Cancer is a leading cause of deaths worldwide; in 2005, cancer accounted for 13%, or 7.6 million cases, of all deaths. The biggest killers are, in decreasing order, cancers of the lung, stomach, liver, colon and breast. What is especially worrying is that the incidence of cancer in Asia, in particular, is increasing rapidly — in 2002, Asia Pacific alone accounted for 4.9 million new cases of cancer (45% of world total), and 3 million (44.9%) of the death toll. [1] According to Dr Donald Max Parkin, a Senior Epidemiologist at the Cancer Research UK Centre for Epidemiology, Mathematics and Statistics, that mortality figure is projected to leap to 7.8 million by 2020 if nothing is done.
Even after correcting for population size, the rate of cancer deaths in Asia is climbing steeply; the World Health Organization (WHO) predicts that Asia’s prevalence of cancer mortalities may increase by 45%, from 112 per 100,000 in 2005 to 163 per 100,000 people in 2030. In contrast, the prevalence rate for the Americas is expected to rise from 136 to only 156 per 100,000 over the same time period.

There are numerous reasons for the increase in cancer in Asia. Increased affluence in many Asian countries has led to an increased meat, fat and alcohol intake, a trend known as the “Westernization” of Asian diets and one that is associated with higher rates of breast, colon and rectal cancer. Lung cancer, as noted above, is the leading cause of cancer not only worldwide but in Asia as well. Though smoking is getting less common in the US and Europe, the number of smokers is on the rise in Asia. Ironically, as communicable diseases like malaria now claim fewer lives because of better healthcare and medical treatment, a greater proportion of the population thus survive to old age only to succumb to cancer and degenerative diseases.

Another concern is a lack of vaccines for cancer-causing viruses; for example, three-quarter of liver cancer cases worldwide occur in Asia, and these cases are due largely to Hepatitis B infections. While hepatitis vaccines are routinely administered for children in many Western countries, these vaccines are still not available in many parts of the Asia-Pacific. Increasing pollution also plays an important role — for example, water pollution in China has been linked in studies to a doubling in liver and stomach cancer deaths since the 1970s, which are now the leading causes of death in the countryside. In fact, China has the highest liver cancer rate in the world [2].

**Conventional treatment and biotech-related treatment strategies**

Despite ongoing intensive efforts in oncology research, a complete cure for cancer has yet to be found. Biotech companies are investing heavily in research and development (R&D) of cancer treatment, driven by the increasing global demand for newer and better treatment strategies. These advances in biotech-based oncology research include anti-angiogenesis drugs, humanized monoclonal antibodies and gene therapy. For large pharmaceutical companies, there is also the constant need to maintain product pipelines as patents on blockbusters expire. As the cost of development of novel drugs continue to climb, some of these companies have diversified into biotech-related oncology R&D activity, including platform technology development. For instance, in Dec 2006, GlaxoSimthKline bought British biotech company Domantis, a £230 million (US$456 million) move that the pharmaceutical company hopes will provide them with next-generation antibody drugs. Earlier that same year, Merck acquired Sirna Therapeutics, a gene splicing specialist company, for US$1.1 billion. [3]

Though well-studied, there are still many problems with conventional therapies. Many cancers cannot be cured, and some are problematic to treat effectively. A lack of specificity in the action of cancer drugs means that a higher dosage is required, and this leads to increased toxicity. These
drugs and conventional treatments such as chemotherapy also have many uncomfortable, sometimes severe, side-effects. In contrast, newer biotech-related treatment strategies, designed to plug the gaps of conventional treatments, are more target-specific and safer. As scientists learn more about what distinguishes cancerous cells from normal cells in the body, targeted treatments that focus only on the cancerous cells can be developed.

Anti-angiogenesis is a form of targeted therapy that uses drugs or other methods such as gene therapy to prevent the angiogenesis (the growth of new blood vessels) of cancer cells. Initially, researchers had hoped that these drugs could replace chemotherapy. Potential leads were first tested in the late 1990s but while the drugs slowed cancer growth in some cases, the tumors did not shrink or disappear. Part of the disappointing results was due to the fact that the initial drugs tested were not very effective; moreover, blocking just one growth pathway may not be enough. However, these drugs offer another important treatment option and they were subsequently shown to work well when combined with chemotherapy. While the older anti-angiogenesis drugs targeted the blood vessels the tumor needs to survive, newer drugs also attack the cancerous cells directly.

Monoclonal antibodies (mAb) are highly specific antibodies that selectively bind to a specified target; if mAb that bind only to cancer cells are created, these mAb can then serve to diagnose or induce an immunological response against that target cancer cells. Humanized mAbs are one of the most well-researched and favored methods for the detection and treatment of various cancers as they are specific in their action and have low toxicity.

Though it is not yet available for commercial distribution, gene therapy is another promising experimental treatment that involves introducing genetic material (DNA or RNA) into a person’s cells. In one common approach, missing or diseased genes are replaced with healthy genes. Gene therapy can also be used to stimulate the body’s natural immune response against cancer cells. Conversely, so-called “suicide” can be inserted into the cancer cells instead, causing the cancerous cells to kill themselves through apoptosis (cell death) when these genes are activated, for example through the use of a pro-drug (an inactive form of a toxic drug). As mentioned above, gene therapy can also be used in anti-angiogenesis treatment.

Frost & Sullivan market analysis noted that “the booming success of the targeted therapeutics segment and the extensive benefits of these new therapies, alongside new treatment strategies with more effective combinations of chemotherapy and hormonal drugs, are expected to drive the demand for drugs in this (cancer treatment) market. It is estimated that the targeted therapeutics segment alone could undergo the most significant growth over the forecast period reflecting the increasing importance of this segment to the overall market.” [4]

In the Asia Pacific region, better access to healthcare and improved awareness of cancer and treatment options has bolstered oncology research efforts. Research and Markets has highlighted the Asia-Pacific region as an emerging key destination for clinical trials and stem cell research. [5]

In this article, a brief overview of the research institutions and priorities in eight countries will be presented, namely China, Indonesia, India, Japan, Malaysia, Singapore, Thailand and Vietnam.
Cancer kills more people than any other disease in China, and coupled with China’s large population size, aging population and increasing incidence rates, the cancer burden is immense. Factors for this increase include pollution, smoking and the prevalence of preserved foodstuffs; China alone accounts for half of the global annual deaths from stomach cancer, which has shown to be significantly influenced by diet. The most common cancer is lung, followed by liver and stomach. [6]

The field of clinical oncology in China has a long history, dating back to 1933 when Peking Union Medical College Hospital established the Division of Clinical Oncology. Subsequently, cancer-focused hospitals were built in the 1950s in several major Chinese cities, including Beijing, Shanghai and Tianjin. Leading Chinese cancer institutions today include: in Beijing, the Cancer Institute and Hospital Chinese Academy of Medical Sciences and Peking Union Medical College Cancer Institute and Hospital; in Shanghai, the Fudan University Cancer Hospital; in Tianjin, the Tianjin Medical University Cancer Institute and Hospital; and in Guangzhou, the Sun Yat-Sen University Cancer Center.

The Chinese Society of Clinical Oncology (CSCO), a public academic organization, was founded April 1997 in Beijing. By the end of June 2004, CSCO has over 4200 individual members from about 1000 hospitals or institutions in China. Among its various roles, CSCO develops dozens of multi-center clinical trials, standardizes Good Clinical Practice (GCP) clinical oncology research and and coordinates collaborations with other organizations.

The Cancer Institute and Hospital (CIH), Chinese Academy of Medical Sciences (CAMS) was rated as first in Asia for cancer prevention and treatment in terms of scale, and is one of the WHO collaborative centers for Cancer Research in China, as well as one of the bases for drug clinical trials by the Food and Drug Administration of State (SFDA). The National Cancer Research and Control Office (NCRCO) and China National Oncology Examination Center affiliated to the Ministry of Health, the Chinese Cancer Research Foundation, Chinese Society of Clinical Oncology (CSCO), and the editorial offices of Chinese Journal of Oncology and Chinese Journal of Radiation Oncology are all attached to CIH.

One of the four early-founded cancer centers in China, Tianjin Medical University Cancer Institute and Hospital (TMUCIH) was first established in 1861 and has changed over the years to become a specialized cancer hospital. In the last half century especially, it has developed into one of the largest cancer centers for cancer prevention, treatment, training and research in China. The hospital is a leader in cancer surgical treatment, both in number of cases and advanced surgical techniques, and has the largest fresh tumor tissue banking in China. The editorial office of the Chinese Journal of Clinical Oncology (CJCO) is also located in the hospital.
[Feature]

The Fudan University Cancer Hospital in Shanghai, founded 1931, is a national leader on first management of cancer treatments, which includes curative effects, life quality, and local and systemic control of a variety of malignancies such as breast cancer, esophageal cancer, lung cancer, colon cancer, gastric cancer, nasopharynx carcinoma, liver cancer, thyroid carcinoma, carcinomas of mouth cavity (lingua cancer), lymphoma, Hodgkin’s disease, choriocarcinoma, ovary cancer, hysterocarcinoma, testicles tumors and soft tissue sarcoma. The hospital founded the Anti-Cancer Association of Shanghai in 1987, and publishes the journal China Oncology.

The Peking Union Medical College Hospital (PUMCH), founded 1921 by the Rockefeller Foundation, is an institutional Faculty of Clinical Medicine affiliated to both the Peking Union Medical College (PUMC) and the Chinese Academy of Medical Sciences (CAMS). The hospital, renowned for its multi-disciplinary cooperation among different specialties, leads within China in terms of medical treatment, scientific research and medical education.

The Sun Yat-Sen University Cancer Center, founded 1964, is the largest specialized cancer center integrated with cancer treatment, training, research and cancer prevention in southern China. It serves the patients in Guangdong province, Hongkong, Macao and Southeast Asian countries, playing a leading role in the field of cancer research and cancer control in these areas. Since 1980, the center has been designated as the WHO Collaborative Center in Cancer Research, and is a sister hospital of the M D Anderson Cancer Center of the United States. It also houses the South China State Key Laboratory for Cancer Research. The headquarters of the Guangdong Provincial Anti-cancer Association is also located in the Center, as well as the editorial department for the Chinese Journal of Cancer. The institute has five missions: patient care, scientific research, medical education and prevention; and five focus research areas: NPC (nasopharyngeal cancer) research, comprehensive treatment of liver cancer, anti-cancer gene therapy, and establishment of community cancer registry network.

The Shanghai Cancer Institute (SCI), founded 1958, is an independent cancer research institute affiliated to the Shanghai Municipal Bureau of Public Health. Since 1980, the SCI has been one of the WHO Collaborating centers for Research on Cancer in China. The institute focuses its research mainly on the epidemiology, etiology and mechanism of chemical carcinogenesis of cancer, as well studies on functional genomics, gene diagnosis and therapy and immunotherapy through the use of biotechnology. The institute's major projects are funded by the National Grants of Basic Research (under the “863” and "973" programs), the National Key Projects and the National Foundation of Natural Science. The SCI also has numerous collaborations with other universities and institutions, both in China and internationally. Since 1981, the SCI has sponsored and published the journal, Tumor.
[ Feature ]

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INDIA

Although the incidence of cancer in India is lower than in developed countries, because of the sheer size of the country, India adds about a million new cases of cancer each year. Similar in many ways to the outsourcing trend in the manufacturing and information technology sectors, clinical cancer research has undergone progressive globalization over the past decade. The Indian population is extremely heterogeneous, cancer incidence shows significant variations by region, and patients are often diagnosed in late stages. Many clinical research groups have found a brisk market in India, as the vast number of very diverse and advanced cancer cases offer unique opportunities for conducting clinical trials; particularly important is the fact that trials can be carried out in a shorter period of time due to faster recruitment, and the low cost involved. India has become well-known as a hub for clinical trials as it has the largest potential of patients and diseases. In fact, about 49% of global trials have moved to India. It has been estimated that international pharmaceuticals would have invested more than US$1.5 billion in clinical trials in India by 2010. [7]

In India, research has been focused on infectious diseases, food problems and plants; even pharmaceutical companies tend to concentrate on drug development instead of basic research. However, this situation is improving, with government support and initiatives from various research institutions like the Indian Council for Medical research (ICMR), Council for Scientific and Industrial Research (CSIR) and Department of Biotechnology (DBT). These institutions have increased their funding for clinical cancer research, mostly involving cancer prevention and early detection. DBT has set up a task force to study breast, cervical and oral cancers; for example, research on human papillomavirus (HPV) vaccines against cervical cancer is ongoing and the government will start HPV vaccine trials soon. ICMR has about 100 projects on the epidemiology and pathogenesis of cancer.

Similarly, Dr Reddy’s Laboratories has identified oncology as a major focus area for drug development. Shantha Biotech has highlighted oncology as its primary area of interest for conducting R&D activities. Dabur Pharma is yet another company focusing on cancer research and anti-cancer products. Eli Lilly is also conducting cancer trials, as well as developing a new drug for lung cancer. There are already almost 20 cancer centers in India, but India has said that more will be needed to meet the increasing population growth and rising cancer burden. [8]

Recently, a cancer trial network comprising of the top six publicly funded regional cancer centers (in Delhi, Mumbai, Ahmedabad, Hyderabad, Bangalore and Trivandrum) and the Department of Clinical Pharmacology, University of Oxford, was established. The network, INDOX (INDia-OXford), aims to provide a strong basic and translational science base in both Oxford and India, and boast of an extraordinary capacity of patient recruitment (estimated at 100,000 new patients per year). While INDOX will be conducting Phase I, II and III trials for all common cancers, particular focus will be paid to those that are more prevalent in India, such as head and neck, gall bladder, and cervix. The network infrastructure will be funded through a grant from GlaxoSmithKline (GSK).
Among the deaths caused by diseases in Indonesia, cancer is ranked sixth. The most frequent and primary cancers are those of the cervix, breast, lymph node, skin and nasopharynx. [9]

The first Indonesian Foundation for Cancer Control was established 1962 in Jakarta; this was followed by several Cancer Foundations in cities such as Surabaya, Solo, Yogyakarta and Bandung. Subsequently, the Indonesian Cancer Society (ICF), which is the coordinating and funding foundation for all these separate cancer societies, was set up on April 1977 in Jakarta. Research institutions were also established, for example, the Research Center for Cancer and Radiology was established in 1974 under the National Health Research Institute of the Ministry of Health. In November 1990, the Indonesian Ministry of Health established a National Cancer Control Action Plan to consolidate and escalate research efforts.

The ICF has prioritized 10 types of cancer for research: (1) cervical; (2) breast; (3) liver; (4) skin; (5) nasopharyngeal; (6) lung; (7) colorectal; (8) leukemia; (9) malignant trophoblast; and (10) malignant lymphoma. The ICF has started a pathology-based registry, conducted in cooperation with the Indonesian Pathology Association in 13 hospitals in regional areas that have cancer units. In addition, the ICF is also maintaining a hospital-based cancer registry, together with the Ministry of Health.

Recently, the Mochtar Riady Institute of Nanotechnology (MRIN), Indonesia’s first private nanotechnology center, was opened in May 2008. MRIN, which collaborates directly with Siloam Hospital, is currently undertaking a study to discover the association genotype and mutation of the hepatitis B and C viruses and the development of these diseases into liver cancer, as well as a study on the immune response of certain biomarkers for developing immunotherapy interventions strategic in cancer treatment. The institute is primarily focused on studies related to hepatocellular carcinoma with the aim of improving control and management of the disease in Indonesia. The MRIN consists of five core divisions: the molecular epidemiology division, which studies the variation of viruses; the proteomic division to develop technology for diagnosing cancer; the SNP (single nucleotide polymorphisms) division to develop genetic screening for cancer predisposition; the immunology division to understand the nature of tumors; and the genomic division to support other divisions in respect to interesting genes. [10]
With an aging population, cancer is a particular cause of concern in Japan — cancer is the leading cause of deaths in Japan since 1981, with one in three dying of the disease.

Cancer research in Japan is mainly supported by the central government, in particular, the Ministry of Health and Welfare, the Ministry of Education, Science, Culture and Sports and the Science and Science Technology Agency. The two most important cancer research funds are (1) Grants-in-Aid for Cancer Research managed by the Ministry of Health and Welfare and the Ministry of Education, Science, Culture and Sports; and (2) Grants-in Aid for the Comprehensive 10-Year Strategy for Cancer Control managed by the Ministry of Health and Welfare, the Ministry of Education, Science, Culture and Sports and the Science and Science Technology Agency. The former focuses on funding basic, clinical and public health research and various other fields, while the latter aims to drive translational research, with special emphasis on the following research projects: (1) the molecular mechanism of the onset of cancer; (2) cancer metastasis, infiltration and characteristics of cancer cells; (3) cancer diathesis and immunity; (4) cancer prevention; (5) the development of new diagnostic technologies; (6) the development of new therapies; and (7) the quality of life (QOL) of cancer patients.

Although cancer research in Japan is largely funded by the central government, several non-governmental organizations play very important roles in supporting basic and clinical research. Examples include the Princess Takamatsu Cancer Research Fund, which was founded in 1968, and the Foundation for the Promotion of Cancer Research, a non-governmental, non-profit organization which works in cooperation with the government and the National Cancer Center, which was established by the Ministry of Health and Welfare in 1968. [11]

The Foundation for Promotion of Cancer Research was set up in September 1968 to consolidate efforts to promote cancer research, train researchers and technicians, and to disseminate accurate information about cancer. The Foundation also publishes the *Japanese Journal of Clinical Oncology*. “The Comprehensive 10-Year Strategy for Cancer Control” was set up in June 1983 to promote cancer research and other activities through joint efforts by the private and public sectors. These activities include postdoctoral fellowship programs, international exchange programs for researchers and clinicians, international symposia for clinical cancer research and public education. Following the first 10-year plan’s excellent results, which include the discovery of oncogenes and tumor suppressor genes, as well as establishment and demonstration of the concept of multistage carcinogenesis, the next 10-year program was started. “The 2nd Term Comprehensive 10-Year Strategy for Cancer Control” aims to further promote the basic research involved in carcinogenesis and to apply this knowledge for cancer prevention, early diagnosis, successful therapy and also improvement of the quality of life (QOL) of patients.
One focus of cancer research in Japan is in the identification of germline mutations in patients with familial cancer syndromes, and of somatic mutations of cancer tissues in patients with sporadic cancers. Other projects of interest include the study of human genomics for the treatment of disease and the development of new drugs, and the link between cancer susceptibility and single nucleotide polymorphism (SNPs) in cancer-related genes. The data obtained from SNPs would be useful in the early diagnosis and prevention of cancer.

The aim of the Research Institute in the National Cancer Center is to advance knowledge in cancer prevention, diagnosis and therapy for cancer control. While the incidences of lung, colorectal and breast cancers are increasing in Japan, the incidence of stomach cancer is decreasing; one of the research goals of the institute is to examine the underlying reasons for this trend. Other research projects undertaken by the Center include the search for translational chemopreventive agents, identification and functional analysis of cancer-related genes and development of gene diagnosis and therapies, and identification of carcinogenic factors in the environment and their elimination. For example, one of the successes of the institute is the discovery of heterocyclic amines, which are food-borne carcinogens in cooked food. Novel methods towards cancer diagnostics and treatment such as molecular targets, immune therapies and tumor markers are under study.

Plans are also underway for an Asian regional network that would gather data from cancer registries in countries from the Philippines to Turkey, spanning an area that encompasses two-thirds of the global population and accounts for over half of the cancer deaths annually. The Asian Cancer Registry and Information Network (ACRIN) aims to share and standardize data on cancer epidemiology and prevention, to investigate why some cancers occur more commonly in some Asian countries, and the pharmacogenetics of Asian-specific genes. The first regional center will be established in Japan, at a cost of US$542,000 over 3 years. [12]
Cancer is the second most common cause of death in Malaysia after heart disease, and the most common types of cancers are lung, breast, cervix and leukemia. Under the 7th Malaysia Plan (1996–2000), almost RM15 million was budgeted for 76 cancer projects through the Intensified Research in Priority Areas (IRPA). The 8th Malaysia Plan (2001–2005) saw a change in research strategy towards a more top-down (multicenter and multidisciplinary) approach, where funding per project was larger — RM32 million for 49 projects. There was also an increased interest in drug development and natural products. The bulk of such research then was carried out at the universities. Under the 9th Malaysia Plan (2006–2010), several research institutions were proposed: a Communicable Disease Center, a National Crisis (Health) Preparedness and Response Center, a National Cancer Institute and a National Oral Health Institute. [13]

The Institute for Medical Research (IMR) is the research arm of the Ministry of Health, Malaysia. Current research focus of IMR’s Cancer Research Centre (CaRC) include identification of new diagnostic markers for colorectal cancer and leukemia, early cancer screening for colorectal cancer, intervention methods for leukemia and oral cancer, and natural product discovery.

The Cancer Research Initiatives Foundation (CARIF) is Malaysia’s first independent cancer research organization. One of their main research efforts focuses on identifying and developing molecular targets for detecting and treating mouth and nose cancer, cancers that are especially prominent in this region (up to 80% of these cancers occur in Asia), but for which targeted therapies have not yet been developed. CARIF is also working on developing an Asian-specific risk prediction model for breast cancer, identifying alteration in two breast cancer genes, BRCA1 and BRCA2. Capitalizing on Malaysia’s natural biodiversity (the country’s rich rainforests are estimated to contain 10% of the world’s living organisms), CARIF is also carrying out a high-throughput screening program on potential biological targets that capitalizes on Malaysia’s biodiversity, such as photosensitizers for Photodynamic Therapy (PDT), which are light-activated compounds that specifically target tumor cells.
SINGAPORE

Cancer is the top killer disease in Singapore. About a quarter of deaths are due to cancer. Key areas of research include cancers that are more prevalent among Asians such as nasopharyngeal carcinoma (NPC) and hepatitis B-linked liver cancer, translational research, stem cells and genetic variation. However, the bulk of the work done focuses on translational research. As a multiracial society, Singapore presents a valuable opportunity to study genetic variation among different ethnic groups. [14]

To integrate and drive translational research in key areas, a number of consortia — the Singapore Cancer Syndicate, Singapore Bioimaging Consortium, Singapore Stem Cell Consortium, Singapore Consortium of Cohort Studies, and Singapore Immunology Network — have been established. Other groups include such the National Cancer Centre Singapore, the Cancer Therapeutics Research Group and the Cancer Research Centre of Excellence.

In an effort to coordinate and integrate cancer research and development efforts within the island, the Singapore Cancer Syndicate (SCS) was set up in 2002 by Singapore’s Agency for Science and Technology Research (A*STAR) and the Biomedical Research Council (BMRC). The SCS is a funding agency that supports cancer research infrastructure and consortia, and the aims of SCS are to: (1) establish a virtual cancer research and development platform on a national scale; (2) enhance the translational research infrastructure, which includes the recruitment of specific trained personnel; and (3) link existing capabilities into a discovery pipeline through coordinated projects.

The roles of the Singapore Bioimaging Consortium (SBIC) are to stimulate, fund, coordinate and report on various bioimaging activities in Singapore. The Singapore Stem Cell Consortium (SSCC) oversees and funds basic and clinical stem cell research in Singapore, with a focus on catalyzing the translation of basic research into clinically viable stem cell therapies. Immunology research is coordinated by the Singapore Immunology Network (SIgN); where research is focused on translational research, including cancer immunotherapy. The Singapore Consortium of Cohort Studies (SCCS) consolidates selected studies to develop a large, multi-ethnic population-based cohort study, so as to facilitate research into diseases with complex gene-environment interactions, such as cancers.

In addition to education and patient care, the National Cancer Centre Singapore (NCCS) also has three research divisions: (1) the Division of Cellular and Molecular Research is studying gene therapy, gene knockouts and transcriptional regulation of genes; (2) the Division of Medical Sciences fosters translational research; and (3) the Division of Clinical Trials & Epidemiological Sciences applies the latest advances to the treatment of patients, providing consultancy in biostatistics, clinical trial design and execution, and studies the epidemiology of cancers. NCCS also develops and manages treatment-based registries and epidemiological databases of major cancers in Singapore. In February 2007, the Van Andel Research Institute (VARI) established the NCCS-VARI Translational Research Program, which will received a funding of US$1.2 million over 3 years.
On 28 March 2008, Singapore announced that it will pump US$187.8 million towards the recently established Cancer Research Centre of Excellence over the next 7 years. The center’s research emphasis will be on basic research into the types of cancer-related genes, focusing on cancers that are more common among Asians such as nasopharyngeal cancer. Cancer stem cells is also another research focus; Professor Daniel Tenen, the center’s director, will lead the Cancer Stem Cells program, which studies the role of transcription factor and related genes involved in the self-renewal of normal and cancer stem cells.

Singapore is also vigorously expanding its clinical trials expertise and capabilities; from 1998 to 2006, Singapore’s clinical trails market has doubled in size. The Health Sciences Authority (HSA), through its Centre for Drug Administration’s Health Products Regulation Group, is responsible for the regulation of clinical drug trials in the country. There are a number of hospitals and research institutes that conduct their own clinical trials, such as the National University Hospital, Singapore General Hospital, Tan Tock Seng Hospital, National Cancer Centre, National Neuroscience Institute, National Heart Centre, Singapore Eye Research Institute, and the Institute of Mental Health.

At the same time, Singapore is also engaged in international collaborations. The Ludwig Institute for Cancer Research (LICR), the world’s largest international non-profit cancer research institute, will be establishing a branch for translational and clinical cancer research in Singapore. This is in collaboration with A*STAR, the Yong Loo Lin School of Medicine of the National University of Singapore (YLL-NUS) and the Duke-NUS Graduate Medical School (Duke-NUS GMS). The Cancer Therapeutics Research Group (CTRG) is a clinical trial collaboration between the National University Hospital/ National University of Singapore, Johns Hopkins Singapore International Medical Centre, National Cancer Centre, Chinese University of Hong Kong, Sydney Cancer Centre, University of Sydney and Yonsei Cancer Centre, Korea. John Hopkins Singapore, a joint venture between John Hopkins Singapore.

Collaboration successes so far include encouraging results by the National Cancer Centre’s therapeutic cancer vaccine clinical trial in patients with advanced colon cancer, a collaboration between Singaporean and Danish researchers. International pharmaceutical companies like AstraZeneca, Bristol-Myers Squibb, GSK, Merck KgaA, MSD, Novartis, Novo Nordisk, Pfizer, Sanofi-Aventis, Lilly, Lundbeck, Schering AG and Schering-Plough, have all set up their own clinical trials coordination centers in Singapore. Clinical research organizations (CROs) such as Quintiles, Covance, ICON, MDS Pharma, PPD and home-grown Gleneagles Clinical Research Centre have also set up regional centers in Singapore to manage clinical trials and carry out laboratory testing of patient tissue samples from around the region. [15]
Cancer is the most common cause of death in Thailand, and the four main cancers are liver, lung, cervix and breast cancers. In 2000, a National Cancer Control Program (NCCP) was initiated, focusing on prevention, early diagnosis, treatment and palliative care. The NCCP plan also aims to set up six cancer centers in all the regions in Thailand, especially in provinces in which there are no university hospitals. [16]

At the Chulabhorn Research Institute (CRI) in Thailand, research is prioritized on the following areas: (1) natural products, medicinal chemistry and organic synthesis; (2) biomedical research; (3) environmental toxicology; and (4) biotechnology. In oncology research, their focus is on certain types of cancers such as liver, esophageal and cholangiocarcinoma, which have a high incidence in the Southeast Asian region. These cancers are believed to be related to exposure to chemical carcinogens in food, such as aflatoxin B1 and nitrosamines compounded by viral and parasitic infection. There are a few groups working on cancer-related research; for example, the Laboratory for Chemical Carcinogenesis aims to study the mechanisms underlying cancer development, particularly in systems prevalent in Thailand and in Southeast Asia which may be induced by chemicals and other agents; genetic alterations in certain types of cancers and their relevance to etiology and pathogenesis; and to identify and evaluate new cancer chemopreventive agents from Thai medicinal plants and herbs.

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VIETNAM

As malnutrition and infectious diseases are still major health problems in Vietnam, cancer is a relative modest priority. Moreover, there is a shortage of treatment facilities and poor repository of health and population statistics, and the shortage of resources, both human and financial, is a major problem in cancer research in Vietnam. Still, cancer registries in Hanoi and Ho Chi Minh City have identified the leading cancers in the country as lung, liver, stomach, colon-rectum and nasopharynx in males, and breast, cervix, stomach, liver, colon-rectum and lung in females. Despite these difficulties, there are local cancer research programs, such as a study of prevalence of HPV infection and risk factors of cervical cancer in Hanoi and Ho Chi Minh City; as well as projects with foreign collaborators, such as clinical trials studying the efficacy of tamoxifen in the treatment of breast cancer with Wisconsin University, and a cervical cancer screening program with Vietnam–American Cervical Cancer Control Program. [17]

However, the incidence of cancer is rising, or at least the number of cases reported. In 1990, there were 52,700 new cases of cancer reported [Pham 2002], and in 2007, that number has risen to 150,000 reported new cases. [IAEA, Vietnam needs international help to develop a plan to fight cancer, Vietnam News, 31 August 2007] The leading cancer hospital in Vietnam is the National Cancer Institute, established in July 1969. More recently, the Institute for Cancer Prevention was established on 6 August 2007 in Hanoi. The newly established institute will perform research projects on cancer and consult the government and the Health Ministry on policies to prevent and cure cancer in Vietnam. Cancer research in Vietnam consist mainly of studies on the epidemiology of cancer in various regions in Vietnam, maintaining cancer registries, estimating the cancer burden and determining steps for cancer control, as part of the support for the National Strategy for Cancer Control.

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