Medicus Mundi Schweiz
Gesundheit für alle

MMS Bulletin #106
Chronische Krankheiten

Combined efforts are much needed

Cancer control opportunities in low- and middle-income countries

Von Hellen Gelband und Frank A. Sloan

Cancer is low on the health agendas of low- and middle-income countries (LMCs) even as other chronic diseases have begun to gain attention. Eleven million cases of cancer now occur annually worldwide, six million of them in LMCs. Five million deaths from cancer - one million more than deaths from AIDS - occur each year in LMCs (1). As the competing risk of infectious disease declines, cancer and other chronic diseases will move to the forefront as contributors to poor health, more so if LMCs adopt the unhealthy behaviors of high-income countries. Steps taken now - particularly in prevention - will be rewarded by curbing the growth in cancer rates. The priorities and programs of LMCs are deeply influenced by the "global health community" - public- and private-sector agencies and organizations that provide advice, assistance, services, and financial support for health. LMCs and the global community at large should be increasing resources proportionately for cancer and other chronic diseases, yet this has not happened to any noticeable degree.

Low- and middle-income countries include nations vastly different in resources, rates of economic growth, political and social conditions, and the state of health care services and infrastructure. In low-income countries, defined by the World Bank (2) as having a per capita gross national income less than 825 US$ in 2004, cancer control is minimal at best. In upper middle-income countries, with a gross national income per capita of 3,256 – 10,065 US$ in 2004, most of the population may have access to at least some cancer services.

The mix of cancers in different areas of the world varies by environment, geography, and standard of living. The rise in cigarette smoking has made lung cancer the most common cancer in men and overall in LMCs and high-income countries. Breast cancer is similarly the most common cancer in women everywhere. In LMCs, cancers of the stomach and liver are next most common in men, and cancers of the cervix and stomach in women. (3) Most cancers of the stomach, liver, and cervix are caused by infectious agents: the bacterium

Helicobacter pylori, hepatitis B and C viruses, and human papillomaviruses, respectively. In LMCs, 26 percent of all cancers are attributable directly to infectious agents; in high-income countries, the figure is about 8 percent. (4)

Cancer stage at the time of detection in LMCs is, on average, substantially further advanced than in wealthy countries. Patients in LMCs also tend to have co-morbidities that make recovery from cancer less likely than it is for patients in high-income countries.

Cancer control and cancer planning

Cancer control includes all activities and interventions intended to reduce the burden of cancer, either by reducing incidence or mortality, or by alleviating suffering. Prevention, early detection, diagnosis, treatment, psychosocial support, and palliative care are the components of cancer control. Surveillance and monitoring are also needed to understand the cancer burden, plan, and track progress. All aspects of cancer control require financial and human resources, including training and education to build the required human resource base, and information for the public to understand what they can do and the services available.

Not all of cancer control is conducted within the health care system. Many effective tobacco control interventions are legal and regulatory in nature. Making morphine available for pain control involves narcotics control authorities as well as the health care system. Other interventions are allied to parts of the health care system that are unrelated to cancer: vaccination against hepatitis B virus to prevent liver cancer is conducted by childhood immunization programs.

Deciding on national cancer control priorities is best done through national cancer control planning. A 2005 World Health Assembly resolution calls on all 192 WHO Member States to develop national cancer plans and programs. (5) Although cancer plans must eventually be embraced by government to be fully effective, they may be developed outside of government, for example, by NGOs. Regardless of the process, cancer planning must involve the full spectrum of stakeholders and interest groups. A process has been well described by WHO (6) with additional guidance from the International Union Against Cancer and other sources. The plan need not cover every aspect of cancer control. It might focus initially, for example on tobacco control and palliative care.

Prevention possibilities

Tobacco control. Globally, tobacco causes more premature deaths from cancer - and even greater numbers from other causes - than any other single agent. Experience in high-income countries and a few LMCs has shown that tobacco use and its impact can be reduced substantially through various policy measures. These include raising prices by increasing taxes, banning smoking in public places, banning advertising and promotion of tobacco products, requiring large and dramatic warnings, and counteradvertising to publicize the adverse effects of tobacco and the benefits of quitting. The top priority for cancer control is to convince the

world's 1.1 billion smokers (80 percent of whom live in LMCs) to quit: Cessation by today's smokers will lead to substantial health gains over the next five decades. Preventing children from starting smoking will have full benefits after 2050. (7)

Hepatitis B vaccination. Hepatitis B Virus causes (often with a co-factor) most cases of liver cancer, taking 500,000 lives each year globally. (8) A safe and effective HBV vaccine has been used in most high-income countries and many LMCs since the 1990s, yet vaccination coverage is poor in many countries with the highest rates of liver cancer. In 2001, fewer than 10 percent of babies in Southeast Asia and Africa - among the worst affected areas - were vaccinated against Hepatitis B Virus. (9)

Hepatitis B Virus vaccines costs less than $2 per person through UNICEF, which can be subsidized by the Global Alliance for Vaccines and Immunization. The future payoffs for Hepatitis B Virus vaccination and other scheduled immunizations are enormous; vaccination should remain as high on the cancer control agenda as it is on the child health agenda.

Vaccination cannot help the 360 million people worldwide who are currently infected with Hepatitis B Virus. However, limiting exposure to the most ubiquitous co-factor - aflatoxin - can substantially lower the risk of liver cancer. Contamination of stored grain by aflatoxin - a chemical produced by certain fungi under humid storage conditions - can be reduced by using low technology techniques such as drying crops in the sun, discarding moldy kernels, and storing crops in natural fiber sacks on wooden pallets. (10)

Cervical cancer screening and human papillomavirus vaccines. Nearly 300,000 women die from cervical cancer each year, 85 percent of them in LMCs. The cause is persistent infection with one of several strains of the human papillomavirus. (11) Improved living standards, effective treatment for cervical cancer, and screening using the Papanicolaou (Pap) smear are responsible for the steep decline in incidence and mortality from cervical cancer in high-income countries. Two strategies could transform cervical cancer control in LMCs: 1. vaccines to prevent human papillomavirus infection, and 2. screening methods that are more compatible with LMC resources and infrastructure than are Pap smear programs.

Vaccines against the most common carcinogenic strains of human papillomavirus have recently been marketed. Although the initial market is in affluent countries, the greatest impact of these vaccines will be in LMCs. The vaccines could prevent of hundreds of thousands of deaths every year, starting several decades after establishment of a vaccination program. Governments and the international health community should take concrete steps now to develop human papillomavirus immunization policies and the means to pay for what is currently an expensive vaccine. However for pre-vaccination generations of women, the vaccines cannot help.

Diagnosis, treatment, and psychosocial support

Most people in low-income countries have no access to curative cancer treatment. In middle-income countries, services are variable but limited. Where few or no services exist, the emphasis should be on establishing a core of expertise and limited cancer management that can be expanded as resources permit. Where some services are available but resources are stretched or inadequate, the emphases should be: 1. ensuring that the most appropriate and cost-effective measures are provided in well-equipped medical institutions, and futile treatments are avoided, and 2. ensuring that services can expand with available resources.

People with cancer and those around them benefit from psychosocial support - from healthcare professionals and lay people - to deal with the physical, psychological, and social impacts of the disease, regardless of other aspects of treatment. Psychosocial support can commence at diagnosis and continue through treatment and recovery or death.

Resource-level-appropriate treatment for curable cancers. The concept of "resource-level appropriateness" recognizes that more than one intervention may be effective for curable cancers. The most appropriate choice for an LMC may not be the current choice in New York or Paris. For example, breast-conserving surgery for early-stage breast cancer requires treatment with radiotherapy. If radiotherapy is not available, more extensive surgery may also be life saving, while maintaining a good quality of life. The range of choices is not always available, however. A major exception is a recent, highly innovative effort, the Breast Health Global Initiative, which is an international collaboration initiated by an American breast surgeon, with a wide range of partners from high-income countries and LMCs. Breast Health Global Initiative has produced a comprehensive set of resource-specific, stage-specific evidence-based guide¬lines, which will be updated biannually, for all aspects of breast cancer management. (12)

The Breast Health Global Initiative model could be applied to other common cancers for which highly effective treatments are available, for example cancers of the cervix, head and neck, and colon and rectum. Common cancers of children and young adults - leukemias and lymphomas, retinoblastoma, and testicular cancer - are also highly curable, and would benefit from this type of focus.

Cancer "Centers of Excellence." Providing guidelines for cancer diagnosis and treatment is of no benefit without a medical professionals who can apply them. Countries should consider supporting at least one well-functioning cancer center where patients can go for diagnosis, treatment, palliation, and psychosocial services. The center should also conduct locally relevant research. Even with limited capacity, such centers can act as focal points for national cancer control and as points of contact for the international community. The center may be as small as a unit in a hospital, offering selected treatments. In countries where cancer centers already exist, enhancing the functions of one or more centers may be most appropriate.

Financing for cancer centers LMCs can come from a variety of public and private sources, including taxes on tobacco products. International support is available, including the Programme of Action for Cancer Therapy (PACT), a relatively new initiative of the

International Atomic Energy Agency. (13) The Programme of Action for Cancer Therapy is expanding to all aspects of cancer management from a 25-year history of support for radiotherapy. The program is attracting collaborators from U.N. Member States and others and is likely to be a major source of new and upgraded cancer centers for at least the next decade.

Institutional twinning involves long-term pairings of established cancer centers, mainly in high-income countries, with new or existing centers in LMCs. Successful twinning programs involve regular exchanges of information and often personnel, attention to funding (although not necessarily money flowing from the high-income partner), training, and technical issues. The oncology community is well organized in affluent countries and has the capacity to help to organize twinning programs.

A special opportunity and responsibility is the treatment of children and young people with highly curable cancers. The total numbers are small compared with cancers in adults - approximately 160,000 children and young adults get cancer every year, worldwide. (14) Currently, 80 percent of U.S. children under age 15 with cancer are cured, but 80 percent of the world's children who develop cancer live in countries where most have no access to treatment.

Palliative care. Late diagnosis of most cancers in LMCs and a lack of treatment options makes palliative care even more important. The cornerstone of palliative care is pain control with oral morphine or other strong opioid analgesics. These medications are largely unavailable in LMCs. In addition to medication, palliative care involves a range of services to relieve and manage symptoms and provide psychosocial support to patients and families in their communities. The two major obstacles to palliative care in LMCs are: 1. the irrational fear of opioids that continues to exist among policy makers, regulators, law enforcement, health professionals; and 2. lack of programs to deliver palliative care at the community level. Both have been overcome in some LMCs, however, demonstrating that it is possible. (15)

Surveillance and monitoring

Few LMCs have accurate data about their cancer burden or major risk factors for cancer. Estimates of cancer incidence and mortality by cancer type, age, and gender have been produced for every country by the International Agency for Research on Cancer. These estimates are useful for setting initial priorities, but not for tracking progress or defining priorities.

Major improvements in vital and health statistics are long-term goals, but over the short term, modest improvements can be made. It is relatively inexpensive to gather information on the major risk factors for cancer and other noncommunicable diseases in periodic cross-sectional surveys. WHO has developed standardized survey instruments in STEPS, a Stepwise Approach to Chronic Disease Risk Factor Surveillance. (16)

Gathering national mortality data is a much more ambitious undertaking. In low-income countries, many people die without medical care or a death certificate, so medical records cannot support such a system. Systems using "verbal autopsies" can be developed in place of medical certification, as has been demonstrated in India's Million Death Study. (17)

Longitudinal studies of chronic disease risk factors and causes of death involving in total several million people have been initiated as collaborations between researchers in LMCs and high-income countries, with early results from China, India, and Mexico. (18) After initial interviews and measurements, households are revisited periodically to record vital status, and participants are resurveyed every few years.

Finally, cancer registries that record cancer cases and outcomes - in specific hospitals, or more usefully, in defined geographic areas - are important for understanding local cancer patterns. Registries require sustained commitments and trained personnel, which are most feasible in urban areas where diagnosis and treatment are available.

The role of the global community

Cancer control will not advance in LMCs without support from the global health community. Multilateral and bilateral aid agencies, foundations and other philanthropies, professional organizations and the academic community, all have roles to play in developing the global cancer control agenda, working with countries to prioritize and plan next steps, and providing resources to carry out plans. With a few exceptions, cancer control has had little support compared with efforts for infectious and nutritional diseases.

So far, cancer-specific organizations have promoted cancer control in LMCs. WHO's small cancer program has continued to provide guidance and other parts of WHO headquarters have taken up specific cancers or types of exposures. The International Agency for Research on Cancer has led in defining the causes of cancer and in surveillance, largely to the benefit of high-income countries, but increasingly for LMCs. The voluntary International Union Against Cancer, largely devoted to cancer control and advocacy in resource-rich countries, has become more active in LMCs in recent years. The broader global health community has, by and large, not followed.

Burgeoning global health programs at universities around the world are also untapped resources for cancer control. Efforts to inform faculty and administrators are needed to make them aware of projects in cancer control, in addition to the traditional emphases on infectious and nutritional diseases. Cancer centers in the United States and other wealthy countries also may not be aware of opportunities for twinning and other collaborations in LMCs.

**Hellen Gelband directed the Institute of Medicine study on Cancer Control in Low- and Middle-Income Countries. She is currently a scholar-in-residence at Institute of Medicine and a project director at Resources for the Future in Washington, D.C. Contact: HGelband@nas.edu. Frank A. Sloan chaired the*

Institute of Medicine committee on Cancer Control in Low- and Middle-Income Countries. He is Professor of Health Policy and Management and Professor of Economics at Duke University, and directs the Duke Center for Health Policy, Law and Management.

This paper is taken from the report "Cancer Control Opportunities in Low- and Middle-Income Countries" of the U.S. Institute of Medicine (IOM) of the National Academies. The report was sponsored by the National Cancer Institute and the American Cancer Society, organizations with strong interests in global cancer control. The recommendations were arrived at by consensus of the committee of international experts responsible for the report. The report can be ordered through the National Academies Press (www.nap.edu). It can be downloaded free of charge in Low- and Middle-Income Countries.

References

1. World Health Organization. 2006. Revised Global Burden of Disease (GBD) 2002 Estimates: www.who.int/healthinfo/bodgbd2002revised/en/index/html.
2. World Bank. 2005. World Development Indicators 2005. Washington, D.C. World Bank.
3. Parkin DM. 2005. The global health burden of infection-associated cancers in the year 2002. International Journal of Cancer 118(12): 3030-3044.
4. Parkin DM, Bray F, Ferlay J, Pisani P. 2005. Global cancer statistics, 2002. Ca: A Cancer Journal for Clinicians 55(2): 74-108.
5. World Health Assembly 2005. Cancer Prevention and Control. WHA 58.22.
6. World Health Organization. 2002. National Cancer Control Programmes: Policies and Managerial Guidelines. 2nd ed. Geneva, Switzerland: World Health Organization.
7. Jha P, Chaloupka F, Moore J et al. 2006. Tobacco addiction. In Jamison DT, Breman JG, Measham AR et al., eds. Disease Control Priorities in Developing Countries. 2nd ed. New York: Oxford University Press.
8. Lavanchy D. 2004. Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures. Journal of Viral Hepatitis 11(2): 97-107.
9. Centers for Disease Control and Prevention. 2003. Progress toward universal childhood hepatitis B vaccination, 2003. Morbidity & Mortality Weekly Report 52(36): 868-870.
10. Hall AJ, Wild CP. Liver cancer in low- and middle-income countries. BMJ 326(7397): 994-995.
11. Bosch FX, Lorincz A, Muñoz N et al. 2002. The causal relation between human papillomavirus and cervical cancer. Journal of Clinical Pathology. 55(4): 244-265.
12. Anderson BO, Shyyan R, Eniu AE et al. 2006. Breast cancer in limited-resource countries: An overview of the Breast Health Global Initiative 2005 guidelines. Breast Journal 12(Suppl1): S5-S13.
13. International Atomic Energy Agency. 2004. Programme of Action for Cancer Therapy: Report by the Director General to the Board of Governors. Vienna, Austria: IAEA.
14. International Agency for Research on Cancer. 2004. GLOBOCAN 2002. Lyon, France: IARC.

15. Foley KM, Wagner JL, Joranson DE, Gelband H. 2006. Pain control for people with cancer and AIDS. In Jamison DT, Breman JG, Measham AR et al., eds. Disease Control Priorities in Developing Countries. 2nd ed. New York: Oxford University Press.
16. Bonita R, de Courten M, Dwyer T et al. 2001. Surveillance of Risk Factors for Noncommunicable Diseases: The WHO STEPwise Approach. Summary. Geneva, Switzerland: WHO.
17. Jha P, Gajalakshmi V, Gupta PC et al. 2006. Prospective study of one million deaths in India: Rationale, design and validation of results. PloS 3(2):e18.
18. Clinical Trial Service Unit, University of Oxford. 2006. Need for Large-Scale Observational Epidemiology. [Online]. Available: www.ctsu.ox.ac.uk/projects/observational.shtml#rp.

Kontakt

Deutschschweiz
Medicus Mundi Schweiz
Murbacherstrasse 34
CH-4056 Basel
Tel. +41 61 383 18 10
info@medicusmundi.ch

Suisse romande
Medicus Mundi Suisse
Rue de Varembé 1
CH-1202 Genève
Tél. +41 22 920 08 08
contact@medicusmundi.ch

Bankverbindung
Basler Kantonalbank, Aeschen, 4002 Basel
Medicus Mundi Schweiz, 4056 Basel
IBAN: CH40 0077 0016 0516 9903 5
BIC: BKBBCHBBXXX