizes varies according to level of the officer. Standard quarters design has been inherited from the colonial days and had been replaced by newer designs in mid 80s and 90s. For health care projects, apart from JKR standard design, some of the quarters, where MoH policy permits, are one off design by the architects of the turnkey or design and built operator based on a standard brief.

The facility is designed with the accommodation meant for one-person occupancy. With the midwifes getting married and had families of her own, expanded design of the facility was devised to accommodate this changes from time to time until the next Malaysia Plan (1971-1975) where it was reviewed and subsequently change to Rural Health Clinic or *Klinik Desa* with a separate quarter building for accommodation of a family and the existing building serve as the clinic.

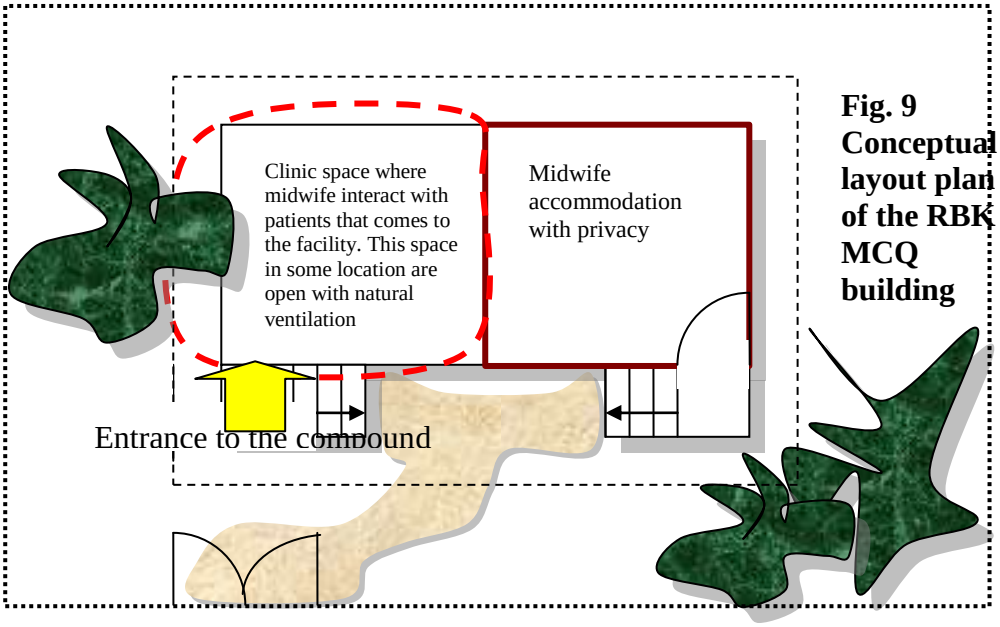


Fig. 9 Conceptual layout plan of the RBK / MCQ building

Fig. 10 MCQ /Rural Health Clinic/RBK
Picture courtesy of the Planning and Development Division, MoH)

The new *Community Clinic* to house the new services and facility in mid 80s was the Batang Kali type design (refer Fig. 11 and 12). The Batang Kali design was named after the placed where the prototype based on modular-dimensioning system was first built.

Fig. 11
The Batang Kali type community clinic.
(Picture courtesy of the Planning and Development Division, MoH)

Fig 12.
The Front View Of The Community Batang Kali Type Clinic Building
(Courtesy of Medical and Health Works Branch, JKR)

In contrast to the simple wooden building type of the former Community Clinic or *Klinik Desa (KD),* the design was build partly brick and partly timber with traditional pitch roof to provide that village or *kampong* environment and yet able to house clinical activities of midwifery, immunisation, nutrition programme and basic outpatient medical treatment such as dressing, cough and cold**.** The midwife herself had her in-house training as rural /community nurse or *jururawat desa* with added skills and responsibility. As shown in Fig.9, the clinic composition is made up of one clinic building with 2 quarters class ´G´[9]. Planned of a cruciform or beetle shaped based plan, the layout also provides verandah spaces as waiting areas similar to former community clinics.

Emerging designs of Community Clinic were initiated in mid 90s and approved by the Central Agencies for nationwide implementation in 1997 for 7th Malaysian Plan (1996-2000). The 2 designs as shown in Fig. 13 and 14 are completely in contrast in one hand with existing community clinic in terms of material use, outlook and floor configuration but conceptually similar to the original design. The two designs, KD1 and KD 2, combined back the quarters to the clinic making it once again one building or one roof. The difference lies in the number of quarters combined with the clinic i.e. 1 G or 2 G quarters, located on the upper floor of the clinic building.

Fig 13 Community Clinic or *Klinik Desa (KD)* with 1 G
(Picture courtesy of the Planning and Development Division, MoH)

Fig 14 Community Clinic or KD with 2 Gs

The design reflects the rapid urbanisation of the rural areas, the sustainable architecture of brick and mortar to easily dilapidated timber as well as keeping the footprint smaller than the acreage of a single storey building of about ½ acre per clinic. The KD 1 is to serve 100 outpatients per day and KD 2 for 50 outpatients per day *(Unpublished report, JKR 2002).*

Fig 15.
KD with 2 G, Raub
(Internet)

[9] Quarters Class G is one of the classified classes of housing in the government sector that denote standard area, spaces and finishes appropriate to level of the officer or worker.

Although approved and implemented to some localities in the country, these designs were however being reviewed in late 2002 prior to them being implemented in the 8th Malaysian Plan. This review is necessary due to feedbacks from client users- the state and local health office, that the structures were too imposing to some rural areas where timber buildings are still prevalent *(Unpublished Working Paper for approval of JPPK, MoH, 2002).* The decision made then was not to discontinue but to be selective in locating the type of facility suitable to the immediate environment. Batang kali designs are still being used.

Health Centres

The Health Sub Centre (HSC) or *Pusat Kesihatan Kecil (PKK)* is a physical composition of two standard or modular services beetle shaped building i.e. the Mother and Child Health Clinic (MCH) and The Outpatient Unit with four (4) units of MCQ/RBK administratively governed by the HSC catering for a total of 10,000 population of 3-5 km radius but need not be in the same compound.

Fig.16 The entrance of the Beetle Shaped Clinic building.
(*Picture courtesy of the Planning and Development Division, MoH)*

Fig.17 Gate entrance to Damak Clinic
(Internet)

The configuration of the cruciform but famously cited as Beetle shaped building as shown in Fig 16, 17 & 19 as a module to accommodate the services goes as early as the MCQ/RBK but in a more urban setting. Made of bricks and mortar with clay roofing tiles, spaces within are white wash with glazed tiled to 1.5 m of the wall. The layout shows a simple building with 4-5 rooms to accommodate the basic function of either the Mother and Child Health Clinic (MCH) or an Outpatient Unit with one main entrance but two other exits at the rear or access to toilets. Naturally ventilated with some mechanical fans, the single use pavilion type design of these facilities are still in use today in the rural areas.

Among the services provided by the centre is Mother and Child Health, Outpatient services, Family Planning services, Blood and Urine tests, Environmental Health and Communicable Disease control. Alternative birthing centre (ABC) or low risk delivery centre is provided where relevant. The ABC is meant to cater for low risk birth, mothers whom are not able to go to hospitals due to living in the remote areas as well as those whose homes are not conducive for home delivery.

The Main Health Centre (MHC) or *Pusat Kesihatan Besar (PKB*), physically, is a composition of the Mother and Child Health Clinic (MCH), an Outpatient Unit, a

Dental Unit and an Administrative Building. Each MHC will govern 5 Health Sub Centres (MCH & OU) and 20 MCQs to a catchment population of 50,000 people.

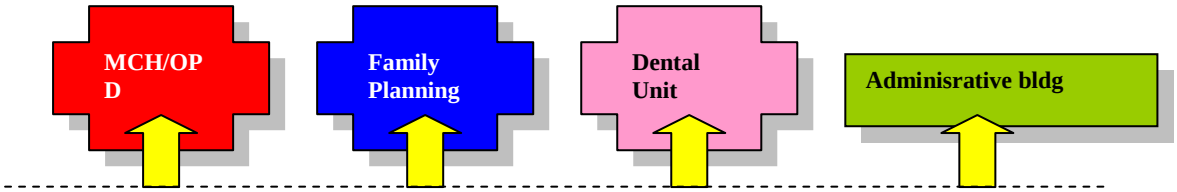


Fig. 18 Pavilion Modules that made up the Main Health Centre which a HSC or HC can be upgraded to.

The MHC is the highest authority of the rural health services before referring to the secondary care i.e. the District Hospitals. Apart from new designs such as (refer Fig 18 & 20) the Mantin (Design) Plan and the Gulau (Design) Plan, being created for purpose build buildings in meeting new requirements of the services, existing facilities are being upgraded or add on with additional buildings to provide the expanded services.

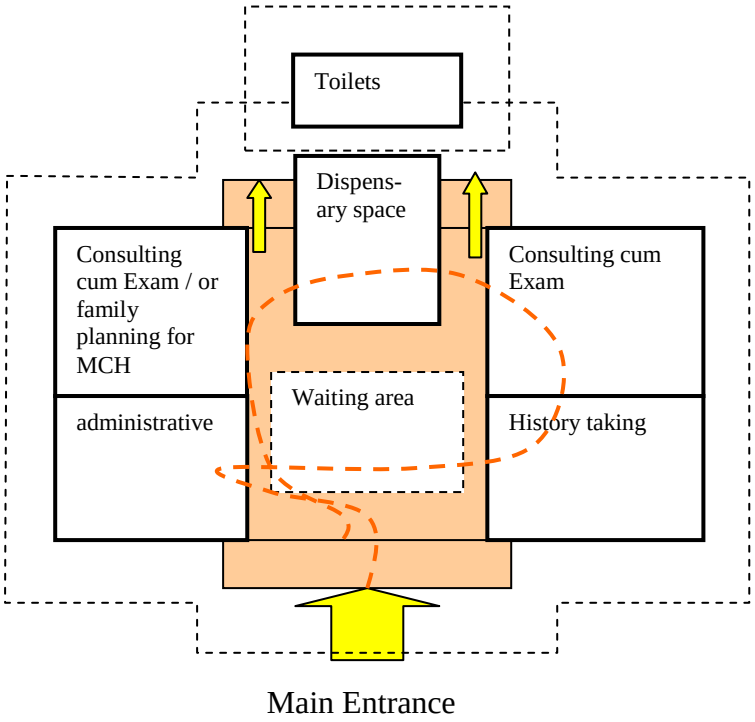


Fig. 19 Beetle shaped modular clinic building

Fig 20. PK Mantin Type, Melaka

Fig 21. PK Mantin ***(Courtesy of Medical & Health Works Branch, JKR)***

The Mantin Design types tried to house all the services under one roof with central waiting, courtyards and one main entrance. Then came the Gulau plan (refer Fig 23 for which goes back to the pavilion design of one building for one purpose and expand as necessary. Gulau design or plan for the main health centre was derived together with Batang Kali KD design. Both designs were based on the modular coordination dimensioning system and implemented within the same period as prototype design. Similar to the modular design of the Beetle modules, the Gulau plan provides expansion to its services to accommodate x-ray unit, laboratory and other facilities as required in its own designed module. Each MHC will require more than 5 acres of land excluding areas for quarters and alternative birthing centres (where relevant).

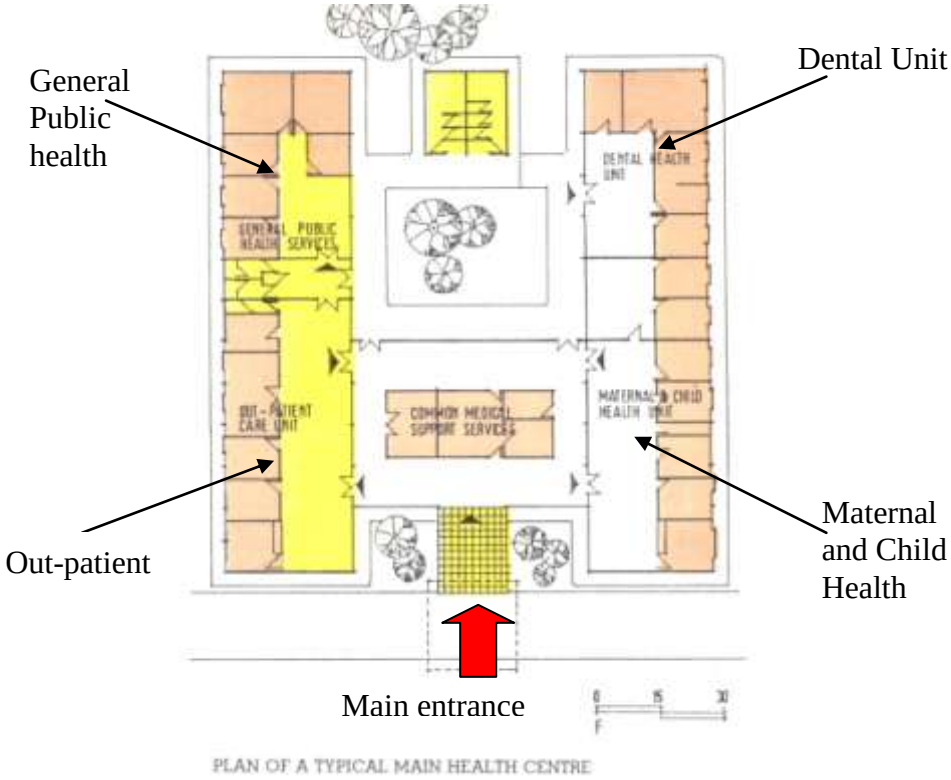


Fig. 22. Mantin Type Main Health Centre Design Layout Plan
(Courtesy of Medical &Health Works Branch, JKR)

Fig. 23 Gulau Main Health Centre, Kedah
(Courtesy of Medical & Health Works Branch, JKR)

East Malaysian Version of PHC-Sarawak or Sarawak Rural Health Services (RHS) is the modified version of the peninsular RHS concept. The norms of 1 Health Sub Centre (HSC) to serve 5000 population and each Community Health Clinic (CHC) to serve 2000 population within 3-5 km radius are due to the sparse population per sq km in comparison to Peninsular. In Sarawak the Community Health Clinic also functioned as Health Clinic.

East Malaysian Version of PHC in Sabah or The RHS Sabah is a 2 tiered system comprising of Rural Dispensaries and Village Group Sub Centres (VGSC). The Rural dispensaries are provided with beds for simple in and out patient care. In most places the Maternal and Child Health (MCH) care is also easily available. In Sabah, VGSC is the backbone of the MCH services in the rural area.

- **URBAN HEALTH SERVICES**

The PHC facilities in the urban areas are mainly made up of private general practitioners, scattered government polyclinics and the General Outpatient Departments (GOPD) of hospitals. While the private sector growth is influence by market forces and therefore not reliable to have them located where the urban poor community need most, most patients attended the GOPD of the hospitals. Private clinics are not free and attendees to private clinics are either company workers where fees are paid for by their companies as panel clinics or those with good income. To decongest hospitals of general outpatients so as to provide better curative care to referred in-patients, current policy of decentralising the General Outpatient Departments (GOPD) from the hospitals had provide an impetus in the upgrading of existing urban polyclinics, new design of urban health clinic or *Klinik Kesihatan (KK)* of various types to cater for the urban catchment's as the first point of entry to national healthcare system in urban setting.

The Urban Health Clinic or *Klinik Kesihatan* or *Poliklinik Komuniti* as it is recently (2003) known, it's general services includes Health Management; Family Health :Ante Natal, Post Natal, Child Health, Healthy Citizen; School Health; Adolescent Health; Geriatric (Elderly) Health; Mental Health; Food and Dietetics; Outpatient; Home Nursing, Occupational Health; Oral Health; Health Education; Environmental Health and Health Surveillance; Support Services: Laboratory, Diagnostic Imaging, Rehabilitation, Pharmacy, Social Welfare, Alternative Birthing Centre (where appropriate).
Doctors and paramedics man these centres. Any ailments beyond the capacity of the centre, or if they are casualties, they are promptly referred to the hospital. Shuttle services are provided to patients from the clinic to the hospital are stipulated hour. Services in the centre, similar to Rural Health Services are nominal and some time free (for the poor).

Types of the primary health care facility in the urban areas are selected based on catchment's population and needs.

Standard Urban Polyclinics Clinics (Arau Type Plans)

Similarly to the rural health services, the existing urban polyclinics are located within the residential area of the township to provide one stop centre for the catchments- the

area residences. Design to merge with the residential structures, the urban polyclinic template provides an inward enclosed space for patients with clinical spaces at the perimeter. Using clerestory as natural lighting, the design is flexible to be use as either OPD, MCH with standard requirements of the utility and support area.

Fig. 24a

SECTIONAL PERSPECTIVE OF A POLYCLINIC

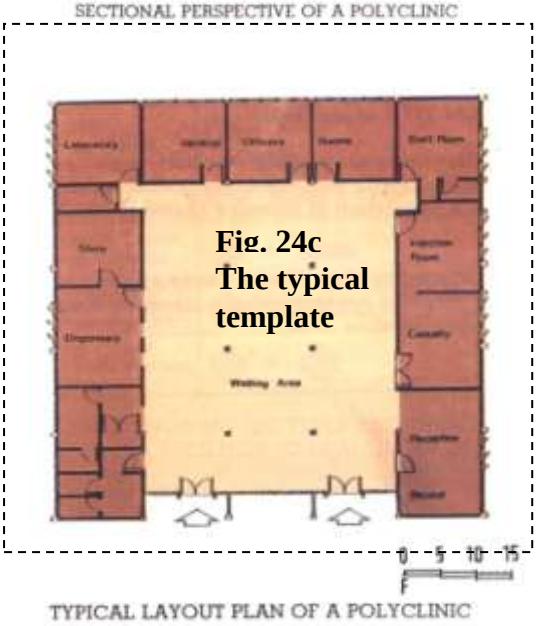
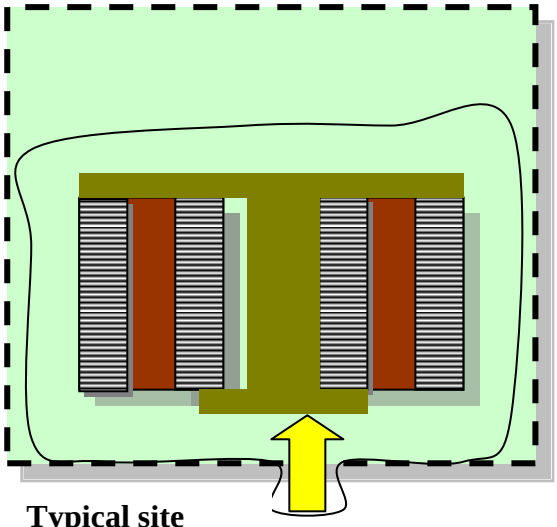


Fig. 24c
The typical template

TYPICAL LAYOUT PLAN OF A POLYCLINIC

Fig. 24b

FRONT VIEW OF THE POLYCLINIC KG DATO' KERAMAT KUALA LUMPUR



Typical site layout

entrance

Fig. 24d

Fig 24 The Standard Urban Polyclinic ***(Courtesy of Medical & Health Works Branch, JKR)***

The urban polyclinic uses 1-2 of the templates as shown on Fig 24 above for each sites to cater for different services i.e. the outpatient inclusive of casualty, and the other template as Maternal and Child Health, family planning, school health and dental. Each template is self sufficient except for common facilities where it will be located in the OPD template with other diagnostics facilities such as x-ray, ECG machine and pharmacy.

The Mak Mandin Type Urban Polyclinic

The Mak Mandin typed polyclinic (refer Fig 25) was named after the first prototype done some time in the early 60s for GOPDs of medium district hospitals such as Bukit Mertajam, Kajang and even Kangar (General) Hospital. Designed based on a linear

concept of cross ventilation and natural lighting with single internal corridors, the building is double storey building keeping the MCH and OPD at the ground floor and the Dental Clinic and administrative spaces at the above floors. No lifts were provided for this clinic nor disable access, as it was only one floor up. The design was discontinued in the new district hospital designs but was taken up on revision basis to work on the Kajang GOPD replacement as a Health Clinic. Currently no longer known as Mak Mandin type, the Kajang Type KK equivalent to KK type 3 for 200 outpatients per day were used throughout the country**.**

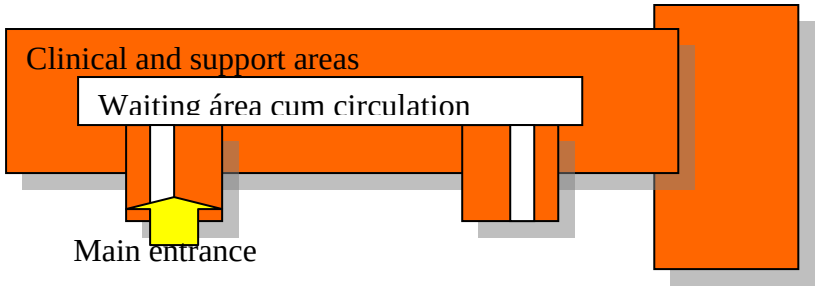


Fig. 25 Concept layout plan of Mak Mandin Type Urban Polyclinic/GOPD

Fig. 26 The Kajang Type KK3 (revision of Mak Mandin Typed) Design

Current New Series of Health Clinics or KK Designs

The decision to move out the GOPD services out of hospitals in early 90s sparked a lot of debate and activities on how to cope with providing alternative service facilities to the outpatient while on going development of new and redevelopment hospital projects, involving the relocation of service affected, goes on schedule.

The Health Division with the Planning and Development Division, MoH had to worked very quickly on the scope of services for this new facility, taking notes of the projected workload, new equipment, staffing organisation, staffing and other considerations to produce a comprehensive medical brief.

The first medical brief on the health clinic was for one off projects under the ADB development loan i.e. the KK Luyang and the KK Seremban by a private consultant architects to off load the GOPD of Queen Elizabeth Hospital in Kota Kinabalu, Sabah and GOPD of Seremban Hospital respectively. Under conventional fund, the KK Kangar by JKR and Kajang to off load their respective GOPD for hospital redevelopment. Fig 27 shows KK Seremban as one off project health clinic design

using one-off medical briefs. The KK Kangar, however, due to immediate demand became the Kangar type of Health Clinic Design and was also used in Kota Bharu hospital to off load its GOPD for similar reasons (refer Fig 28).

Fig.27 KK Seremban similar to KK Type 1 / 2 for 800-1000 outpatient per day

Fig.28 KK Kota Bharu using KK Kangar template as KK2/ KK3 for 500 outpatient per day

Planning and Development Division of MoH produced Generic Medical Brief for the various types of Health Clinics for 7th Malaysia Plan initially in November 1995 with the collaboration of the Health Division. The Central Agencies-the EPU approved the brief[10], in 1997. The revised but non-published version was produced for JKR´s 8th Malaysia Plan implementation in July 1999 and January 2001 by the Family Health Development Division, MoH which were finally published in 2003.

For the 7th Malaysian Plan the Generic Brief lay out the basic requirements of the clinics as follows:

1. KK Type 1 for 500-1000 outpatients (urban)-refer Fig. 29
2. KK Type 2 for 300-500 outpatients (urban)-refer Fig. 30
3. KK Type 3 for 300-500 outpatient (urban and rural)- refer Fig. 32

KK Type 1 is designed for 500-1000 outpatient attendances per day other than attendances to mother and child clinics, the rehabilitation unit or special clinics, were created initially to cater the off-load of the general outpatient patients from the hospital immediately. However, in the mid term review *(MoH Annual Report 1998)*, MoH decided not to pursue this design due its high cost.

[10] Economic Planning Unit of the Prime Ministers Department that looks after Standards and Cost of all projects initiated by the government prior to implementation nationwide.

Fig. 29 KK Type 1 *(Courtesy of Medical & Health Works Branch, JKR)*

Fig. 30 KK Type 2 *(Courtesy of Medical & Health Works Branch, JKR)*

KK Type 2 for 300-500 outpatient attendances was approved for implementation in 7 locations in Peninsula Malaysia for the 7th Malaysia plan with additional 3 projects including Putrajaya and Rasah, Seremban *(MoH Annual Report 1998, table 22, pg 88)* Health trend being dynamic, it is important to note that although the 7 projects were initiated from the Generic Brief, with exception of KK Seberang Jaya (refer Fig 31) which completed quite early in the process, other design outcomes, especially the internal layout for each of the projects, faced with many policy change of the MoH during construction period, that none could be called truly a standard design *(unpublished report on KK2, JKR , May 2002 and http://rakan.jkr.gov.my/caw/bgn/urs/a/main/projek/kk2/kk2.html).*

The planning and design concept of KK2, as one of the new standard design encompassed the new policy of the MoH, i.e. to provide a comprehensive service with emphasis on primary health care based on the concept of a caring society and the use of contemporary technology. The facility is inward deep plan design on two floors with the top floor housing the M & E services rooms. Designed with full air conditioning of the interior spaces, the waiting areas are provided in the semi enclosures with clinical and support rooms at the perimeter. The facility provide services for outpatients, mother and child health, geriatric, adolescent, well women, workers, dental and support services such as rehabilitation, laboratory, imaging/radiology, pharmacy, school health, home nursing, health education, information technology, medical records, administration, staff and public facilities. For such projects KK Putrajaya, located within the multi-media super corridor of the nation, emerged as the first KK to be paperless *(Malaysia Health 2001).*

Fig. 31 KK Seberang Jaya, P. Penang (KK2*)(Courtesy of Medical & Health Works Branch, JKR)*

Fig.32 KK Type 3 *(Courtesy of Medical & Health Works Branch, JKR)*

The KK type 3, based on the KK Kajang design, 97 projects were planned for implementation in the 7th Malaysian Plan nation wide. Feedback from users on utilising such facility was the inadequacy of spaces to needs at the onset of use leading to additional spaces required almost immediately as expansion projects. On interview with the MoH, one of the reasons the client-user[11] request such designs despite its inadequacy was its availability and cheaper building cost rather than either KK1 or KK2. Client-users were also quite sceptical if they would be able to get any project should they request for the KK2. They fear that although KK2 was appropriate for their needs, their request may not be approved. Thus, their decision was to settle for less and add later on (which defeats the process of the exercise!) as long as they get a new facility within the plan[12] period. KK Kelana Jaya (refer Fig 33) is supposed to have KK2 for the location. As KK2 were still on designing stage, the authority had settled with KK3 that was already too small for the services provided as well as to the population served at the onset of use.

Fig.33 KK Kelana Jaya or Polyclinic Community (KK3) *(Courtesy of Medical & Health Works Branch, JKR)*

Despite its short comings, KK3 has undergone many changes with the latest to be built in Johor Bharu, as the next GOPD off-load facility for Sultanah Aminah (general) Hospital, Johor Bharu.

For the 8th Malaysian Plan (2001-2005), the MoH had produce the revised Generic Brief that was derived from the review of the short comings of the KKs design requirements in the 7th Malaysian Plan. The new brief described 7 types of KKs instead of the original 3 types of KKs in the 7th Malaysian plan. The treasury approved this proposal in 2001 as measures taken to prevent wastage and providing appropriate level of care to the people of the localities. The revised KKs are as follows:

- KK Type 1 for 800-1000 attendances per day
- KK Type 2 for 500-800 attendances per day
- KK Type 3 (XP) for 300-500 attendances per day ** (Refer Fig.34)
- KK Type 4 for less than 300 attendances per day (refer Fig.35)

[11] Client users are either state or district level administrative users of the facility and may be not the same corporate or payor client. The Ministry of Health is the Corporate Client i.e. making up many hierarchical management team with Planning and Development Division as the representative and authoritative decision maker for the Ministry on development and implementation of health care facility projects.

[12] The 5 years development period i.e. 7th Malaysian Plan period.

- KK Type 4 (SS) for 150-300 attendances per day (Sabah and Sarawak only)
- KK Type 5(SS) for less than 150 attendances per day (Sabah and Sarawak only)
- KK Type 6(SS) for less than 50 attendances per day (Sabah and Sarawak only).

*** Notes*
The original KK3 was to discontinue and replace with a ***modular plan*** *called KK3 (XP) and KK4*

Mantin and Gulau Design Plan were also proposed to be used in replacement of KK3 where KK3 may be too huge for such locality to prevent wastage of funds if the facility were to be under utilised.

Fig. 34 The proposed KK3 (XP)

Fig. 35 The proposed KK4

KK3 (XP) and KK4 were designed as amendments as well as to provide accommodation to the extended services that should be accommodated in the former KK3 design. The salient factors affecting the new designs were the health services system, climatic conditions, topography, landscape, the use of appropriate material and structure (*JKR architects unpublished report*).

Generally, the new KKs or Health Clinics for PHC Services in 8TH Malaysian plan to be provided with the following services:

- Family Health that includes Ante and Post Natal care; Child Health; Outpatient; Wellness Clinic; School Health; Family Planning; Adolescent Health; Geriatric Health; Special (Handicap/disable) Children; Community Mental Health: Workers Health; Home Nursing; Health Education

- Dental Health
- Environmental Health and Health Surveillance
- Supporting Services that includes Pathology; Pharmacy; Diagnostic Imaging; Rehabilitation; Welfare Medicine; Alternative Birthing Centres (optional)

The expanded scope will varies according to the level and type of facilities identified against the needs such as less number of consulting examination rooms for lesser

outpatients attendances, no provision of x-ray services for remote areas and others (refer Appendix 1).

The planning and design to accommodate the basic operational policies of

- Uniform patient circulation pattern (refer Appendix 2)
- One stop registration and revenue collection centre
- Triage/Screening Function
- Encourage multi-functional health personnel
- The use of IT and Computers.

The outcome of the deliberations, MoH agreed a pilot study be done to implement KK3/4 at Chemomoi in Pahang with KK4 and Bakar Arang with new KK3 (*Unpublished, JKR, 2002)*

For the 8th Malaysian, towards providing the facilities as fast as possible to the communities, the government embarked upon other procurement process using the privatised Project Management Corporation (PMC) and design and build approach, apart from through the JKR, for implementation. Using the same standard medical design briefs, designs provided by the contractor led architects were either non standard but definitely not far different from the conventional as shown in Fig 36 and 37 using the basis of a standard plan-the *Mak Mandin* cum *Kajang* typed plan. This process is gradually discontinued in the Peninsular as the PMC takes the toll on cost and therefore uneconomical but may still be utilised for Sabah and Sarawak, as JKR Malaysia does not the administrative jurisdiction in those states.

Fig. 36 KK3 by PMC at Kota Sentosa ***(Courtesy of MoH)***

Fig. 37 KK4 at Karakit ***(courtesy of MoH)***

CONCLUSION

> *"One of the bases on which the edifice of our civilization has been raised, is that herein both physical and spiritual needs have been safeguarded. The Islamic civilization paid due attention to the development and care of the physique so that along with a resplendent soul man may attain the highest position in evolution."*

Internet: hospital in Islam
Excerpted from English translation of Dr. Sibai's book "Min Rawa-i-Hazaratuna" by S.A. Khan.

Looking back, Malaysia preventive medicine begins as early as 1901 with the establishment of the Malaria Advisory Board and Anti- Malaria Control Services in 1911. At the same time in 1900, the Medical Research Institute (MRI) was established to carry out research for prevention and control of communicable diseases with the Labour Code being enacted in 1920 in capital towns to enable medical officers to be appointed to strengthened health and sanitation activities.

The above effort was carried through in 1958, after independence, through the 5-year economic development plans where the government embarked on extensive socio-economic development including development of infrastructures and programmes through the primary care centres.

Primary Health Care is the first entry to any national health system and it is community base and meant for the populace where they are located. PHC covers preventive, promotive, educational, environmental, school, home nursing and curative care. Whilst meeting needs of health care services and trend, the facility architecture and ambience should be friendly, approachable and accessible to the community.

The overall findings of this short exercise on the evolution of PHC design in Malaysia, is that health trend or needs are both determined by projected needs and current demands that may and may not be illustrated by the facility concern due to reasons of economy, perception, over standardisation or overtaken by time.

The medical brief is generic and functional in nature that leaves a lot of rooms for the architects to manoeuvre his/her designs around the functional needs as obviously shown on the variety of architectural forms and configuration that were not determined by the client.

As stated by the above quotation about the state of health of an individual, it can be concluded that while there are threats and uncertainties on the disease patterns and population lifestyle that relates to health such as the communicable diseases SARs and AIDs, the Government responsibility to assure the population to be in the state of health as envisioned in the Vision for Health, will need to constantly review and assess the existing facilities, designs as well as existing legislation on sanitation and by-laws as the need arises.

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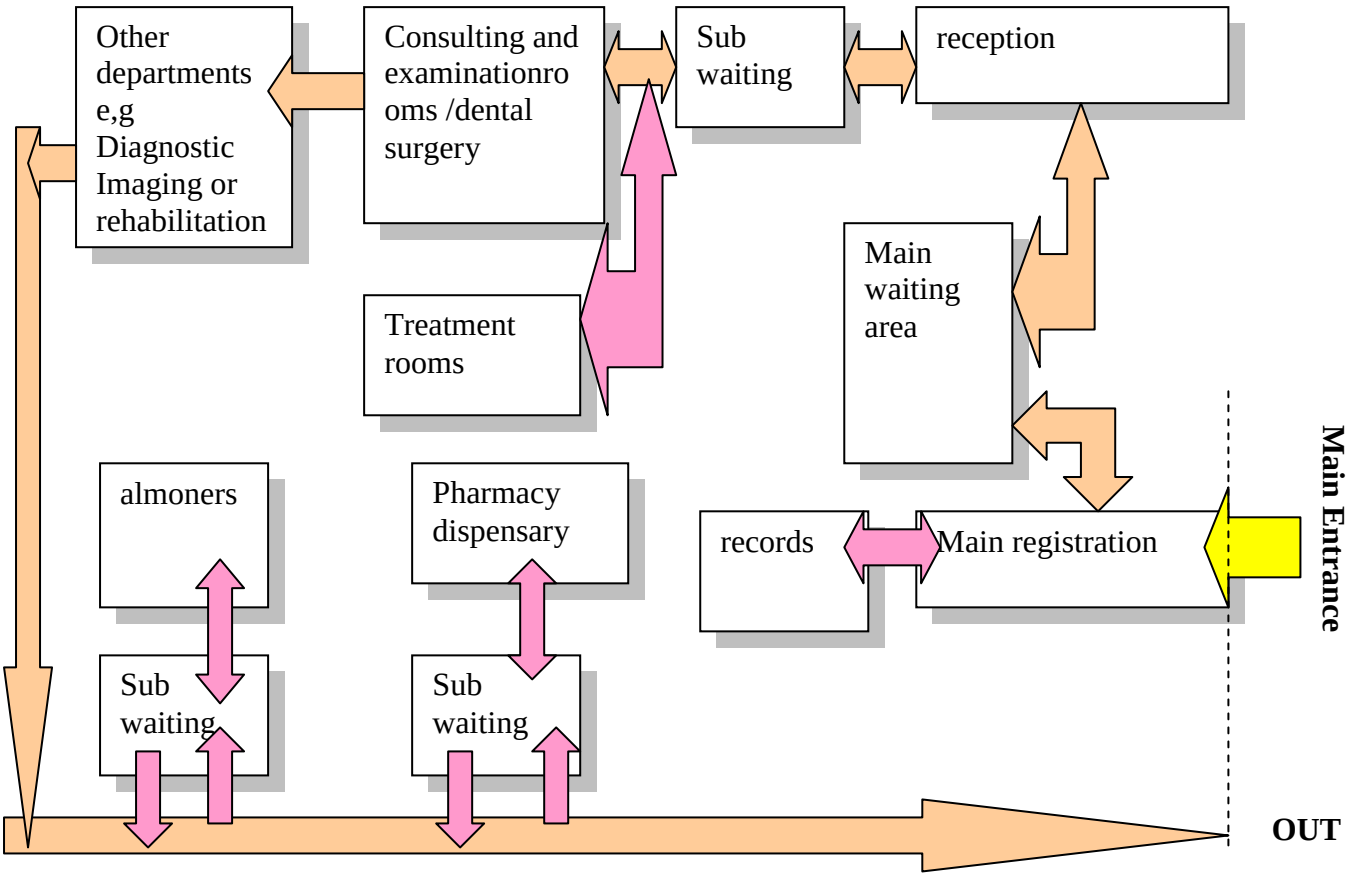
APPENDIX 1

Excerpts from a 2-pages table report of the generic medical brief, Bahagian Pembangunan Kesihatan Keluarga. 2003. *Panduan Penyediaan Klinik Kesihatan. Buku A : Keperluan Perubatan Klinik Kesihatan (Semua Jenis) untuk Rancangan Malaysia Kelapan*. Kementerian Kesihatan Malaysia page 13 and 14, to provide the different level of provisions for the type of facilities planned.

Item	KK1	KK2	KK3	KK4P	4SS	5SS	6SS
Attendances day	800-1000	500-800	300-500	300-500	150-300	150-300	<50
Scope of Services	Expanded	Expanded	Expanded/	Expanded	Expanded	Expanded/	Expanded
Registration & revenue Counter	Separate	Separate	Shared Counter	Shared Counter	Shared Counter	Shared Counter	Shared Counter
Information Counter	Special	Together with Registration Counter	Together with Registration Counter	Together with Registration Counter	Together with Registration Counter	Together with Registration Counter	Together with Registration Counter
Screening Counter	/	/	/	nil	nil	nil	nil
Consultation/ Examination Room	18	16	12	8	6	3	2
Treatment Room	2	1	2	1	1	Treatment & procedure combined	Treatment & procedure combined
Procedure Room	2	1	1	1	1	nil	Nil
Rehabilitation Unit	Full	full	full	2 room	Nil	Nil	Nil

APPENDIX 2



(The generic patient circulation pattern as reported on powerpoint presentation on Health Clinic by Dr.Noor Azah Dahlan, MoH to architectural students of IIUM for their clinic KK3 design projects, 2001)

Note:
It must be noted that each clinic and treatment will have its own flow pattern. Supply and staff flow will have its own pattern to meet the needs of the operation and policies of the health centre.

Planning Concepts

- The layout of the centre should ensure an efficient workflow and flexibility for growth and function.
- Urgent and acute cases will be referred to the emergency department of the local hospital.
- Services off site or privatises includes laundry, cleaning, security, waste disposal and maintenance
- Security should be 24 hrs.
- Registration area should be accessible and visible.
- Public toilets should be close to waiting area
- Other (refer generic briefs)

Among the upgrading of facilities in the PHC in RM8 were the upgrading of support facilities and supply of appropriate equipment that do not have implication on spaces already provided for in the respective clinics.

- All KK Laboratory is Level 1 (upgraded), KK1, 2 & 3 will be equip with automatic equipment.
- All KK 1, 2 & 3 will have Diagnostic Imaging.
- All KK 1, 2,3 &4 will have Ultrasound.
- All KK 1 & 2 will have full rehabilitation unit. KK3 will have selected services peculiar to the area it is located.

All IT for clinical and communication mode will be implemented in phases

Seamless System with IT Implementation in HC

Health Education, Electronic Data Base, Health Information
Sharing of information, Monitoring and Control
Training, Telemedicine
Teleconferencing, Centralising Support Resources

The **Information System is** to served the following services**:**
-Registration
-Appointment
-Triage
-Record Administration
-Queue
-Billing and Micro cost
-Clinical Record and Documentation
-Pharmacy, other