Rising to the challenge in the developing world

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Most cancer deaths are in the developing world and the problem is set to escalate, yet cancer has never received the attention given diseases such as AIDS and malaria. Equipping less-developed health systems with the resources and expertise needed for effective cancer control has been posed as the great challenge of this century.

Cancer is seen as a disease of richer nations because it is strongly associated with aging, and the age profile of the richer nations is high and getting older. The perception has been that, while developing countries face huge problems from malaria, childhood diseases, waterborne diseases and AIDS, cancer is a problem for the future when rising affluence will also allow it to be tackled.

The reality is somewhat different. Last year more than six million people died from cancer globally – twice as many as died from AIDS. More than half of new cases were in the developing world and by 2020 it is predicted by the World Health Organization (WHO) that developing countries will account for 60% of 15 million new cancer cases each year.

Because of the rising incidence, unmatched by adequate measures to prevent, detect or treat the disease, deaths in developing countries overtook those in industrialised countries in the early 1980s. By 2020 there will be three cancer deaths in developing countries for every one in an industrialised country.

The result of this mismatch between perception and reality is that relatively little attention is paid to the millions of people who die each year in developing countries from cancer, without treatment, pain relief or dignity. Indeed, statistics about those who live and die with cancer are not even properly collected.

Indraneel Mittra, director general and head of oncology at the Bhopal Memorial Hospital and Research Centre in India, points out that although the prevalence of cancer may be lower in developing countries, the sheer numbers of people mean that the burden of cancer is high. "With the control of infectious diseases and increased longevity, cancer will become a more

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WHO / P. VIROT

A nurse recycles surgical gloves for the oral cancer clinic at the Tata Memorial Hospital in Mumbai (Bombay), India.

"Guidelines drawn up in the West encourage developing countries to focus on the wrong problems"

and more important problem." A number of traditionally very poor countries have experienced improvements in living standards and life expectancy, at least for segments of the population, and lifestyle changes can bring changes in the pattern of disease.

Tobacco's biggest market

Smoking has been gaining ground in the developing world for three decades. In China two thirds of men smoke. Smoking-related deaths in China are around one million a year today, and expected to rise to two million a year in 2025 and three million a year by 2050. In 1998 a study by Bo-Qi Liu, Richard Peto and others, based on interviews with relatives of some of the one million men who died between 1986 and 1988, estimated that half of today's smokers will die from smoking-related diseases, including cancer. The study predicted that tobacco will kill about 100 million males who were then aged 0–29 unless smoking patterns change. More than a third of these deaths will be from cancer – 15% from lung cancer, and between 5% and 8% each from cancers of the oesophagus, stomach and liver.

Other lifestyle changes have had an effect. Mittra says: "Breast cancer is increasing everywhere especially in the developing world. It is connected with the emancipation of women. She starts to work outside the home; she delays having her first baby, has fewer children and shortens the period of lactation."

Cancer is destined to become the leading cause of premature death in developing countries. The Global Alliance for Cancer Control, set up in 2003 by the International Union Against Cancer (UICC) and WHO, said: "Action is required now in order to save millions of lives in future years; cancer as a problem

TABLE 1. THE TOP FIVE CANCERS (BY INCIDENCE) IN THE INDUSTRIALISED WORLD, SOUTH ASIA AND UGANDA (MALE/FEMALE)

Industrialised countries	South Asia	Uganda (male)	Uganda (female)
Breast	Cervix	Kaposi's sarcoma	Cervix
Prostate	Mouth/pharynx	Prostate	Breast
Colon	Breast	Oesophagus	Kaposi's sarcoma
Lung	Oesophagus	Liver	Oesophagus
Lymphoma	Lung	Stomach	Ovary

Source for industrialised countries and South Asia, Audit in Oncology in the Third World, in: *Cancer in developing countries* S. Tanneberger, F. Cavalli, F. Pannuti. Source for Uganda figures, *Cancer Incidence in Five Continents VII* (IARC 1997).

cannot be put off for action by future generations. The time to act is now."

However, the pattern of cancer in developing countries differs from that in richer countries. Diego Serraino, an epidemiologist from the Italian National Institute for Infectious Diseases, says that this variation makes it all the more important to collect information about cancer incidence and cancer mortality. In Nordic countries population-based cancer registries cover almost 100% of the population. In Italy the figure is about 20%. In Africa, registries cover less than 5% of the population, and there are not even accurate data on cancer deaths. "Cancer registration in developing countries is a public health priority," he said.

The eighth edition of *Cancer in Five Continents*, published in 2002 by the International Agency for Research on Cancer, reflects this weakness. It contains data from north America and from 27 European countries, but only from 14 countries in central and south America, 12 in Asia and just 9 in Africa.

Variations in the incidence of cancer can be seen from Table 1, showing the top five cancers in industrialised countries, South Asia and Uganda.

In Asia and Africa there is a much higher incidence of cancers related to viral infections, notably hepatitis B (HBV), human papilloma virus (HPV) and AIDS, which is associated with Kaposi's sarcoma and non-Hodgkin's lymphomas.

Virus-associated cancers, particularly cervical cancer in women, liver cancer, Kaposi's sarcoma and non-Hodgkin's lymphomas, represent the predominant cancer epidemic in Africa. Indeed Serraino says that vaccination against HBV and HPV would constitute the most important primary prevention methods of tackling cancer in Africa. A prophylactic HBV vaccine is available today which could reduce the incidence of liver cancer. Therapeutic and prophylactic HPV vaccines are under development and could be commercially available in as little as two years. Even in the absence of an HPV vaccine, cervical cancer can be largely prevented through screening.

Combatting fatalism

In developing countries cancer tends not to be seen as a disease that, given the services and resources, can be detected and treated. Lack of awareness and lack of treatment options lead to late presentation.

In Nigeria there are fewer than 100 practising oncologists in a population of 120 million people, with limited supplies of drugs and imaging equipment. Muheez Durosinmi, from Obafemi Awolowo University teaching hospital, says that external aid organisations have failed to prioritise cancer, although Nigeria is expected to have 500,000 new cancer cases a year by 2010. "Cancer is for the most part an incurable disease in Nigeria, but less because of the nature of cancer, and more because of the limited resources and lack of education of the population."

Writing in the Newsletter of the International Network for Cancer Treatment and Research, Durosinmi reviewed the management of 213 patients with Burkitt's lymphoma and found that "similar to most other cancers" a large majority presented very late and were unable to afford anti-cancer drugs. More than

three quarters of patients presented with advanced disease, 62% received less than the recommended number of cycles of chemotherapy, almost 78% failed to return for their outpatient visits. Perhaps unsurprisingly there was a survival rate of only 1.9%.

Adedoyin Adesanya, a surgeon at Lagos University Teaching Hospital, recalls that his patients had to use clean, transparent plastic bags as colostomy bags until a nurse in Scotland arranged for supplies of left-over colostomy bags to be sent to him on a regular basis. Adesanya can offer sphincter sparing surgery, but the necessary equipment is usually unavailable and many patients cannot finance their operations.

ELIGIO PAONI

Adedoyin Adesanya: Cancer surgery in Nigeria is constrained by lack of resources

Of course the world is not only divided between rich and poor countries. Within many countries there is a contrast between services available to the poor and the rich.

Many Latin American countries are trying to expand coverage to the population that traditionally has not been able to afford care. Chile, Cuba, Uruguay and Brazil all offer 100% public care for those who cannot afford to pay, while Bolivia meets 40% of the cost of treatment. Brazil only has an equivalent of US$74 per person per year to spend on health care, but still manages to enrol patients into Phase 1 and Phase 2 studies.

Ten hospitals in Latin America, covering Argentina, Bolivia, Brazil, Mexico, Peru and Venezuela are collaborating in the Latin America Childhood Oncology Project, seeing between them 500 child cancer cases a year. One initiative is to establish a register of extra ocular retinoblastoma, the second most frequent extra cranial solid tumour in Latin America. Many children who present for treatment have stage IV cancers and very poor rates of survival.

Fernando Negro, from the CEHTAC Haematology Centre in Buenos Aires, says that with greater public awareness and greater equity in health care, they can make a real difference to outcomes of childhood cancers. "Are we winning? I believe the answer is yes. More than 70% of childhood oncology cases can be cured in developed countries, less in developing countries. 30% of the population is less than 15 years old in Latin America. But there are many inequalities in health care."

Pain relief

One improvement in care that could be made globally without huge cost is pain relief.

Cuba is a poor country with a well developed health care system. Cancer is the second leading cause of death and Cuba has been providing palliative care through community doctors and their teams since 1993. Today, 60% of people who die, do so at home, and health professionals are being sensitised to further reduce the number of people who die unnecessarily in hospital. However, community-based care is hampered by lack of morphine and weaker opioids such as codeine.

This is not just a problem for Cuba – 80% of the world's consumption of opioids is by 20 of the world's richest countries.

This is only partly a funding issue, as morphine can be made cheaply from a powder.

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It is primarily a result of restrictions on drug use in a community setting and bureaucratic problems.

Opioids are classified as narcotic drugs regulated by international treaties and national drug control policies. However the International Narcotics Control Board and the WHO both report that opioids are not sufficiently available for medical purposes. Reasons include a low priority for pain management, exaggerated fears of addiction and overly restrictive national drug control policies. A WHO Report "Achieving Balance in National Opioids Control Policy" (WHO 2000) proposes a set of 16 guidelines for countries.

These state: "National drug control policies should recognize that opioids are absolutely necessary for medical care, in particular for relief of pain and suffering" (guideline 2), and "Governments should establish and promote a national cancer control programme that includes cancer pain relief and palliative care as a priority for health care resources" (guideline 13).

Oncologist Stephan Tanneberger, based in Bologna, Italy, says: "We have to bring the problem of lack of morphine to the attention of the people who make the decisions. It is a limitation on the dignity of human life."

Building local services

Perhaps lack of attention for pain relief reflects a general sense of fatalism that prevents cancer from being given sufficient priority. The International Network for Cancer Treatment and Research (INCTR), an NGO founded by the UICC and the Institut Pasteur in Brussels, assists developing countries through collaboration in research, education and training. Its president, Ian Magrath, says that it is essential for countries to build the capacity of cancer services to break a vicious cycle in which governments give a low priority to cancer treatment and patients present with advanced disease and die without acceptable care.

Magrath believes that training doctors from developing countries in western institutions can be counter-productive. Many never return home while others are demoralised on their return by lack of resources. He also believes that guidelines produced in western institutions encourage developing countries to focus on the wrong problems.

"I am not against guidelines because everyone needs to know how to do things properly but you have to do clinical research in each country. We are using evidence from Europe and the USA to develop guidelines for these countries. We assume that the disease is the same, but the genetics and lifestyle are different. Guidelines must be based on the evidence and where is the evidence from developing countries?"

Franco Cavalli, President elect of the UICC, favours twinning programmes between countries, so long as they build local expertise and do not promote inappropriate hi-tech solutions. The aim should be to create conditions for independence, rather than dependency, and to encourage a "research minded attitude".

This year, for the first time, cancer control will be on the agenda of the World Health Assembly, the Governing body of the WHO, when it meets in Geneva in May 2005. An executive board resolution highlights the need to reduce the levels of smoking in developing countries, detect and cure cervical cancer and develop methods of multidisciplinary management.

It calls on countries to work with the WHO to develop cancer control programmes tailored to their socio-economic context, by considering four types of cancer:

- Cancers that can be prevented by avoiding exposure to risk factors
- Cancers amenable to early detection and treatment, including oral, cervical, breast and prostate cancers
- Cancers that can be cured or where a patient's life can be significantly prolonged, such as childhood leukaemia
- Advanced cancers where the programme should focus on relief from pain and other symptoms and to improve the quality of life

Perhaps the biggest task for the WHO is to convince policy makers that investing in cancer prevention, detection, treatment and care represents good value for money, given the other pressures on developing countries. The message from those in the front line is that that they can do a lot, if they are given the tools.