N E T W O R K

THE NEWSLETTER OF THE INTERNATIONAL NETWORK FOR CANCER TREATMENT AND RESEARCH

INCTR

Volume 4, Number 2, Autumn 2003 — Inside: REPORT: ACCIS - Automated Childhood - **8** - ARTICLE: Individual & Population System Tailored Treatment Strategies for Cancer - **11** - FORUM: International Spirit of Life Foundation - **14** NEWS - **15** - PARTNER PROFILE - **18** - PROFILES IN CANCER MEDICINE - **20**

THE PRESIDENT'S MESSAGE

GRAND STRATEGIES

2. Meeting the Challenges

by Ian Magrath

In the first part of this message, *The War on Cancer*, I commented on the seemingly inescapable conclusion that human warfare has its origins in the biological process of natural selection and, ironically, in the fact that humans have evolved as social animals. The success of the species, and the consequent expansion of human populations, has led to a situation in which dozens of violent conflicts are occurring constantly in various parts of the globe. Yet well before the modern era, the biological rationale for intergroup competition - the promotion of the survival of a particular gene pool - had been essentially negated. Competition among our hunter-gatherer ancestors was between different tribes or tribal groups (i.e., genetically distinguishable peoples) occupying adjacent territory. Although genetic differences may be expressed in physical features, these, judging from the bitter conflicts between different religious groups within the same ethnic group, or between branches of the same dynasty, may not be of greater importance as a means of defining "us" versus "them" than differences in dress, customs, speech or beliefs. In fact the extensive mingling of peoples of different ethnic origins in the modern political territories referred to as countries, which have emerged (although many boundaries remain unstable) after millennia of conflict and colonization, has markedly diminished the original close relationship between territory and genetic homogeneity, and consequently blurred the distinction between competition for leadership within a group and competition

The storming of the Bastille, on 14 July 1789, precipitated the fall of Louis XVI and the French monarchy. It is a symbol of liberty, democracy and the struggle against oppression for the French people, who came to realize their own power - and rights - and the arbitrary nature of dynastic rule. This painting is by Claude Cholat. ***Photo provided by akg-images.***

between groups. In the modern world, an individual may simultaneously be a member of a "national," ethnic, religious, socioeconomic, political, language or other group, any of which may provide a pretext for the establishment of a new hierarchical structure ("pecking order") extending over as much territory as possible. Thus, cultural evolution, through its success, has both heightened the likelihood of conflict, and dramatically escalated its negative consequences. And whereas in the small, homogeneous tribal societies that constituted prehistoric mankind (remnants of which still survive), each individual had an important and recognized role to play within the single community, in the large, heterogeneous societies which emerged in the historical era, rulers, or ruling classes, have often been of different national, religious or ethnic origin,or, after the accumulation of vast riches, have perceived their subjects as inferior, and hence, fair game for exploitation.

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In late 18th century Europe, centuries of oppression of the masses finally erupted into violent revolution, its epicenter in France, eventually resulting, in spite of strenuous opposition, in a permanent shift in the relationship between the people and their rulers - at that time the crown, nobility and the church.

These sociopolitical upheavals were fostered by more efficient, mechanized agricultural techniques which resulted in dramatic population growth. Simultaneous industrialization caused a major shift in populations from the countryside to the cities. New technologies required an educated populace, resulting in the rapid growth of the middle classes whose upper echelons themselves acquired enormous wealth and eventually seized the reigns of power. At the same time, the insatiable demand for iron, steel and coal to create and drive the engines of the industrial revolution, coupled to large-scale manufacturing in the cities, led to inhuman working conditions, overcrowding, exploitation of women and children (see photograph) and indescribable squalor in the rapidly enlarging urban slums. Occupational diseases, among them, cancer, and raging epidemics (six pandemics of cholera occurred between 1817 and 1923) led to a recognition of the importance of public health, epitomized by Disraeli's Public Health Act of 1875, which required local authorities to ensure efficient sewage treatment, drainage and water supply. While Europe and her colonies (or former colonies) were in the vanguard of the political and technological revolution, the rest of the world has followed, and a survey of developing countries reveals a broad range of political and social circumstances not unlike those which existed in Europe at some point in the course of the last two to three centuries - although modified by the intrusion, to varying degrees, of modern technology and other aspects of "westernization."

In Europe, the concept of government by consent of the people, whose antecedents extend to the ancient world, eventually prevailed over the idea of absolute monarchy (although not without enormous bloodshed), and along with it, the emergence of the idea that all people have rights, i.e., protection against the power of those who rule them. The French revolutionaries did not invent the concept, but in their *Declaration of the Rights of Man and the Citizen*, in 1789, went further than the constructs contained in the English Bill of Rights of 1689 and the Bill of Rights of the USA, also ratified in 1789. The seventeen articles of the French Declaration included the declaration that men are born free and have a right to remain free and equal in rights, protection against oppression, including arbitrary detention and inhuman punishment, freedom to practice any religion and to express their own opinions, the right of citizens to approve the purposes, levels and extent of taxation, and the right of society to hold all public servants to account. In 1794, additional social and economic rights were added, including the abolition of slavery and the statement that "public assistance is a sacred obligation." In 1948, the United Nations published the *Universal Declaration of Human Rights*, based on international consensus, which includes the additional rights to education and a standard of living adequate for health and well-being, including

The industrial revolution led to the exploitation of vulnerable populations, including women and children (children are shown here working in a coal mine). In addition to long hours, minimal wages and dreadful work environments, the lack of safety regulations led to frequent injury and death and a markedly increased risk of various chronic diseases, including, in some circumstances, cancer. Such exploitation continues in many world regions to the present day, even where prohibited by law. ***Photograph by Lewis Hine, Courtesy of the National Archives and Records Service.***

food, clothing, housing, medical care and necessary social services. Unfortunately, declarations do not guarantee the rights they advocate. The French Revolution was followed by waves of terror, mass killings and a taste for the guillotine, while in many developing countries today, poverty is of such a degree as to exclude the possibility of education and health care, or even clean water, adequate food, clothing, and housing, for a large sector of the community. And it is still the case that what is seen as liberation from oppression by the many is often considered to be synonymous with mob rule by those who benefit most from the *status quo*.

Sociopolitical issues, although not usually considered the domain of health professionals, are critical determinants of public health - influencing both the causes of disease, and the effectiveness of disease control. Governments determine the priorities in spending public money, and are responsible, to a large degree, for the institutions of a country (sometimes developed over hundreds of years, but potentially wiped out in an instant). They are also responsible for security, education and health policy - all of which are both dependent upon and contribute, to the economy. Perhaps the central issue that the governments of developing countries must grapple with is the disparity between the size of the population and the size of the economy, a problem compounded by enormous inequalities with respect to the distribution of national and global wealth. This has an impact upon the quality and quantity of health facilities and health professionals and is largely manifested as a lack of access to health information and health interventions. Cancer, which comprises a set of complex diseases, is particularly hard hit - some patients never receive appropriate care while others present at an advanced stage, when treatment, if feasible, is more costly, complex and toxic. In the context of already inadequate resources, access to care for other patients is reduced even further (a situation I have referred to elsewhere as a "vicious cycle" [1]). Most patients do not even receive palliative care (symptomatic relief and emotional comfort), and die in abject misery. The challenge of solving these problems can only be met by increasing the *capacity* for controlling cancer through prevention, specific treatment and palliative care. This requires political will, i.e., the designation of health, including non-communicable diseases, as a political priority, and the development of the necessary funding to create additional resources. The capacity, however, to deliver sufficient health care can only be built through broad cooperation within and between countries and through the use of science and technology. The use of the latter to reduce the sum total of human misery, rather than contribute to it, should surely be a goal for the 21st century.

Building the capacity necessary to exploit existing knowledge and to continuously acquire more, is the key to cancer control.

ADDRESSING THE PROBLEM OF LIMITED RESOURCES THROUGH BUILDING CAPACITY

PREVENTING PREVENTABLE CANCERS AND CURING CURABLE CANCERS

Many of the deaths from cancer could be avoided by more efficient prevention or early detection. Some cancers (e.g., pediatric cancers, some leukemias and lymphomas, testicular cancers and trophoblastic tumors), are potentially curable by chemotherapy or combined modality therapy even when advanced. Yet prevention, early detection and chemotherapy are often the least available interventions in developing countries. Clearly, if preventable cancers are to be prevented and curable cancers cured, there must be increased emphasis - in locally relevant cancers - on these three approaches. Chemotherapy requires a skilled team of professionals and a broad range of hospital facilities, many of which span disciplines (e.g. microbiology and blood transfusion). Prevention and early detection require rather minimal resources, but could significantly reduce the burden of advanced disease, thereby improving patient access to care and helping to break the vicious cycle. Whether the approach (which depends upon the cancer in question) is via education or screening, cost-effectiveness is achieved when there is a high incidence of a preventable or easily detectable early stage cancer (i.e., one occurring in readily accessible anatomical sites), in a defined population group. Effective programs, however, require high population coverage, and therefore knowledge of the most effective means of promoting the program locally. Widely advertised screening programs also help to spread the message that cancer can be prevented and cured if detected early enough - a message that must be repeatedly emphasized to the general public, and also to health care providers and policy makers. Finally, screening also provides opportunities for the education of captive and receptive audiences (both participants and their families) as well as trainee care givers, and has an additional positive impact through the inevitable detection of, and opportunity to treat, benign diseases.

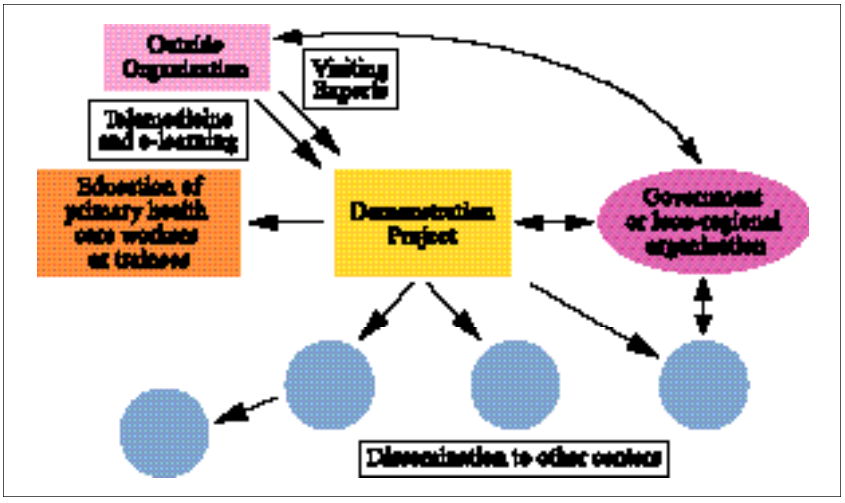

Figure 1. Successful model programs show "proof of principle" and define the cost-benefit ratio. In addition to their intrinsic value, they provide convincing grounds for governments and donors to support their replication, which will extend their benefits to a wider constituency, the ultimate goal being adequate population coverage.

INCREASINGTHE EFFICIENCY OF EXISTING FACILITIES

A variety of individuals and institutions are involved in the care of cancer patients, ranging from solo practices to major cancer centers. In general, oncological services are poorly coordinated and largely devoid of quality control. Efficiency would be greatly increased by the development of regional networks for cancer services. Peripheral centers and even temporary clinics could participate in region-wide screening, educational programs and palliative care; patients with suspected invasive cancer would be immediately referred to a competent treatment facility. Ancillary health professionals can be quickly trained to undertake much of the screening and public education, thus lessening the load on specialists. The regional plan may involve central confirmation of diagnosis, standardization of care plans, continuing education programs and outcome measures. Treatment of early-stage cancer may be conducted in a general hospital (by a visiting specialist if need be). More complex cancer surgery, radiation therapy and chemotherapy should be conducted only in an appropriately equipped and staffed cancer center. Regional planning will normally involve governments, and a coordinating cancer control committee, and should be based, where possible, on successful pilot or model programs (Figure 1).

Increasing the Number of Health Professionals and Cancer Specialists

Since developing countries suffer from a shortage of health professionals, more doctors and nurses must be trained, some of whom will go on to specialize in caring for cancer patients. Medical and nursing schools can be established with quite minimal facilities, while the shortfall in teachers can be compensated for by the use of information technology and visiting experts. During their training, medical students (and nurses) should be made aware of the importance of encouraging their patients to live a healthy lifestyle and providing information regarding the prevention and early diagnosis of cancer - primary health care providers have a major role to play in these areas.

Establishing more Facilities for Cancer Prevention and Treatment

In many of the poorer countries, a high proportion of cancer care is provided by general surgeons in general hospitals. There is clearly a need to expand the number of specialized cancer centers and units, and in addition, the number of prevention programs, trained cancer surgeons, radiotherapy facilities, chemotherapists and palliative care programs (Figure 2). Continuing education systems will be required for existing health care staff and the establishment of training programs in cancer prevention - almost non-existent anywhere - would ensure that this element of cancer control is emphasized. While poor countries cannot afford to provide either enough facilities or the needed experts to staff them, structural factors in their medical professions compound the problem - including poor working conditions, limited possibilities or incentive for research, seniority rather than merit-based professional advancement, and low salaries. This results in many of the more ambitious and more expert staff members moving to the private sector, or to more affluent countries, further reducing resources available to poor patients. Many young people are sent for or seek training in affluent countries on the assumption that their education will be superior. While this is often true, such training is costly and many trainees never return, preferring the professional and economic advantages abroad. Those who do return often find that their training does not equip them to deal with the high patient burden, limited resources, and more advanced, or sometimes quite different diseases they encounter in their own country, creating disillusionment and a strong desire to return to the affluent world. The expansion and improvement of cancer centers in developing countries, then, is important not only from the perspective of increasing access to care, but also to providing more training centers and improving opportunities for young professionals in their own countries, thereby reducing the constant loss of talent. In-country training programs, however, must address the problems of the quality and quantity of existing educational facilities. One solution is to provide broader access to expertise within and outside the country. Visiting experts may participate not only in the teaching of young trainees, but in continuing education of all staff, a process that can be supplemented by an organized program of workshops, symposia and training courses, supplemented by telemedicine programs and e-learning (see below). Multiple expert visits can be associated with needs assessments and the provision of more tailored educational experiences as well as the introduction of modern approaches and technologies that will improve efficiency (compensating for the limited human capital and poten-

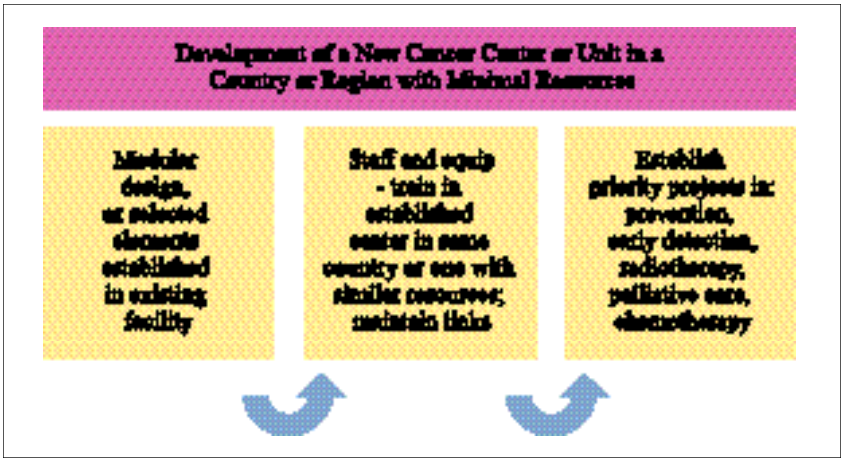

Figure 2. Development of cancer centers in countries with minimal resources will involve building new specialized cancer hospitals and research units (preferably to a standard design, to reduce costs), or use of suitable existing premises, the training of staff and the introduction of relevant foundation programs.

tially reducing cost). Visiting experts benefit from the broader clinical experience, and may stimulate collaborative research projects. In circumstances where such in-country training is not possible, the next best alternative is training in good quality programs in countries with similar socioeconomic status and cancer patterns. This may benefit both trainer and trainee and reduces the risk of migration.

Developing Relevant Cancer Control Programs

While the increase in quality and quantity of health professionals will inevitably improve cancer control, it is essential in all countries that maximal efficiency is achieved with respect to the translation of resources into health benefits. This requires effective organization. Ideally, a master plan for capacity building should be combined with the development of a cancer control program (as advocated by the World Health Organization) based on knowledge of the regional cancer pattern (where possible, via population-based registration) and the distribution of resources. It should also be integrated into the overall health plan. Where resources are particularly limited, the selection of a small group of (priority) programs in each of the areas of prevention, early detection, radiotherapy, surgery (where expertise is lacking), palliative care and if possible, chemotherapy (for at least one potentially curable disease) will provide an excellent foundation on which to build (Figure 2). Priority programs should be chosen on the basis of the incidence or frequency of preventable or curable cancers, and should include realistic goals. As time passes, and particularly if programs are successful, priorities may change. Maximal benefit is likely to be achieved when educational service and research elements are combined, and when multiple benefits are gained from each program, e.g., through providing information to accompanying family members, demonstrating successful programs to other professionals and trainees, and ensuring replication and dissemination to other parts of the country or region.

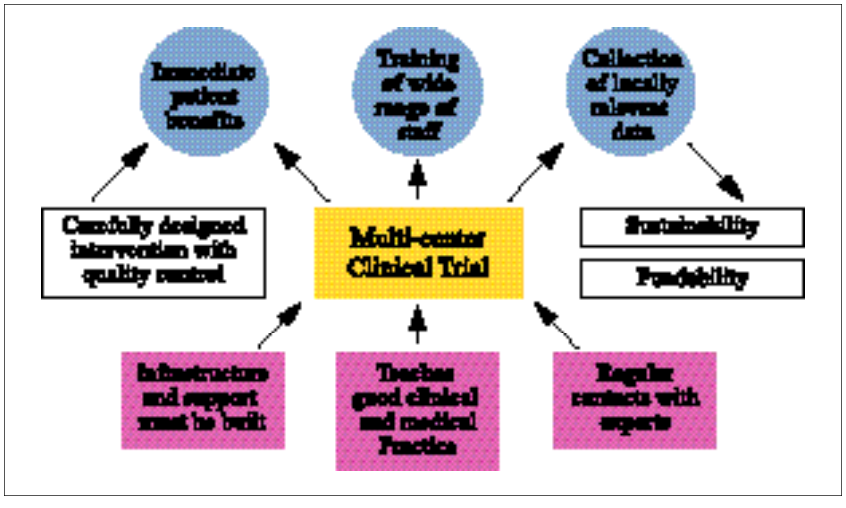

Figure 3. Clinical trials, particularly if multicentric, have multiple values beyond the specific research being undertaken. In addition to the "on-the-job" training for various staff members, physicians become more familiar with the scientific method that should inform their clinical practice. Finally, when research is combined with cancer prevention or management, patients derive immediate benefit.

The Importance of Clinical Trials

Regionally relevant research is an important element of cancer control, and clinical studies, including surveys, prevention and treatment trials, should be undertaken whenever possible, led by, or in collaboration with experienced clinical researchers - where necessary from outside organizations. Such trials, in their simplest form, consist of the disciplined application of appropriate treatment (or prevention) guidelines coupled to outcome measures, but may also include translational research elements. They should lead to an immediate improvement in patient management and provide a focus for "hands-on" training of a broad range of health professionals, not only in research - which is essential for the improved definition and solution of local problems, and stimulation of a more enquiring mind-set - but also in good medical practice (Figure 3). Where such trials involve multiple centers (cooperative groups) in the same or different countries, they also lead to sharing of available expertise and educational opportunities for young and experienced staff alike, and can be coupled with the creation of scientific resources, such as tissue banks. The desire for an enhanced professional reputation creates added incentives for improving the quality of care, and high-quality data provides a foundation of evidence relevant to national or regional problems on which to build ever more efficient cancer control strategies.

THE ROLE OF INFORMATION TECHNOLOGY

Modern information technology can enhance all aspects of communication, including consultations, education (e.g., through multi-disciplinary telemedicine conferences and a variety of e-learning tools), knowledge assessment, record keeping (including registration and clinical trials data management) and access to data and images. Information technology is inexpensive compared, for example, to imaging or radiotherapy equipment and in addition to increased efficiency and reduced costs (by decreasing time and staffing requirements) improves access to expertise (national or international) and information. It can also greatly improve the efficiency of patient tracking and follow up and through bar coded drugs or products and automatic label generation, improve treatment documentation and reduce errors in patient care.

DEVELOPING FINANCIAL SUPPORT

Few governments in developing countries can afford to support the construction of the required number of cancer centers, so that the necessary resources, at least in the short term, must largely come from elsewhere, such as non-profit, non-governmental organizations (e.g., INCTR), international organizations (e.g., the United Nations and its agencies), and foreign governments, Responsible corporations have an important role to play, since they provide products necessary for cancer control, and their interests are also served by increasing access to (i.e., use of) their products - ideally, through promoting education and training. All such outside organizations must work closely with local governments, institutions and organizations and must not automatically assume that "western" methods are best - planning must take account of social, economic and cultural differences as well as the resultant differences in the pattern of cancer. Alliances of organizations interested in cancer control and/or in promoting development may make valuable contributions. Truly global strategies may be possible when universally applicable preventive strategies exist (e.g., tobacco control, such as the *Global Tobacco Framework*, and vaccines against infections associated with cancer), and these may have multiple health benefits.

Developing countries tend not to have health insurance schemes, at least for the poorer members of society who can barely survive today, and consequently have limited ability to put aside resources for tomorrow. This must change, with means-based systems, and return on expenditure for the insured (e.g., education and screening) [2]. Successful prevention will, of course, render the insurance program more cost effective. Insurance schemes can also result in significant redistribution of health care costs, creating a more equitable sociopolitical environment, and reducing dependence upon external resources. Ideally, insurance should cover at least some of the costs of relevant research - which is justifiable on the basis of its potential for further reducing the cost of care.

EPILOGUE

One can only wonder whether the collective human mind will eventually learn to control its potentially fatal instinctive drive to compete violently with perceived "others" and instead, to devote more energy towards promoting its equally instinctive cooperative element, to the benefit of global security and the reduction of poverty, environmental degradation and disease. This will require a more inclusive sense of "us", and a real attempt to find ways to reverse the present gross (and increasing) inequities in the world, for these are the lifeblood of insecurity and conflict. Cancer is a common threat to the world's people, and as such will be more effectively addressed by concerted action. The 21st century holds great promise of ever more rapid scientific advance, and the discovery of highly effective, minimally toxic and less expensive approaches to the prevention, diagnosis and treatment of cancer. Developing countries, which account for 85% of the world's people and a continuously increasing fraction of its cancer, can contribute greatly to this process as well as benefit from it, and their exclusion, or incomplete participation, will be to the detriment of all. Such countries contain enormous reservoirs of human talent, and with their vast range of genetic and environmental patterns, provide unique opportunities for scientific research. Helping to building capacity for cancer prevention, treatment and research in such countries is the surest way to ensure that suffering and death from cancer throughout the world will be dramatically decreased in the coming years. ■

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ACCIS – AUTOMATED CHILDHOOD CANCER INFORMATION SYSTEM

In the European Union, about 1% of all cancers occur in children under 15 years of age, corresponding to a crude estimate of 11,000 new cases per year. Seventy-five percent of these now survive five years after diagnosis, although many will have long-term sequelae, in terms of physical, mental or reproductive impairment over their entire future life.

Childhood cancers represent a diverse spectrum of morphologic tumor types. Whilst over 80% of malignancies in adults are carcinomas, in childhood carcinomas account for less than 10% of tumors. The most common childhood tumor types are sarcomas (45%), leukemias (30%) and lymphomas (15%) [1,2] – (Figure 1). Presumably, the different morphology is a reflection of different histological origin and probably also of differences in aetiology.

An important obstacle in studying the aetiology of tumors in children is their rare occurrence. Due to uncertainty about the causes of cancer in childhood, preventive measures are largely nonexistent. Only studies covering large geographic areas or long time periods will result in sufficient numbers of cases being collected to have the necessary power to answer specific hypotheses of causality. It is the ambition of the Automated Childhood Cancer Information System (ACCIS) to provide the tools necessary to elucidate the reasons for geographical and temporal differences in the incidence of and survival from childhood cancer and thus help to reduce the burden of childhood cancer in the population.

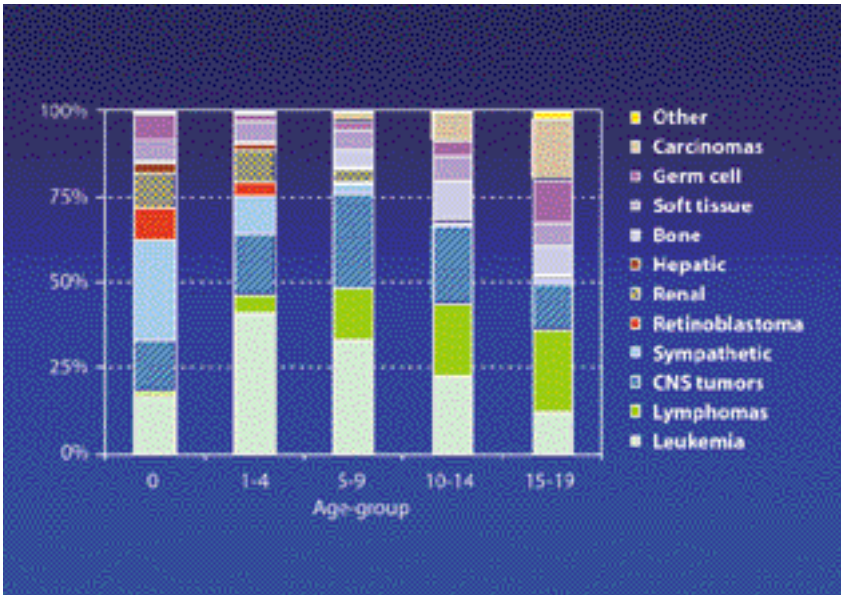

Figure 1. Proportionate age distribution of ICCC tumour groups. Europe, 1990s.

The aim of the ACCIS project is to collect, standardize, interpret and disseminate data on indicators of the cancer burden in the childhood population of Europe. These objectives are being achieved by three approaches (see pannel):

1. Construction of the ACCIS database containing information on incidence and survival of children with cancer in Europe.

2. Creation and maintenance of the Internet site, as a tool for wide distribution of information about the ACCIS project and collected data.

3. Analysis, evaluation, interpretation and dissemination of the collected data.

With some 160,000 cancer cases registered in Europe over the last 30 years and a population at risk of around 2.6 billion person-years, the ACCIS database is the largest database of young cancer patients in the world.

Eighty population-based cancer registries in 30 European countries have provided their data for the construction of the ACCIS database, which includes all cases of cancer occurring before the age of 20 (Figure 2).

Every registry provided a list of individual records of cancer cases with a standard set of variables. Received data were validated to limit the coding errors, to allow standard interpretation of the results and to evaluate the overall comparability of the datasets [3]. The categories of the International Classification of Childhood Cancer (ICCC) [1] are used to classify tumors and present the results. Survival time was calculated for registries with available follow-up [4].

The population data file contained the number of residents in the registration area in each calendar year of the reported period, by gender and age. All registries also completed a specific questionnaire, which provided the coordinating center with information on the registry and its registration and coding practices.

Figure 2. Contributors to the ACCIS database

The ACCIS Scientific Committee examined and commented on each dataset. Any issues that could influence the interpretation of the results were documented within the ACCIS database. The majority of the datasets were considered sufficiently comparable for display to the general public on the Internet site.

Using standard methods of data analysis [5], the incidence rates reported below are standardized to the World standard population. Observed five-year survival was calculated using the life-table method [4].

The incidence of childhood cancer in Europe in the 1990s reached 140 cases per million for children aged 0-14. Examination of the time trends has shown that the overall incidence has increased over the 30 years of observation, representing an increase of about 10% per decade in the total European rate.

Figure 3 shows that a rising trend is observed for the majority of tumor types, apart from a relatively stable incidence of retinoblastoma, renal and hepatic tumors. The decreasing trend seen for the "other and unspecified" tumors can be explained by improvements in diagnosis and registration, as a result of which these tumors are classified in more specific diagnostic groups.

Overall five-year survival for unselected childhood cancer patients diagnosed in Europe in the 1990s reaches almost 75%, with a clear difference being seen between the Eastern and Western European countries, in virtually all diagnostic groups (Figure 4).

An increase in survival over time is seen in all parts of Europe, whilst the differences in survival between the East and the West are diminishing relatively slowly. Despite these geographical differences, the overall survival of European children and adolescents has improved in all of the main diagnostic groups defined by ICCC, including the three major diagnostic groups – leukemias, lymphomas and CNS tumors.

The observations described here are based on good quality datasets, uniformly processed and analysed. More refined analyses are necessary in order to describe the observed patterns more precisely and to be able to generate conclusions and recommendations of importance to public health.

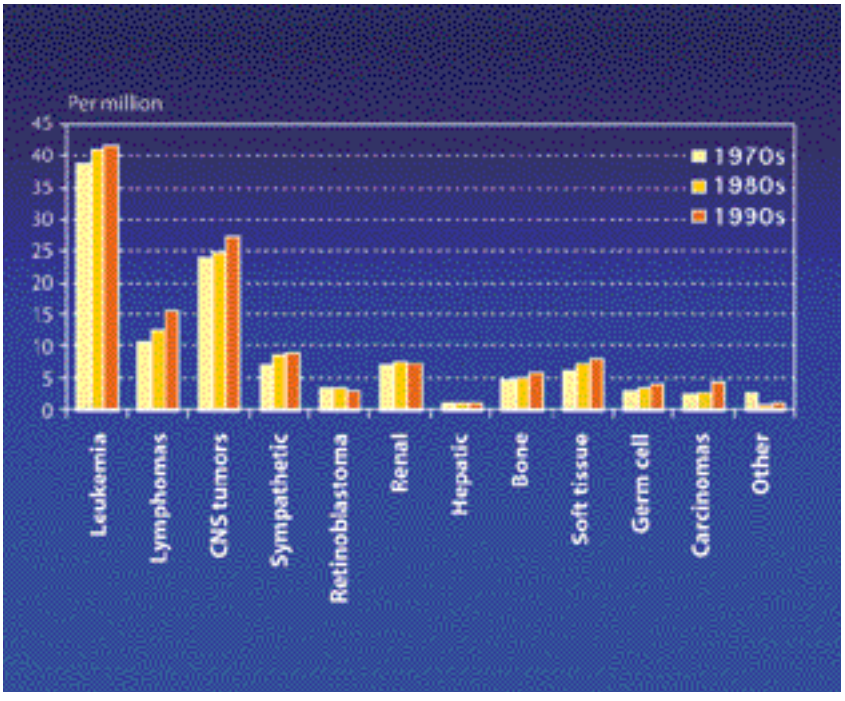

Figure 3. Time trends of cancer incidence in children (age 0-14). Age-standardized rates, Europe.

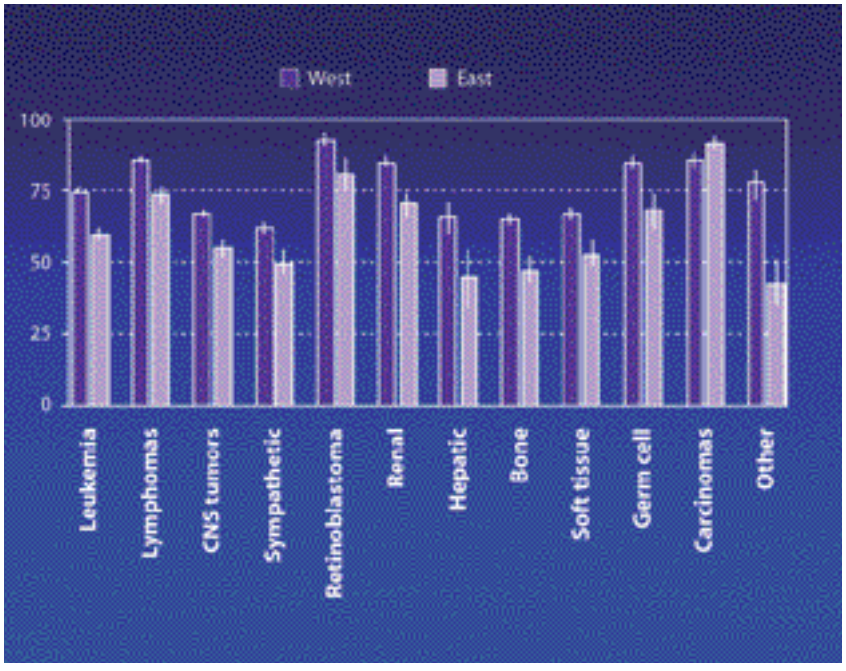

Figure 4. Five-year survival of children (age 0-14) diagnosed with cancer in different parts of Europe in 1990s. (95% confidence interval represeted by line sections).

An Internet site was developed to present the ACCIS project, display the criteria for contribution, give information about participants in the ACCIS study, provide links with other resources of data on childhood cancer and, most importantly, to disseminate data on childhood cancer incidence and survival and to give help in the interpretation of the results. The user is able to consult incidence rates and survival for childhood cancer by registry, country, ICCC diagnostic group and five-year age group. The tables are displayed in PDF format. The web page can be explored at the address: **http://www-dep.iarc.fr/accis.htm**

The ACCIS database was established with a view to being continuously updated. The database and all other aspects of the project will evolve to make full use of this precious data source. A natural development would be to incorporate data from the registries of other countries, especially those with sparse data, which is the case in developing countries. International differences between incidence rates would point to possible risk factors, while comparison of survival data would reflect differences in availability and delivery of health care. Population-based survival data are practically unavailable, to date, for childhood cancer patients in developing countries. The results of a comparison between Europe and developing countries could provide a powerful tool for the development of public health policies pertaining to childhood cancer in the less affluent nations. ■

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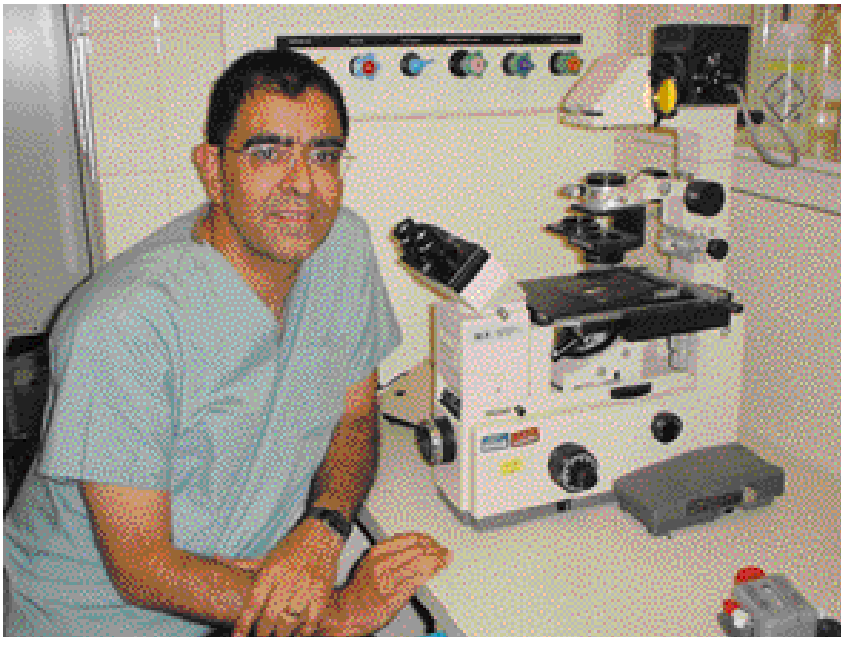
INDIVIDUAL & POPULATION TAILORED TREATMENT STRATEGIES FOR CANCER

Time and again medical specialists and cancer researchers have been confronted with the question – why is a certain patient with a known curable cancer not responding to conventional treatment or why did he suffer a relapse?

The simplest explanation for such differences must be that either the "unresponsive" cancer is in some way biologically different from the responsive cancer, or that the treatment given is not as effective in the patient who does badly, because of differences, for example, in the amount of effective drug that reaches the tumor. Perhaps there is no single answer to these questions and multiple factors contribute. Whatever the complexities, the variations in the biology, natural course and treatment of cancer are intriguing and challenging. Dissection of the causes of such variations will eventually provide the tools to offer curative regimens to individual patients, rather than using treatment derived from group studies, which give the best overall results, but which are clearly not optimal for all patients in the group. What we call cancer is in reality a group of diseases, each with one common property - the abnormal, and unbridled proliferation of cells which have escaped from normal control. With time, these abnormal cells also gain the potential to spread and survive in diverse tissue environments, i.e. to "metastasize" to various parts of the body.

Over the years, cancers have mostly been diagnosed and treated on the basis of their clinical and morphological features. Conventional treatments of cancer have revolved around the modalities of surgery, radiation and chemotherapy, used singly or in combination, according to clinical protocols. Treatment strategies for cancer have, until recently, been guided by experience based on morphological diagnosis and clinical trials of therapy conducted mostly in North America, Europe and Australia.

It became apparent that clinical (e.g. disease extent) and morphologic (i.e the appearance under the microscope) features could be used to classify cancers and to predict the likelihood of success with a given therapy. As we have gained additional tools to classify cancer, using for instance antibodies to identify variations in the expression of a limited panel of proteins, our ability to define "less responsive" malignancies among otherwise morphologically and clinically identical cancers has improved. Such analyses provided the preliminary insights that expression (or lack of expression) of specific genes in morphologically identical cancers may allow prediction of treatment failure. Since the behavior of a given cancer is dependent directly upon the profile of expression of its genes, it is likely that defining the expression profile of cancers will further sharpen classification, making it even more clinically relevant. Furthermore, it is now clear that cancers are ultimately the results of molecular genetic changes in normal cells that are responsible for altering the pattern of expression of proteins, and therefore creating the type of cellular behavior that we refer to as malignant (e.g. spreading to other parts of the body, constant accumulation of cells).



Kishor Bhatia, Director of the Research Center, King Fahd National Children's Cancer Center, and of INCTR's Translational Research Program.

Such strategies should allow the oncologist to choose regimens that are most appropriate for the genetic profile of the cancer, irrespective of the morphology. Should we assume that molecularly identical cancers in different patients within defined geographic populations respond similarly to a chosen treatment plan? There is increasing evidence that in addition to variation in the genetic profile of the tumor, the patient's own genetic make-up will also influence clinical outcome, be it response toxicity or long-term sequelae. Can we then presuppose that the treatment approaches standardized in one geographic population are ideal for other populations? Unfortunately there is evidence that would suggest that biological, and ultimately, molecular, differences may exist in morphologically identical cancers in diverse populations. This should provide the impetus to conduct studies on whether the fraction of clinically relevant subclasses differ geographically, since the overall response to therapy in any population will be influenced by the composition of the prevalent subclasses that are predictive of treatment outcome.

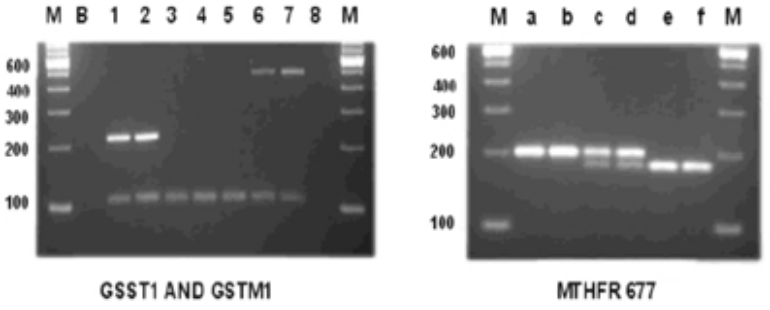
In the future, therapeutic strategies are more likely to be guided by study of the "molecular lesions" that cause cancer. Novel drugs are being developed that are specifically targeted against such lesions. Thus for devising cancer management plans, it may no longer be sufficient to define, for example, the total burden of breast cancer, but to assess the expression in the tumor cells of a particular protein (e.g "neu", a gene amplified in a subset of breast cancer, which, therefore, can be treated by strategies specifically targeting the expression of "neu"). It is clear that a shift is occurring from the use of systemic cytotoxic agents to tumor-specific therapies, and the practice of directly adopting treatments standardized in the West may need to be revised.

Rong Bu, a Chinese physician/scientist whose training in the King Fahd laboratory was initially supported by INCTR.

Another reason to revisit the above issue stems from gathering evidence that inter-individual variability in the metabolism of drugs can significantly modify their bioavailability, efficacy and toxicity. Even within defined geographic patient populations and using more or less uniform approaches to treatment and support of cancer, variation in clinical outcome has been documented.

In a recently published report from the US, racial and ethnic differences were noted in the survival of children with acute lymphoblastic leukemia treated with contemporary risk-based therapy [1]. Multivariate analysis showed that Asian children in the US had a better outcome in terms of survival compared with white, followed by Hispanic and black children. The authors speculate that one of the factors that would have contributed to the differential outcome is genetic variation in the metabolism of various chemotherapeutic drugs that exist in the study population, based on ethnic and racial lines. Several studies have shown that polymorphisms for genes responsible for drug metabolism influence drug disposition in the body. Genetic polymorphisms are defined as a variation (i.e a specific change in the coding sequence for the gene, rather like the misspelling of a word) in the DNA sequence at a given nucleotide position that is present in a small percentage (e.g., 1%) of the population (Fig. 1). These are called single nucleotide polymorphisms, or SNPs. There are more than three million SNPs described in the human genome.

Pharmacogenotyping of the individual (the detection of such SNPs) has become crucial in assessing the efficacy and toxicity of certain drugs [2]. Genetic differences in the metabolism of 6-mercaptopurine have been observed,



LEFT PANEL
Agarose gel electrophoresis of PCR products from a multiplex reaction. The presence of GSTT1 is shown in lanes 6 and 7 (480bp product). GSTM1 gene is seen in lanes 1 and 2 (230bp product). Beta-globin gene is co-amplified as an internal control (110bp band). Lanes 3,4 and 5 represent null genotypes. B = blank.

RIGHT PANEL
Agarose gel electrophoresis of HinfI- digested PCR products. MTHFR677C allele yields a 198bp band and MTHFR677T allele yields 175bp band (+23bp band not detected). Lanes a and b represent CC wild type genotype, lanes c and d represent CT heterozygotes and lanes e and f, TT mutant homozygotes.

M = molecular weight marker (sizes in bp are shown).

Figure 1. SNP analyses

due to varying levels or complete absence of an enzyme known as thiopurine methyltransferase in diverse ethnic populations. Similarly, several dozen genetic polymorphisms of drug-metabolizing enzymes have been identified, some of which involve metabolism of cancer drugs like fluorouracil, alkylating agents and anthracyclines [3].

There are also recent reports that drugs used in supportive care of cancer patients are also handled differently by individuals [4]. Those who have deletions or mutations of cytochrome P-450 enzymes have different responses to anti-emetic drugs like ondansetron. Thus the ultra-rapid metabolizers of the drug have more significant nausea and vomiting. SNPs have lately also been described for genes that encode erythropoetin and other colony-stimulating factors.

In the future, pharmacogenomics or pharmacogenetics will dictate which drug is best, and in what dose in a given individual, based on his/her genotypic profile. Integration of pharmacogenetic data into treatment strategies for cancer and supportive care is only a matter of time. Successful treatment of cancer will not only depend upon histological identification but also on complete molecular subtyping of the tumor and genotyping of the patient. It is also imperative that we move from mere adaptation of protocols/therapies established in the Euro-American arena to conducting clinical trials within defined geographic populations and selecting optimal treatment strategies for the combination of the molecular subtype of a cancer and the genotype of the population being treated. ■

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3. Eugene Y. Krynetski and William E. Evans. Pharmacogenetics of Cancer Therapy: Getting Personal. American Journal of Human Genetics 63: 11-16, 1998.
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NETWORK

INTERNATIONAL SPIRIT OF LIFE FOUNDATION

American entrepreneur Joseph R. Simone is accustomed to overcoming obstacles to his success. Founder and principal of Saratoga Food Group, a restaurant development company, Simone is particularly adept at developing and negotiating business deals for franchise and investor growth,and at spurring economic development and reform. Since being touched by cancer, Simone has turned that business acumen to a humanitarian purpose. If he has his way, as he has had in the business world, cancer's days are numbered as he pushes to raise public awareness, to support research initiatives, and to gather the missing clues from around the world that would enable scientists to better understand why some people get cancer and others do not.

The bottom line in Simone's business plan to fight cancer is to support the development of a cancer vaccine within the next three to five years. "We understand the basic causes," he says, "having identified 1,000 causes of 100 cancers. We know what drives cancer cells, how it spreads to other parts of the body, and in the small fraction of inherited cancers, how it is genetically passed on. We are learning more about cancer at the cellular level, learning more about better targeting of cellular markers of cancer in diagnosis and treatment. What we don't know yet is how to put the puzzle together. I'm reminded of the scientist who linked the discovery of rubber to the manufacture of tires; the tires didn't grow on the trees. The same thing holds true with cancer. We're not there yet. The hope is that we can fast-track this, to accumulate more information, more quickly, from a greater and broader population base, on an international level."

Simone, a two-time cancer survivor himself, works through the International Spirit of Life Foundation, an organization he and his wife, Merium Ann Simone, founded in 1999, two years before she was diagnosed with a rare and fatal liver cancer. His three-year-old grandson, Justin, has leukemia, and already has spent half his life in a hospital. After 15 years of dealing with cancer on a personal front, Simone is losing patience, but certainly not resolve. Along with his memory of wife Ann's courageous battle with cancer, he carries an impassioned drive to accelerate the pace to overcome cancer; to prevent, to stabilize and eventually to cure cancer. And he knows he can't do it alone. He finds strength for his resolve in the story of Ann's battle against cancer; a fight that paved the way for other, more successful outcomes. Yet, he says, had the liver cancer research being conducted at the time by Bayard Corp. in Europe been accelerated by as little as three months, his wife's cancer might have been stabilized. "Ann was the first woman to receive a stem-cell transplant for solid tumors," Simone recalls. "Doctors at the National Cancer Institute used stem cells donated by her brother James. It was a very daunting protocol with a lot of possible outcomes. Her passion and dedication to the cause of fighting cancer grew stronger as she battled the disease. She often expressed gratitude to her doctors for the privilege of participating in this new, uncertain protocol, as well as concern for others. In Ann's case the treatment was actually shrinking the tumor. But the stem cells were so overpowering that they attacked her system too, and she died of a massive cerebral hemorrhage on August 23, 2001, one month before the

Ann Simone selected the Spirit of Life statue, originally sculpted by Daniel Chester French, as the symbol for the organization. Simone says the statue embodies the vision, passion and courage his Foundation hopes to ignite in all cancer patients, their families and caregivers.

Merium Ann Simone

Foundation's third International Spirit of Life Awards Celebration." Her message, her commitment, her unselfish outlook live on, he says, as the International Spirit of Life Foundation ignites a global response to cancer.

The Washington DC-based organization is dedicated to kindling collaborative efforts to advance the prevention, treatment and management of cancer. The Foundation works in partnership with Washington Cancer Institute, a leading cancer center in the United States, to accelerate and heighten awareness of the disease and to foster a global exchange of information.

With the launching its first International Oncology Research Symposium this April, the Foundation seeks to provide participants with opportunities to share information about new models of clinical cancer care and prevention, and to grasp the powerful potential of a proposed web-based global information exchange program. INCTR and the International Spirit of Life Foundation are involved in efforts to develop the global portal for quicker assess to information, ongoing trials and treatments. Endeavoring to raise cancer awareness, each year the Foundation recognizes and celebrates the international achievements of those who make extraordinary contributions to the field of cancer.

Awards are given for distinguished service, cancer research, clinical care, philanthropy and advocacy. Among those recognized at the September 2003 celebration were former U.S. President George Bush and wife Barbara, Dr Elmer Huerta, an oncologist at the Washington Cancer Institute, and Dr Richard Klausner, former Director of NCI who is now Executive Director for Global Health at the Bill and Linda Gates Foundation.

In accepting the award, Klausner remarked: "The Spirit of Life Award represents incredible optimism that the improbable can become possible, and that the impossible can become real." Simone remains undaunted in the face of sobering predictions that the global incidence of cancer could double in the next 15 years, precipitating an economic calamity of staggering proportions. "For groups like us, we need to carry the message that time is of the essence. With genetic predispositions and environmental causes, we are seeing younger people with cancer. It's getting way out of control. Still I'm convinced the answer is out there, not in laboratories here in Washington but around the world." ■

Marcia Landskroener for INCTR

MEETINGS

PEDIATRIC UPDATES

Two INCTR pediatric oncology updates were held respectively in Dubai, on 4th and 5th October (jointly with Shaukat Khanum in the course of its Annual Meeting), and in Chongqing, China, on 21st November (as a component of the Chinese Pediatric Oncology Society's Annual Meeting). Approximately 50 people attended the meeting in Dubai, and 190, the meeting in Chongqing. Both workshops included presentations and discussions on the management of common pediatric neoplasms, the role of bone marrow transplantation, limb sparing surgery and palliative care, and were organized by Aziza Shad, Chairperson of INCTR's Education sub-committee on Pediatric Oncology. Both were also supported by the OIA,NCI.

Dr Shad also attended a meeting in Jordan to discuss an additional workshop in 2004 for the training of Jordanian and Iraqi pediatric oncologists.

REPORT OF WORKSHOPS AT THE NATIONAL CANCER INSTITUTE (NCI) CAIRO

A workshop on lymphoma and a meeting for cancer nurses were held concurrently at the NCI Cairo in October, 2003. From the outset, this represented a collaborative venture between the Egyptian and UK branches of the INCTR, with generous support from Dr Joe Harford, Director of the Office of International Affairs at the NCI, Bethesda, USA. Prior to the three-day meetings, Professor Ama Rohatiner, Director of INCTR (UK),

spent three days as a visiting professor working with Professor Hussein Khaled, Dean of the NCI, and the staff of the Department of Medical Oncology there.

Lymphoma Workshop

The Faculty comprised invited speakers from Europe and Egypt. The program encompassed molecular and translational aspects, as well as recent advances in the management of Hodgkin's Disease and non-Hodgkin's Lymphomas. The workshop was very well attended and the presentations and proffered papers engendered lively discussion, particularly about areas of controversy in clinical practice.

Cancer Nurses' Meeting

In parallel with the lymphoma workshop, a meeting to discuss recent developments in cancer nursing brought together senior nurses from the NCI and eight Egyptian cancer centers, as well as nurses from Bethlehem and Gaza City. The meeting was organized by Dr Nagwa Elkateb, Director of Nursing Institute at the NCI and Miss Claire Murrell, her counterpart at St Bartholomew's Hospital (SBH) in London. Presentations were made by senior nurses from SBH and from the Royal Marsden Hospital. The program included presentations on leukemia, lymphoma, breast cancer, supportive care and palliative care. Once more, there was much audience participation and discussion, both within the context of the formal talks and subsequently.

The success of these two meetings will strengthen collaboration between the INCTR and the NCI, Cairo, which will be hosting the INCTR 2004 Annual Meeting.

Lymphoma workshop's participants, Cairo, Egypt.

MEXICAN GROUP FOR RETINOBLASTOMA

Ian Magrath participated in the second meeting of the Grupo Mexicano de Retinoblastoma,which is being supported by INCTR. There was considerable enthusiasm for the progress made to date, and the group is preparing a manuscript for publication that includes data from many of the participating institutions.

MEETING OF AFRICAN ORGANIZATION FOR RESEARCH AND TRAINING IN CANCER (AORTIC)

INCTR staff participated in a meeting of AORTIC, which took place in Ghana on October 6th to 9th. The meeting was attended by many oncologists, pathologists, nurses and other health workers from many Sub-Saharan African countries. In addition to presentations relating to cancer in Africa, many discussion groups were held with a view to initiating projects in palliative care, treatment, epidemiology etc. The meeting was very successful, and INCTR expressed a willingness to work closely with AORTIC in the context of cancer in Africa. ■

VISITING EXPERTS

Stuart Brown visited Nepal twice in the last year accompanied on the latter occasion by two colleagues (palliative care specialists) from Canada in order to assess the needs for palliative care in the Kathmandu region. In the course of his second visit, from 28th October to 3rd November, Dr Brown visited the Tribhuvan Teaching Hospital, Hospice Nepal, Bhakatapur Cancer Center and Scheer Memorial Hospital, Banepa.

He also visited the Pain and Palliative Care Center in Calicut, India, which runs residential courses for palliative care throughout the year. In the course of this visit, Dr Brown and colleagues in Nepal developed a proposal for forming

a palliative care group in conjunction with INCTR's Nepalese branch to significantly boost the present rudimentary palliative care services in Nepal.

Ama Rohatiner, a medical oncologist, worked with physicians in the Dept. of Medical Oncology at the NCI, Cairo prior to the meetings there in October, attending multidisciplinary meetings and ward rounds.

Marty Malowar, an orthopedic surgeon from the Lombardi Cancer Center and Washington Cancer Institute, spent time in Shanghai in November, after the Pediatric Oncology update in China, discussing limb-sparing surgery. Dr Malowar was informed that limb-sparing surgical procedures (i.e., removal of a tumor in a limb and replacement by a prosthesis rather than amputating the limb) is not currently practiced in China. Dr Malowar is exploring possibilities of working with Chinese orthopedic surgeons to introduce this technique into some major Chinese cancer facilities. ■

TRAINING

INCTR arranged a five-day training course for two doctors, two social workers, and two members of NNCTR / INCTR, INCTR's branch in Nepal, in basic palliative care in Calicut, India, commencing on October 13th. ■

RECENT PUBLICATIONS

Gutierrez MI, Siraj AK, Bhargava M, Ozbek U, Banavali S, Chaudhary MA, El Solh H, Bhatia K. Concurrent methylation of multiple genes in childhood ALL: Correlation with phenotype and molecular subgroup. *Leukemia.* 2003 Sept; 17(9): 1845-50. ■

LETTER

PEDIATRIC ONCOLOGY WORSHOP IN CHONGQING, CHINA

Dear Prof. Ian Magrath,

With INCTR and your strong support, our National Pediatric Oncology meeting on November 21-23, 2003 has crown with success. 11 foreign experts from INCTR and New Zealand joined this meeting and make 14 presentations on various fields of Pediatric oncology and 14 Chinese experts made presentation on recent advance in Chinese pediatric oncology. In addition, 25 young pediatric oncologists made reports on their recent clinical and laboratory study results. As well as the VIP persons from the Chinese Academy of Engineering, the Mayor of Chongqing, Mr. Pen, also made very important speeches. All these speeches gave the participants a great encouragement. With these presentations, especially made by the Experts from INCTR, we fully understanding the recent advance in pediatric oncology in developed countries and gave us a great help. After presentation, our doctors discussed with the representatives from INCTR. Prof. Aziza Shad, Barry Anderson, Janet Franklin, the possibility of collaboration on Leukemia, Lymphoma and Osteosarcoma. The documents brought by Prof. Aziza Shad were distributed to the participants. They will make further study of these documents and will give me response within two months; then, I will report to you. In this meeting, 171 formal representatives from all corner of our country joined this meeting as well as 20 college students from Nepal. Prof. Malawer plans to stay in Shanghai for about 1 week and will discuss with the orthopedic surgeons in our hospital and make presentation in Shanghai and he is quite satisfactory to this Shanghai visit and we'll do our best to make him happy. I wish to get your suggestions on our further collaboration.

With the best wishes!

Sincerely yours

Prof. Yao-ping Wang. Nov, 26, 2003 ■

Drs Black - left center - & Harris - right center - meet Dr Kline, administrator - center - of Scheer Memorial Hospital.

NETWORK

INSTITUTO NACIONAL DE ENFERMEDADES NEOPLÁSICAS (INEN)

Historically, health care in Peru has not received the attention and funding required to adequately meet the needs of the population.

The Eduardo Cáceres Instituto Nacional de Enfermedades Neoplásicas.

This situation has not improved in recent years. With its citizens experiencing a high infant mortality rate, a life expectancy of around 50 years and a progressively deteriorating economy, Peru has not considered cancer to be a high priority within its health care arena. This sad scenario is exacerbated by uncontrolled growth of the population and unrealistic and out-moded health care policies. As a result, cancer in this developing nation has reached epidemic proportions.

Cancer is a serious public health problem that is the second-leading cause of death, responsible for 17% of the mortality in adults. If risk factors are not identified and appropriate interventions initiated, the problem will increase in magnitude. This is the reality that has to be tackled by the present administration of INEN, which was established in 1939 as the only institution in Peru exclusively dedicated to cancer. More than sixty years later, it remains the nation's only cancer institution.

The Institute was reorganized in 1952 under the leadership of a new Director, Eduardo Cáceres Graziani, M.D, after whom it is now named (see physician profile). He organized the medical services as specialized departments focused on organ or system-specific cancers (gynecologic, hematologic, etc.), and established the first residency program in cancer. The INEN has been affiliated with the Universidad Peruana "Cayetano Heredia" since 1966. The Organization of American States (OAS) has recognized our institution as having an appropriate educational program for the training of professionals in the care of cancer patients. During the 1970s INEN received government assistance, through a special tax on tobacco, to build a new hospital.

This new hospital, built on a 12-acre lot in Lima, began its operations in 1987 under the guidance of Dr. Luis Pinillos-Ashton, the first Director General.

Dr. Carlos Vallejos-Sologuren

Presently Dr. Carlos Vallejos-Sologuren occupies this position. Under his leadership, several important initiatives are being implemented to make the organization more efficient and cost-effective. The most pressing issues confronting the administration at this time are: sharing the responsibility for the care of the cancer patients with other medical centers in the city of Lima and other areas of the country, further developing education and prevention programs by emphasizing the detection of risk factors, and promoting research through the Institute's Division of Research and Education. INEN has signed agreements with several hospitals in Lima for the creation of Oncological Units, some of which have already begun to function.

The World Health Organization (WHO), through the International Agency for Research in Cancer (IARC), provided technical and financial assistance for the establishment of an Epidemiology and Cancer Registry Service. A nationwide program for the Control of Cervical Cancer of the Uterus has been in operation since 1972 through a Cytodiagnostic Center and the "Center for Research and Education Maes-Heller." Our patients also benefit from research protocols in cooperation with hospitals and universities from other countries, as well as research groups such as the Eastern Cooperative Oncology Group (ECOG), the Breast International Group (BIG), the European Organization for Research and Treatment of Cancer (EORTC), the European Society of Medical Oncology (ESMO) and the American Society of Clinical Oncology (ASCO). These important cooperative efforts allow our patients to benefit from state-of-the-art prevention, diagnosis and treatment programs.

INEN Organization

The General Director supervises the Executive Directors of Medicine, Surgery, Research, Education, and Specialized Care. The latter includes the Departments of Radiation Therapy, Radiodiagnosis and Laboratory, with support services for diagnosis and treatment. There are 112 staff physicians in 27 specialties.

Programs For Cancer Care

Management of Pediatric Cancer

INEN maintains a staff of internationally recognized physicians specialized in pediatric oncology. Within the hospital, an entire floor of the building is dedicated exclusively to pediatric cases. To get this far has taken a great deal of effort, and has included the raising of funds from the community through a special program called "Give with your Heart". The pediatric services include chemotherapy areas, infant care, invasive procedures and a small school, made necessary because of the long periods of hospitalization that are sometimes required.

Health Promotion and Cancer Control

At INEN we are constantly concerned about cancer prevention as well as cancer treatment. The Ministry of Health has supported the creation of a national prevention initiative, named "Program of Prevention and Control of Cancer in the Community." The purpose of this program is to educate the population in lifestyle behaviors that reduce the risk of cancer, with special emphasis on improved nutrition, genetic counseling, and control of infections that may lead to malignancies, such as the human papilloma virus, known to be associated with cancer of the cervix. We have also participated in national campaigns to promote the early detection of cancer.

We have agreements with two important hospitals in the metropolitan Lima area — Santa Rosa and Carrión. These hospitals have oncological units for detection, diagnosis and treatment of cancer. Furthermore they participate in the prevention programs devised by INEN. We have supported, with great enthusiasm, the creation of cancer institutes in two other regions of Peru. This will permit persons who live far away from Lima to receive the benefits of cancer treatment and prevention, and will relieve the pressure on our institution so that more time can be dedicated to research.

As part of our education and outreach efforts, we have updated our web page with a section designed for patients and others seeking information about cancer. We are also creating videos in VHS and DVD formats to be used by groups in the community that show interest in developing awareness about cancer.

We hope that all our efforts will be successful and will result in improved early detection and a better outcome of treatment, and most of all, that the population will participate in nationwide programs of prevention. ■

Carlos Vallejos-Sologuren
Instituto Nacional de Enfermedades Neoplásicas (INEN), Lima, Peru

STATISTICS FOR 2002

PATIENTS	
Hospitalizations	11,310
Outpatient consultations (total)	227,299
New patients	63,293
Follow up	133,452
Readmissions	30,514
SURGICAL OPERATIONS	
Major	6,361
Minor	4,463
PROCEDURES	
Minor invasive	8,158
Chemotherapy	25,551
Radiation Therapy	151,041
Colposcopy	3,063
Endoscopies	3,935
LABORATORY	
Number of tests	620,507
BED USE	
Number of beds	332
Average stay	7.6 days
Occupation percentage	80.9
Yield	45.2
Substitution interval	1-5
OUTCOMES	
Deaths	620
% Mortality	5.5
% Net mortality	3.3

PROFILES IN CANCER MEDICINE

EDUARDO CÁCERES

Peru's only cancer hospital now bears the name of a doctor who has devoted more than 40 years to fighting cancer. The Eduardo Cáceres Instituto Nacional de Enfermedades Neoplásicas in Lima, which he directed between 1952 and 1985, has evolved into a modern comprehensive cancer center with all the facilities for diagnosis, treatment and research. Yet he and his colleagues still struggle to keep up with a growing demand for cancer treatment and the need for qualified health professionals in Peru.

Inspired by one of the world's leading cancer surgeons who visited Peru in the late 1940s, the young medical student decided to follow a similar path. "George T. Pack's simple but deep way of thinking taught me a lot about my career," Cáceres recalls. "He influenced me deeply with the idea that cancer surgery is not a technique but a philosophy that can only be learned in a cancer hospital."

Cáceres would study with Pack at the Memorial Hospital for Cancer and Allied Diseases in New York before returning to Lima as Director and Chairman of the Department of Surgery, and as Chief of the Department of Breast, Bone and Mixed Tumors, at Instituto Nacional de Enfermedades Neoplásicas. He also was a professor of surgery at Cayetano Heredia University. Over the course of his career, Cáceres produced 124 scientific papers and 12 chapters in books related to oncology, and received several national and international honors, including the Gold Scalpel of the Peruvian Academy of Surgery, Peru's distinguished Amauta Award given by the Ministry of Education, and the Múcio Athayde Cancer Prize, given by the UICC in July 2000.

"I know that this cancer prize is an individual award, but I must emphasize that I was only the representative of a select group who had accompanied me in my journey in the fight against cancer during the last 40 years," Cáceres says modestly. "One man's efforts amount to very little and it would be a difficult task to make significant contributions by oneself."

The Prize, worth $100,000 US, recognizes the initiatives in cancer education, prevention, diagnosis and treatment his institution coordinates and conducts through epidemiological studies on the mechanisms of carcinogenesis and the development of scientific strategies for cancer control. Cáceres is using the prize money to develop a foundation for training in cancer epidemiology and cancer registries, with special emphasis in cancer among the poor.

Like most developing countries, Peru is experiencing a rise in cancer incidence, and most cancer patients there die of their disease. Between 1985 and 1997, Cáceres notes, cancer deaths increased from 6% to 24% of the total annual deaths in the developing world.

Fighting cancer in countries with limited resources requires projects with a rational and well-structured program of cancer control, he says, and an emphasis on setting priorities in cancer prevention, detection and treatment in the context of the resources available.

Cáceres perceives an acute shortage in several subspecialties such as radiotherapy, pathology and radiology throughout Latin America. "A decrease in the number of applicants for training in these disciplines is increasingly felt because of a lack of economic incentives under the present national health programs in most Latin American countries and because of the rapid sophistication and difficulties in obtaining equipment for private practice," he says. "Even those who are academically inclined and appointed to university posts continue their private practice because the salaries from universities are insufficient to support a family. Unfortunately, this inhibits the academic growth of the centers and the growth of the cancer education program."

Dr. Eduardo Cáceres

It is education that holds the greatest promise for cancer prevention and management, Cáceres insists, and international collaboration plays a critical role in sustaining that process.

"There is a consensus that greater efforts should be made to assist investigators from Latin America and the Caribbean to identify common research interests and research training needs, and to develop joint research projects." ■

Marcia Landskroener for INCTR