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Towards an international cancer control plan: Policy solutions for the global cancer epidemic

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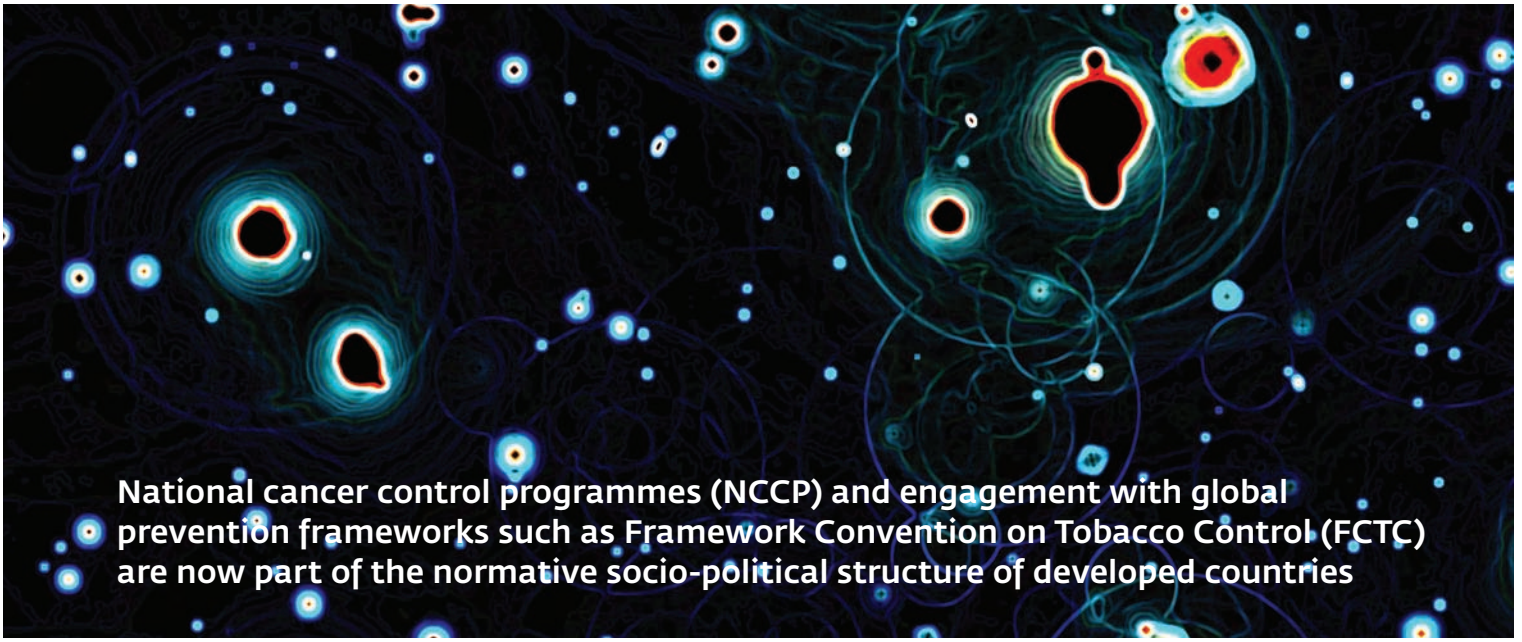
The economic and public policy challenge of cancer

Cancer has a devastating personal, social and economic impact on the global population. The figures provided by Ian Magrath are a stark warning that cancer specifically and non-communicable diseases (NCD) generally are a major and increasing burden on the health and wealth of nations. In the face of rapidly changing demographics – an ageing and expanding global population – there is a critical need for public policy action at both national and supra-national level. Chronic diseases including cancer, heart disease and diabetes account for more than 60% of deaths worldwide but less than 3% of public and private funding for global health. Excluding the huge impact of disability and years of lost life, cancer's economic toll was US$895 billion in 2008 — equivalent to 1.5% of the world's gross domestic product[1]. Cancer is a direct public health threat to economic development and a failure to prevent now putting in place healthcare programmes and systems to cost-effectively manage cancer using resource-level appropriate control measures is a basic necessity, not a luxury. Cancer cuts productive lives short and has a major impact on essential social structures, e.g. through female mortality due to breast (developed countries) and cervical (mainly low/middle income countries) cancers. Kevin Murphy and Robert Topel at the University of Chicago have estimated that a 10% reduction in cancer mortality would be worth over US$4 trillion to the global economy, of which over half of this will fall on low/middle income countries (LMC)[2].

Public policy measures for global cancer control are not a zero sum game with other critical domains – population and nutrition – and diseases, e.g. HIV/AIDS, unipolar depression, maternal and child health, in other words controlling cancer does NOT need to be at the expense of these other areas. Rather, (1) cancer and NCD's need to be integrated into all the major horizontal actions and, (2) all aspects of cancer control plans – prevention, through to health systems design and research priorities – should be part of proper health systems planning.

Cancer is a global issue and whilst developed countries have only had to deal with an epidemiological transition from acute to chronic diseases the reality for LMC is one of the double and, even triple burden of disease, i.e. the need for health systems that can deal with a disease burden that stretches from infections to chronic disease and



National cancer control programmes (NCCP) and engagement with global prevention frameworks such as Framework Convention on Tobacco Control (FCTC) are now part of the normative socio-political structure of developed countries

Group III causes (accident, conflict etc). This is a unique and wholly untested situation for cancer control that will need novel ways of superimposing and integrating cancer prevention and management systems and programmes on to other disease areas. Furthermore, achieving good outcomes in cancer control at low cost is entirely achievable with the correct prioritization of cost-effective modalities and care pathways (e.g. state of Kerala in India and Costa Rica)[3].

National cancer control programmes (NCCP) and engagement with global prevention frameworks such as Framework Convention on Tobacco Control (FCTC) are now part of the normative socio-political structure of developed countries. However, the degree to which emergent market economies (EME) have implemented well-validated NCCP is highly variable and outcomes for many types of cancers in many countries remain unacceptable in light of the knowledge of what can be achieved. Substantial gaps in cancer outcomes due to deprivation in EME with otherwise low index of inequality (Gini), for example, are unacceptable[4]. Models for cancer systems reform as well as public-private partnerships and research funding fora (e.g. Institut National du Cancer http://www.e-cancer.fr/) are not the rate limiting factor to delivering cancer public health policies for developed countries. Numerous approaches to excellence in service delivery, research and education/training abound, along with a spectrum of options for their organization based on centre or network models[5]. In developed countries the key public policy issues centre around over-regulation, the relative lack of supra-national funding for research, the escalating cost (and cost-effectiveness issues) around cancer care and the orphanization of key domains such as cancer surgery and prevention relative to cancer medicines[6]. However, taking a global perspective, in spite of these significant issues for cancer in developed countries outcomes are excellent compared to those in LMC. It is these countries that will be the key to global cancer health in the coming decades.

One of the critical challenges to G20 and all countries committed to cancer control is to understand the myriad of partnerships, global actors and initiatives currently at work. Beyond country-specific efforts there are a plethora of partners from WHO Non-Communicable Disease division and the International Atomic Energy's cancer programme (http://cancer.iaea.org/index.asp#content) through to umbrella / advocacy organisations – e.g. Union for International Cancer Control (http://www.uicc.org/) , patient groups and trans-national research organizations e.g. International Prevention Research Institute (http://www.i-pri.org/) and International Network for Cancer Treatment and Research (http://www.inctr.org/). There are a bewildering

number of organizations, interconnected in a myriad of ways and through a variety of horizontal and vertical programmes to form what amounts to a cancer public policy nexus.

Are all these organizations necessary? Almost certainly they are. The challenges of country-specific cancer control and supra-national programmes require a multitude of different alliances, perspectives and knowledge. However, current partnerships can be obscure and ad hoc; there is, for example, a need to constantly challenge the staus quo with new policy approaches that bring in new players. Important opportunities for enhancing global cancer control could be driven out of World Bank NCD programmes[7]. Although these organizations all have heterogeneous goals, operating patterns and histories, the one common feature is that in their efforts to support cancer control in LMC, the funding that is available is a drop in the ocean in comparison to what is provided by and for, cancer public health in developed countries. This massive funding gap is now a critical public and economic health threat.

The social determinants of cancer

The human ecology of cancer and its control is at least as complex, if not more so, than any aspect of the biomedical science of oncology. This policy domain, first described in the 1920s by Roderick McKenzie encompasses all the complex dynamic spatial and sustenance interrelationships within which human society is organized and through which cultural forces act[8]. Thus cancer control is seen not as a collection of molecular and cellular processes but as a result of multi-dimensional processes that bring to act such values and concepts such as equity, distributive justice, access, and sustainability. By its nature this is a hugely challenging area for cancer public policy and one that is frequently neglected, in part because of its intrinsic challenge but more so because it forces a dialogue about political ideology and the prioritization of expenditure and efforts in cancer control. If, for example it is so abundantly clear that countries and global institutions are failing to address the growing burden of cancer in LMC, despite a plethora of documents, finely worded declarations, learned articles and other assorted policy paraphernalia, what are the root socio-political causes of this "second translational gap", i.e. turning knowledge about the solutions to cancer control into real change on the ground?

In framing the human ecology of cancer it is essential to develop public policy that is convergent and complementary with existing views articulated by the Commission on Social Determinants of Health[9]. By mapping onto existing public policy that covers the full spectrum of health and well-being, policies that specifically address cancer control can be developed into coherent strategies with real chances of implementation, rather than ad hoc documents unlinked to core national and supra-national social policy-making. One of the critical failings time and time again is the development of public policy and actions around inequality and cancer outcomes that are completely disassociated from the actual lifestyles and concepts of individual responsibility that give rise to the situation in the first place. Before even setting the policy agenda for the social determinants of cancer there needs to be an explicit political mechanism that stitches cancer into the various vertical political silos of social policy – for example education and urban planning.

Inequality and Cancer

Inequality in cancer remains one of the most fundamental issues that both developed and LMC societies struggle to address. Here cancer reflects the broad problem of health inequality; one that has been globally recognized since the 1978 Alma Ata declaration that saw health promotion as a system that acted on the underlying economic, social and political causes of poor health. For LMC this dream of Primary Healthcare was shattered by the imposition

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of a series of market-orientated models and decades of structural adjustment programmes following the Washington consensus that all but put social health to the sword.

Against this background, the combined effect of poor governance and inequality has ensured that in many LMC, the huge gaps in cancer outcomes between the affluent and deprived are deeply entrenched. Furthermore, because of the double burden of disease many health programmes in these settings focus exclusively on Group I (infectious disease, maternal mortality, etc) without recourse to thinking how to map on specific cancer control and other NCD control measures. Because of the tight relationship between cancer outcomes and cumulative life experience, generic measures to address inequality from the start of life will, over time, enhance cancer control. A diagnosis of cancer is not only a personal tragedy but is often a financial disaster for patients and their dependents as well. Such individuals will either not present for treatment, present too late and/or only complete primary treatment without follow up.

In terms of gender equity the impact of cancer on women has a dramatic knock-on effect to the health and economic productivity of their families. Some 64% of all illiterate adults are women (an estimated 495 million world wide)[10] and this directly impacts on the ability to deliver effective cancer control; the stigmata of cancer for women in many societies leads to substantial social disruption. Policies that directly work to address gender equity will, coupled to early detection and good universal cancer management systems ensure directly the improvement of the health and wealth of families as a whole. The seemingly entranched deprivation gaps manifested in developed countries also need urgent attention. For developed countries like the USA[11] and the UK[12] the public policy solutions are clear; they simply lack socio-political motivation.

Healthy environment

The human environment is constantly changing. Over three quarters of the population in developed countries is urbanised and LMC are catching up fast with 40.9%. In the latter, however, some 43% of the urban population lives in slums (UN-HABITAT 2003 data). The rural-urban evironments have a dramatic effect on the full spectrum of health. On the one hand there has been chronic under-investment in rural medical infrastruture[13], thus there a few treatment options in this setting. On the other hand urbanization is a "pro-cancer" environment that promotes "nutrition transition" – high consumption of fats, energy dense and highly processed foods – and thus, coupled to less physical activity leads to obesity which, after tobacco usage, is one of the most important cancer risk factors. Poor environmental conditions can also exacerbate poor cancer outcomes due to the triad of deprivation-elderly-ethnic minority. Each feeds back and re-inforces poor outcomes. Public policy solutions aimed at tackling urban planning, rural support and access, rural-urban migration and the natural environment would all have positive long-term effects in terms of both prevention and the outcomes in cancer.

Society and cancer

The culture and structures of societies play a critical role in how cancer is perceived, what action is taken to prevent and alleviate suffering, and the socio-political priority assigned to action the required public policies. "Social system influences... may account for as much (if not more) of the variation in health and/or illness statistics as do environmental influences, or even the attributes and lifestyles of individuals"[14] and numerous facets of these systems – the role, position and liberty of women, the social stigma of cancer, perceptions of the causes of cancer, taboos in seeking help outside the "in-group" etc – contribute to the global burden of cancer but at a local level.

The heterogenous nature of the global society makes broad public policy particularly difficult, especially when it challenges entrenched culture. Policies aimed at promoting and supporting grass roots advocacy for cancer control are absolutely essential and the only effective means of changing, long term, cultural artefacts that promote cancer and poor outcomes. Political governance woven into the fabric of societies is also a critical determinant of cancer control, and indeed in delivering universal

health. Political governance needs to be held to account by national advocates in civil society and where the formal sector of the economy is weak and government limited, community health insurance schemes need to be initiated to provide social health protection. Policies to provide sickness funds can also help mitigate the social consequences of cancer and defray catastrophic expenditures as a result of this.

Finance and market responsibility

Cancer control relies upon an adequate supply of services and material resources. For many countries the free market has failed to deliver not least because economic growth remains so low that even with the political will to mobilise 15% or more in taxes from the domestic economy the absolute level of per capita income is too low for this to be an effective sum. Part of the solution, particularly for the better financed middle income countries lies in the need for fiscal transfers to directly support cancer control in higher burden, greater "at-risk" regions and better economic management (budgeting, payment contracting, etc). For upper low income countries where cancer is becoming a significant public health threat there are a variety of basic strategies, articulated by the WHO Commission on Macroeconomics and Health that would directly support cancer control, for example prepayment schemes and community finance programmes that would support families hit by a diagnosis of cancer[15].

This is particularly important. In India, for example, some 86% of women and 83% of men employed in areas outside the agricultural sector are in informal employment[16]. Over 45% of this group with a diagnosis of cancer will have catastrophic expenditure with around a quarter being pushed below the poverty line (2004 data)[17].

How governments work with the private market is hugely challenging and no easy public policy solutions exist. Little information is available to measure private sector performance and pricing but it is clear that tighter federal oversight is required. For very different reasons developed countries also need to challenge the role of the market as the cost of cancer control continues to go up. The glass ceiling has already been reached, and in some cases breached. A continual increase in cancer control for high income countries is simply not affordable and public policies targeting cost-effectiveness and driving greater value from services are essential.

Globalisation of cancer risk: New policies for prevention

It is widely acknowledged that too little is done to prevent cancer. Data indicate that less than 4% of the overall public annual public global research budget is spent on this area and the contribution from private sector is also tiny. The major risk factors for cancer as well as other non-communicable diseases are absolutely clear. Tobacco usage remains by far and away the most dangerous risk to health, but it is being chased by a combination of obesity and alcohol usage, particularly in developed countries. In LMC the threat from infection-related cancers e.g. hepatitis B and liver cancer, and of course human papilloma virus (HPV) and cervical cancer, a particular threat for women continues its upward march, even in the face of new eradication programmes centred around vaccination.

In both developed and LMC, especially in the latter, a combination of ageing demographics coupled with increasing exposures to pro-cancer environments and lifestyles will have a critical socio-economic impact. It is now crystal clear that few, if any, LMC will on the basis of their current out-of-pocket driven healthcare systems be able to cope with the financial impact of managing cancer without driving down incidence through preventative measures. Although challenging, prevention remains the only serious option for controlling the long term impact of cancer, and indeed wider afield the impact of other chronic diseases such as CVD and diabetes.

The control of viral and bacterial-induced cancers by vaccination and other approaches remains a critical quest for public policy in cancer prevention. Although many global initiatives have been launched to conquer the threat of infectious disease through vaccination major success has been elusive, not least because by themselves vaccines are a small component of the overall health system, and in many cases present their own issues in terms of costs and the logistics of deliverability. Nevertheless within a

programme that really understands the social context of the community to be engaged and with appropriate health system strengthening in parallel, vaccination remains an important part of the preventative repertoire. However, global vaccination programmes are not a magic bullet and even where, for example, in cervical cancer vaccines have been developed it still may be more cost-effective to utilize a non-vaccine approach to prevention.

While there are many international documents outlining important strategies in cancer prevention, the practicalities and logistics are left to the individual countries. Even within the country, it may be unclear who has the responsibility for cancer prevention. Given that tobacco smoking, obesity and alcohol consumption are major drivers of cancer incidence worldwide, a national strategy lacking coordination with other countries seems doomed to fail. Studying these major risk factors one by one it is clear that they are driven by global – not local or national – phenomena. As one market for these products shrinks so another one is opened up. Particular examples include:

- the tobacco industry turning to the big markets in India and China;
- the international food industry changing societies diets with calorie dense, poor quality food-stuffs, creating a global "Westernisation" cultural change with fast food and less physical activity;
- Aa westernised lifestyle regarding alcohol intake where, for example, women are targeted as a high use consumer group.

The mismatch between the globalization of pro-cancer commodities and the relative nationalization of prevention within a cancer control setting is a major issue. Social determinants also play an integral role in the complex adaptive system health behaviours but with few public policies addressing the demand side of pro-cancer commodities. The globalization of markets, behaviours, population and development are having a profound effect on the supply and demand of pro-cancer commodities such as tobacco and alcohol.

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By itself globalization is not the issue. The expansion of global markets has provided major benefits for human development, however, the same mechanisms have been co-opted to increase exposure in LMC to tobacco. Furthermore we know that where countries experience economic shocks from global downturns without recourse to the benefits of local/national sustainability plans the social stress and disintegration of cohesive, health-promoting networks forces many into serious pro-cancer, anti-health behaviours such as increased tobacco usage and alcohol consumption[18].

What can and should be the focus for public policy? For developed countries there is simply no longer any excuse not to put in place the full raft of public health measures to combat the most pernicious risks, such as alcohol and obesity. Furthermore there is an urgent need to support more research into the most appropriate measures and means to combat these cancer risks stratified by the various complex sub-populations within their countries. Beyond the Framework Convention on Tobacco Control a suite of public policy measures – tobacco taxation, restrictions on smoking, health information and counter-advertising, bans on advertising and promotion, and smoking cessation treatments are available[19]. There is also a clear political governance role for helping to reign in the movement of these pro-cancer commodities and supply chains to LMC. Most major corporations are based in the developed world in one way or another and concerted action to prevent them "globalizing" these pro-cancer commodities is necessary. In addition and considering the "harm" posed by tobacco to public health in general in comparison with other drugs[20] perhaps countries should consider taking the route that the Kingdom of Bhutan has and ban tobacco sale completely.

Can we call on Adam Smith's invisible hand to

suggest that counter-forces can and will come into play against the tyranny of anti-health commodities? Whilst most cancer prevention public policy has focused on the "demand-side" the case for changing human behaviour is more complex and potentially less tractable. Should we perhaps take a more enforced top down approach to the supply-side in the name of cancer public health? Aside from the practicalities, political philosophy is sharply divided between the pro-free market of Hayek and Friedman and the need for Sen-like distributive justice. A bottom up approach seems too slow and top down too political. Thus we are left with civil society, philanthropic funders, advocacy and patient groups to hold policy-makers to account and agitate and educate within their communities – is this the correct "solution" or are FCTC-like public policy the only avenue for real improvements to the prevention agenda? An attractive, but long term policy approach is to incorporate prevention into the education stream, particularly for women, as part of a health for tomorrow programme. Adding health to the basic universal curriculum as part of the Education for All objective would be a huge step forward in cancer prevention and life long health[10].

Perhaps we can have recourse to a belief in the self-correcting nature of human societies. However, major changes in human society have only taken place under substantial environmental pressure[21] and the ever increasing fissioning of social groups suggest that a wait-and-watch approach will fail. Public policy in cancer prevention could, however, take much more notice of what we have learnt about the evolution of human behaviour from our evolutionary adapted environment. As Robin Dunbar at the University of Oxford has eloquently put it, "Primate societies [and that includes humans] are implicit social contracts. Like all social contracts, their stability and functionality depends on the members trading off short and long term benefits"[22]. In societies with short life expectancies and a higher proportion of life spent disabled, prevention makes no sense to the individual. However, even in societies which have fully undergone the demographic and epidemiological transition, major portions of these societies are increasingly at risk from pro-cancer behaviors. While social conformity and "good health behaviour" can always be imposed by punitive action on backsliders[23], there are limits to which such action can really enforce social cooperation. Social cooperation is far more effective when individuals act willingly because they all voluntarily sign up to the communal project. Mechanisms that create a sense of communality in cancer prevention are, thus, more likely to result in the required levels of altruism than the use of top-down social control[24].

International Cancer Control Planning (ICCP)

How are we to address global cancer control when, even today we are faced with some basic truths that we have failed to adequately deal with the most simple of public health measures? As a recent *Lancet* editorial starkly put it, "adequate sanitation is the most effective public-health intervention the international community has at its disposal. Yet 40% of the world's population still lacks access to a toilet"[25]. The answers lie not in trade-offs with other facets of global health but in formulating a new paradigm that constructs programmes, systems and public policy that is inclusive and coherent with the variety of needs on the ground. Cancer is a part of a cross sectoral approach that will have many commonalities with the control of other NCD but will also need very specific vertical programmes. Likewise, the much needed call for the inclusion of cancer as a Millennium Development Goal[26], and this partial recognition by the recent UN General Assembly to work towards a high level meeting of the General Assembly[27] is a positive international response. Nevertheless it is still a long way from tangible adequately-funded global cancer action plan. G20 leaders could do much to catalyze this.

The answers lie not in trade-offs with other facets of global health but in formulating a new paradigm that constructs programmes, systems and public policy that is inclusive and coherent with the variety of needs on the ground

Proactive measures to stimulate and fund research in prevention, early detection, childhood cancers, cancer surgery, to name but a few are needed. Improvements in global cancer outcomes needs research findings across the full spectrum

This should and will require careful thought. Donors should be willing to ask the hard questions as to whether proposals will lead to better cancer public policy and, through this, better control. Different countries, regions and even domains of cancer control (surgery, palliative care, etc) will need bespoke vertical action and as these are evolved, the need to weave them horizontally with cancer control as a whole and wider into health will be a serious intellectual and logistical challenge. There is plenty to guide G20 leaders with analysis of ODA policies as well as the lessons learnt from other global health (mis)adventures. Multilateral co-ordination is the ultimate goal but confidence-building steps between donors, advocates, and national leaders will be required for a full International Cancer Control Plan.

For both prevention and early detection, the critical factors will be the social determinants of health, fit-for-purpose technologies and the requisite infrastructure (this includes manpower and training). Other domains of cancer control also need strong international public policy. Palliative care access programme from the INCTR and WHO policies on this area have created a strong advocacy movement which can be built on. Likewise the efforts of the IAEA in bringing radiotherapy provision to many LMC countries is a model start. However, we have yet to see a concerted effort and advocacy around surgical oncology or indeed around how LMC are going to access essential cancer medicines. There is a critical need for new public policies in both these areas.

Furthermore, there needs to be recognition of the "fallacy" of trying to translate clinical guidelines and / or systems from developed countries to LMC. International Cancer Control Planning is not amenable to "one-size-fits all". Dealing with, for example of complexities of orthodox and "traditional" approaches and systems used by most LMC for cancer treatment requires a deep understanding and empathy with the socio-cultural norms of these societies in order to develop the most effective systems and programmes. Increased Instutional-to-Institutional cooperation would be a major step forward. Cancer centres in developed countries can provide faculty, funding and other support for networks and centres in LMC. The relationships should be reciprocal; developed countries have much to learn both in terms of novel cost-effective management techniques but more importantly the critical issues under which much of the world operates when developing their cancer control plans.

Research is vital and absolutely integral to ICCP. Many developed countries take their responsibility to fund cancer research seriously but in practice do not always do so. Data gathered during the ECRM project identified major shortfalls in many countries[28]. More seriously though are, a) the in-balance between different domains of research, and b) the lack of funding to support research into controlling the cancer burden in LMC. In the latter case our current estimates from the Centre for OncoPolicy indicate less than 2.7% of global funding goes to cancer research specifically relevant for LMC. This is an astonishing 97/3 gap. On the former issue cancer research funding has been extremely generous towards fundamental biology and drug development, and far less so towards many other crucial areas.

Proactive measures to stimulate and fund research in prevention, early detection, childhood cancers, cancer surgery, to name but a few are needed. Improvements in global cancer outcomes needs research findings across the full spectrum. Data on the challenges and priorities for the public sector for global health, including cancer[29], are now readily available and whilst totals have risen, the spread of contributions has not changed significantly[30]. There is a strong case both for the creation of a Global Cancer Fund and for increased corporate responsibility and national research funding organisations to support work outside their borders. The building blocks and tools are there for use to construct an international cancer control plan; so too are the builders. It is, as in so many cases now "simply" a matter of will. ■

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