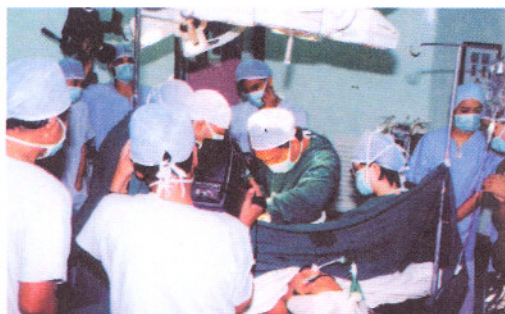


# CANCER

## THE HEALTH CHALLENGE OF THE NEW MILLENNIUM



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# CANCER: THE HEALTH CHALLENGE OF THE NEW MILLENNIUM

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## **Introduction**

Life is a challenge and a constant struggle, a cliché perhaps, but ever so true. Written history is dotted with human struggles against dreaded diseases such as plague, syphilis, sleeping sickness, small pox, malaria, tuberculosis, leprosy, diphtheria, polio and such infections which are now either eliminated or very much under control. Cancer on the other hand, a non infective affliction has been a challenge to human civilization and to this day remains so. Contrary to popular belief it is not a new disease. Indeed it is as old as written history itself.

Each of us have got some one we know who had suffered from cancer or indeed had succumbed to it. A father, a mother, a husband, a wife, a brother, a sister, a relative or a friend perhaps. In some two decades of involvement in the field I have come into direct contact with many individuals with as many stories to tell often of their sorrows and worries but sometimes of their gratefulness for a

successful outcome. Some of what follows are reflections of these images which have left a permanent mark in the way I look upon the subject.

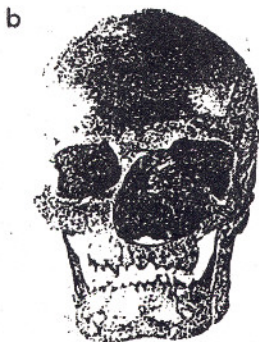
Cancer rise to prominence is both in the absolute and the relative sense. Population increase is naturally accompanied by an absolute increase in the number of cases. In addition the dramatic decline in infectious diseases as society advanced is taken up by cancer and cardiovascular ailments. Both of these diseases are common in a mature population. Development, industrialization, urbanization and changing but detrimental life styles all aggravate the cancer problem.

### Historical Perspective

As alluded to earlier and contrary to popular belief cancer is not a new disease. It was there preserved in fossil evidence in ancient peoples and in writings of major civilizations of long ago. The ancient Egyptians were affected. This is documented in well established sources in the papyrus of which the Edwin Smith medical papyrus is the most notable. In Sumerian writings too cancer was recorded as far back as 3000 BC.

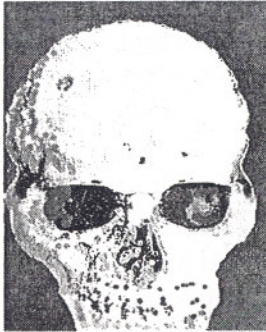


Skull with meningioma :1200 BC  
Adapted from Rogers, 1949.



Upper jaw with malignant destruction: 2800 BC  
Adapted from Brothwell and Sandison, 1967





Skull with metastatic deposits c.3000 BC.  
Adapted from Wells 1963.

The ancient Persians too were affected. In the splendour of their great empire. Queen Atossa the wife of the famous king Darius had what was thought to be breast cancer. The celebrated Greek physician Democedes was summoned or more likely kidnapped to treat the queen. History recorded that she recovered from the malady. In pre-Columbian Indians skulls were recovered revealing involvement with multiple myeloma a form of blood cancer. In India, ancient writings in Ayurvedic books recorded around 2000-2500 BC of cancer of the oral cavity, pharynx and oesophagus. In Greek civilization when medicine flourished, Hippocrates (c.460 BC) was attributed to have made recommendation on how to treat cancer:

*'occult cancers ought not to be treated for those who are treated will die soon while those who are not will live longer....'* (Hippocrates, Aphorism no:38)

Galen the legendary Roman physician at the time when Rome was at its pinnacle under emperor Marcus Aurelius (c 131-200 AD) recorded his observations on breast cancer amongst many of his works. He recorded many famous people who were afflicted with it. These are some of the observations in recorded history which tells us about cancer affecting people of long ago. In our own time

too and within the living memory of many of us we know King Hussein of Jordan died of lymphoma, Emperor Hirohito of gastro intestinal cancer, President Pompidou who succeeded De Gaulle died of multiple myeloma, our beloved Tun Razak had blood malignancy, Norodom Sihanouk is combating prostate cancer, Hollywood and Bollywood celebrities males and females have succumbed to various cancers. Yul Brynner and Jill Ireland for example died of lung and breast cancer respectively. The message is loud and clear, nobody is spared and nobody is immune to this affliction. Emperors, kings, queens, presidents, prime ministers, celebrities and ordinary folks are all in the same boat in so far as cancer is concerned.

### The World Stage

The world entered this millenium with some six billion people. The population distribution in Asia is (3.6b), Africa (0.75b), Europe (0.73b), South America (0.5b), North America (0.3b), Australasia/Oceania (0.03b). The estimated new cancer cases annually world wide is around ten million based on an average of 1500 cancers per million population (range: 500-2500 per million) the higher figure being in the developed world and the lower figure in the less developed world. The estimated breakdown of the new cases annually in the various regions are as follows:

Asia (total population 3.6b)	5,400,000 cases
Africa (total population 0.75b)	750,000 cases
Europe (total population 0.73b)	1,825,000 cases
Latin America (total population 0.5b)	1,000,000 cases
North America (total population 0.3b)	1,300,000 cases
Australasia/Oceania (total population 0.03b)	60,000 cases

What is obvious is that the most populated continent with the least degree of development has the most number of cancers as a social

burden. However looking at it in another way the most developed parts of the world has the most number per population (about 2.5 times more). Perhaps at this point we may be reminded here that the price of development without some changes in life style and habit will lead one to a very predictable situation. Let us now examine in a little more detail some aspects of the cancer problem in the US representing the developed western world and Japan, the developed eastern world.

The population of USA is 274 million (1998 estimate). The estimated annual cancer incidence for 1995 is 1.2 million new cases (NCI/SEER Program). The breakdown of the top ten cancers in the males and females is presented below:

Age adjusted cancer incidence rates per 100,000 population 1987-1991.

*Male*

Prostate	121.2
Lung	80.7
Colon/rectum	58.7
Urinary bladder	32.3
Lymphomas	22.2
Oral cavity and pharynx	15.8
Skin melanoma	14.5
Leukemia	13.5
Kidney	12.2
Pancreas	10.1

(Note: In the black population stomach and oesophagus replaces melanoma and leukemia)



### Females

Breast	113.2
Lung	41.3
Colon/rectum	39.9
Uterus	22.2
Ovary	15.6
Lymphomas	14.7
Skin melanoma	10.9
Cervix	7.8
Leukemia	7.8
Urinary bladder	7.8

Note: In black females melanoma, leukemia and urinary bladder are not in the top ten but instead pancreas, stomach and multiple myeloma are in the list. Cervical cancer takes the no: 5 position with twice the incidence over white females.

US trend of selected common cancers death rates (1930-1991) are as presented below:

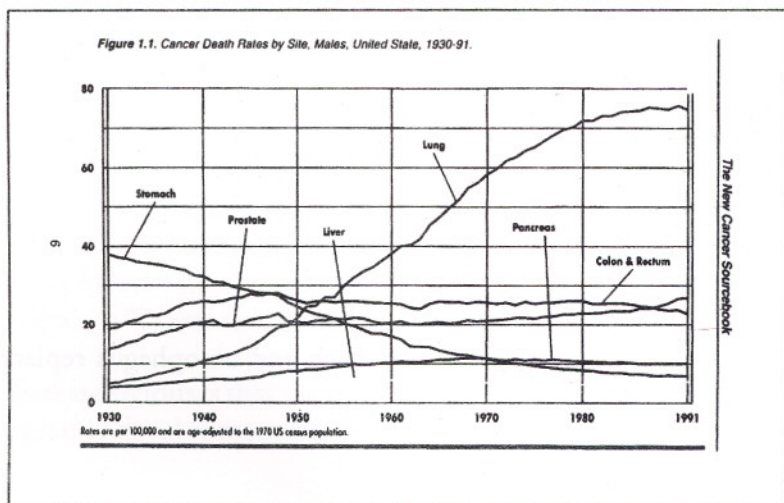
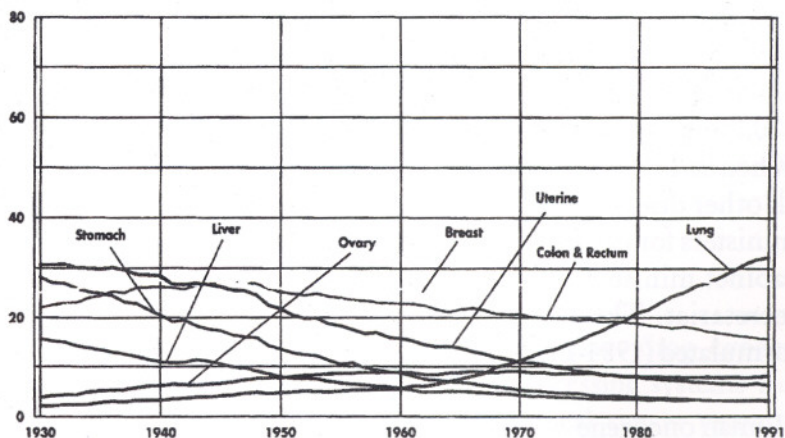
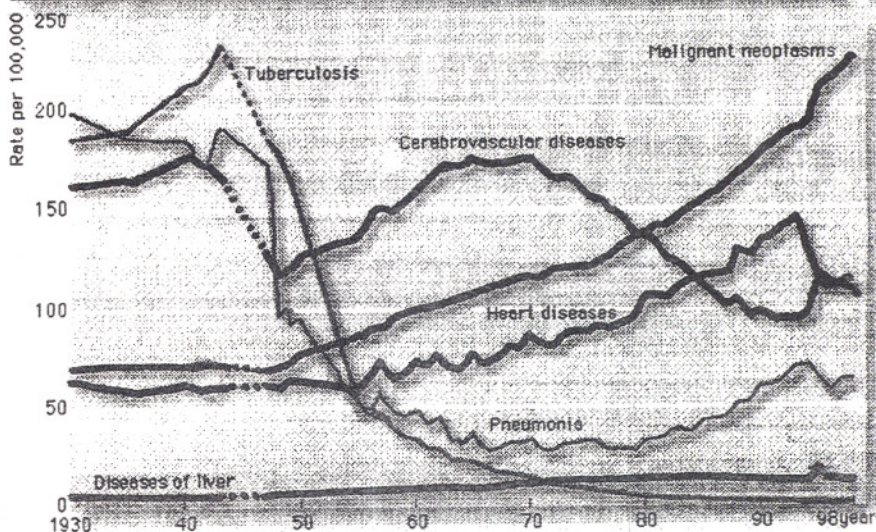


Figure 1.2. Cancer Death Rates by Site, Females, United States, 1930-91.



Cancer Facts and Figures

Annual mortality trends by leading cause of death in Japan (1930-1998).



Source: Vital Statistics of Japan, Statistics and Information Department, Ministry of Health and Welfare, Japan.



Japan is an Asian country whose development status is at par with the most advanced western countries. As would be predicted the number one health problem and killer is cancer. It has been Japan's number one health problem for the last twenty years. The number of cancer deaths in 1998 was 283,827 giving a rate of 226.6 per 100,000 population. This is 30.3% of the annual deaths in Japan. When in 1981 cancer became the leading cause of death surpassing all other diseases it so alerted the country that a council of cabinet ministers for cancer control was formed in 1983 consisting of five cabinet ministers with the ministry of health and welfare as the secretariat. The first ten year strategy for cancer control was formulated (1984-1993) focusing on research in the following areas:

- Human oncogene
- Human virus related cancer
- Mechanism of tumour promotion and control
- New technologies for early diagnosis
- New therapeutic procedures
- Immunomodulation and immunomodulators

The important results of this ten year program was the following:

- Elucidating multiple gene alteration in carcinogenesis
- Genetic analysis can help prognosis of certain cancers
- Viruses implicated in human cancer
- Molecular diagnosis in susceptible individuals
- New technology in detecting cancer
- Availability of less invasive diagnostic tools
- New drug therapies
- Understanding drug resistance mechanism
- Choosing optimum therapy
- The importance of cancer prevention

The results obtained by the first ten year program had made it

possible for the second ten year program (1994-2003) to be drawn and implemented. The main aim was consolidation and further research in the following areas:

Molecular mechanism of carcinogenesis

Invasion, metastasis and characteristics of cancer cells

Cancer prevention

New methods of cancer diagnosis

New methods of cancer therapy

Quality of life of cancer patients

A cancer information network was formed providing cancer information services and high level image processing systems for cancer diagnosis and therapy. Local clinics, local cancer centers, local hospitals and The National Cancer Centre Hospital are linked in a communication network by fax, bulletin board, internet and multiarea TV conferences. Three main long term results are expected from the strategy ie: improvement of cancer cure rates, good cancer palliation and reduction in cancer incidence. The results are yet to be seen.

### **Cancer Issues in Malaysia**

The cancer experience of the developed countries is that population increase, modernization, life expectancy improvement and eradication of infectious diseases resulted in cancer coming into prominence as a major health issue. In this country beginning in the late 1950s, soon after independence the initiation and evolution of the health care provisions systems, charted a trail of success. This is due to the proper planning and implementation of the program which recognised correctly the health problems of the day. Infectious diseases were eliminated or kept under control with nationwide immunisation programs. Maternal as well as infant mortality rates were greatly reduced. Improved public health measures and upgrading of public infrastructure such as clean water

supply and various sanitation measures paid dividend. These were achievements that marked the first two decades of independence which ran parallel to rapid economic development. The following decades ie: the 80s and the 90s saw the rising trend of cancer. The period between 1970 and 1997 saw the following figures for peninsula Malaysia:

Year	Total registered Cancer cases	total population (million)
1970	5583	12
1989	22254	15

(Adapted from the ministry of health report for peninsula M'sia)

1997	48469	18
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(Estimated figure. Malaysian health and morbidity survey 1997).

The figures for 1970 and 1989 although are from hospital registered cases only, they nevertheless indicate the rising trend over a twenty year period in a no insignificant way. It could even be an underestimate of the real magnitude of the cancer burden for the country. For what it is worth it is infact rather alarming, a four fold increase over two decades. The ministry of health made the year 1995 as a cancer awareness campaign year with the general objective of inviting public awareness to the problem as well as promoting healthy life style habits. But what is the actual magnitude of this problem? In an attempt to answer this question a research team from the universities (IIUM, USM, UNIMAS and UKM and the ministry of health) with the cooperation of the ministry of education embarked upon a study to quantify cancer incidence rate for Malaysia and secondly to establish the KAP (knowledge, attitude and practice) status of Malaysian school children and teachers



towards cancer. This study was supported by an IRPA research grant no:06-02-05-7012 and was carried out between November 1997 to December 1999. School children in their fourth form were chosen as these are the cohort that will form the population at risk for cancer in the following decades and that they could be reassessed after intervention measures just before they leave school to continue further education upon leaving their fifth form. Six representative districts were chosen for study ie: Penang-Timur Laut, Penang-Seberang Perai Selatan, Kuantan Pahang, Temerluh Pahang, Kuching Sarawak and Samarahan Sarawak.

A comprehensive and accurate pilot cancer registry for one year (1997) in the six study districts in three regions of the country was undertaken. This gave a reasonable indication of the incidence of the different types of cancers in the country as a whole. Extrapolations of these we believe could be done for purposes of planning control measures and instituting prevention program. In addition it could also be employed in planning provisions for comprehensive cancer management and treatment facilities both in terms of human and physical resources.

The KAP study gave important indicators regarding basic knowledge on cancer, student and teacher's opinion on various important cancer issues, positive and negative aspects of their behaviours as they relate to cancer. This information are essential prerequisites when strategies and approaches are made to combat cancer. As we may be able to appreciate already, even in the advanced and rich countries such as the US and nearer home Japan, they are still grappling with the cancer problem despite the better position they are in with regards to financial, human and material resources.

The six districts studied are from a total of ninety six districts in Malaysia. The total population of these districts based on the 1991 census is 1.41 million ie: about 7.7% of the total Malaysian population (Kuantan 1.4%, Temerloh 1%, Timur Laut 2.2%, Seberang Perai Selatan 0.5%, Kuching 2%, and Samarahan 0.6%).

The gender distribution is 50.2% males and 49.8% females; the national one being 50.7% and 49.3%. The ethnic distribution is tabulated below:

Malay	40.8%	(47.8%)
Chinese	40.0%	(26.9%)
Indian	5.6%	(7.6%)
Others	13.7%	(17.7%)

The figures in brackets are national %

Some of the findings of this study confirm earlier impressions while others are revealing and yet others are unexpected. The total number of cancers registered in 1997 in this study population is 1077 cases giving a crude incidence rate of 89.7 per 100,000. The crude rate obtained is lower than the national morbidity estimate of 1997 which put it at 230 per 100,000. This rather large difference we attribute it to two factors viz: this study covers both east and west Malaysia and that are actual counts while the morbidity survey was an estimate only. The crude for males is 77.6 while for the females is 102.2. The females tend to be more prone to cancer as was the feature in the US and the UK until increase in lung cancer in males and the decrease in cervical cancer in females closed the gap. When ethnic specific incidence rates were examined the following rates were obtained: 154.2 for Chinese, 127.7 for Indians and 52.2 for the Malays. Urban districts has got a consistently higher incidence than rural districts. Thus the rate in Penang Timur Laut is 169.4 while that for rural Temerloh is 63.4.

The common sites and incidence rate IR (per 100,000) are shown in the table below:

Sites	(Male) IR	IR (female)	Site
Lung	14.3	23.5	Breast
Colorectum	12.6	14.4	Cervix
Nasopharynx	6.0	11.3	Colorectum
Stomach	5.8	5.9	Lung
Liver	4.7	4.9	Ovary
Bladder	3.7	3.9	Stomach
Leukemia	3.5	3.6	Nasopharynx
Bladder	3.7	3.2	Leukemia
Prostate	3.5	2.4	Liver
Lymphoma	2.8	2.2	Bladder

From the above data it is very evident that Malaysia is heading in the same direction as advanced countries have in terms of the pattern and cancer burden of the future. Our main cancers which should be of concern interms of the social impact and hence deserving urgent emphasis and priority are breast cancer, cervical cancer, lung cancer, colorectal cancer, nasopharynx cancer, stomach cancer, liver cancer and ovarian cancer.

Overall this study confirms that Malaysian patients present at a more advanced stage compared to those of developed countries. Only one fifth present in stage I, another fifth in stage II while the rest are late presenters ie: stage III and IV. No doubt this will have an important bearing in their survival even in the best of circumstances.

The KAP study on schools involved 1875 subjects in schools located in the six study districts. After a base line KAP was established through a set of a very comprehensive 102 KAP item questionnaire, schools chosen for intervention measures participated in the intervention process. The intervention involved seminars, poster exhibitions, brochure distribution and video shows either on a specific cancer or a question and answer session on cancer. Six months after the intervention the subjects were requested



to complete the same set of questionnaire again. Some of the important observations and results of the KAP studies are:

Five per cent of school children consume cigarette

Four percent consume alcohol

Five percent had sexual early exposure

All of the above are well known factors in cancer aetiology. Their general awareness of cancer as a health problem are adequate and this is mainly from the media and so also are the association between smoking and lung cancer. However the awareness on the negative effect of high fat, and low fiber diet are low. Another surprising finding is on the lack of awareness on cancer treatment modalities beyond surgery. When examined in more details it is observed that intervention improved their KAP in a significant way. This leads us to believe that a real impact could be obtained by targeting this group of school children for cancer education as a major strategy for cancer control measures.

### **What We Know about Cancer Pathogenesis**

At the macroscopic level we know that cancer is a mass that grows and continues to grow at the expense of the host until such a time that the host is overwhelmed. The same is applicable to non solid cancers such as blood cancers apart from the fact that the mass is not visibly manifested. At the microscopic level we know that this growing mass are made up of cells which have lost their normal characteristics. Structurally the cell shape and sizes are abnormal, their staining characteristics are different and their orientation and relationship to the normal surrounding tissue are lost. They have escaped the normal regulatory control mechanisms of normal cell growth and differentiation. They thus perpetuate themselves relentlessly invading and destroying adjacent tissues. What is worse

is that this mass has the capacity to break off and establish itself in distant organs well away from its original site. This so called metastatic ability is the hallmark of cancer. Metastasis in fact is the typical end point of the natural history of a cancerous growth albeit different cancers have a different metastatic potential.

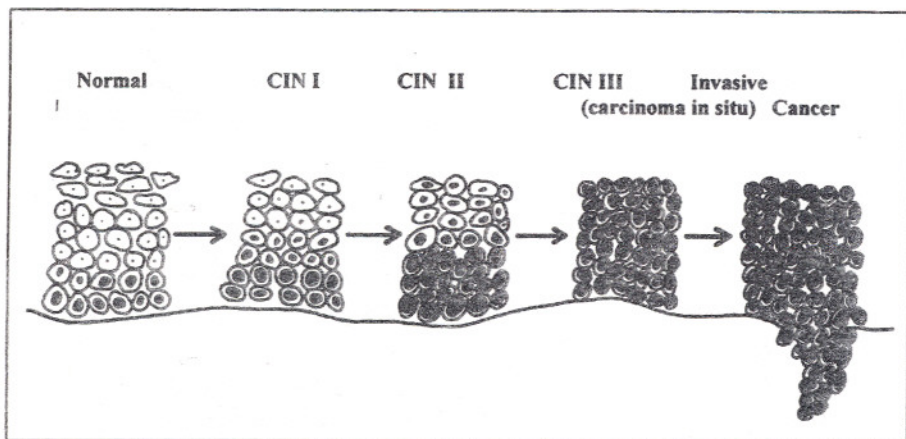
At the molecular level we now know of chromosomal and genetic abnormalities that accompany cancerous transformation and growth. How does everything begin then. One cell out of the  $5 \times 10^{12}$  billion cells in the body has been genetically transformed which then assumes autonomy and starts proliferating on its own oblivious to the need of the rest of the body. This essentially is the beginning of the cancerous career of the transformed cell. But what transformed the cell. Known mechanisms of this transformation process are genetic mutation either spontaneous or initiated by factors called carcinogens. Well known carcinogens are chemicals (eg: benzidene, vinyl chloride, arsenic, chromium, asbestos, etc.), viruses, radiation and parasites. Animal studies have established the development of skin cancers by chronic chemical exposure or breast cancer developing in mice by viruses transmitted through the mother's milk suckled by the young. Observations in human populations have seen scrotal cancers developing in olden day chimney sweepers of England and Europe due to carcinogens in the soot. Human populations exposed to non medical radiation whether deliberate or accidental as the Hiroshima-Nagasaki atomic explosion or the Chernobyl disaster were followed by increased incidence of different types of cancers particularly leukemia and thyroid cancers. Shistosomiasis, a chronic worm infestation of the bladder so common in the Nile valley is associated with bladder cancer. Of course all these combined is pale compared to the monumental problem caused by tobacco in initiating lung cancer through carcinogens present in cigarette tar.

The natural history of cancer is often viewed in a rather skewed way in that we tend to focus on the later part of the disease process only. This is best appreciated by the following schematized diagram:

Normal cell → Transformed cell → Insitu cancer → Invasive cancer → Disseminated cancer

Initiation by a carcinogen (10-30 years)      (5-10 years)      (1-5 years)      (1-5 years)

In a simplified way the above shows that what we see as a typical mass of cancer that has invaded and spread afar is actually the end result of a long process initiated between 10 to 30 years earlier. Putting it in another way a cancerous mass is the end result of years of initiation and microscopic growth. Classically this is typified by the evolution of cancer of the cervix in women as depicted below:



At the genetic and molecular level we are familiar with some very interesting genetic and chromosomal abnormalities which are associated with specific cancers. Infact looking at it this way cancer is a disease of the genes ie: disrupted gene function. For example



in some leukemias and lymphomas there is only one mutation to result in the malignant behaviour. Thus in chronic myeloid leukemia chromosome breakage and translocation of the broken parts between chromosome 22 and chromosome 9 is a feature. In Burkitt's lymphoma there is breakage and translocation between chromosome 8 and 14. In breast, colonic and several other cancers there is the appearance of p53 oncogene which is the result of mutation. This can not only cause loss of suppressor function causing abnormal gene expression but also activation of p53 as an oncogene both causing encoding of proteins necessary for cancerous growth. The details of how and why this comes about are actively been investigated. Gene deletion or loss of a certain fragment is another feature seen in certain cancers. The classical loss of the 13q14 fragment of chromosome 13 is seen in cancer of the eye called retinoblastoma.

Diagram of 22,9 translocation and fusion

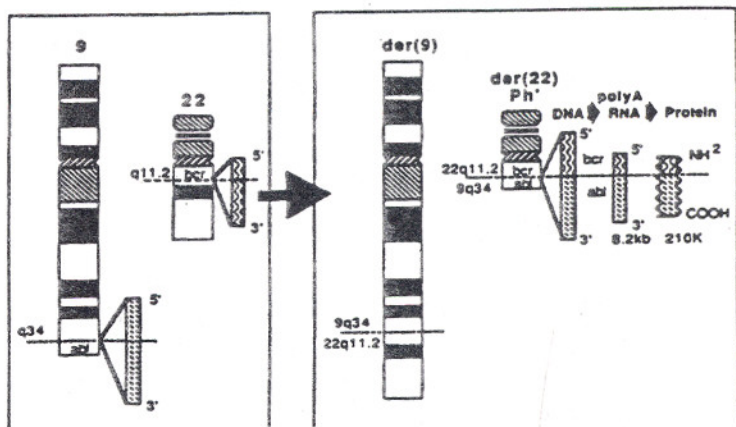
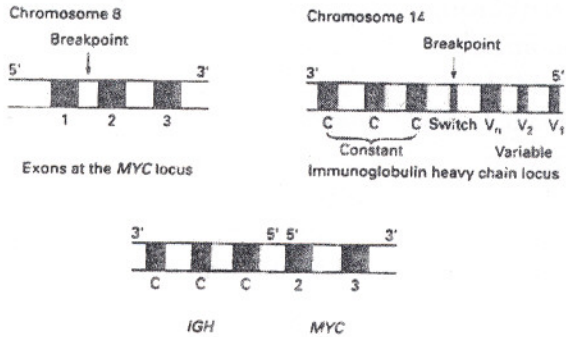
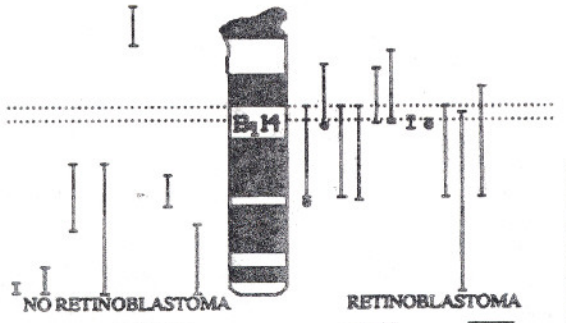


Diagram of 8,14 translocation

Diagram of chromosome 13 fragment deletion in familial retinoblastoma



#### DELETIONS OF 13q



### What We Have to Deal with Cancer

Broadly speaking when cancer becomes established and present as a clinical problem the singlemost important aim is to eliminate the growth and cure the individual. In about a third of cases this is possible. In other instances this may not be an appropriate proposition due to its extensive and disseminated nature. Nevertheless some form of treatment is still indicated to all, to relieve distressing symptoms and improve the quality of life. This

so called palliative care is as important as curative treatment itself. Using statistics and figures from a developed country namely the US the last 100 years have shown the following trend for cancer treatment in so far as cure rates are concerned:

Overall cancer survival rates (5 years)

1900-few if any

1930-20%

1960-30%

1990-54%

What this means is that while in the early 1900 the survival was very poor indeed, over a hundred year period the cure rate has improved to more than 50% overall. Of course when certain specific cancers are looked at especially certain lymphomas and childhood cancers the improvement is by leaps and bounds. Germ cells and embryonic tumours in children are for example routinely cured these days. What has contributed to this vast improvement are primarily the following:

Better understanding of the tumour biology and behaviour

Better diagnostic methods

Better surgical and radiation techniques supported by availability of equipment sophistication

New chemotherapy regimes, supportive drugs and use of biological modifiers

Multidisciplinary and coordinated approach to treatment

Availability of adequate human expertise.

Some of the above points may be typified by looking at breast cancer ie: the leading cancer in both the western world as well as here at home in Malaysia. In 1894 Halstead the renowned American surgeon introduced to the medical world how best to cure breast



cancer surgically. He recommended not only to resect the entire breast but also the axillary content and the pectoral muscles. This was proclaimed to give the best chance for cure. It was not to be in some cases despite the extensive surgery. A significant number so treated still died of cancer recurrence at distant sites ie: the liver, lung, bones and brains. This means that while the primary tumour is being resected there are already metastatic deposits growing in these organs. The appreciation of this fact influenced doctors to do less extensive surgery and combined this with post operative radiotherapy to reduce the chances of local chest recurrence. The overall survival is of course still determined by the presence or absence of distant metastatic disease. Subsequently chemotherapy and hormone manipulation were employed successfully to improve survival. Presently the trend in the treatment of early breast cancer is limited surgery combined with radiation therapy and chemotherapy or hormone therapy as appropriate. This multimodality approach involves specialists in multiple disciplines including surgery, pathology, radiation and medical oncology and nursing personnel. Things have come a long way since the days of Halstead. This multidisciplinary approach was the same lesson learned and benefited from in the dramatic improvement of treatment results of many paediatric cancers. In Malaysia today we have almost all the facilities for cancer treatment including the expertise. The most current chemotherapeutic agents are available, radiotherapeutic modalities including high dose rate facilities first introduced in the mid eighties for cancer of the cervix is now more widely available in big centers. Our only shortcoming is the limited coverage of these facilities and a very acute shortage of cancer specialists.

### **The Frontier**

The universal attitude and expectation of people at large with regards to cancer is that it is a medical problem awaiting the magic drug that that will cure it. This expectation is rather simplistic and

unfortunately cancer is not one disease to be cured by one medication. We have seen how in its development and natural history it varies from one type of cancer to another. Infact the same type of cancer may behave differently in different individuals resulting in different outcome. The only common denominator in the different types of cancers is their excessive uncontrolled proliferation arising from genetic mutation and their ability to metastasise. Hence the frontiers of research are not only in genetics and molecules but also cover vast areas such as sociodemographic and epidemiological factors, behaviour patterns, dietary habits and environmental factors. In addition there is the clinical and drug research which are actively pursued in various institutions. Presently the active areas of research are in molecular genetics, tumour angiogenesis, new drugs development, mechanisms of drug resistance, adjunctive and combination therapy and cancer prevention measures including vaccine development. We have already mentioned the direction of research in the 10 year Japanese national cancer strategy which included most of these.

### **The Way Forward**

The cancer problem is too complex and multifaceted to entirely leave it to any one group to deal with it. It is evident at this point that multi sector involvement and active participation with strong commitments from various social institutions (the government, medical and affiliated institutions, religious institutions, NGOs, communities and families) are the best hope for a successful planning and implementation of any anti cancer program. Identification, quantification and prioritisation of the cancer burden is a prerequisite. Policies made to implement the will would be successful if coordination of the various sectors are supplemented with the essential manpower expertise and appropriate equipments. Prevention program, screening program for common treatable cancers such as cervical and breast cancers, cancer education in schools must complement basic and clinical research which can



only contribute so much even in the most advanced countries.

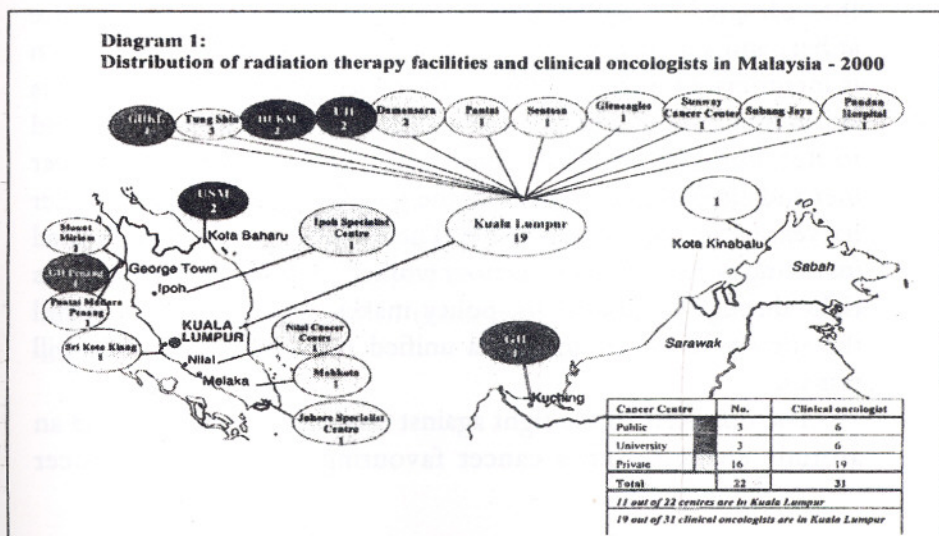
When however cancer presents as a clinical problem despite all preventive measures then the proper thing to embark is optimal treatment with a curative intent when this is a reasonable option or palliating troubling symptoms and improving the quality of life when a curative proposition is not realistic. There is no alternative to having the best of facilities in term of professional expertise and sophisticated hardware in order to achieve optimal results in cancer treatment. Anything less is a measure of what have to be attained to achieve the optimum. In this respect it would be prudent to compare where we stand in relation to others in cancer control, cancer research and cancer care. In terms of expert manpower and facilities Malaysia is relatively short when compared to the estimated cancer burden that we have ie: between 20 to 30 thousand new cancer cases annually. As a measure of comparison the following table would illustrate our position in relation to other countries of the world. Radiation oncologists and radiation machines are used as the index not that these are the only aspects of cancer treatment but this is because radiation therapy establishments cut across all medical disciplines and are involved in both curative and palliative treatment of cancer in the majority of settings. It is quite obvious that we have some way to go both in terms of specialist and general manpower requirement and also in relation to cancer treatment hardware. We still have on many occasions the need to solicit treatment outside the country due to inavailability of a particular expertise or sophistication, or if we have it is in a limited restricted scale.



Country	pop.(m)	radiation oncologist	machine	pop.(m) per machine
Malaysia	23	23	27	0.8
UK	58	250	—	0.4
US	274	—	3000	0.09
Egypt	65.9		56	1.2
South Africa	39.3		30	1.3
Tunisia	9.3		7	1.3
Uganda	19.2		1	19.2
Tanzania	32.1		1	32.1
Ethiopia	59.6		1	59.6

The world Health Organisation recommends that the reasonable number for one machine is for half a million people. Malaysia is not quite there yet with one to 0.8 million people. This has not taken into account other factors such as trained personnel and other support systems.

The distribution and treatment facilities in Malaysia are as depicted in the diagram below:



A word on alternative therapy for cancer. The current accommodative gestures towards the so called complimentary and alternative medicine has important implication on cancer therapy. In a chronic disease such as cancer and where failure to cure has a very negative consequence plus the fact that conventional treatment is prolonged, elaborate and often uncomfortable any alternative with a promise of easy cure is very tempting. World wide however unconventional treatment has not been proven to have an impact on advancing cancer treatment. Isolated claims have been anecdotal and when subjected to scientific scrutiny they are either fraudulent practice or patients have had conventional therapy as well. Some of the other negative aspects are delay of proper treatment, raising false hope and great financial losses as an additional burden to the patients and their families.

Cancer, from a general perspective, like everything else which are not acute or dramatic until the concluding part of its natural history, will not conjure a message of urgency. A misleading sense of security pervades until the disease becomes clinically manifest. This attitude is common at all levels of society which is not peculiar to any one country but is true for most parts of the world. This would explain why even amongst the well informed the attitude to the widespread use of the best known carcinogen is one of tolerance at best and a defensible economic activity at worst. Tobacco, which is incriminated in about 40% of the cancer burden of the world is still a non issue to a large proportion of the world population. Add to this, lifestyles which promote cancer such as high fat low fiber diet and alcohol and we have all the main factors for a good cancer harvest for a long time to come. The tobacco issue is multifaceted involving growers, traders, factory workers, managers and financiers right through to politicians, policy makers and law makers. Until the society so decide to take a unified stand on it, the issue will remain.

The obstacles to the fight against cancer is on the one hand an attitude change from a cancer favouring life style to a cancer

avoidance life style and on the other hand a costly exercise of molecular and clinical research for effective treatment. In both knowledge, training and education are the key elements.

### **Portents for the Future**

We have arrived in the second millennium carrying with us both the success and failures of the first. Based on factual records, the coming decades for us is one of more development, industrialization, urbanization, sophistication and various degrees of life styles changes and environmental degradation. This inevitably means that disease patterns would not be dissimilar to those of the developed western world where cancer is the main health burden. A changed demography with increasing demand and limited resources would be compounded by such factors as increase population knowledge and expectation and craving for newer technologies for investigation and treatment. It is not a question of can we cope but rather we must cope. On the positive side we know enough about cancer prevention to be able to prevent the preventable ones, we know enough how to treat the major cancers on provision that we have the optimum facilities and we could if we choose to, implement palliation program for the benefit of those afflicted but are beyond curative therapy. The choice is ours. But when we make the right choice we are also making it for many generations coming after us for the better.

### **Acknowledgement**

I would like to express my gratitude to the members of the group from IIUM, UNIMAS, UKM and the Ministry of Health (HKL and Hospital Pulau Pinang) who have contributed to complete the regional cancer study and all those who have contributed but too numerous to name.



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Prof. Dato' Dr. Md. Tahir Azhar, Dean of the newly established Kulliyah of Medicine, IIUM was born in Kangar in 1949. After completing secondary school at Malay College Kuala Kangsar, he studied medicine at University of Malaya (UM). He was one of the only four Malays to be admitted directly into the first year. His working career started in the General Hospital of Penang and Kangar, followed by a stint in Saudi Arabia for the Malaysian Pilgrims Fund Board, and at University Hospital. In 1978 he joined University Kebangsaan Malaysia (UKM) as trainee lecturer in internal medicine. He obtained his MRCP in 1980 (Edinburgh), followed by DMRT (London) and FFRRCSI (Dublin) in 1985, FRCP in 1990 (Glasgow) and FRCP in 1994 (Edinburgh).

At UKM, Dato' Dr. Tahir Azhar was the Deputy Dean (Development & Training), editor of its medical journal, and a consultant in radiotherapy and oncology. Besides being active in several professional bodies including the Malaysian Oncology Association (President) till 1997 and Asia-Oceania Clinical Oncology Association (Secretary) till 1998, he has also been on the scientific committee for several conferences on cancer including the Asean Conference on Gynaecological Cancer (Penang, 1991) and 2<sup>nd</sup> Asia Pacific Conference on Cancer in Bangkok (1992). Vice Chairman Asia Pacific Cancer Conference (Kuala Lumpur, 1996). He was also Vice President of Malaysian National Cancer Council (MAKNA) till 1998.

Dato' Dr. Tahir has presented at many conference papers on chemoradiation locally and internationally, including the 7<sup>th</sup> Asean Conference Radiology Congress (Indonesia, 1992) and Asean Gynaecological Malignancies Meeting (1991). He is the author of a paper on "The Association between TSH and thyroglobulin (1<sup>st</sup> European Symposium on Thyroid Cancer, Montpellier, 1985); adrenal cortical carcinoma-Response to Chemotherapy (1987) in journal of AFES, Vol. 6, and squamous carcinoma (18<sup>th</sup> World Congress of Dermatology, New York, 1992), Sociological aspects of patients: A radiotherapy perspective (congress of Asian Radiographers, Kuala Lumpur 1987), Management



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Dato' Dr. Tahir has also delivered many lectures on such topics as radiotherapy, cancer management and chemotherapy, at meetings of the Malaysian Society of Radiography and Malaysian Oncological Society. Dato' Dr. Tahir has written a book on the treatment of uterine cancer (UKM, 1995) and translated three textbooks into Malay (on clinical practice, oncology, and nervous system disorders).

His previous research projects of interest are High dose rate intracavity treatment of carcinoma of the cervix, Brachy therapy treatment for local recurrence of nasopharyngeal carcinoma, conservative treatment for early breast cancer, brachytherapy for lip and oral cancer and chemotherapy in advanced breast cancer.

Currently he is leading an IRPA funded research on the determination and evaluation of national cancer control strategies which started in 1998.

In 1999 he is nominated to represent Malaysia in the RCA Committee of IAEA as advisor in the training of radiation oncology workers for developing countries through distance learning.

In June 2000, he was nominated to participate in the IAEA advisory committee to draft the future use of long life radioisotopes in Vienna, Austria.