



Cancer control: life and death in an unequal world

*S.B. Sutcliffe BSc MD**

Cancer and non-communicable diseases (NCDs) sharing common causal risk factors are not under control. Of 57 million deaths worldwide in 2009, cancer and NCDs (diabetes, mental illness, and heart and pulmonary diseases) caused 36 million, or almost 65%. Among 12.9 million patients with new cases of cancer, 7.6 million died of their disease (approaching 60%)¹. By 2030, 27 million new cases of cancer will have been recorded, along with 17 million deaths—again, almost 65%. During the same period, 80% of all deaths (52 million) will be caused by NCDs.

The lives lost prematurely to cancer will not be equally shared by the world's nations. In 1990, the developed and developing nations shared the global burden of cancer equally, but by 2020, developing countries are expected to be experiencing almost a doubling of their share of cancer incidence (9.9 million compared with 5.5 million in industrialized countries), with a proportion of deaths ranging from 150% to 180% higher than that seen in the developed world². Notwithstanding the belief that cancer and NCDs are “problems of the rich,” compared with the infectious, communicable, and maternal–fetal “problems of the poor,” 70% of the global burden of cancer and NCDs will, by 2030, be borne by the developing world—those with the least capability and capacity to respond.

The World Economic Forum estimates that the five major NCDs (cancer, diabetes, mental illness, and heart and pulmonary diseases) will cost US\$47 trillion over the next 20 years. The cost associated with new cancer cases in 2009 was estimated at US\$286 billion, composed of both direct (medical care) and indirect (lost productivity, etc.) costs, emphasizing the personal, family, community, and socioeconomic burden imposed by cancer and NCDs³.

Why is this happening?

The answer is that the world's population is increasing and aging, and cancer and NCDs are problems of older people. In short, as nations evolve through the demographic transition of high birth rate, high death rate, premature death largely from communicable illness, large proportions of young people in the population, and low indices of human development, to that of lower death rates, lower birth rates, avoidance of premature deaths from control of communicable diseases, a higher proportion of aging adults in the population, and higher indices of human development, cancer and NCDs become the dominant causes of disability and death in the population. This is the price paid for growing old if no commensurate attention is given to addressing the social, environmental, and economic determinants of health. The challenge is not solely to achieve a longer life; it is to ensure a good life preceding a good death⁴.

The statistics of global cancer and NCDs are so large that they almost defy comprehension. Furthermore, many have little understanding of how “unequal” the cancer and NCD challenge will be. The developing world is not “like” the developed world and does not share the same opportunities to respond. Retired General Romeo Dallaire (in reference to the Canadian Forces Peace Support Training Center) wrote that, if the world's population were to be represented by 100 people, 57 would live in Asia, 6 would have 57% of the world's wealth and live in the Americas, 70 would not be able to read or write, 1 would have a college or university education, 50 would be malnourished, 35 would not have access to safe drinking water, and 80 would live in substandard accommodation⁵.

So cancer is not under control. The problem is big; will get bigger; will affect nations unequally, prejudicing those with the least ability to respond; and will have enormous societal and economic consequences. However, this situation is not the problem, it is a reality. The real challenge is “What we are going to do about it,” because quite clearly, “more of the same” will be an inadequate, insufficient, and ineffective response.

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What would a better response to the challenge of cancer (and NCDs) look like?

The idea of controlling cancer and NCDs is daunting. These complex conditions have multifactorial causes, including both genetic and environmental influences. Those causes, and the resulting pathogenesis and expression, are variable and variably understood, and treatments are frequently of limited applicability and long-term benefit. Notwithstanding, health outcomes in the more “Westernized” countries have improved largely as a result of the control of communicable diseases and the promotion of healthful environments. Many diseases have been controlled without either a clear knowledge of cause or of effective treatment (for example, scurvy, smallpox, and polio, among others). Indeed, in England, one quarter of the population mortality from tuberculosis had resolved before the discovery of the tubercle bacillus, and three quarters of its mortality had disappeared before the first effective antibiotic, streptomycin, was introduced. Many illnesses have been addressed through concerted social, political, and collaborative action, even though treatment of established disease may be limited (for example, river blindness, dracunculosis, hepatitis, and so on) ⁶. Those examples illustrate principles underlying the control of illness at a population level. The concept of controlling disease has to be understood in the context of the prevailing health state and needs of the population (integration of public health and medical management):

- Action is undertaken in a “systems” manner, through approaches to prevention, early detection, treatment, support, surveillance, and palliation across home, community, and hospital sectors.
- “Gaps” in knowledge can be addressed through alignment of research to care.
- Priorities are determined according to need, impact, and value of interventions.
- Capacity for disease control is created in relation to population need.
- Interventional services have defined standards of care applicable to the population in need (mitigating disparities in access for underserved populations).
- Care must be integrated across health providers and care environments.
- Interventions must be sustainable and be effectively governed and managed.
- Health interventions must be evaluated and reported.

To this point, a case has been presented for a different level of mobilization to control cancer (and NCDs sharing common risk factors), to undertake that mobilization within a framework that recognizes both health promotion and maintenance, and to apply principles that address disease control from a combined population, societal, and health systems perspective. That statement may sound “theoretical

and idealistic,” but, in reality, it applies across all resource settings (low, middle, and high) even though the priorities and levels of application may well differ according to ambient resource availability.

Given the foregoing articulation of purpose (why action is needed) and principles (the context in which actions need to be considered), the next steps are “what needs to be done” (the content of the interventions), “how does it need to be done” (the process of the interventions), and “who needs to be engaged” (the relationships that underlie collaborative collective action).

To state that a strategic plan for cancer control must be set in place is a necessary but insufficient step. In essence, all strategic plans for cancer control are very similar whether presented by nations with an annual per-capita gross domestic product or average income of more than US\$30,000 or less than US\$500. Among member states of the World Health Organization, elements of cancer control plans are in place for 35%–75% of nations (from low, low-middle, upper-middle, and high resource groupings according to World Bank definitions). Within that range, even more variation is evident in the availability of certain elements of population-based cancer control, with the rates being lowest for accessible third-party coverage, home-based care, palliative and end-of-life care, screening (organized early detection programs), and explicit standard-of-care guidelines, particularly in low- and low-and-middle-income countries (Table 1) ⁷. Indeed, the content of national cancer (and NCD) plans need not be confined to experiences with cancer. A good example is HIV/AIDS, the *Declaration of Commitment on HIV/AIDS* adopted by the United Nations General Assembly during the 26th special session (June 27, 2001), and the ensuing collective action to address the HIV/AIDS pandemic. Following from that experience, Venkat Narayam and colleagues identified five underlying themes integral to the mobilization of an effective response to a global health or illness challenge (abstracted from Narayam *et al.* ⁸):

1. Good surveillance systems for the disease and its risk factors are crucial for measuring the magnitude of the problem and its associated costs and for evaluating the effects of policy and practice interventions.
2. Serious commitments to basic and applied research are essential (given the overwhelming burden of cancer and NCDs in the developing world), and those commitments must be contextually appropriate to the realities of the setting.
3. Combatting cancer and NCDs will require concerted action to advance science-driven public health interventions (across national boundaries, across broad public policy, and across diseases) that facilitate healthier living in parallel, and aligned with, policies to manage illness.

TABLE 1 Elements of population-based cancer control among member states of the World Health Organization, according to resource setting

<i>Variable</i>	<i>World Bank GDP/income groupings (%)</i>			
	<i>Low</i>	<i>Low–Mid</i>	<i>Upper–Mid</i>	<i>High</i>
Presence of a national cancer and non-communicable disease (NCD) plan	35	55	60	75
Social or private health insurance coverage for cancer or NCDs	35	50	50	85
Accessibility to care and treatment by health insurance coverage	24	45	64	88
Element of a plan as part of the primary health care system:				
Primary prevention	68	83	93	93
Risk factor detection	50	70	90	93
Risk factors and disease management	62	74	95	91
Support for self-help and care	38	55	66	74
Home-based care	25	41	52	74
Availability of services in the public sector:				
Chemotherapy	37	47	71	85
Palliative/end of life	22	15	57	76
Availability of cancer services in primary care:				
Cervical cytology	20	43	89	83
Visual inspection of cervix with acetic acid	12	23	34	30
Breast self examination	54	74	93	87
Mammography	7	17	64	72
Availability of oral morphine	29	25	57	80
Prevalence of fully implemented, approved, evidence-based guidelines, protocols, or standards for management of cancer and NCDs	10	15–20	20–38	20–50

GDP = gross domestic product.

4. Delivery and financing models for integrated health systems that align resources with population need—that is, interventions for early diagnosis and “curative” treatments across a number of disease states, and deployment of alternative models of care and “task shifting” amenable to detection, diagnosis, treatment, compliance, and surveillance in limited-resource settings—must be prioritized. The establishment of synergies between care strategies for AIDS and for early detection of cervical cancer (or, potentially, other preclinical or precursor states for NCDs) presents a strategic opportunity to strengthen health systems and to provide more effective management of chronic diseases^{9,10}.
5. Societal engagement is vital. That is, effective programs must engage affected communities and harness goodwill and support from all relevant stakeholders, including those with knowledge and resources both within and outside the purview of the cancer/NCD control plans of nations.

In practice, the intent is to place “what we know” (often determined in controlled evidence-based academic settings) into “what we do,” more

commonly, the uncontrolled community and population settings in which practice-based knowledge and reality commonly challenge the transfer of scientific knowledge to policy and application¹¹. Not uncommonly, the transfer of knowledge is equated with “collaborations,” without the concomitant realization that collaboration requires commitment of time and resources, leadership, trust, and a willingness to establish a common goal even when it might require compromise to individual or institutional goals and aspirations¹². In addition, just because the evidence has been established within high-resource academic domains does not mean that it is automatically embraced with enthusiasm by those in community clinical practice or lower-resource domains. The “push” of science and evidence must be “welcomed” by the “pull” of patient and community need for practice change within the contextual realities of the situation¹³.

Finally, the issues of self-sufficiency in health care provision—that is, services within available self-determined resources—and of sustainability need to be recognized. Both are rooted in present and future projected resources (fiscal, facility, technical,

and human), level of need, expectation or entitlement (or both), productivity of the services provided, mechanisms for payment of services (personal, private, public), and financing mechanisms (public funds, philanthropy, nongovernmental organizations, charities, foreign aid). Clearly, what “works” in a high-resource country cannot be transposed to an environment of lesser resources. What “works” needs to fit within the resources available in a country in a sustainable long-term manner.

What is also clear is that what is “apparently working” in high-resource countries is not sustainable if the means of practice continue unchanged, when discretionary spending at the pace of expectation, entitlement, technology development, medical necessity, and scientific possibility greatly exceeds revenue growth and far outstrips the nondiscretionary impacts of population growth, aging, and cost of living¹⁴. Thus, the way in which resources are allocated for health in high-resource nations is not only impractical for lesser-resource nations, but also untenable for high-resource nations. This situation underlies the imperative to redefine “affordable, sustainable health care for all” that is underpinned in “value”: the most effective use of resources to achieve optimal outcomes. In doing so, the “unequal” parts of the world may, indeed, have a leadership role in exploring alternative ways of providing and delivering care, more through the necessity of managing the burden of cancer and NCDs than as recipients of practices evolved in high-resource settings that are no longer tenable in today’s global reality.

CONFLICT OF INTEREST DISCLOSURES

SBS has no financial conflicts of interest to declare in relation to the present manuscript.

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Correspondence to: Simon B. Sutcliffe, Terry Fox Research Institute, Level 14, BC Cancer Research Centre, 675 West 10th Avenue, Vancouver, British Columbia V5Z 1L3.

E-mail: cci-cancercontrol@shaw.ca