Global Response to the Burden of Cancer: The WHO Approach

Andreas Ullrich, MD, MPH, and Anthony Miller, MD, FRCP

OVERVIEW

As the burden of many cancer types of major public health relevance worldwide are in part determined by behavioral risks, much of the success of cancer control depends on the uptake of prevention strategies at the population level. Over the last decade, the World Health Organization (WHO) has developed global prevention strategies of major relevance for cancer prevention and the prevention of other non-communicable diseases (NCDs), such as the 2003 WHO Framework Convention on Tobacco Control and others. The implementation of these core strategies gained momentum in 2011, when heads of states at the United Nation's (UN) High Level Meeting (HLM) on NCDs declared that NCDs are a global health threat that menaces social and economic development globally and requires urgent action. They asked for a paradigm change of the global health agenda by including NCD prevention and control into the group of priorities set by the Millennium Development Goals. WHO’s translation of this call for action by the UN into practice has been consolidated into one clearly defined the WHO Global NCD Action Plan 2013–2020, including the pre-existing prevention strategies.

Although cancer risk reduction will profit from the WHO Global NCD Action Plan, comprehensive cancer prevention and control will require other supplementary strategies not included in the plan because they are not shared with other NCDs. Causality of the over 200 cancer types is complex. A myriad of non-behavioral factors such as environmental and infectious risks, require specific attention when planning comprehensive cancer prevention. In reducing the cancer burden globally much will depend on how prevention strategies are implemented and how progress in cancer treatment can be translated into the reality of health systems in less affluent countries.
ble disease, a system for cancer control would need major adjustments to the resources available.

This article outlines the principles of the public health framework for comprehensive cancer prevention, the principal WHO strategies to reduce population exposure to cancer risks, and the political development around the implementation of the UN HLM on NCDs in 2011 and their implications for cancer control.

**COMPREHENSIVE CANCER CONTROL THROUGH NATIONAL CANCER CONTROL PLANS AND THE WHO GLOBAL NCD ACTION PLAN 2013–2020**

Over two decades ago, WHO developed a policy framework which is known as the National Cancer Control Program (NCCP) concept. Crucially, this framework addresses the full continuum from primary prevention and early detection (including screening, diagnosis and treatment) to palliative care. In terms of public health actions, the NCCP concept encompasses population interventions for prevention and screening, as well as, health care system-strengthening aspects, so that patients with cancer get optimal care. In accordance with this framework, national cancer control planners need to work from both ends of the health system, taking in a health care system perspective, as well as, population-based social medicine perspective.

Ideally, all the known causes of cancer (such as tobacco, infectious and chemical carcinogens, and radiation) would require national policies and strategies to reduce population exposure and would be part of a comprehensive plan. For example, tobacco control is advocated as an integral part of national cancer plans, so that professional organizations involved in cancer control (e.g., oncologists, radiotherapists, and surgeons) might consider it as part of their role in their interaction with patients and their families. Encouragingly, many countries have started to develop national cancer plans. According to a recent WHO survey about national capacity in NCD, 85% of the 176 participating countries in the survey have a national cancer control policy or plan. These plans are greatly dependent on national health priorities, background cancer risks, and available resources. However, WHO recommends that even in very low-resource settings, prevention should be part of national cancer plans.

NCCPs are embedded in a broader overall WHO Global NCD Action Plan and its monitoring framework, which has been developed through several steps of consultations with WHO Member States and stakeholders and was endorsed by the 2013 World Health Assembly. The WHO Global NCD Action Plan is therefore the result of a broad consensus among governmental and non-governmental stakeholders. The WHO Global NCD Action Plan defines the roles WHO Member States and NGOs will play in reducing the NCD burden. It also gives an overview about the technical areas that need to be tackled so that risk reduction strategies and service delivery for NCD cure and care are both addressed. From the cancer prevention perspective, the generic NCD framework needs to be translated into the specificities of what causes cancers and what are the strategies to reduce population and individual exposure to those cancer risks that go beyond the shared behavioral risks with other NCDs. This WHO Global NCD Action Plan encompasses a set of six objectives that are aimed at halting the NCD epidemic.

The development of national capacity governance and multisectoral actions into national plans (objective 2) and implementing NCD prevention strategies (objective 3) are central elements of the NCD framework. The WHO Global NCD Action Plan has a timeframe for implementation until 2020. Several coordination mechanisms at the UN and global level, including civil society, are under development. A UN interagency taskforce was established in 2014 and brings together a broad variety of technical agencies of the UN family that can contribute to NCD prevention and control. For example, the International Atomic Energy Agency has established a special program (Programme of Action for Cancer Therapy) on cancer treatment. GAVI Alliance has included HPV vaccine in its portfolio of country support for the GAVI eligible low resource countries. The United Nations Population Fund is engaged in developing health care for early detection of cervical cancer.

**CANCER AND LIFESTYLE FACTORS: WHO’S RISK REDUCTION POLICIES AND STRATEGIES**

Over the last decade and starting from a first generic NCD framework in 2000, WHO has developed a series of milestones in population-based risk reduction strategies for NCDs. The WHO secretariat put forward and got endorsement from the World Health Assembly in 2003 for a major international tobacco control strategy, then in 2004 for the global strategy on diet and physical activity and in 2010 to the global alcohol control strategy. The WHO Framework Convention on Tobacco Control (FCTC) was the first global health treaty. This legally binding convention came into force in 2005 and its implementation is coordinated by the FCTC secretariat hosted by WHO Headquarters. As of April 2012, 174 WHO Member States have ratified the FCTC by national parliaments and by doing this are contracting parties to the treaty.

The FCTC provides new legal dimensions for tobacco control. It is a comprehensive approach to tobacco control since it includes mechanisms to result in supply and demand re-
duction of tobacco products. Price and tax policies, labeling of tobacco products, and protection from exposure to second-hand smoke (rather promoting smoke-free environments) are evidence-based strategies to reduce demand which are included in the FCTC. A central element of limiting demand and cancer risk reduction is smoking cessation programs, which depend on services for current smokers (such as quit lines and treatment of nicotine dependency). Supply reduction policies include measures to reduce illicit trade in tobacco products (smuggling), banning sales to minors, and encouraging alternatives to tobacco growing in the agriculture sector. Although enforced for several years, the implementation of the FCTC still has a long way to go. According to the most recent WHO report in 2013 there are major gaps in implementing the obligations of the treaty.12

The WHO Global Strategy on Diet, Physical Activity and Health (DPAS) is a prevention-based strategy that aims to considerably reduce the prevalence of common risk factors for NCDs, primarily unhealthy diet and physical inactivity.10

Its overall objectives are to increase awareness and understanding of the relationships between diet, physical activity, and NCDs, including cancer. DPAS provides the framework to develop, strengthen, and implement global, regional, and national policies and action with the intent to reduce obesity, unhealthy diets, and physical inactivity in populations through public health actions. DPAS is underpinned by a series of WHO guidelines that have a specific focus on the prevention of childhood obesity since this is linked closely to future obesity levels in adulthood.

The WHO global strategy to reduce harmful use of alcohol focuses on a series of ten key areas of policy options and interventions at the national level and four priority areas for global action.11 These include drink-driving policies and countermeasures, the availability of alcohol and the marketing of alcoholic beverages. The four priority areas for global action are public health advocacy, partnership, technical support and capacity building, and the production and dissemination of knowledge.

**TARGETED CANCER PREVENTION BY REDUCING EXPOSURE TO INFECTIONS AND ENVIRONMENTAL AND OCCUPATIONAL CAUSES**

By identifying specific causes of cancer, preventive action can be tailored more to selected agents. Cancer causing infections are of major relevance in many developing countries being responsible for up to 23% of cancer.13 Chronic hepatitis B virus (HBV) infection causes approximately 52% of the world’s hepatocellular carcinomas resulting in nearly 340,000 deaths per year.14 Another 20% of hepatocellular carcinomas are caused by the hepatitis C virus (HCV). HBV interacts with exposure to aflatoxin through consumption of contaminated food, which increases the risk of liver cancer. Human papilloma virus (HPV) is the world’s most common sexually transmitted viral infection of the reproductive tract. It is estimated to cause almost all cases of cervical cancer, 90% of anal cancer and 40% of cancer of the external genitalia.15

The most cost-effective strategy for preventing primary liver cancer is universal vaccination coverage with HBV vaccine. Vaccination strategies are based on the epidemiology of HBV. WHO recommends universal infant immunization by incorporating hepatitis B vaccination in national infant immunization programs. Important non-vaccination strategies include implementation of safe injection and infection control practices in all health care settings to reduce both HBV and HCV transmission. Various behavior change strategies targeting unsafe injection practices and high-risk sexual practices need to be implemented to prevent infection and eventually liver cancer.

With the recent progress in development and availability of HPV vaccines, WHO took the firm position in 2009 to recommend the introduction of HPV vaccines as part of comprehensive cervical cancer control plans that also should include screening for cervical cancer pre-cancer and cancer. A series of technical documents provide hands on guidance for national decision makers to rationally plan and implement HPV vaccine programs.16

Preventing HIV infections can also be subsumed among cancer prevention interventions as HIV and cancer are closely related. HIV positive populations are at increased risk to develop a large variety of cancers. WHO’s guidance in treatment of HIV and sexual education and the prevention of sexually transmitted diseases is therefore an important component in comprehensive cancer prevention and opens up cross links and options for integration between programs of cancer control and infection control.

Environmental pollution of air, water, and soil with carcinogenic chemicals is an important cause of cancer. In Bangladesh, 5% to 10% of all cancer deaths in an arsenic-contaminated region were attributable to exposure.17 Exposure to carcinogens also occurs via the contamination of food by chemicals, such as aflatoxins and dioxins. Reducing exposure is effective if food safety systems (i.e., legislation and monitoring) are implemented and are focused on key contaminants of food that can cause cancers.

Other examples of environmental and occupational agents important for cancer prevention are asbestos, ionizing radiation, and ultraviolet radiation. WHO is promoting evidence-based exposure reduction strategies to reduce environmental and occupational cancer risks, such as guidance in improving ventilation and sealing floors to reduce radon levels in homes. Indoor air pollution from coal fires doubles the risk of lung cancer, particularly among non-smoking women.18 The reduction of the use of biomass and coal for heating and cooking at home and promotion of the use of clean burning and efficient stoves, is a powerful tool to reduce the lung cancer burden.

**THE UN POLITICAL DECLARATION ON NCD AND IMPLICATIONS FOR CANCER PREVENTION AND CONTROL**

One of the many factors that contributed to putting NCDs, including cancer, on the agenda of the UN General Assembly
in September 2011 was the increased awareness and knowledge about the current and projected future burden of NCDs, as well as, their economic effect. Driven by population aging, unplanned urbanization, globalization of trade, and marketing, and the unhealthy lifestyles, the NCD epidemic is spreading rapidly. At the micro-economic level, there is a spiral of poverty caused by NCDs (such as cancer) that affects more and more families and ends up causing catastrophic expenditures for NCD care because of insufficient insurance coverage. At the macroeconomic level, NCD care requires an increasing proportion of health budgets in LMICs. A joint report of WHO and the World Economic Forum quantified the economic consequences of NCDs as serious. Under a “business as usual” scenario where intervention efforts remain static and rates of NCDs continue to increase as populations grow and age, cumulative economic losses to LMICs from the four diseases are estimated to surpass $7 trillion from 2011–2025 (an average of nearly $500 billion per year). This yearly loss is equivalent to approximately 4% of these countries’ current annual output. On a per-person basis, the annual losses amount to an average of $25 in low-income countries, $50 in lower middle-income countries, and $139 in upper middle-income countries.

With WHO providing the global picture on NCD’s burden and trends, the political will to tackle NCDs became unstoppable. The political determination of a group of UN Member States lead by the Caribbean community of countries (CARICOM) finally reached its objective in 2011 to discuss the problem of NCDs at the highest political level, as had been the case for HIV a decade earlier. In preparing the background documents for the UN General Assembly HLM on NCDs, WHO put forward the focus on the cost-effectiveness of the interventions to be proposed as solutions for controlling NCDs. The concept of best buys (defined as the interventions with the most extensive health impact by monetary unit invested) was highly promoted and condensed in one of the key publications available at the event. Among the selected interventions included in the best buys, two were specifically relevant for cancer prevention: screening for cervical cancer and immunization against HBV infection to prevent liver cancer.

The UN HLM resulted in a political declaration that expresses the firm commitment of the signing UN Member States to develop national NCD strategies along the lines of WHO’s technical advice. The backbone of the declaration are the World Health Assembly’s resolutions on risk reduction strategies (tobacco, diet, physical inactivity, and alcohol) and the WHO Global NCD Action Plan framework. Cancer prevention is covered by the UN resolution in particular with regard to these behavioral factors. However, there are several entry points in the resolution that provide bridges to infectious and environmental causes and related health systems delivering preventive interventions. Operative paragraph 43/k makes reference to the infectious cause of cancer and the call for increasing the vaccinations against HBV. In operative 43/k the declaration mentions screening as an important intervention to control NCDs. Among all NCDs, cancer screening is the most established intervention, which in the case of cervical cancer is also preventive since is focusing on pre-cancer. By treating cervical pre-cancer lesions, invasive cervical cancer can be fully prevented. The cross link between cancer prevention and reproductive health is specifically mentioned in operative paragraph 45/j and 45/k. To translate these intentions, as expressed in the declaration, into practice, cancer prevention programs in settings where infectious causes are of major importance, such as in high HIV prevalence countries. They will need to build on existing systems with focus on primary care level or equivalent (such as reproductive health and anti-HIV programs).

**CONCLUSION**

The 2011 UN NCD Declaration provides a historic chance for an improved agenda setting for cancer control. In the past, high-income countries have reacted to the raising NCD burden through massive investment in health care systems. This applies in particular to cancer. Nevertheless, by prioritizing health care, many countries have almost completely refrained from dealing with the underlying causes. Such a model is not a solution for any country. Because of WHO’s continuous efforts over the last decade, it is now well-accepted that NCDs prevention needs to be an integral part of controlling NCDs. It is also more and more recognized that NCD, including cancers, are also a problem in LMICs. The globalization of markets has the consequence that NCD risks are spreading worldwide. WHO has a key role to play in the NCD agenda because of its technical expertise and the credibility afforded to it by its UN mandate. WHO is the independent broker able to catalyze the necessary changes in societies through national and international decision-making and priority-setting. These key turning points are predominantly related to tobacco control, halting the epidemic of obesity, increasing physical activity, and limiting alcohol use.

Tackling NCDs and their underlying causes is complex and difficult because of the close relationship between risk factors, market forces, social and economic development, and health outcomes. NCDs appear on the global health agenda to many as still less menacing compared to communicable diseases, as countries may experience acute outbreaks of conditions because of contagious agents. As a consequence, for decades NCDs were considered as a problem restricted to affluent societies and were therefore invisible as a development issue. The agreement of all UN Member States on a joint political declaration would not have been possible if developing countries had not already perceived the NCD burden as a major threat to their public health and economy. The historic window for setting the pace to address NCDs now needs to be used so that the necessary changes at the global, regional, and national health agendas are implemented.
Disclosures of Potential Conflicts of Interest

The author(s) indicated no potential conflicts of interest.

References