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Cancer research for better public health policy – A personal view on the role of the International Agency for Research on Cancer in cancer control



The International Agency for Research on Cancer (IARC) is the 50-year-old specialized cancer agency of the World Health Organization (WHO). It has made significant contributions to cancer science that are of high public health relevance, such as the series on Cancer Incidence in 5 Continents and the IARC Monographs on the Evaluation of Carcinogenic Risks to Humans.

The last couple of decades have seen the emergence of numerous other international programs in cancer prevention research by different academic institutions and other organizations, with a wealth of resources and important contributions as well.

Is IARC's research portfolio adapted to a world with so many international players and competing organizations? Should IARC carry on doing cancer science in the same way as it has up to now?

In this Commentary, I put forth arguments as to why IARC:

- Is needed more than ever to tackle the global cancer epidemic.
- Must increasingly focus its activities on producing cancer research of the highest quality and public health potential impact: produce evidence-based knowledge to support public health policy¹ decision-making processes.
- Must remain a trusted organization in producing relevant science for public health policy and for public good, independent from vested interests.
- Needs to work closely with WHO and other international organizations to maximize the public health impact of the knowledge produced.

1. IARC is needed more than ever to tackle the global cancer epidemic

As the world population grows, and life expectancy increases globally, so does the incidence and the prevalence of diseases that occur frequently in the elderly, such as non-communicable diseases, including cancer. These trends have a substantial impact not only on individuals' health, but also on health care systems, and consequently on health care expenses. Cancer is associated with disabilities and high morbidity and mortality, with overwhelming consequences for individuals, families, and societies. The cancer burden is high in all countries, but in particular in low- and middle-income countries, which often have a poor, inadequate infrastructure. "It is completely unacceptable that at least half the world still lacks coverage for the most essential health services." (Dr Tedros Adhanom Ghebreyesus, Director-General of WHO). While it is clear that governments and regulators bear a heavy responsibility in this, WHO, as the world health policy leader, is the

advocate for wiser investment in health care systems to reach universal health care.

Therefore, prevention is, and should continue to be the first line of attack in tackling the challenges posed by the global cancer epidemic, seconded by screening and early detection. Estimates indicate that more than 50% of incident cancer cases could be prevented [1]. However, as not all cancers are preventable or amenable to early detection, high quality cancer treatment must be offered in a cost-effective and affordable way to all in need.

The world is changing at an astonishing speed, its population subject to globalization, urbanization, introduction of new technologies, digitization, consumerism, and rising global temperatures. All this will likely have major influences on the health of individuals and of the planet. Although there are 'big unknowns' in society, these changes are likely to affect our ways of life and work – thus affecting our risk of cancer – as well as the way we do science. Indeed, a linear extrapolation of knowledge production from the 19–20th centuries cannot be applied to the 21st century. Today science production is faster, and the ways in which scientific collaborations are carried out are changing profoundly. What will be the profile of cancer researchers in the future? Will cancer researchers at IARC have the same profile as scientists working elsewhere? Should science conducted at IARC be similar to science done elsewhere?

2. IARC must increasingly focus its activities on producing cancer research of the highest quality and potential public health impact: produce evidence-based knowledge to support public health policy decision-making processes

Disparities, both within and between societies are currently alarmingly wide, but they are likely to increase to the point where only a fraction of people have access to increasingly expensive and complex biomedical treatments and genetic engineering tools, while the vast majority of the world's population is left with basic, if any, affordable preventive services and health care. The dilemma between investing in research on social determinants of health or on clinical health care will continue. In this regard, reducing poverty, the first of the United Nation's Sustainable Development Goals (SDGs), is of huge importance for health and wellbeing in the world. SDG3–'Ensure healthy lives and promote wellbeing for all at all ages' – is the most directly relevant to IARC's research on many persistent and emerging health issues. SDG3 specifically addresses some of IARC's key research activities, such as the monitoring of cancer occurrence, cervical cancer screening coverage, and the impact of vaccination against cancer-causing agents (e.g., human papillomavirus and hepatitis B virus) on cancer burden. Several

¹ Defined by the Centers for Disease Control and Prevention in the USA (see cdc.gov) as 'law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions' which influence public health, for example, tobacco control policies.

other SDGs (SDG numbers 2, 8, 9, 11, 13, and 15, among others) are directly or indirectly relevant to IARC's research portfolio. IARC may need to position itself more clearly on the SDG agenda, and on the role it intends to play, particularly in regard to the WHO 13th General Programme of Work 2019–2023 [2].

Contributing to the production of knowledge to support the achievement of cancer control for public good is the key challenge IARC faces in the next decade. IARC's added value is to produce cancer science and to integrate evidence that benefits societies worldwide: it must be impact-focused, and address global cancer challenges with excellence and transparency.

One of the pillars of IARC's activities is providing the best possible information on cancer incidence, prevalence, and mortality worldwide, fostering political support and providing technical guidance for the establishment and maintenance of high quality cancer registries, which is of paramount importance to quantify the magnitude of the cancer burden. Mapping cancer incidence and mortality is the first step in cancer research, without which cancer researchers and policy makers worldwide would lack the most basic understanding of the burden of cancer. Of particular importance is the Global Cancer Observatory, which provides an interactive tool with the most up-to-date, quality assured cancer statistics worldwide. This resource is provided by IARC and is used as a key reference in cancer research and health policy globally.

To identify causes of cancer and preventive measures, including early detection, is at the core of IARC's daily research activities. Cancer prevention through international collaborations is an area where the Agency has a legitimate, historical niche, and a competitive advantage as compared to other national and international organizations. Moreover, this is an area in which IARC truly makes a difference. No single country can find the solutions for cancer prevention alone, and IARC can continue to be a focal point for new studies on cancer prevention and cancer control for all.

Being the only WHO research center² brings an additional dimension to IARC, as it speaks of prevention with the WHO brand and provides elements for health policies to be formulated at the international level, first and foremost by the World Health Assembly. IARC is thus at the crux of international collaboration in cancer research, but strategically placed as WHO's evidence-base arm for cancer.

3. IARC must remain a trusted organization in producing relevant science for public health policy and for public good, independent from vested interests

Governments around the world rely on IARC's evaluation of carcinogenic hazards as one of the elements to regulate their use and exposure. Scientifically solid carcinogenic hazard identification is a central activity for public health and regulatory bodies worldwide.

IARC has evaluated over 1000 potential carcinogens. Evaluating the evidence for carcinogenicity or cancer preventive strategies using the highest possible quality, independent of vested interests, is of unique value worldwide, as it provides unbiased, state-of-the-art knowledge, which is potentially useful for policy makers. IARC can also provide a platform for assessing the preventive and health promotive tools and strategies – what works in cancer prevention and in population interventions. It is crucial that all these operations occur with clear, transparent, and unquestionable evaluation criteria. The best scientists from around the world should be able to come to IARC to perform those collegial evaluations without being harassed, challenged, and questioned by those very stakeholders who have competing (hidden) interests. Therefore, the selection of IARC panels of international experts

² IARC has its own governance and funding structure, as opposed to WHO's Tropical Diseases Research Program, or the Framework Convention on Tobacco Control, for instance, which form integral parts of the WHO structure.

needs to be transparent and *in the hands* of the IARC secretariat, under the overall protective umbrella of WHO.

In this regard, the glyphosate, meat, and alcoholic beverages monographs are examples of how complex the relationship between WHO and IARC can be, and how essential good and direct communication and coordination of efforts are.

In parallel to the evaluation programs, IARC's programs on translational (molecular epidemiology) research and on understanding the molecular and cellular events in malignant transformation have allowed another IARC flagship program, the pathology books (the Blue Books), to prosper. Pathologists from all over the world use the Blue Books to classify cancers and to provide new avenues for early diagnosis and proper treatment, as a counterpart to prevention efforts.

IARC can fulfil an important need in knowledge production and solution creation for cancer prevention and cancer control in future decades. IARC must remain a trusted institution in its evaluation programs, independent of vested interests. At the same time, IARC must listen to its stakeholders, especially WHO and IARC Member States, and act wisely by adapting to the changing world without losing its roots and its *raison d'être*.

4. IARC needs to work closely with WHO to maximize the public health impact of the knowledge produced

Close collaboration with and support from WHO is essential for IARC to survive and thrive. The 1948 WHO definition of health as a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity, guides the research agenda and strategy of the Agency. Moreover, health is considered by the United Nations as a basic human right [3]. In the framework of the SDGs and the non-communicable disease agenda, and in close partnership with WHO, IARC must do its part in the work toward the reduction of cancer morbidity and mortality, *inter alia* [4,5].

IARC's role is therefore to contribute to global health by producing relevant knowledge on cancer and to work with governments and experts to find solutions to these problems.

WHO should be welcomed in *all* fora where priorities for cancer control strategies, identification of carcinogens, and preventive tools are discussed, as well as in the planning of the needed communication and awareness processes.

IARC and WHO should work hand in hand to achieve the continuum between the research evidence base and policy formulation, in particular in the communication of carcinogenic hazards and risks. The independence of the IARC evaluation process in making assessments of the existing evidence cannot be sacrificed for any short-term gains – and no interference by outside bodies is acceptable at the level of the individual agents under assessment. This being said, the importance of joint efforts, for instance, in the area of the impact of screening and early diagnosis, and – whenever suitable – field interventions to decrease the cancer burden, as exemplified by cervix cancer screening projects, cannot be over-emphasized.

The IARC Statute [6] has been revised over the years and is in line with the WHO mission statement [7]. “The objective of the International Agency for Research on Cancer shall be to promote international collaboration in cancer research. The Agency shall serve as a means through which Participating States and the World Health Organization, in liaison with the Union for International Cancer Control (UICC) and other interested international organizations, may cooperate in the stimulation and support of all phases of research related to the problem of cancer.”

IARC should strive to work together with WHO Headquarters on overarching issues, and with WHO regional and country offices when conducting studies in Member States.

WHO has a very comprehensive health agenda and has a mandate to advise Member States on public health challenges. However, cancer is only one of many competing priorities of WHO, even within the non-

communicable disease agenda. The number of staff at WHO headquarters dedicated to cancer-related activities is very limited given the disease burden worldwide. This is where IARC is part of the solution for its parent organization: through a closely interwoven network of collaborations, the Agency can play its prevention part in support of WHO programs in the various countries that need its support most (registries, evaluation of prevention strategies, etc.). Participation of IARC's top management in the WHO Global Strategy committee (alongside the Regional Directors) is therefore key to articulating these policy recommendations and the research needs in relation to cancer.

IARC is therefore indispensable, given its expertise in generating new knowledge that WHO can translate into public health policy advice. Thus there is a compelling need to demonstrate the complementary nature of the missions of these institutions and the synergy in action of both.

Given the aging of the global population, cancer prevention is needed in the 21st century more than ever before. IARC has a pivotal role to play worldwide in the production of knowledge for cancer prevention. Its overarching *raison d'être* is to promote international collaboration in cancer research, with the aim to decrease the cancer burden worldwide.

Competing interests

The author has no competing interests to declare.

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