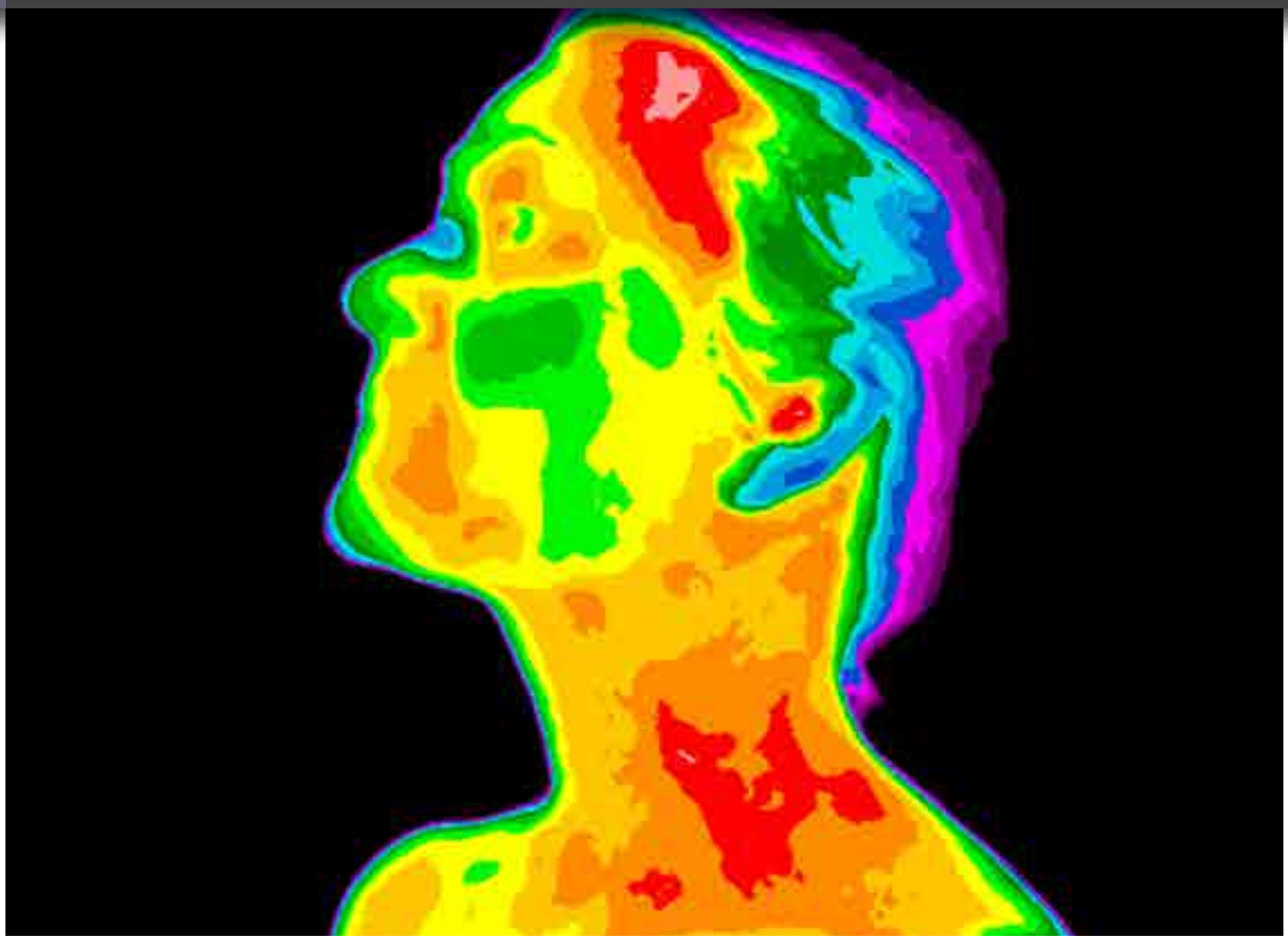
CANCER CONTROL 2023

CANCER CARE IN EMERGING HEALTH SYSTEMS



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CLIMATE CHANGE AND CANCER • REGIONAL FOCUS ON LATIN AMERICA
LESSONS FROM SUDAN • CANCER CARE IN SYRIA • GLOABAL ONCOLOGY NURSING
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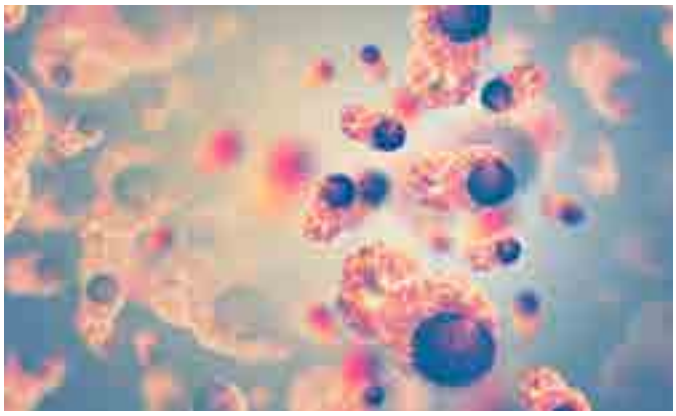


Welcome to *Cancer Control 2023*

For a decade Dr Ian Magrath, our first Editor-in- Chief, and myself, Publisher of *Cancer Control* have written this introduction together for each annual volume. Sadly, in March 2023, Ian passed away.

The *Cancer Control* series began as a partnership between Global Health Dynamics and the International Network for Cancer Treatment and Research to give some much needed coverage to cancer care in low- and middle-income countries. I will be forever grateful for Ian's guidance, motivation, insight and profound knowledge, which set our course. I treasured his friendship and conversation, which covered so many subjects from the cosmos (a favourite topic) to the politics of the day. The success of *Cancer Control* is in no small way down to him and his legacy is hard-wired into our purpose, role, and attitude to global cancer care.

This sadness was added to by the death shortly after of Melissa Adde, Ian's wife and then the current President of INCTR. An heartfelt appreciation of Ian and Melissa by friends and colleagues follows this introduction.

In this issue, we report on some of the global challenges faced by the cancer community. We take a first look at the complex way that climate change is impacting cancer care in LMICs in a disproportionate way and also how cancer research creates its own carbon footprint, that needs to be addressed. We look at how cancer care is managed in crises with a focus on displacements during conflict and using the example of Syria. Conflict is also key in our assessment of cancer care in the Sudan. Finally, we report on the current status of oncology nursing in five LMICs (Turkey, Peru, Philippines and Ethiopia) and what needs to be done

We also revisit Latin America with an article on the new Latin American Cancer Code by one of its senior contributors and carry an extended interview with the eminent Professor Cazap, President of SLACOM, on the development of cancer care in the region during his career and what remains to be done.

In our final section, we look at how language and communication can affect perceptions of cancer and how people react to it, which may lead to poor diagnosis and misunderstanding. We also look at personalized care and how it can contribute to quality of life as well as survival by providing a more holistic approach to cancer treatment and care. ■

We would be delighted to have your feedback at cancercontrol@globalhealthdynamics.co.uk. Please visit our website www.cancercontrol.info for updates.

Tim Probart, MA, Publisher, Cancer Control and CEO, Global Health Dynamics

Ian Magrath and Melissa Adde – an appreciation

Ian Magrath, the creator and first president of the International Network for Cancer Treatment and Research (INTCR), was the best sort of idealist. A gentle man and a gentleman, he was determined to make a difference in his chosen calling: building capacity for cancer treatment and research in low and middle income countries where resources were either poorly provided or non-existent.

In many ways a visionary, in the first decade of this century – when there was little or no widespread interest in the concept of "Global Cancer" – he built up a network of clinical and scientific experts that stretched from Vancouver and Brazil to Europe, across sub-Saharan-Africa and India. Compassionate and generous to his colleagues, Ian placed a high value on collaboration and service to others, and had little time for well-heeled institutions and individuals who in pursuit of financial or political advantage, or professional self interest, withheld their support from programmes designed to save the lives of people less fortunate than themselves.

Known and widely respected in the field of oncology for his extensive work on African Burkitt's lymphoma. Ian was a polymath who carried his erudition lightly. His colleagues will remember his magisterial discourse, published over four editions of the INCTR newsletter, of the evolution and discovery of the Cell. Beginning with the Dutch microbiologist Antonie van Leeuwenhoek, Ian's account travelled both backwards to the traces left in the fossil record dated to 3.5 to 3.8 billion years ago (e.g., stromatolites containing microorganisms), and forwards to our understanding today of simple and complex cells. Although exceedingly well read Ian was no bookworm. Appearing slender and diffident in character, he was in fact physically strong, and quick to act. On one occasion having lunch with friends in a Paris restaurant he heard a diner choking noisily on a piece of meat. Going to his assistance Ian took the necessary steps concluding with a perfectly executed Heimlich manoeuvre. On being congratulated on saving the man's life he shrugged and said simply "It's what we do."

Cruelly stricken with Parkinson's Disease, Ian Magrath was nursed for several years by his wife Melissa Adde who eventually succeeded him as INCTR's President. Tragically, Melissa passed away shortly after Ian's death. Their work, and the example of the lifetime commitment that they provided, touched many people's lives and they will be sorely missed by those who had the privilege to know them.

Mark Lodge, Director, INCTR UK

Melissa Adde, RN, MSc, served as the Director of the Clinical Trials Office and then as President of INCTR for many years beginning in 2000 and ending in 2023 with her untimely death. She coordinated multi-institutional clinical research studies for multiple adult and pediatric cancers in countries such as Peru, Egypt, and India. Melissa conducted training in basic skills of clinical research, database design and data analysis with results shared in multiple publications.

I had the pleasure to collaborate with Melissa throughout her INCTR career including attending INCTR annual meetings in various low- and middle-income countries. Two memorable occasions were our participation in the 24th International Congress on Chemotherapy in Manila, Philippines and the INCTR 2007 meeting in São Paolo, Brazil. Melissa's quiet presence and on-going support of clinical researchers was notable. She was cognizant of the challenges of conducting clinical oncology research in resource-limited settings yet set the bar high for quality data capture and analysis. She will be missed by many in the international oncology community, particularly those striving to improve cancer care in LMIC settings.

Julia M Challinor, RN, PhD Associate Adjunct Professor School of Nursing University of California San Francisco USA

It is a pleasure and a privilege to write about Ian and Melissa, with whom I worked for the INCTR, for 10 years. I first heard Ian speaking about his work, soon after he had founded the organization and was so moved that I asked whether I could help with teaching doctors and nurses in developing countries. As a consequence, INCTR (UK) was created, St. Bartholomew's Hospital and the Medical College having allowed me to give up 40% of my regular work in order to do this, for 5 years. With my colleague, Tom Lister, we were able to organize funding and teaching for medical and nursing staff in Turkey, Egypt, Nigeria, Uganda, Hong Kong and Brazil but the delegates came from far and wide. Ian and Melissa were totally dedicated to their cause and had a talent for

convincing others to do the same. I miss them both.

Ama Rohatiner, Emeritus Professor of Haemato-Oncology, St Bartholomew's Hospital, London

I had a lot of contact with Ian and Melissa during the administrative, legal, political and logistical preparation for the establishment of the INCTR at the Pasteur Institute in Brussels.

Over the years I have had the privilege of working with them, and have come to appreciate their enthusiasm and generosity. I will have unforgettable memories of Ian., a great humanist and outstanding scientist, and of Melissa, who lived in profound harmony with her husband, for whom she became an irreplaceable adviser and an unconditional support.

Louis de Schoofs, Brussels, Belgium

Ian Magrath Melissa Adde -gone but will never be forgotten…

Ian Magrath and Melissa Adde left us at short interval causing great loss to INCTR at the "best of times and the worst of times in oncology" Their selfless service in treatment of haematological malignancies through international clinical research contributed remarkably to the recent success in treatment of Leukemias and Lymphomas heralding the "best of times". Their untimely demise occurred at the "worst of times" when the whole world is desperately trying to recover from the deleterious effects of a pandemic on cancer care. Empathy is considered as the skill that builds bridges around the world. Ian and Melissa were in the forefront of building such bridges in cancer care across the oceans. May you both rest in peace!

Madhavan V Pillai MD, FACP, President, INCTR, USA

I met Ian and Melissa at different colloques and meetings on Burkitt lymphoma and Epstein Barr virus. I remember the meeting in Virginia Falls for the new edition of the WHO classification of tumours of hematopoietic and lymphoid tissues and how proud I was when he asked me to be a member of the Alliance Mondiale Contre le Cancer (AMCC), an NGO created by his best friend Guy de Thé. For several years, we worked together in connection with INCTR with a lot of trust.

Martine Raphaël, Vice President of AMCC

Here is an unforgettable memory, the beginning of the adventure of the French office of the INCTR: a sweet memory for Ian and Melissa who have always supported us. The office of the Alliance Mondiale Contre le Cancer (AMCC) opened in Montpellier on 4 April 2003. The inauguration was attended by Prof. Dubois, Director of ICM, Prof. Guy de Thé, President of AMCC, Dr Ian Magrath, President of the INCTR, Ms Melissa Adde, Director of the INCTR's Clinical Research Department, AMCC is part of the International Network for Cancer

Treatment and Research (an association under the French Law of 1901). This association is the French-speaking branch of the Brussels-based INCTR (Institut Pasteur) .It's an adventure that's still going strong in 2023! Thank you Ian and Melissa, we'll never forget you!

Sabine Perrier-Bonnet, Chargée de projets e-santé UNFM

I am proud to have known these two extraordinary persons for many years. Both had enormous sincerity – for long years – for the cause of lessening the suffering of cancer patients in the world. Prayers, may their souls rest in peace.

Prof. Ahmed Elzawawy, MD, PhD, Egypt

Attending their funeral service was the saddest thing I have done in a while. I had just returned from Ethiopia where I was a part of the WHO/IAEA team that did the country's need assessment for cancer. I thought of Ian a lot as he would have been so proud to know that I achieved the purpose of establishing pediatric oncology in Ethiopia through the ASLAN Project and made it a GICC Focus country this week.

Aziza T Shad, MD, Ellen WP Wasserman Chair of Pediatrics Professor of Pediatrics & Oncology Georgetown University School of Medicine

I have said in the introduction how important Ian was to founding of the Cancer Control series and how much I valued his expertise and friendship, but I would like also like to say how much to enjoyed the company and, latterly, long telephone conversations with Melissa. I remember what fun it was to stay in with them in Brussels once, whilst we were do some planning work. I shall miss them both.

Tim Probart, MA, Publisher, *Cancer Control*

Cancer care in 2023

David Collingridge, Editor-in-Chief, The Lancet Oncology; Visting Professor of Global Oncology, King's College London, UK

DAVID COLLINGRIDGE

Looking over the events of the past year, and recalling discussions at the World Oncology Forum, Ascona, Switzerland; the World Cancer Leaders' Summit in Long Beach, California, USA; and most recently, the London Global Cancer Week, it is clear substantial challenges continue to hamper cancer control worldwide.

Stigma from a diagnosis of cancer is a global blight, particularly for people in low- and middle-income countries, and from certain cultures. Coupled with a lack of trust in health systems, it reinforces a perception that a cancer diagnosis is an inevitable and irreversible life-limiting event. Regrettably, this view is not without substance. Seen through the lens of inequities in early access to diagnosis and treatment between rich and poor citizens worldwide, the cost of cancer care – at both the macro (health systems) and micro (out of pocket expenses) level – can be catastrophic. Furthermore, most readily accessible evidence is based on research done in high-income countries with Caucasian patients. It typically does not take in to account the large variation in global cancer demography, gender, or the realities of access to care for patients living in rural areas versus those in urban centres. These are all big drivers of disparity in cancer outcomes. By 2030, there will be a need to double the expenditure on cancer care if we are to tackle existing shortages in resourcing of treatment centres; prevention and public health; strengthening of multi-disciplinary workforces; and reducing deficits in educational attainment.

Solutions do exist. Advocacy for, and the adoption of, Universal Health Care in each country is a prerequisite for addressing many of the inequities in the delivery of cancer care, but it needs to underwritten by a long-term financially sustainable plan and stable government. Better prevention, screening, and early detection is a must, as is access to morphine for palliating patients presenting with late-stage disease. At the same time, we need to explore and access novel funding mechanisms to bend the cost curve not just in our health systems, but also in our global oncology research networks, clinical trials, and implementation science. Barriers that drive gender-based and cultural disparities must also be broken down because these are among the biggest drivers of inequity. As a community, we must also press for better design of clinical trials and adherence to the principles of "common sense oncology", which promote the idea that interventions should demonstrably improve the lives of patients and not simply achieve statistical significance to gain regulatory approval.

New technologies such as AI and cloud computing can be used to build resilience in health systems, and we should amplify the narrative that spending on healthcare represents an investment in the long-term prosperity of a nation and is not just a drain on the public purse. Indeed, a healthy nation is a productive nation. Furthermore, the financial spillover from investing in cancer control in other areas of medicine drives additional change for the good. In terms of prevention, for example, cancer shares all the same risk factors of the other major NCDs and for every US$ 1 invested in NCD prevention a return of up to US$ 7 through reduced health costs and improved productivity is seen.

Finally, advocacy is a huge lever for change, but campaigners need to incorporate strategic thinking into their strategies. It is not enough to merely identify problems; we also need to provide solutions and deliver these messages to the best person, party, or agency that as the power to act – as inconceivable as it might sound, that person is often not the minister for health. Above all, though, we must not give up for this would be unforgivable. ■

Current Global Cancer Reports

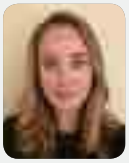
Climate change: The problems and potential solutions in oncology

Sarah EW Briggs, Academic Clinical Lecturer in Medical Oncology and Junior Research Fellow at the Centre for Personalised Medicine and St Anne's College, University of Oxford, UK; **Ilit Turgeman,** Medical Oncologist, Emek Medical Center, Israel; **Seamus O'Reilly,** Clinical Director of Cancer Services and Consultant Medical Oncologist, Cork University Hospital, Ireland; **Catherine S Weadick,** Medical Oncology Specialist Registrar, Cork University Hospital, Ireland; **Lucy Murphy,** Project Manager, Green Trials Initiative, Cancer Trials Ireland; **Roselle B De Guzman,** Medical Oncologist and Associate Professor, Manila Central University-FDT Medical Foundation Hospital, The Philippines; and **Rob Chuter,** Clinical Radiotherapy Physics Team, The Christie and University of Manchester, UK


SARAH EW BRIGGS


ILIT TURGEMAN


SEAMUS O'REILLY


CATHERINE S WEADICK


LUCY MURPHY


ROSELLE DE GUZMAN


ROB CHUTER

The effects of climate change are increasingly being felt around the world. Climate change directly impacts cancer patients and their healthcare, disproportionately affecting populations who have contributed little to the problem. Meanwhile, cancer care and research have a significant carbon footprint. In this article we discuss some of the key challenges, and potential solutions, to the challenge of climate change in oncology.

Climate change represents the biggest threat to human health of this century *(1)*, from threats including extreme weather events, food shortages, conflict, and water shortages *(2)*. From an oncological view point, changes in patterns of exposures and disrupted access to healthcare, will increase the burden of cancer globally. Extreme weather events such as flooding and heat disrupt cancer care, whilst migration as a result of climate-related problems will lead to insecure healthcare for millions *(3,4)*. Many of these issues have a greatest impact on populations with minimal historical emissions, widening health disparities.

However, emissions associated with cancer care and research also contribute directly to climate change. Healthcare accounts for 4.4% of emissions globally *(5)*, including the spectrum of cancer care – from screening for prevention to surgery, radiotherapy, and systemic therapy. In addition to this, cancer research and development, for example basic science, pharmaceuticals, and technology, and the large conferences associated with this work, have a significant footprint. Reducing these emissions as rapidly as possible needs to become an increasing focus. Health systems internationally have acknowledged this and are working hard to reach net zero *(6)*.

In this article we address some of the challenges in different areas of cancer care and highlight available and potential solutions to these (Figure 1), and discuss the role of the oncology community in supporting broader societal change to mitigate the impacts of climate change.

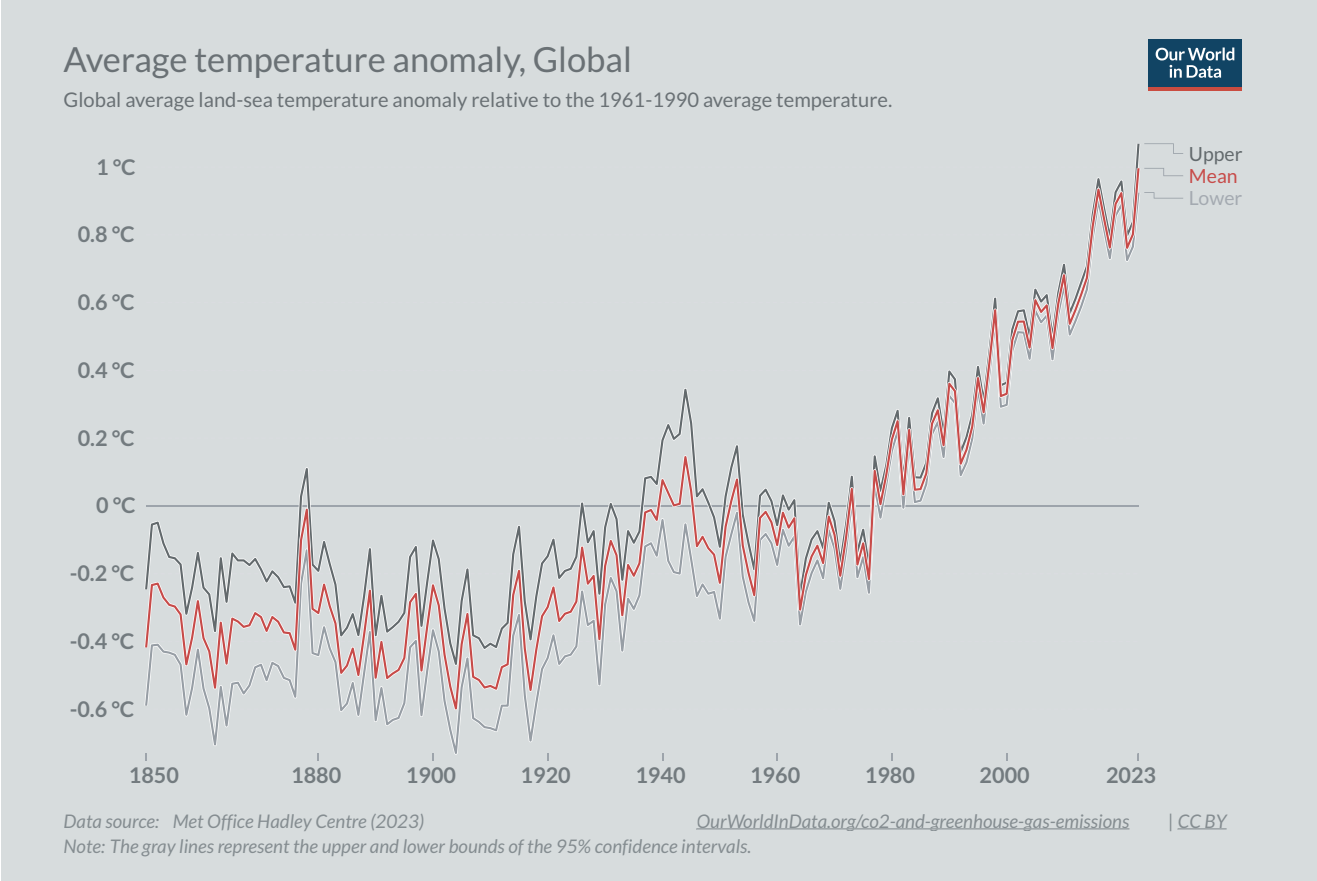
How climate change affects cancer

Challenges

The extensive effects of climate change on cancer are increasingly clear. Both direct exposures to cancer risk factors resulting from climate change, such as air pollution and ultraviolet radiation, and the disruptions to cancer care should be considered.

Air pollution is largely brought about by the combustion of fossil and biomass fuels emitted directly into the environment, simultaneously causing and worsened by climate change *(7)*. Carcinogenic pollutants include gases, namely nitrogen dioxide, sulphur dioxide and ozone, and particulate matter with a diameter of 10 micrograms/metre^3 or less (PM_{10} and $PM_{2.5}$) *(8)*. The vast majority of the global population currently resides in regions where pollution levels exceed the World Health Organization's guideline *(9)*, exacerbated by increasing urbanization in low- and middle-income countries (LMICs). Air pollution is the second leading cause of lung cancer after smoking, and responsible for 14% of lung cancer deaths *(9)*. Increasing $PM_{2.5}$ concentrations are associated with both incidence and mortality from lung cancer *(10–13)*, and recently, with epidermal growth factor receptor (EGFR)-driven

Figure 1: Increase in average global temperatures relative to the 1961-1990 average temperature. Gray lines represent the upper and lower bounds of the 95% confidence interval. Reproduced under CC-BY licence from Our World in Data https://ourworldindata.org/co2-and-greenhouse-gas-emissions.



lung cancer, commonly diagnosed in never-smokers, with evidence of an inflammatory mechanistic basis *(14)*. Additional data link pollution to cancers of the aerodigestive and urinary tract, breast, and other organs *(9)*. Besides air pollution, water, chemical and soil pollution may harm human health *(15)*.

Climate change has led to increases in ultraviolet radiation due to global warming and ozone depletion, a strong risk factor for melanoma and other skin cancers *(16–18)*. Moreover, reduced access and deleterious effects on water and food supply, including aflatoxin contamination of crops linked to liver cancer, are also projected to impact cancer deaths *(19–21)*.

Extreme weather events precipitated by climate change, such as wildfires, hurricanes, flooding, and drought, generate substantial carcinogenic exposures, and impact across the cancer care continuum, delaying new diagnoses and disrupting treatment, with an impact on cancer survival *(22–24)*. Shortages in supplies, damage to infrastructure, power systems, communication and transportation of patients and care teams further hamper cancer care *(25)*. Infectious diseases become more prevalent *(26)*, to which individuals with cancer may be more susceptible.

Climate change disproportionately affects socioeconomically disadvantaged communities, racial and ethnic minorities, and women and children. People living in LMICs, with historically low contributions to carbon emissions, have less accessibility to cancer care, that is more likely to be disrupted by natural disasters, and a lower capacity to mitigate them *(27)*. Early life exposures to pollution have been related to childhood and young adult cancers *(9)*, and nearly 92% of pollution-related deaths occur in LMICs *(15)*. It is anticipated that millions of climate refugees and displaced people due to uninhabitable conditions will have jeopardized healthcare security and cancer care in the future – making the social determinants of cancer fundamental to appreciating the impact of climate change *(28)*.

Solutions

Potential solutions for reducing the impact of climate change on cancer centre on addressing the causes of climate change, mitigating exposures to cancer-risk factors, and strengthening health systems *(28)*. Healthcare professionals have an opportunity to generate evidence and educate, to ultimately impact behaviours and climate-related policy. Recently, key medical journals published a united message to world leaders urging rapid climate action *(29)*, and action on pollution has been urged by the the International Association for the Study of Lung Cancer *(30)*. For the first time this year, the Conference

of the Parties (COP) 28, the annual UN convention on climate change, will consider health issues in depth.

A global and rapid shift to renewable energy sources as well as increased use of efficient hardware is necessary to both reduce pollution and reduce the greenhouse gases emitted into the atmosphere that drive climate change, and typically have health co-benefits. For example, phase-out of fossil-fuel powered vehicles and increased use of active transport reduces pollution and increases physical activity, reducing cancer risk. Oncology professionals could play a key role in advocating for a rapid shift away from fossil fuels to clean our air, just as we have been an important voice in the fight against tobacco *(31,32)*.

Cancer systems and healthcare infrastructure must be made resilient and prepared for cancer threats as well as the changing patterns and burdens of disease. Care continuity during climate events, and health disparities based on social determinants should be prioritized.

How cancer treatment affects climate change

Challenges

Much of the infrastructure associated with healthcare contributes to emissions, from buildings and land use, to transport, energy, and food supply *(33)*. Many healthcare facilities in low-income countries use outdated medical equipment, which can be energy-inefficient and contribute to higher energy consumption and emissions. Cancer care is typically delivered in large centres, with patients often travelling a considerable distance for their care *(34,35)*, with hospital care disproportionately more carbon intensive than community-based care *(33)*.

Surgery, pharmaceuticals, and radiotherapy, the mainstays of cancer care, are likely to have significant environmental footprints though their relative contributions in oncology have not yet been quantified. Operating theatres have a significant carbon footprint, and newer surgical techniques are increasingly carbon-intensive *(36,37)*. Medicines and chemicals make up 20% of the total of the United Kingdom's NHS carbon footprint (when Scope 3 emissions are included) *(6)*, whilst in the US prescription drugs account for 14% of healthcare-associated carbon emissions *(38)*. The pharmaceutical industry has been found to be 55% more carbon intensive than the automotive industry *(39)*. The intensive prescribing practices in oncology makes pharmaceuticals likely a significant portion of oncology's environmental footprint. Treating a rising volume of increasingly complex cases, whilst also ensuring care is environmentally sustainable, is a huge challenge. Many limited-resource countries heavily rely on imported drugs, medical equipment, and supplies, transportation of which also contributes to carbon emissions.

A large part of cancer care is delivered in the context of clinical trials. The intensive monitoring, patient travel, and laboratory use result in a major environmental impact. Globally conducted clinical trials have a carbon footprint of just under a third of the annual emissions of Bangladesh *(40)*. In 2009, a study of 12 pragmatic randomized trials estimated that the average emission of a trial was equivalent to nine people in the United Kingdom in one year *(41)*. Compounding these figures are emissions and waste from laboratory based or "wet lab" bioscience research which is responsible for 2% of global plastic waste *(42)*. Laboratories are also resource intensive using higher amounts of water and 5–10 times more energy per square foot than standard office spaces *(43)*.

Solutions

At COP26, 52 countries committed to developing resilient, low-carbon healthcare systems, and high-income countries must lead the way in decarbonization *(44)*. Over 1000 hospitals in the United States have committed to emissions reductions, and the NHS in England has developed a comprehensive net-zero strategy *(6,44)*, In line with this, ensuring cancer centres are retrofitted or built to high environmental standards, and powered by renewable energy (with financial support for this in LMICs), is a key step. In low-income countries, regular maintenance and repair services help extend the lifespan of existing equipment. Collaboration with international organizations to secure funding or donations for updated, energy-efficient and environmentally-responsible medical equipment would contribute to sustainable solutions.

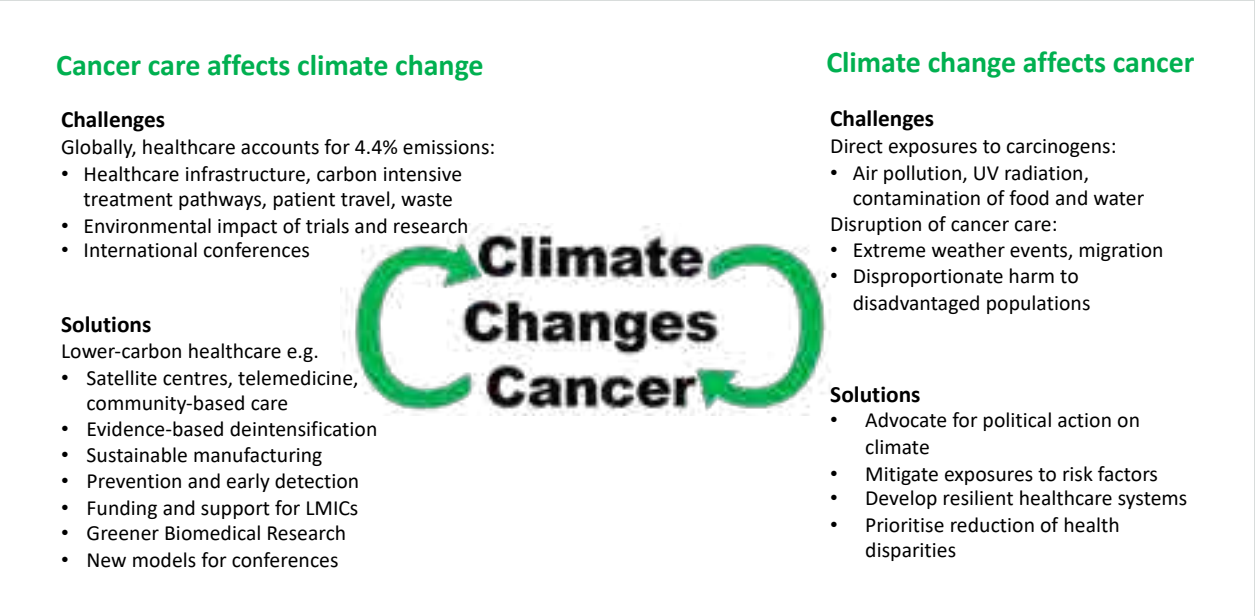
As travel is responsible for a large proportion of the emissions for cancer care, increasing the number of satellite centres, increased use of hypofractionated radiotherapy treatments, and use of telemedicine would also reduce emissions, and could improve patient experience *(45)*. Telemedicine can also help facilitate access to care for patients in remote regions. Community based cancer care, where possible, has a lower carbon footprint than hospital based care *(33)*. Improving public transport would also reduce travel emissions.

Procurement and supply chain comprise over 70% of healthcare's emissions *(46)*, and reducing these requires coordinated effort between health systems and industry *(44)*. Regulations to ensure that manufacturers use sustainable practices have been implemented (e.g. ISO 14001) but need to be widely adopted to ensure standards are met. Embracing the circular economy, whereby a used product is returned to the manufacturer for reuse, refurbishment or recycling, can also contribute. In resource-limited settings, local production can reduce the need for extensive imports and transportation. Establishing partnerships with neighbouring countries for resource-sharing and reducing cross-border transportation

Table 1: **Enabling greener biomedical research challenges and solutions**

Challenge	Possible solutions
Prioritizing environmental sustainability within the biomedical research ecosystem	- Supporting "bottom up" activities with a more strategic and better resourced "top-down" approach - Develop a workforce specializing in improving the environmental sustainability of research practice - Integrating environmental sustainability into good research practice analogous to health and safety integration - Developing environmental sustainability standards to provide benchmarks and promote accountability - Central coordination for environmental sustainability in biomedical research
Generating and disseminating evidence on environmentally sustainable research practices	- Provision of additional data on the environmental impact of research activities, equipment and consumables - Standardized and evidence based metrics on sustainability to guide decision making - Mechanisms to ensure effective dissemination of information and sharing of experience - A critical mass of experts to study and develop environmentally sustainable research practices
Accelerating introduction of more environmentally sustainable practices in clinical research	- A greater focus on green practice in clinical trials and other clinical research - Public and patient engagement should be built into a sustainability agenda for clinical research
Promoting and informing behaviour change	- Coordinated engagement to ensure sustainability is embedded in the behaviour of individual researchers

Figure 2: **An overview of the challenges of climate change in oncology and potential solutions**



would also promote climate-friendly practices.

Over-prescription and pharmaceutical waste need to be addressed. The key actions of reduce, reuse and recycle are fundamental to all sustainability initiatives *(47)*, including clinical medicine and research. In 2012, the "Choose Wisely" campaign was launched in the United States, and is now active in 30 countries, discouraging the use of tests and interventions with minimal patient benefit over concerns of rising healthcare costs and concerns that a third of healthcare offered no clinical value to patients *(48)*. The recommendations target overuse and have been re-imagined for clinical climate change mitigation *(49)*. Evidence-based de-intensification of treatments (for example reductions in adjuvant therapy for colorectal cancer *(50)* and careful choice of treatment

scheduling *(51)*, will reduce emissions associated with these treatment pathways.

A renewed focus on risk reduction and cancer prevention is essential to limit the rise in cancer cases. This includes public health measures to promote healthier lifestyles and address wider determinants of health, such as active travel, limiting UV-exposure, and more plant-based diets, much of which also reduces emissions. In LMICs, many patients present with advanced-stage cancers requiring more intensive treatments due to limited access to early detection, which can lead to increased energy and resource consumption. Cancer awareness and education campaigns to promote early detection, and support for low-cost or free cancer screening programmes would reduce the need for aggressive treatments, improving cancer care and reducing environmental impacts.

Palliative care is also often underdeveloped in low-income settings, which can lead to unnecessary and resource-intensive interventions at the end of life. Compared with other specialties, palliative care has relatively low greenhouse gas emissions *(52)*. Expanding palliative care provision and education, particularly community-based support, is essential both for patient care and emissions reductions.

To date, engagement in sustainability in the clinical research arena has been low. Following a landmark analysis by the Sustainable Trials Study Group in 2007 of MRC CRASH trial *(53)*, there has until recently been little progress, though we are now at a time of unprecedented activity in translational research. Over 2000 clinical trials evaluating immune checkpoint inhibitors were active last year *(54)*. The rapid expansion of clinical investigation has been largely uncoordinated, a divergence that will increase as molecular profiling and predictive biomarkers, targeted therapies, and novel combinations are tested *(55,56)*. Harmonization of trials, which would reduce waste, will be challenging given the disparate and growing number of pharmaceutical companies involved. When clinical engagement has been present it has been beneficial. In 2011, the UK Sustainable Clinical Trials Group (SCTG) published guidelines for reducing the carbon footprints of trials. Two subsequent trials demonstrated improved carbon efficacy due to faster patient recruitment, lighter trial materials and web-based data entry *(57)*.

In contrast, in the laboratory arena engagement has been significant, where "My Green Lab" a non-profit organization with a mission to build a global culture of sustainability in science *(58)*, is an exemplar. "My Green Lab" Certification is recognized by the United Nations "Race to Zero" campaign, and is considered gold standard for laboratory sustainability best practises internationally, with 1055 laboratories certified

Figure 3: **Actionable areas in clinical trials**

by July 2022 *(58)*.

Several recent initiatives are accelerating progress in clinical trials. A UK research project funded by the National Institute for Health and Care Research (NIHR) is developing a method to measure reliably and consistently the carbon footprint of clinical trials *(59)*. A recent forum workshop hosted by the Academy of Medical Sciences, the Medical Research Council, and the NIHR has highlighted four key challenges for greener biomedical research and proposed possible strategies to address these deficits (Table 1) *(60)*. Actionable areas for improvement are shown in Figure 2 *(59,61–64)*.

As with clinical work, there is a need to enhance value and reduce waste in research *(65–67)*. Integrating a "Green Choose Wisely" initiative into clinical research, as in clinical practice, would reduce waste, reduce trial costs, be climate smart, and could serve as a catalyst for engagement of the clinical trials community at this pivotal time.

Professional engagement and education is essential in both clinical and research settings. A multinational survey of 4654 healthcare professionals assessing their views on climate change as a human health issue showed that awareness was high, but barriers existed to their engaging in advocacy and education on this issue *(68)*. Over 70% of respondents reported that policy statements by professional organizations and guidance documents on workplace sustainability would be helpful to them.

Challenges

In order to share ideas and practices, members of the oncology community regularly meet for national or international meetings and conferences. This is key to research and development but also has a large environmental impact. Air travel to these meetings has a huge environmental footprint, but accommodation and event spaces also contribute significantly to conference emissions. Initial work estimates the carbon footprint of medical conferences is about 2–3 tCO_2e per delegate *(69,70)*, and rough values for a European radiotherapy and oncology conference estimated per person emissions of about 1.1 tCO2e per person (personal communication). It is thought that to stay within 1.5°C each person globally would need to use less than 2.3 tCO2e per year by 2030, so one conference is a significant proportion of that yearly limit *(71)*.

Solutions

One solution to conference emissions would be to embrace the move to online conferences which the COVID-19 pandemic did much to normalize. This has been shown to reduce the carbon footprint of conferences by 94% *(70)* but also broadens access, including for colleagues in LMICs and those with caring responsibilities, and improves equity of delegates that can attend *(72)*. Another possibility is to use a hub model to conferences whereby for example delegates meet face-to-face locally but join the international community virtually *(73)*. A simpler approach would be to hold the meetings/conferences less frequently or alternate them between face-to-face and virtually each year. Such changes will require the support of both major cancer organizations and large pharmaceuticals.

Conclusion

The circular impact of climate change on the provision cancer care to patients across the world, and of cancer care and research on the climate, are an urgent and essential issue within oncology. These interlinked issues replicate injustices noted across the climate and health movement: the greatest oncology-associated emissions arise from cancer care in high-income countries, whilst the impacts are felt by patients in countries with historically very low emissions, and poor access to newer cancer treatments and technologies. These issues cannot be tackled without also addressing this injustice *(74)*. Physicians are trusted messengers and powerful advocates. We suggest that the international oncology community has a key, and as yet largely unrealised role, not only in mitigating climate change by reducing our own impacts, but also in advocating for others – at individual, organizational, and governmental levels – to urgently and rapidly do the same. ■

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Cancer control in crisis situations: What has the Syrian crisis taught us?

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This review addresses the critical issue of managing cancer care in the context of crises, with a focus on forced displacement due to conflicts. It highlights the impact of these events on essential cancer control measures. Using Turkey as a case study, the text discusses the country's response to the influx of refugees from the Syrian conflict, outlining the healthcare rights and protections available to refugees. The text concludes with policy recommendations for integrating cancer care management into national control plans and for prioritizing data collection on cancer care during crises.

Crises can strike unexpectedly and affect anyone at any time. Individuals might find themselves forced to flee their home to escape war, face a death sentence from a disaster – be it an unexpected earthquake, flood, or insecurity due to armed or political conflict – or struggle with the fallout from a major economic downturn. These events can disrupt essential cancer control measures, including prevention, screening, diagnosis, and treatment. Such was the case during the recent armed conflicts and COVID-19 pandemic. The question for us – policy experts, specialists, and decision makers – is: What actions should we take?

Consider the issue of forced displacement. Typically, it is sudden, massive, and beyond control, leaving both the host country and the refugees, as well as their home country, unprepared. The impact on people's lives is profound and often irreparable, with insufficient data to support care provision as well as rapidly shifting and computing human priorities. This lack of intelligence hampers planning, implementing, and maintaining support strategies. As of October 2023, UNHCR reports 110 million forcibly displaced people worldwide, with 75% hosted in low- and middle-income countries (LMICs). Additionally, 76% have been displaced for five or more years, according to the UNHCR. Notably, 52% of originating from the Syrian Arab Republic, Ukraine, and Afghanistan *(1)*. Forced displacement is a global issue, affecting regions including the Middle East, Latin America, sub-Saharan Africa, Europe, and beyond.

Overview of the refugee protection and healthcare rights in Turkey

In response to the Syrian conflict and other crises, Turkey has become a refuge for a significant number of displaced persons. UNHCR figures indicate that Turkey is home to the most substantial refugee population globally, with approximately 3.6 million people *(1)*. These individuals are predominantly Syrian nationals receiving Temporary Protection, while others from Afghanistan, Iraq, and Iran benefit from International Protection.

As of 2 November 2023, there are 3,254,904 Syrian individuals under Temporary Protection. Additionally, by the year's end in 2022, Turkey had welcomed 33,246 International Protection beneficiaries *(2)*. Although Turkey is a signatory of the 1951 Refugee Convention and the 1967 Protocol, it maintains a geographical limitation regarding the Geneva Convention. This limitation confines the official status of "refugee" to persons originating from European countries.

The protections are categorized as follows:

- Refugees: Those from European countries;
- International Protection: Individuals from non-European countries;
- Temporary Protection: Specifically for persons from Syria.

All individuals with Temporary Protection in Turkey are entitled to free healthcare services in public institutions within their registered province. This inclusive policy ensures that

beneficiaries, including migrants with cancer living in Turkey, have access to the necessary medical care.

Turkey's healthcare response to the Syrian refugee influx

Since the onset of the influx of Syrian refugees in 2011, Turkey's immediate priorities have been to provide refugees with shelter, food, safety, and emergency health services, including vaccinations and treatment for infections and trauma. Initially, healthcare was administered within refugee camps. As the number of Syrian refugees expanded and dispersed across various Turkish cities, the government broadened healthcare services to encompass state health centres and hospitals for providing free tertiary care as required. Subsequently, following the 2014 Regulation on Temporary Protection, Turkey successfully integrated refugee healthcare into its national system. By 2015, Syrian refugees gained access to comprehensive health services from primary to tertiary care, inclusive of specialized treatment at migration centres. Additionally, the government established "Migration Health Centres" nationwide and recruited Syrian medical professionals to bridge language and cultural barriers *(3)*.

Despite partial funding from the European Union, the primary burden of expenditure rested with Turkey's national budget. By 2018, Turkey's expenditure on Syrian refugees had exceeded US$ 30 billion, a significant commitment by any measure. The World Health Organization (WHO) acknowledged Turkey as a leading nation in restoring refugee health *(4)*.

The SIHHAT Project signed between the European Union and the Ministry of Health of the Republic of Turkey in 2015 was the most comprehensive collaborative effort implemented on migration management in the field of health. The project launched at the start of 2017 and aimed to support and improve primary and secondary healthcare services provided by the Ministry of Health to Syrians under Temporary Protection (SuTP) in Turkey. The scope of healthcare services was extended 190 Migrant Health Centres in 32 provinces hosting the majority of Syrian refugee population, the capacity and quality of service provision were enhanced and access to services was increased through SIHHAT, which introduced a system working towards solutions to address healthcare needs of SuTP in their own language *(5)*.

Within the scope of the SIHHAT Project, the Ministry of Health implemented the National Cancer Prevention Programme which applied to Turkish citizens for Syrian refugees as well. The Ministry of Health now offers cancer screening programmes through family physicians and mobile units. Similarly, cancer screening services for migrants are provided at Family Health Centres and through five mobile cancer screening units financed by SIHHAT. These units are equipped with sampling equipment for both colorectal and cervical cancer, in addition to mammography machines. The target groups include women aged 40–69 for breast cancer screening, women aged 30–65 for cervical cancer screening, and men and women aged 50–70 for colorectal cancer screenings. As of November 2020, a total of 420,000 cancer screening services have been provided to SuTP *(5)*.

Cancer care challenges for displaced Syrian refugees

Health research on forcibly displaced populations is scant. "Migration management" poses an intricate challenge with deep, lasting impacts but does not have a deep well of insight to draw upon. Specialized strategic focus is essential for refugee cancer care, given the significant number of affected individuals and the protracted nature of their displacement. Syrian refugees in Turkey are granted the same healthcare access as citizens, and the country has incorporated free healthcare for these refugees into its national health system. Nevertheless, managing cancer care remains complex for displaced populations, and the survival rates for Syrian refugees are low particularly for men, exacerbated by the hardships of displacement *(6)*.

Our research collective from Turkey has conducted pivotal studies on Syrian cancer patients *(6,7)*. The first work done in the city of Konya examined the status of 230 adult and 38 Children with cancer. The five most common cancer site specific cancers in adults were; breast, colorectal, lung and bronchus, central nervous system, and stomach. When the stages of patients at the time of diagnosis were examined 19.1% patients had the local disease, 40% had the loco-regional disease, and, 40.4% had metastatic diseases. The abandonment rates were estimated at 9.2% for this cohort and were higher in male than female patients (11.5% vs. 6.9%) The overall survival probability for the whole group was 37.5% at 5 years. When analyzing the children with malignant tumours, the three most common cancer by ICCC 3 were; Leukemias, Lymphomas, and reticuloendothelial neoplasms, and CNS neoplasms. Excluding Leukemia cases, among 43.3% of patients the stage of cancer at the time of diagnosis was advanced (Stage III and IV); 10.5% of patients had treatment abandonment. The two-years overall survival probability was 78.1%, dropping to 69.5% at the end of three years *(6)*.

Notably, our second study published in *JAMA* Open network this year examined the care of Syrian cancer patients in southern Turkey, a region where over half the refugee population resides *(7)*. We gathered data from eight university hospitals on the diagnosis and treatment of patients between 2011 and 2020 to evaluate treatment outcomes. Notable findings include an average time-to-diagnosis was 66 days for

adults and 28 days for children. The breast cancer, leukemia, and lymphoma were most prevalent among adults, while leukemia, lymphoma, and CNS tumours were most common in children. Metastatic disease was observed in 60% of patients across both age groups. A striking discovery was that 35.6% of adults and 14.5% of children experienced treatment-abandonment, despite having access. The five-year survival rates were reported at 17.5% for adults and 29.7% for children *(7)*. While Turkey has made considerable progress in offering care to Syrian cancer patients, the high rates of treatment abandonment survival rates and subsequently low underscore the challenges faced by this population as a result of migration. The data speak to the need to seamlessly integrate cancer care into existing healthcare frameworks and to bolster national infrastructures to ensure refugees have access to enduring and effective cancer control strategies. It is incumbent upon all stakeholders to engage in rigorous research and disseminate insights gleaned from humanitarian crises to safeguard and inform future generations. This data underscores the critical need for targeted cancer care strategies within refugee populations and the importance of considering the unique challenges they face.

Palliative care, a vital component of cancer care, was discussed in a multi-stakeholder conference organized by our study group. The conclusion emphasized the need for a nationally co-developed strategy involving various stakeholders, setting actionable steps for integrated and comprehensive palliative care. The goal is to improve the quality of care and life for cancer patients and their families encompassing both the national and refugee populations *(8)*.

The economics of cancer care in conflict-impacted populations is also a key consideration for policymakers. The R4HC (Research for Health in Conflict) research group estimated the cost of cancer care for Syrian refugees at €25.18 million in Turkey, €6.40 million in Lebanon, and €2.09 million in Jordan *(9)*. These are substantial costs that need to be found both domestically and internationally. It's crucial to highlight that due to the conflict, cancer care in Syria has been significantly disrupted, and merely 23% of operational public hospitals in Syria offer cancer treatments in 2016 *(10)*. Thus, for the foreseeable future the care and the costs of cancer care will be borne by the Turkish healthcare system.

Healthcare access barriers in the migrant population

Access to healthcare for displaced population is hindered by numerous obstacles, which our study categorized across three critical migration phases: pre-migration, migration, and post-migration.

Pre-Migration Phase: Challenges stem primarily from disrupted healthcare systems, and include:

- attacks on healthcare facilities and threats to staff;
- infrastructure destruction and looting of supplies;
- depletion of human resources due to injuries or lack of security;
- economic collapse.

Migration Phase: This phase is marked by:

- physical and mental stress;
- violence and abuse;
- perilous journeys;
- disconnection from social networks;
- limited access to medical care, resulting in high infection rates.

Post-Migration Phase (Migrant Perspective): Post-migration difficulties include:

- delays in diagnosis and lost medical records;
- inadequate health assessments upon arrival;
- unfamiliarity with new health systems;
- pre-existing health conditions;
- extended waits for legal registration;
- cultural differences in health beliefs and expectations;
- health literacy gaps, language barriers, and discrimination;
- financial strains due to lost income.

Post- Migration Phase (Host Country Perspective): The host country faces:

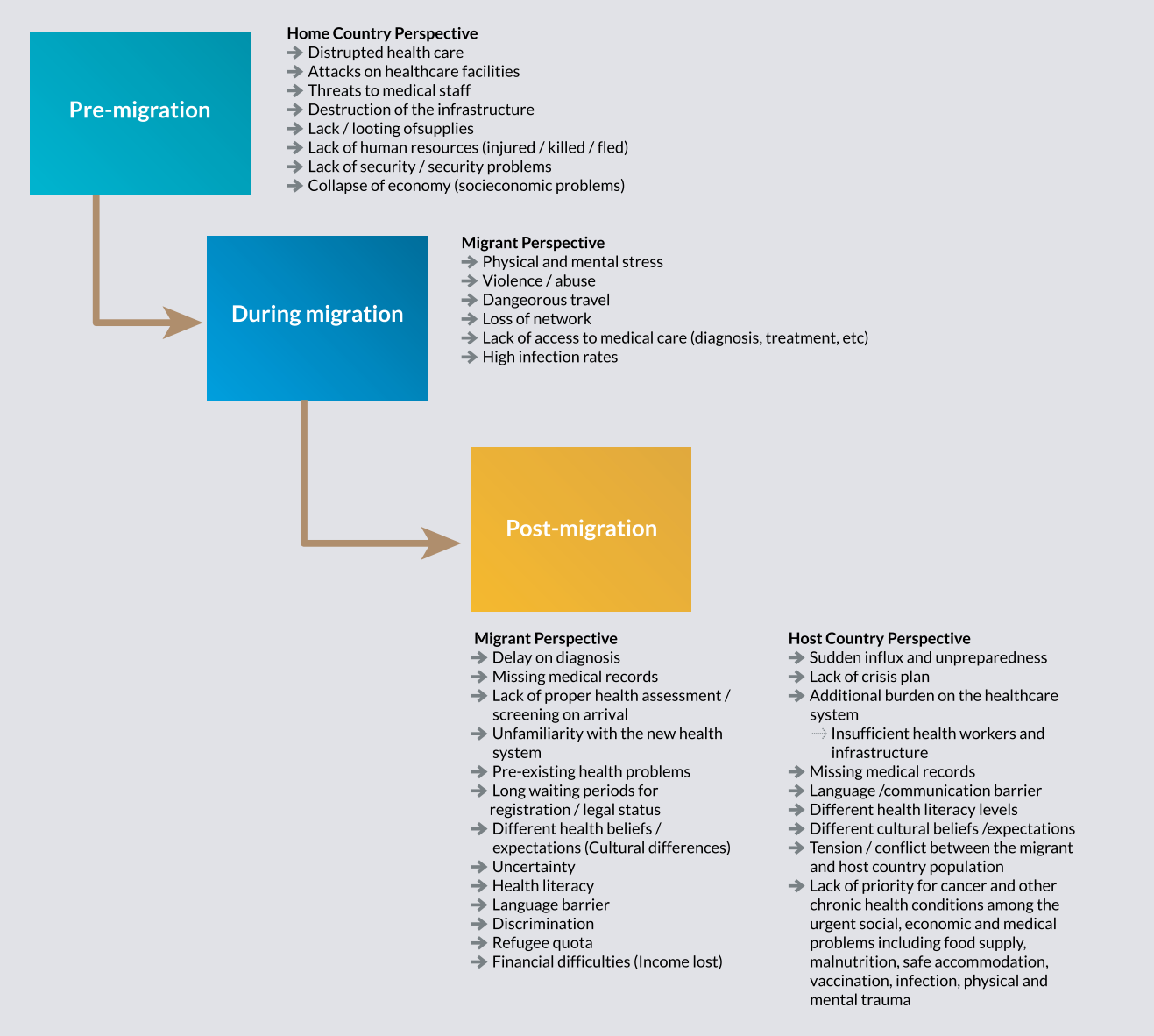
- sudden influxes and lack of preparedness;
- absence of crisis management plans;
- additional strains on the healthcare system;
- shortages of health workers and infrastructure;
- missing patient medical records;
- cultural and linguistic barriers;
- conflicts between migrant and local populations;
- overlooked chronic health issues like cancer due to immediate social, economic, and medical crises such as food shortages, unsafe living conditions, and the need for widespread vaccination and trauma support.

The figure summarizes "the phase-specific health-related risks and problems of forced migration" based on the earlier reports on forced displacement and our research group experience *(7)*.

At the recent World Cancer Leader's Summit in October 2023, two proposals were put forward to global cancer control communities and all stakeholders:

1. We strongly recommend that national cancer control programmes incorporate a dedicated section on managing cancer care during crises. Large-scale events, such as the COVID-19 pandemic and the conflicts in regions like

Figure 1: The phase-specific health-related risks and problems of forced migration (7)



Syria and Ukraine, pose a substantial risk of inadequate healthcare delivery, even in countries with robust systems. It is essential for stakeholders, policymakers, governments, and international organizations to collaborate on a global framework that improves the management of both acute and chronic healthcare needs amidst major migration crises.

2. Data collection and its exploitation into critical cancer intelligence should not be viewed as optional but rather as an integral component of crisis management plans. Consequently, governments and international entities must prioritize and invest in data and intelligence initiatives that capture cancer.

Clearly, the optimal solution is to prevent forced displacement in the first place. Nevertheless, the insights gained from the Syrian crisis can inform the development and execution of strategies to enhance the health of refugees now and in the future. We, all, must take lessons from the recent worldwide conflicts and make plans for shaping the future of cancer control beyond normative national cancer control planning. ■

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The cancer situation in Sudan

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Sudan, a sub-Saharan African country, is in the centre of what is now increasingly known as the African's arc of instability. This is an arc stretching from Somalia and Eritrea in the east to Mauritania in the west forming a band of countries, most of them in the African Sahel, that are particularly vulnerable to the consequences of climate change including conflicts *(1)*.

The conflict in Darfur in western Sudan is considered the "the first climate change conflict" due to the convergence of environmental and political factors leading to conflict *(2)*. The current conflict that erupted in April this year has rapidly engulfed the heart of the country, its capital Khartoum, and significantly worsened the situation in Darfur and other parts of the country. It has resulted in what the UN describes as the "biggest internal displacement of people in the world" *(3)*. The health infrastructure has almost collapsed particularly in the epicentre of the conflict, Khartoum, and Darfur. Hospitals and primary healthcare centres have been attacked, occupied or looted. Healthcare workers have been injured, killed, or internally and externally displaced. Those still working have not been paid any wages since the beginning of the conflict.

Cancer care has been severely disrupted since the eruption of the conflict. Sudan has boasted one the most advanced cancer care systems in the region. The first cancer centre, Khartoum Oncology Hospital, was established in 1964. In addition, the country has achieved significant strides in decentralization of services with the establishment of several provincial cancer centres and hospitals. Two provincial centres, Wad Medani and Merowe, provided radiotherapy although at a much more limited capacity than that of Khartoum. Other centres provide chemotherapy and a mostly partial array of cancer surgeries and diagnostics, such as those located in Shendi, El Obeid, El-Gadarif, Nyala, and El-Fasher. Most of chemotherapy and other essential cancer medicines were provided free of charge in government hospitals and there has been a growing private sector providing cancer care. The bulk of cancer services, however, was still delivered in Khartoum.

The collapse of the healthcare infrastructure in Khartoum and the Western region resulted in massive internal displacement and has placed unprecedented pressure on the provincial centres to provide care. In the period between April and August 2023, the National Cancer Institute (NCI) in Medani, the average number of new cancer cases registered has almost doubled from 1560 cases in the previous year to 2980 cases. Similarly, at the Tumour Therapy and Cancer Research Center in Shendi, there has been an increase from 163 cases to 791 cases. The East Oncology Center in Elgadarif treated 165 cases last year, which has risen to 337 cases from the start of this military conflict. Additionally, the average number of new cancer cases registered at the Eldaman Oncology and Radiotherapy Center in Merawi has risen from 217 cases to 397 cases *(4)*. The drug supply chain has been disrupted and the central Ministry of Health warehouses in Khartoum were destroyed during the war. As of August, the only cancer medicine reliably available was tamoxifen. Children with curable cancers are not receiving cancer medicines. Relapses of acute lymphocytic leukaemia (ALL) in children are now seen at alarming rates. No attempts at evacuation of these children have taken place as we have seen in other places such as Ukraine or Gaza. Access to morphine and other pain medications is an essential part of cancer care in Sudan as many patients present at late stages of the disease. The shortage in cancer pain medicines is causing significant suffering and is a tragic humane situation.

Khartoum provided the bulk of radiation therapy for the country and the entire region. Originally equipped with two cobalt RT machines at the conflict's onset, one ceased functioning in June, followed by the other in August. Consequently, as of 15 August, the NCI was forced to discontinue RT services *(4)*. Recent news from Sudan indicate that a team of Sudanese technicians, engineers, and physicists was able to repair one machine providing palliative radiation. The other centre that provides radiotherapy is Eldaman Oncology and Radiotherapy Center in Merowe, Northern State. This centre has one functioning linear accelerator radiation machine that belongs to the private sector. There is some hope recently that the radiotherapy machine in Shendi that has not been functioning before the conflict may be able to provide some services as the team of the radiotherapy workforce that was displaced from Khartoum has been working

diligently to repair the machine. Despite all these incredible efforts, the radiotherapy situation is precarious as spare parts and equipment cannot be replaced or repaired easily. Most radiotherapy is now reserved for palliative and emergency situations. Radiotherapy with curative intent is certainly no longer tenable. This will result in significant worsening in cancer outcomes in Sudan as head and neck cancer and breast cancer which are very common often require radiotherapy for treatment with curative intent.

Most of the complex cancer surgery occurred in Khartoum. Khartoum also boasted interventional radiology capabilities such liver-directed therapies Some cancer surgery is still taking place in Atabara and Wad Medani such as mastectomies or urgent colon cancer surgery. However, the main focus of surgical care is on trauma and emergency surgeries given the shortage in supplies, power cuts and workface challenges.

Cancer diagnostics are also very difficult to access, and some are now impossible to access. For example, histopathology services are available mainly in Khartoum, Wad Medani, and Algadarif (in the eastern region of Sudan), but immunohistochemistry tests for breast cancer are offered only in Khartoum *(5)*. As such we are witnessing total regression to the time when every new breast cancer patient will be treated with tamoxifen as there is no way of telling whether they have hormone receptor negative disease or not.

Not all Internally displaced patients have been able to avail themselves to the provincial centers because travel is now very expensive, fraught with hardships and even risk of violence. In the absence of an effective central government, lack of wages and the collapse of the informal sector upon which the majority of Sudanese depend for their livelihoods as laborers, or sellers in markets, the country is quickly sliding towards catastrophic impoverishment of the population. This leaves many of the patients, especially those who are poor and without resources, effectively without access to care.

Limited information or data is available for externally displaced cancer patients. Likely the number is small but current available information indicates that most Sudanese refugees in neighbouring countries are experiencing significant delays in the processing of their documentation by the UNHCR or the host countries and most remain without health insurance or access to care and having to rely solely on out-of-pocket expenses.

Sudan is also a major destination for cancer treatment for surrounding African countries *(6)*. Sudan shares borders with seven countries, six of which have conflicts and fragile health systems. Many of the 16 African countries in conflict are contiguous, stretching from the western Sahel through the Horn of Africa, encompassing the Lake Chad Basin and Great Lakes regions *(7)*. Most of these countries have traditionally, for geopolitical reasons and configurations, excluded from attention. The Sahel region has been destabilized by climate change, conflicts, poor governance, and a marginalized status in the global geopolitical map. The climate change in these regions is a glaring form of "climate injustice" as these regions are bearing the brunt of the catastrophic results of climate change while contributing little or none to cause it. The geographical clustering in conflict prone areas causes conflicts to be protracted, often appear to be sudden and intense and exhibit what is now recognized as being locked in harmful cycles of inequity, conflicts, and instability *(8)*. The disruption of cancer services in Sudan is a major blow to cancer services in the entire region.

Lessons learned from the Sudanese experience

It is now more than six months since the conflict started. There has been a remarkable mobilization by the Sudanese cancer workforce exerting enormous efforts in the provisional centres providing care for patients, liaising with Sudanese doctors and communities in Diaspora to try to facilitate shipments of cancer medicines, and repairing and maintaining radiotherapy machines. Telemedicine consultations with patients carried out by physicians either locally or those in the Diaspora have provided significant support for patients who have access to cell phones. Sudanese oncologists have collaborated with Sudanese oncologists in the Diaspora and their allies to raise awareness and bring attention to the crisis in Sudan through publications, interviews and conference talks.

Such resilience and concerted response, while insufficient to address the current dire situation of cancer care delivery, could not have been possible without the upscaling of cancer services that occurred in Sudan despite the challenges and political turmoil the country has witnessed since independence from British rule in 1956. This upscale included investment in the workforce with local training of most of the workforce including physicians, decentralization of services and limited universal health coverage.

Another lesson is that no matter how much health system strengthening has been achieved in hubs such as central Sudan, the destabilisation of the entire region would eventually engulf these hubs as well. The destabilization is partly due to uneven development, health disparities and inequities, and marginalization of large segments of the population within the centre and between the centre and the periphery. Solutions to these crises must take into consideration that health system strengthening must be equitable to achieve health and peace for all.

Response at the African and international level and the way forward

At the regional level, African governments and the African oncology community have yet to come together and produce coherent plans of action on what needs to be done for cancer services in countries in crises. One possible explanation for the inaction is that most previous and current conflicts have occurred in countries with no or sparse cancer services and attention has mostly been on addressing the health consequences of violence such as trauma or epidemics. However, this is changing as we are witnessing increasing awareness of cancer as a major health threat in the continent which is likely to translate into interest in cancer in conflict zones in Africa. The African Organization for Research and Training and Cancer (AORTIC) and other cancer organization are experiencing transformative changes because of the expansion in cancer workforce. The new and more interconnected cadre of African cancer health professionals and researchers are now coming together to address the various gaps in the cancer control agenda on the continent including cancer and crises. In addition, the world is experiencing a surge in conflicts and destabilization and the suddenness of the violence in Khartoum, a regional hub for medical education and health services, has brought it home that we do need to come tother in the oncology community in Africa and address our crisis-preparedness at a regional and continental level.

Regarding the rest of the international community, the response is still very suboptimal, due partly, to the normalization of conflicts in Africa resulting in a sense of helplessness and inertia. Another reason is lack of a coordinated responses from withing the African continent, and the fact that most of the conflicts are in countries with fragile health systems and marginalized status in the geopolitical space. Again, this starting to change with the advent of the crisis in Sudan as some international cancer organizations and knowledge platforms such as *The Lancet*, ASCO, UICC, London Global Cancer Week, Cancer Control are increasingly engaged in efforts to raise awareness regarding cancer in conflict zones in Africa.

While Sudanese oncologists and cancer hospitals are working hard to find safe passages or corridors for cancer medicines and other supplies, the international community should make concerted efforts to help in procurement of medicines, maintaining radiotherapy services, supporting the Sudanese cancer workforce and the continuation of it training and education, in addition to the collection of accurate data on the effect of the conflict on patients, cancer delivery system and cancer outcomes.

Long-term solutions include making serious efforts to tackle health system fragility and address the "cancer care desert zones in Africa", which tend overlap with conflict zones, through introduction and decentralization of cancer services in entire regions. Having cancer services in South Sudan, Eretria and Chad would have helped enormously in the current crisis in Sudan; not only in providing services for displaced Sudanese patients but also for the cancer patients in these countries especially those who are dependent on Sudan for provision of cancer services.

At a global level a paradigm shift is needed in how cancer care in conflict areas is addressed. As conflicts are increasing especially in vulnerable regions such as the Sahel region, the global oncology community should shift from a passive position to that of "a cancer conflict preparedness" especially at regional levels. An important element is the recognition that health equity and gender equality are pre-requisites for peace as well. Lack of access to health and health services is one of the causes of conflicts. Addressing climate injustice and working on global solutions to address the roots of conflicts are essential components of this response. The WHO is advocating for "health for peace". Cancer as a major health threat in LMICs must have its place on the agendas for peace. ■

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Current global oncology nursing with highlights from five low- and middle-income countries

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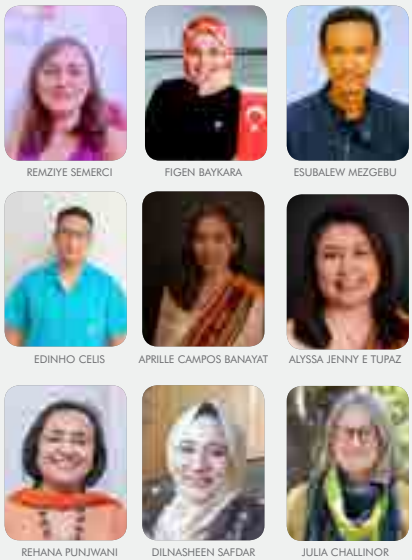
REMZIYE SEMERCI
FIGEN BAYKARA
ESUBALEW MEZGEBU
EDINHO CELIS
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Low- and middle-income countries (LMICs) have 70% of the world's cancer deaths and their incidence of cancer is rising. National successful cancer control planning and programmes require essential nursing practice and leadership. However, without government recognition of this specialty, robust oncology nursing faculty, training, advanced clinical opportunities and appropriate remuneration, cancer control will remain compromised. The current status of oncology nursing in five LMICs (Türkiye, Peru, Pakistan, Philippines, and Ethiopia), give insights into progress made and work still to be done.

In December 2019, WHO declared 2020 as the year of the nurse and midwife in collaboration with the International Council of Nurses, Nursing Now, the International Confederation of Midwives, and the United Nations Population Fund *(1)*. At that time, nine million nurses were needed worldwide to address universal health coverage. Unfortunately, the global pandemic intervened, and many oncology nurses were reassigned to COVID-19 units or had to make significant changes in practice to manage patients with cancer *(2)*. In fact, shortly after the pandemic, many nurses left their practice due to stress, anxiety, and fear of the disease, and others planned to leave the profession *(3,4)*. Thus, the global nursing shortage remains critical, and in oncology specifically.

Departing from words written by Drury et al. about oncology nursing in Europe, "… nursing and cancer care face challenges, arising from workforce shortages, under-investment in services and under-representation in decision-making." (p. 2), *(5)*, we present short descriptions of the state of oncology nursing in two upper-middle-income (Türkiye and Peru), two lower-middle-income (Pakistan and Philippines), and one low-income (Ethiopia) country to demonstrate that the challenges are worldwide. The authors include recommendations for strengthening the oncology nursing workforce in their settings, which can be extrapolated to other LMICs and high-income countries as well.

Türkiye

The history of the Turkish Oncology Nursing Association (TONA) began with a collaboration between the Ministry of Health (MOH) and Hacettepe University *(6)*. This collaboration started after organizing a seminar on the topic of "Cancer Nursing" at Ankara in 1987 *(6)*. Hacettepe University Nursing

School faculty, under Professor Dr Leman Birol's leadership, launched oncology service training, founding TONA in 1989. TONA focuses on educating nurses in cancer detection, specialized patient care during treatments like chemotherapy and radiotherapy, conducting research, organizing seminars, publishing literature, and collaborating nationally and internationally. TONA currently comprises approximately 755 members and among 15 nursing working groups *(7)*.

The TONA conducted a series of studies on "safety measures related to the preparation and administration of antineoplastic drugs" between 1995 and 2003 *(8)*. In 2004, in collaboration with the MOH, they developed the "Guidelines for the Safe Use of Antineoplastic Drugs," and published it *(9)*. Additionally, in 2005, TONA and MOH initiated the "Chemotherapy Nursing Certification Course." Today, the programme has been updated to align with the needs of nurses and revised as the "Oncology Nursing Certification Programme." This certification programme includes 56 hours of theoretical and 64 hours of practical training over three weeks *(10)*. Professor Dr Sultan Kav collaborated with the European Oncology Nursing Society (EONS), initially serving on its Board of Directors and later becoming its President in 2014. TONA has conducted training and educational programmes in Türkiye aligned with EONS initiatives *(11)*.

In recent years, there have been promising developments in the specialization of nursing and oncology nursing *(12,13)*. The first oncology nursing master's programme was initiated by Dokuz Eylül University *(14)*, subsequently, at Ege University *(15)*. Currently, universities offer both undergraduate and graduate programmes in the field of oncology nursing, but specialization has not yet reached the desired level in Türkiye. Challenges remain in effectively deploying specialist nurses into clinical settings, particularly when they are redeployed without the resources necessary for their roles.

In Türkiye, the primary challenges for specialized oncology nursing include language barriers tharnecessitate English proficiency for postgraduate studies. The demanding clinical workload makes it difficult to devote sufficient time to specialist training *(16)*.

Moreover, the lengthy duration of training programmes might necessitate taking annual leave *(17)*. Additionally, there's no assurance of employment in an oncology clinic after achieving specialization *(18)*. In Türkiye, nurses completing the "Oncology Nursing Certification Training Programme" receive incentives from the MOH. However, these incentives are relatively low and do not strongly motivate nurses to pursue specialization.

In Türkiye, to enhance oncology nursing specialization, the MOH should guarantee employment in oncology clinics for certified nurses. There is a need to increase the number of universities offering postgraduate programmes in oncology nursing. Establishing an official specialization programme and legislation supporting this field is crucial. Expanding and improving accessibility to education programmes for oncology nurses, developing undergraduate programmes, and defining clear specialization areas are essential. These steps will encourage career advancement and strengthen healthcare services for oncology patients. Implementing these recommendations is crucial to enhance nurse education and improve care for oncology patients.

Peru

In Peru, the nursing career training is five years of study at national and/or private universities, then in order to practice in the profession you have to take the SERUM for one year. Currently there are 96,000 registered nurses in Peru *(19)*. There are postgraduate studies and/or subspecialties, the training lasts two years; Each nurse will be trained according to skills and/or interest in a speciality. A specialized nurse has a salary of approximately 3,500 to 5,000 soles (US$ 929–1327). Currently, there is a society of nurses in oncology (Sociedad de Enfermeras Oncólogas del Perú [SPEO]). This society is in charge of carrying out training related to oncology for nurses. We have a large group of empowered nurses in the area in the different entities of the state and in the private sector practising this nursing profession in oncology. This is the effort of preparation, studies and training at the national and international level, and they are highly trained to be able to work in various functions such as clinical, administration, teaching and research. SPEO has the support of the MOH and the College of Nurses of Peru and is recognized as such, because it keeps a registry of general nurses, specialist nurses and nurses with masters degrees.

In 2019, Peru was the first Latin American country to join the World Health Organization Global Initiative for Childhood Cancer (GICC). *(20)* The MOH assembled a paediatric oncology nursing committee from multiple paediatric oncology treatment facilities to guide work relevant to the CureALL framework that guides the GICC. This committee reinforced government recognition of national oncology nursing leaders and their expertise.

Another weakness we encounter includes intrusiveness by other health professionals in nursing care. We are working to overcome these weaknesses and further strengthen our profession. We are also currently working on a project to create the specialty of Nursing in Pediatric Oncology and the Society of Nurses in Oncopaediatrics.

Pakistan

Oncology nursing in Pakistan is at a primitive stage;

historically special training was limited to basic specialties, e.g. mental health, paediatrics and maternity and child health. Subspecialty nursing started two decades ago with cardiac nursing as a trailblazer. Oncology care came into limelight with the inception of speciality oncology hospitals, highlighting the need for speciailty nursing education. Shaukat Khanam Cancer Hospital, established in Lahore in 1994, initiated an oncology nursing diploma in 2000, and The Children Cancer Hospital, in Karachi, initiated training in paediatric oncology, including nurses, in 2009 (before merging with the Indus Hospital in 2014). Both programmes received approval from Pakistan Nursing Council. These two centres remain the only two specialized oncology nurse training programmes in a country with a population of over 220 million with an estimated 8000 children *(21)* and 178,388 patients overall diagnosed with cancer per year *(22)*.

There are 127,050 registered nurses in Pakistan *(23)*, a country with less nurses (0.5/1000 population) than physicians (1.1/1000 population) *(24,25)*. Pakistan has no existing oncology nursing society or association. Nurses do not have a national voice or recognition as a central aspect of cancer care and are still struggling for their status within the leadership of cancer control. Because of lack of recognition and career opportunities and the low number of cancer centres, there is less of an attraction for novice nurses to join the field of oncology nursing. The progress of this subspecialty to date is only because of senior nursing leadership efforts and initiation.

More nurses are now moving abroad due to poor socioeconomic conditions in Pakistan. The government spends 0.4% of the GDP on healthcare *(26)* and 78% of the population must pay for healthcare out of pocket *(27)*. Nurses can earn 300 times more money in neighbouring countries, and out migration results in a need for 1.3 million nurses in Pakistan *(28)*. With an increasing number patients with cancer and high mortality due to late diagnosis, poverty and limited supportive care, it is imperative that the government offer additional opportunities for oncology nurse training. The government and existing schools of nursing and cancer hospital nursing leaderships should immediately create an oncology nursing association/society to give a national voice to the experts in oncology nursing care and leadership. The role of national oncology societies and associations has been shown to be effective in improving patient care and outcomes *(29)*. A Pakistani oncology nursing society/association could collaborate with the Pakistani Nursing Council and other key stakeholders, e.g., local civil society and international partners to move the agenda of developing advanced oncology nursing training programmes, e.g., essential palliative care and nurse researchers to establish local evidence for best practices. Existing paediatric oncology nurses deserve due recognition in salary and status (official government recognition as a sub-speciality) to address this imminent pressing cancer burden posing a serious public healthcare threat to many patients and to decrease mortality and improve quality of care. Unless efforts are put in increasing training, providing competitive salaries, improved work conditions and opportunities, effective cancer control cannot be achieved.

Philippines

The Philippine cancer nursing landscape has advanced throughout the years. Various government agencies produced the Philippine Qualifications Framework (PQF) to standardize qualifications *(30)*. It "describes the levels of educational qualifications and sets the standards for qualification outcomes" *(30)*. This paved the way for professional organizations to set educational qualifications and standards for qualification outcomes. Particularly, the Philippine Oncology Nurses Association (PONA), the accredited cancer nursing association in the Philippines promulgated the standards of practice for nurses in practice, educators, and even researchers *(31)*. Baccalaureate standards are also set, aiming for the Philippines to lead in promoting professional nursing in the Asia Pacific Region *(32)*. Post-baccalaureate, and doctoral and postdoctoral levels are still under development and review. The challenge for these standards is in their embedding, including alignment of programme outcomes of MS Nursing with Oncology Nursing track, for appropriate training in both undergraduate and postgraduate nursing programmes, and their subsequent competencies and outcomes validation.

Various landmark Philippine policies and laws essential for cancer care have been passed in recent years. Included in these is the Universal Health Care (UHC) Act of 2018 wherein it mandated that all citizens are automatically entitled to health benefits, including those for cancer care *(33)*. Even before this law, changes were implemented in 2012, including the Z benefit package, which aimed to update minimum standards of care based on the best available evidence and current standards of practice applicable in the Philippine setting *(34)*. This package covered diagnostics, treatments, and therapies for select haematologic malignancies and solid tumours, making cancer care affordable and available for Filipinos. Another important law that was passed was the National Integrated Cancer Control Act (NICCA) of 2019, which recognized that cancer is one of the leading causes of death in the Philippines, thus, the country shall adopt an integrated and comprehensive approach to address this concern *(35)*. The State was then able to allocate a budget for integrative, multidisciplinary (including nursing), patient and family-centred cancer control policies, programmes, systems, and interventions at all levels of care.

Optimizing and localizing the implementation of landmark

policies and laws continue to pose a challenge. Even novice nurses who are new in practice, with little to no experience, are being hired and assigned to cancer centres, especially with the advent of speciality regional hospitals in different parts of the Philippine archipelago. In addition, public health institutions should work with their current number of nurses until approved by the Department of Budget and Management. In addition to this, even with the PQF, additional positions for those with higher qualifications are unavailable. Subsequent training of nurses who are currently in practice is not standardized, thus, cancer care widely varies across institutions. There is currently no recognized advanced practice nursing (APN) across specialtiies, including cancer nursing. Nurse experts who would train and accredit nurses in oncology nursing remain scarce in the country, especially since there are no APNs in the Philippines. But even with these challenges, oncology nursing and care in the Philippines continue to evolve and develop.

Ethiopia

Ethiopia has an estimated population of over 123 million *(36)*, the second highest in Africa. Climate change, industrialization, and changes in lifestyle are linked to an increasing risk of cancer, since infectious diseases are under better control. Unfortunately, oncology services are woefully inadequate for this large patient population, and the country is ill-prepared to address the expanding cancer burden (53,560 patients diagnosed in 2019 or 104.3/100,000 population from the only population-based registry covering 3–5% of the population *(37)* with few doctors (0.1/1000 population *(25)* and nurses and midwives (0.8/1000 population) (24) overall in the country. Historically, Tikur Anbessa Specialized Hospital (TASH), in Addis Ababa, was the only cancer centre, however, services have now expanded to many hospitals throughout the country, i.e., St Paul Hospital Millennium Medical College ([St Paul] Addis Ababa), Harar (Hiwot Fana Comprehensive Specialized Hospital), Jimma University Medical Center, Hawassa University Comprehensive Specialized Hospital; University of Gondar Specialized Hospital, Mekelle (Ayder Referral Hospital), Dessie Comprehensive and Specialized Hospital, Tibebe Ghion Comprehensive and Specialized Hospital, and Felege Hiwot Comprehensive and Specialized Hospital.

Although the number of oncology service facilities has increased, the number of oncology nurses has not kept pace. Nurses represent the largest single health workforce worldwide and WHO has called for nurse graduates to "match or surpass health system demand and have the requisite knowledge, competencies and attitudes to meet national health priorities" (p. 8) *(38.)* Only two masters' programmes in oncology nurses are currently available: Addis Ababa University and St Paul. Other centres educate nurses to care for patients with cancer in onboarding classes combined with on-the-job training. To tackle this challenge, a collaboration of oncology nurses, paediatric oncologists/haematologists, the Ethiopia MOH, and international oncology nurse experts with experience in low-income countries (LIC) developed a paediatric oncology nursing onboarding training manual.

Experienced paediatric oncology nurses from Jimma, Addis Ababa (TASH), and Gondar and a nursing school faculty member from Jimma participated. After three in-person workshops to refine manual drafts in Addis Ababa, funded by The Aslan Project, a non-governmental organization in Washington, DC, USA, the manual was officially approved by Ethiopian MOH April 2023. This formal curriculum is expected to improve paediatric patient care, but the field is complex and fast changing so nurses need extensive knowledge, skill, and experience to give standardized and quality care including evidence-based practice. To strengthen oncology nursing in Ethiopia, attendance at national and international conferences, e.g., the International Society of Paediatric Oncology (SIOP) and the African Organization for Research and Training in Cancer (AORTIC) to network and learn about best practices and experiences. In this way, nurses caring for patients with cancer, even in LIC settings can prepare and engage in research, seminars, and workshops to share their challenges and successes and network to strengthen oncology nursing in their region. Ultimately, oncology nurses in Ethiopia should consolidate into an association such as an Ethiopian Oncology Nurses Society and strengthen their networking abroad to join other professional oncology nursing organizations with the common goal for the development of the field as an officially recognized nursing specialty.

Conclusion

Contributions from the five LMIC authors demonstrate that there are shared challenges and opportunities for oncology nursing today. As our Peruvian author recommends "Dedication and preparation in our work is essential to be able to advance as health professionals, all focusing on the well-being of our patients. The essence of care has to become stronger as time goes by and always seek continuous improvement for our patients." Sulosaari and colleagues highlight the critical need for oncology nurse leadership, "The engagement of nursing leaders on multidisciplinary leadership is critical in the cancer care setting for the future of the nursing profession, quality of care, and the overall healthcare system" *(abstract, 39)*. The WHO Global Strategic Directions for Nursing and Midwifery call for four strategic directions and policy priorities 2021–2025: education, jobs, leadership and service delivery *(38)*. All four address areas of oncology that need strengthening highlighted by the oncology nurse authors above. Until

oncology nurses everywhere are officially recognized as a key specialized health workforce, well-educated and skilled, with appropriate remuneration and governments invest in advanced oncology nursing faculty and training programmes including in clinical settings and place oncology nurse leaders at the highest level of policy development (nationally, regionally, and internationally), government and civil society efforts to address the ever increasing cancer burden in all countries will be compromised. ■

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Figen Bay is a specialist nurse and has worked as a nurse at a university hospital for 28 years. She served as the charge nurse for the Oncology Hematology Clinic for many years. She has been a board member of the Turkish Oncology Nursing Society for 22 years and has served as the society's president for the last six years. Figen Bay has attended numerous national and international congresses and courses in the field of oncology, authored several book chapters, and holds the authority responsible for the Ministry of Health-approved Oncology Nursing Certification training programme. Actively involved in planning and implementing training programmes nationwide, in every region and province, Figen Bay aims to educate nurses in the field of oncology and enhance the quality of oncology patient care.

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Rehana Punjwani RN, BScN, MS Global Child health has over 20 years of experience in paediatric oncology in Pakistan and is a well-recognized nurse educator and palliative care specialist. She was one of the team leads that initiated the first Pediatric Oncology Nursing Education department in Karachi, Pakistan. She has served as a co-Chair of the International Society of Paediatric Oncology (SIOP), Pediatric Oncology in Developing Countries (PODC, now called Global Health Network) Nursing Working Group and received the SIOP Nursing Leadership award in 2021. She has conducted consultations and volunteer support for nurses through other non-governmental organizations, e.g., The Aslan Project for Ethiopia, to provide expert education and training in pediatric oncology nursing in other low- and middle-income countries.

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Julia Challinor, RN, PhD, MS Education, MS Med Anthropology collaborates in multiple international paediatric oncology projects in Africa, Asia, and Latin America. She focuses on promoting and supporting nurses and healthcare professionals in low- and middle-income countries to deliver the best care using available resources, and to be acknowledged as specialists capable of advanced practice when given appropriate education and training. As a member of the International Society of Paediatric Oncology (SIOP), she contributes to SIOP's strategic plan actions including SIOP's role as a non-State actor in official relations with WHO and WHO Global Initiative for Childhood Cancer.

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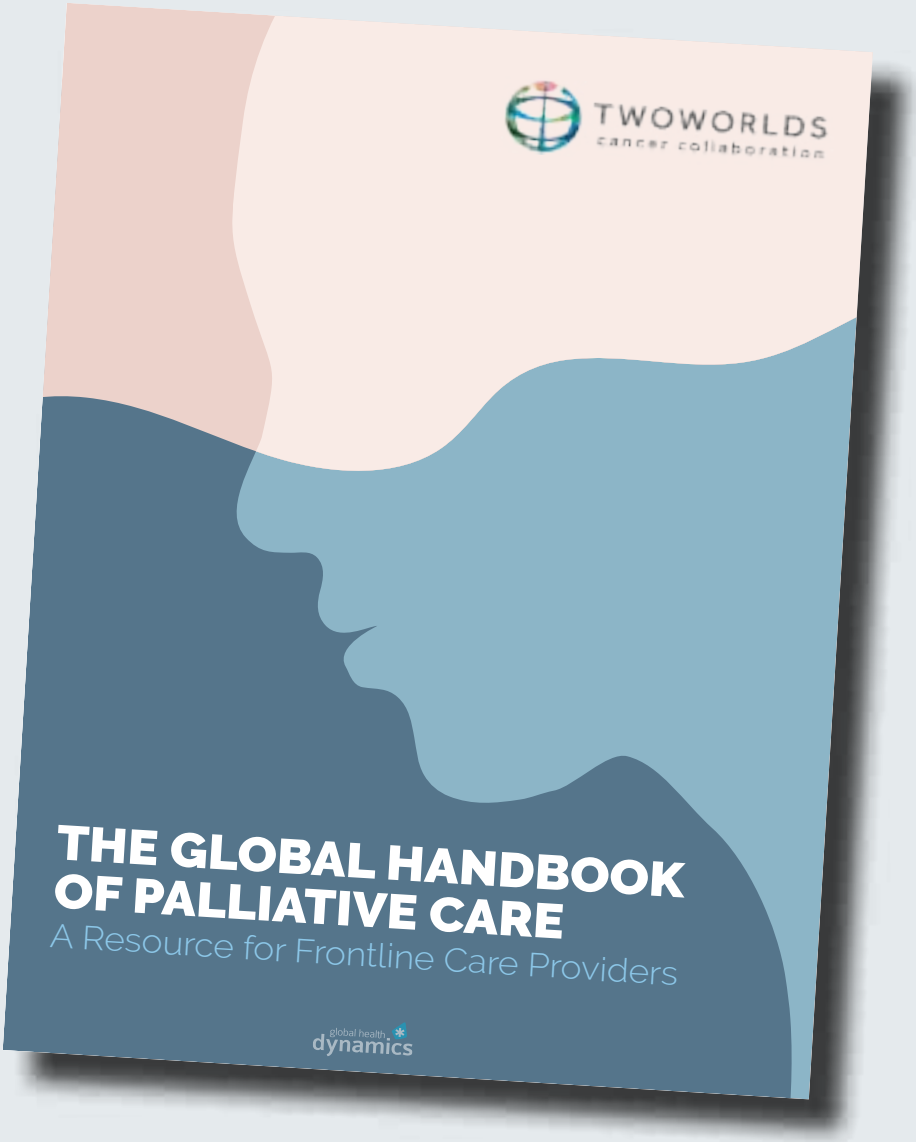

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Regional Focus: Latin America

Interview with Professor Eduardo Cazap

Latin American and Caribbean Society of Medical Oncology (SLACOM), Buenos Aires, Argentina

CANCER CONTROL

I know how busy you are, and I really appreciate the fact that you have time to do this interview. Okay, so question number one is: how long have you been in cancer?

PROFESSOR CAZAP

Well, I started my medical career here in Argentina, in 1960s. I entered to the School of Medicine in 1966. At that time, I was 17 years old. Don't worry! There is an Argentinean doctor that obtained his medical degree at the age of 19. I think that he's the youngest and he was also trained in oncology

I have some family background because my father was a medical doctor, also working here in Argentina. And he was trained as a dermatologist, but he was interested in cancer. He was partially trained at the Roffo Institute which is the oldest Cancer Institute here in Argentina. Dr Roffo was a researcher in the early 1900s and he was one of the first in the world working with the carcinogenesis of tobacco,. My father was interested also in that. His thesis was about cancers of the inferior lip in pipe smokers because of the pressure of the pipe over the lip. And that was true because it was practically all the cancers in pipe smokers were predominantly in the lower lip. Sadly, my father died at the time that I was 13, but he had time to become one of one of the very first radiotherapists in Argentina . That was in the Fifthies when radiotherapy was a very young specialty, before cobalt, and most of the equipment was teletherapy,

Well, about my career, my idea was that to be a good doctor, it was necessary to be a good clinician. So, I started: I was young, the first oncologist in Argentina having first done three years residency in internal medicine. At that time there were two or three main groups or institutions working in cancer in Argentina. The number one it was the Roffo Institute, a big institution with many doctors, but there was also a small group at the Military Central Hospital in Buenos Aires that was predominantly working in a specialty called "chemotherapists" at that time.

This group was incredibly active, it was a small group but it was like a factory of the future, producing several future leaders in Argentina. This group had a small lab doing studies of cell kinetics because at that time, the basic science behind

Talking at the World Cancer Leaders summit, 2011, Ireland

cancer was the understanding of the cell cycle, differentiation, undifferentiation and the cell cycle At that time, the knowledge about the stem cells was very, very elemental. The group had rapidly some good connections , for example with the NCI. So early in my career, I was part of the group working in a project of the NCI, a programme constituted by groups in Latin America working with partner institutions in the United States and our group was working with a new institution, the Lombardi Cancer Centre in Washington, DC.

CANCER CONTROL

So, is this now around the 1970s?

PROFESSOR CAZAP

We're talking about 1975 to 1980 now. That was about less than 10 years of my graduation. But the research at that time was at the cellular level very basic, and at the clinical level, the number of drugs were only a few. My boss, the leader of the group, Dr Roberto Estevez is considered the father of cancer chemotherapy Latin America (later on named oncology) . He published in the 1950s a book about cancer chemotherapy, similar to the Pinedo book in Europe. At the time there were, I don't remember exactly, 10 drugs?, and the book was in two volumes. Two volumes for 10 drugs! Can you imagine? But he was very enthusiastic and committed.

This was the starting times of CMF with Bonadonna's

combination. And it was curious because the first thing that we had to do on entering the group was to receive a booklet; like a guideline, but guidelines didn't exist then. The booklet consisted of chemotherapy protocols accepted for use within the Chemotherapy Service. Two leading groups – one group in the United States organized by Dr Bernard Fisher and the other Bonadonna's group in Italy – were very productive in some first chemotherapy combinations: in lymphomas and breast cancer.

It was interesting because in the booklet service there was, one very good chemotherapy combination for breast cancer, constituted by cyclophosphamide 5Fu and methotrexate. During the next two years, I remember that Bonadonna launched his historical CMF: exactly the same combination. The problem was that, at our department (which was the number one in Argentina) the publications were only in Spanish and the dissemination of that publication was only in a really limited area of some Latin American countries, so that seminal work was never included in the international literature.

By the end of the 1980s things were evolving. We were moving our group to different institutions. My boss and I founded a private Cancer Institute in Argentina. Eventually I became the director and the institution survived 20 years. Around the beginning of the 2000s the social limitations of the healthcare system in Argentina were very complicated. The survival of a cancer institution without the public support was not possible and the possibilities of development in Argentina, were not really feasible. So I spent some time at the Gustave Roussy Institute in Paris working with Jean Pierre Armand and other colleagues. I spent some time at the Lombardi Cancer Centre working with Phil Schein, and his group. We published some publications on Fluoruracil, Adriamycin and Cisplatin (FAP) for gastric cancer – which was the main tumour that was under research at Georgetown at that time . So, that was something until the decade of the 1990s.

I have completed practically 40 years of medical activities, you know.

Immediate Past President and BOD , UICC, Geneva, 2011

CANCER CONTROL
And how has the scene changed in all those years?

PROFESSOR CAZAP
At the beginning of the 1990s the cancer world was extremely limited. The idea was that cancer curability will be achieved with research. This is linked with the US vision. You can remember 1971 – that was one of the turning points in modern cancer history – when President Nixon signed the "War Against Cancer" document, with the objective of controlling or curing cancer for the year 2000.

CANCER CONTROL
I remember.

PROFESSOR CAZAP
Curability was not possible, but during those 30 years, the human knowledge about cancer increased enormously; perhaps much more than the previous 2000 years.

Curability was not achieved, but with part of the money from that programme, the governmental part of the Human Genome project was funded. So that project was successful in some important part, but not totally.

Very early in that decade I started to think that perhaps that the vision was a little bit limited and not so feasible to achieve in the next 50 years.

CANCER CONTROL
Yes.

PROFESSOR CAZAP
I realized that it was necessary to follow some different philosophy; a philosophy in which cancer diagnosis and treatment were part of a more extensive understanding and plan of action. I started with other people like Franco Cavalli and others trying to figure out how controlling cancer by different means, could be a better strategy. This is the precedent experience previous to cancer control globally, yes? So, we started with the concept of cancer control meaning that the whole world together would achieve a successful outcome. This initial concept of "global "at that time was immature, because the idea was to have global cancer control, and today that is impossible.

CANCER CONTROL
How do you mean impossible?

PROFESSOR CAZAP
The idea was that the World together would do something to improve cancer curability and control. But now, we understand

that the equation is a little bit more complex. It is a combination of developing countries, developed countries and global institutions working at the country level as well as the regional, sub regional and global levels.

The majority of the systems are country-based, so the decisions are taken country by country, whereas the great concepts and plans are regional or global. So now we understand "global cancer control" as a combination of global and country visions. So I started this conversation with my friends, majority of them from ASCO and the idea was rejected.

"No, we are Americans, we have our development and we have our institutions and we have our competitive groups."

"And what about global cancer? "

"We are Americans."

So during those decades, I had a very good interaction with the leaders of ESMO. At that time, ESMO was constituted by European countries. So I presented to the Board to have Argentina included as a member of ESMO.

"No, no", they rejected me because Argentina was not in Europe. "We are Europeans "

In the following years Israel entered ESMO and I insisted. "No, no, but Israel is not in Europe" "No, no but Argentina is in South America!" Well, finally, after many years of pressure, Argentina was the first country outside Europe to have been a member of ESMO. That was in the early times of the concept of global cancer control. I am talking about Europe and the United States because at that time they were the two leading sources of cancer as a science, with knowledge in clinical systems.

So finally, Argentina was a member and later, the position of ESMO was that it was not able to have all the Latin American countries as individual members, so the decision was to have a Latin American group working with ESMO. And then a US group was accepted.

I was always trying to convince my European and American colleagues that they should expand their organizations and to think that the world is not only Europe and the United States. And I know that today this idea is something very basic , but it was not easy to convince our colleagues. Now this is a global reality that many of the organizations are supportive, although I'm not so sure that that "globality" is clearly understood.

CANCER CONTROL

What do you think are the impediments to global cancer control?

PROFESSOR CAZAP

I think that we need to understand the players working in cancer control so that we can connect and understand the components of the issue with more clarity. At one time the world was dominated by treatments, by pharmaceutical companies and by medical associations. That was a very basic structure. We are talking in the early model of healthcare systems in which the concept of public health was for many years based mostly in hospitals , doctors, and treatments: surgery, radiotherapy or medications. All other elements of cancer control were practically absent. There was, of course, some actions on prevention, but the strategy of the early prevention measures was somehow naive and simplistic, and also limited by the knowledge that was available at that time.

We know today that the famous Papanikolaou screening test is impossible to apply to the world population. How can global cancer control face early detection and curability of cervical cancer with a test that is costly and difficult to obtain? You need a complete coverage that is not possible to obtain.

Furthermore, if a wide coverage with a proper screening methodology is feasible, you need the necessary resources in place for a timely diagnosis and a proper treatment, something frequently not available. (Similarly, with mammography; at that time, the idea was to expand the use of mammography. That is not possible under the current concept of global cancer control.) Many studies and groups were insufficient to obtain the final product: eliminate cervical cancer. That will never be achieved only with Pap smear. It is very different now with a vaccine and with other forms of early detection to simpler, more accessible and that can be widely applied. Anyway, the campaigns were successful for public education, but not for the eradication of cervical cancer.

CANCER CONTROL

That must have been a radical position to take at the time.

PROFESSOR CAZAP

For the past two decades I have been insisting that if the world has not a focus on global cancer control, and the focus continues only in diagnostics and treatment, something is going wrong. The incredible achievement of new drugs and many different new therapies today, the ones based on proteins , genetics or molecular targets or monoclonal antibodies these are more and more limiting.

CANCER CONTROL

Why limiting?

PROFESSOR CAZAP

Because the cost increases and the global access for cancer control decreases. Instead of having one drug like Adriamycin for 10 cancers, you will have one therapy for 20% of patients of one given cancer. So you have extraordinary therapies giving 70% of curability for a minority of patients. So, in the many discussions that I have with different stakeholders, the

problem is the concept. If you are trying to get an objective following a strategy that is not the proper strategy, the results will not be successful.

I think that one of the historical pillars for global cancer control was the Union for International Cancer Control. The UICC is perhaps one of the leading partners , if not THE leading organization, for the understanding of cancer as a human disease that affects all of us globally. But I am not sure if we will have so many "global" solutions, like a vaccine against cancer, we need to find the solution and have better strategies at each country level in order to use the current existing resources properly. I am not talking about new things. We need to apply much better the existing knowledge, that regrettably applies today to less than 20% of the global population.

CANCER CONTROL

The majority of research that's accessible has been done on white populations in in high-income countries. That's a very crude way of saying it, but it's true.

PROFESSOR CAZAP

Absolutely. Let's analyse my own situation. I am a man of 75 years old, and suppose that I have a prostate cancer. So my doctor gives me X. "Treatment X is fantastic for you!" he says, following guidelines from NCCN, ASCO or ESMO.

"Doctor, could you please tell me how many non-US or non-European patients are in those?"

"Could you please tell me how many patients of 75 years old are included in the studies?"

"Could you please tell me about the race and genetic background of those?"

"No, no, no".

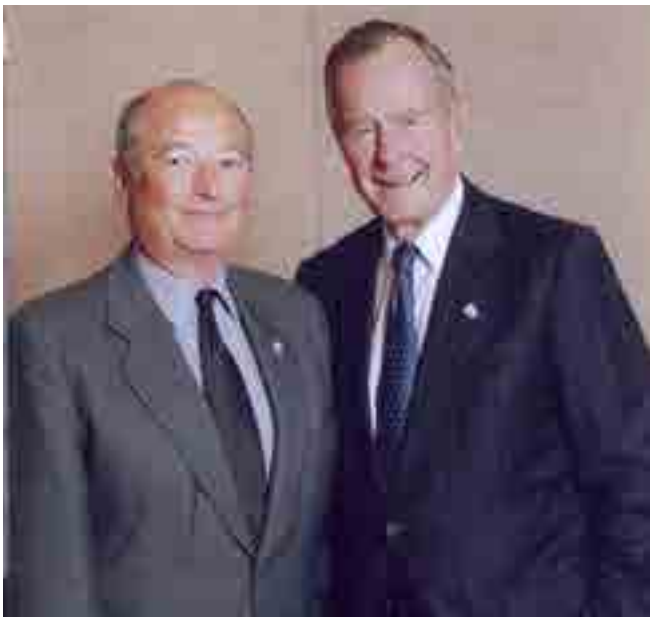
So that treatment is perfect for another person but is unknown for me. This is a methodological problem. If you do not correct the world methodology in cancer research, , evaluating which type of science we will apply for Phase 1, 2, 3 trials in drugs or other treatments, data from the literature will reflect only partially the different world populations.

CANCER CONTROL

But there is a problem there. Because companies may not want to invest in research of a drug that might benefit people have a different genetic makeup, you know, or jn a different region if that population doesn't have the money to buy the drug. Is the idea of "Well, even if we found a drug, would there be a market for it?" true? Is research market-driven or human-driven?

PROFESSOR CAZAP

We need to discuss in detail the strategy about the role of governments in the development of cancer treatments. That is



With President George W Bush, Cancer meeting, USA, @ 1991

perhaps one of the basic questions for the currently discussions about a Global Cancer Fund. The money governments invested in global health – not only in treatment, but in water pollution and many other things related with health –during the last decade was US$ 87 billion. The three main NCDs: diabetes, lung diseases and cancer received only US$ 3,000 million. This is a political issue.

Money from industry follows the objectives of the industry and that is correct, because those companies must report to the investors. But in the case of our populations, the investors are the common people, contributing with their taxes, so the government must take a leading role. But the problem is 1) political will, and 2) a good strategy, and combining those two parts in a proper way.

A good strategy includes education: it means good information, and not only education of the people but also education of the doctors, education of the political leaders, education of everybody, because cancer needs a coalition between all parts of society including pharma companies.

CANCER CONTROL

Yes, I get the impression that the politicians don't understand how serious the problem is. They took 30 years to admit climate change, and I don't think they recognize yet how, if you look globally, or even if you look by nation, how serious a threat cancer is. Either if you're a high-income country, you've already got a serious threat, or if you're a low-income country, it's coming in the next 20–30 years.

PROFESSOR CAZAP

Yes, yes. you are correct, but with some exceptions.

ASCO Distinguish Achievement Award , 2019

CANCER CONTROL
Go on.

PROFESSOR CAZAP
When the politician is personally concerned. President Dilma Rousseff in Brazil launched a nationwide programme for the prevention of breast and cervical cancer. President Chavez of Venezuela had cancer and he was interested when suffering with the disease; the father of this initiative, "the Moonshot Project" comes from the United States. Why? Because of President Biden's son, Beau. But we have an additional problem: healthy people!

CANCER CONTROL
The healthy people?

PROFESSOR CAZAP
We recently had an election here in Argentina and I was reading some of the information that was provided to the candidates for the Presidency about the priority actions requested by the people to the political leaders. They were Inflation, security, corruption at the top of the list… health and cancer were between numbers 15 and 20. We have two components to this problem: the politicians and the people. If society does not take a leading role pushing politicians to improve health, nothing will happen.

I think that many of these cancer control ideas from Latin America are applicable to all diseases in any country and globally. We have examples, the coalition in Peru against cancer was fantastic and helped a lot to realize the implementation of cancer control, the support for the National Cancer Institute, a National Cancer Plan. At the beginning of this process, the budget for cancer was obtained at the country level from the taxes on the tobacco industry; something very innovative. Of course, after successive governments with different political ideas, there was not continuity. But we have extraordinary models that we would like to share.

I would like to go back to UICC.

CANCER CONTROL
Yes, please.

PROFESSOR CAZAP
Because the UICC launched perhaps one of the very first tools for cancer care in the 1950s – late 1940s: the TNM. The TNM was the first global classification of tumours. Before TNM. cancers was not classified, so the interaction between scientists had no correct wording and a technical language for stages, metastasis (Yes or No), size of the tumour, you know. And the TNM was of course, following an idea of Professor Pierre Denoix, an excellent French surgeon who was later on President of the UICC.

Founded in 1933, the UICC is one of the oldest global cancer organizations. At that time UICC's main objective was research. But between the 1950s and the1990s, it was more involved with global treatments and TNM. Today, the TNM Committee of the UICC is still working very actively, having 70 years of leading in a common language for cancer. I am mentioning this because the evolution of the UICC is the evolution of the cancer control in the world.

When I was younger, working as a medical doctor in cancer we had in our country several UICC workshops for basic cancer or advanced cancer. These were educational programmes organized and funded by UICC before ASCO, before ESMO. The educational programmes of the UICC were fantastic, and the UICC paid for the doctors' travel and other expenses. But by the 1990s UICC was an old institution and it was necessary to change its role and its structure. I was part of that group working since the beginning of the century, and Professor Eliezer Robinson (Israel), John Seffrin (United States), Franco Cavally (Switzerland), David Hill (Australia), Mary Gospodarowicz (Canada), Tezer Kutluk (Turkey) and me, during a period of 20 years was a fantastic group of leaders, reengineering the organization. The institution today is one of the global leaders of cancer control (if not THE global leader) and has a clear mission and vision. The UICC thinks that the basic component of better cancer care, survival and curability is cancer control, not only cancer treatment.

"UICC's mission is to unite and support the cancer community to reduce the global cancer burden, to promote greater equity, and to ensure that cancer control continues to be a priority in the world health and development agenda."

One of the decisions we had to make was if should we expand the UICC or should the UICC be like a facilitator; a connector gathering together people with a common objective? And

the decision taken was the last one. Instead of expanding the UICC, the idea was to start with projects, and if the projects are useful for better cancer control – like C/Can, we would make these projects autonomous, independent, because it will be very difficult for UICC to keep their clear objectives with new areas. So, one of the very first initiatives was to improve cancer control through the collaboration with the other noncommunicable diseases issues because otherwise it would be difficult for the cancer community to obtain a global voice. In that way we presented the matter at the second High Level Meeting on Health In the history of the General Assembly of the United Nations. The first one was in 2001 on AIDS and the second one was in 2011 for NCDs.

CANCER CONTROL
I remember.

PROFESSOR CAZAP
I was the Chair of the Advisory Committee to the High Level Meeting to the President of the United Nations. I thought at the time that having all these important people interested in cancer was fantastic!. One of my difficult experiences was in my first conversation with the President of the United Nations Assembly who was the Swiss Ambassador in New York. Talking with him, giving some advice about how to manage the Assembly on NCDs, it became clear to me that the Swiss ambassador had no idea about cancer. Of course, the idea of any person that you can stop in the street and ask about cancer, they will know. So that, for me was a shocking thing because If the leaders of the world have that so limited knowledge about cancer, what can we expect from the general population?

CANCER CONTROL
Exactly.

PROFESSOR CAZAP
It's the leaders of the world – can you imagine? – they had no idea. Well, a general idea. And with a general idea, you reach nothing, zero. Less than zero. That was something very shocking for me.

So after that, we got our objective: NCDs were at the top of the political agenda. What has happened today, after 13 years? Nothing. Nothing. And now, more dangerously, many governments are moving from cancer control plans to NCD plans.

CANCER CONTROL
Like the UK Government.

PROFESSOR CAZAP
Like the UK, my dear friend.

Taking office at the UICC, Geneva, 2010

CANCER CONTROL
Yes.

PROFESSOR CAZAP
Twelve to 15 years of work for nothing.

CANCER CONTROL
Yes.

PROFESSOR CAZAP
Yes. What is the world doing in country control now?

Let's move on to take a look at Latin America. Next year we will have our first Latin America Global Cancer Week . We are setting up the website now. A few months ago we launched the Latin American Code Against Cancer, joining forces with IARC and with PAHO. So, we are active, we are trying to get real things done, we are seeing through the application of this strategy for cancer control. The Code is a tool developed 15 years after the European version. After Europe, this is the only Code that exists. And now, I think that motivated by our work , IARC has a plan for a Global Cancer Code that will include Asia Pacific, Africa and the other regions of the world, and for each region to have their own Code because the Code is fundamental. It is the basic tool for healthy people and for cancer patients, but the focus of the Code is the healthy population because today the medical objective is not only curing cancer. Today the ultimate objective in global health is to avoid diseases and for that primary and secondary prevention is fundamental.

Let's one minute think about molecular medicine. We understand the value of the new technology, genetics, molecular medicine and other new achievements. but we are planning and envisioning to use that new methodology not only to cure cancer but also for improved prevention. Let's imagine that you have a little baby girl. She is three days old. You take a drop of blood, air or saliva, you can make a genetic test and the genetic test will say "This lady has a very low risk

With Dr. Tabare Vazquez, President of Uruguay, AAOC Congress, Buenos Aires.

of having breast cancer". So that lady will have a breast cancer screening procedure every five years or 10 years. Now another girl has the highest possibility of breast cancer; that lady will be screened more often selectively. Are you with me?

CANCER CONTROL
Yes

PROFESSOR CAZAP
We need to think in a way that the new knowledge would be applied not only for treatments. We need more new innovative tools in cancer prevention and that is part of the strategy. Because if I propose to the government, "Are you okay for Argentina to have one thousand new mammographic equipment?" the politician will say "Yes". Then will be an article in the newspaper, 'The Minister of Health donating 1000…' But if I talk about something what will happen In 30, or 40 years from now? So we need to make this understandable for the politicians. If not, we are in a problem, my dear friend.

CANCER CONTROL
Thank you that is a good summary of some of the global cancer control activities that are currently happening in Latin America.

PROFESSOR CAZAP
Of course, it needs a lot of improvement. Mainly we need understanding of funding. Practically there is no funding for cancer control actions in our region. Most of the actions are based on volunteers, or fantastic ideas that I am sharing with you. But the possibility of success without money is, you know, almost impossible.

CANCER CONTROL
One of the questions I have to ask is what do people get wrong about Latin America? Or do people not think about Latin America at all?

PROFESSOR CAZAP
For me, this is a difficult question to answer, because I don't have an US or European mind.

CANCER CONTROL
Okay.

PROFESSOR CAZAP
I have a Latin American mind. Of course, my understanding is of the minds of the cancer people, not the minds of a population. The cancer people, they know about cancer in Latin America. The problem is with the general population, informed through the newspapers and media, and the people participating from as civic society players.

But I would like to say a couple of things. One, it is not relevant if the situation is Latin America, Europe, or Africa; the situation is the same. Of course, in the United States they think that they are in a different situation. Yes, in a general analysis they are in a different situation. But, let's analyse one of the 25 or 30 million uninsured people in the United States.

Let's think about the minorities in the United States…

Let's think about a family in Utah, in the middle of the mountains or in a small town.

Those are sometimes in a worse situation than in many Latin American countries.

I was invited once to a meeting that happens every year for all the cancer institutions in the United States. I was invited to give a lecture about Latin America. The meeting was, I think, two or three days long, so I attended the whole meeting to see what happened inside the United States and to better understand the internal cancer situation. There was a presentation – I don't remember the lady or the topic, – but she showed the map of the United States with the colour of each state and cancer curability. The delivery of cancer curability in some states was a disaster. Curiously, that map was one of the first times I think about Mr Trump. The map was practically superimposable with a map of the states that Trump won.

CANCER CONTROL
The Republican states.

PROFESSOR CAZAP
The same states with lower cancer curability.

So to me, from a scientific perspective, geography doesn't matter too much. The rich person in India, the rich person in Africa, they don't have any problems. They will receive care be much better than many US citizens. The problem is access. The problem is availability of resources. The problem is more socio-political than medical. The person that faces less possibilities in any part of the world is the same; in the middle of Ukraine, in the middle of a war in the Lebanon, in Haiti...

But to answer your question: I think, basically, that for the majority of the population, they are not aware of Latin America. They think that Brazil is Argentina, they think that Buenos Aires is Rio.

CANCER CONTROL
Thank you, Professor Cazap.

The Latin America and the Caribbean Code Against Cancer: A collaborative effort for cancer prevention

Carolina Espina, Scientist, the Environment and Lifestyle Epidemiology Branch, International Agency for Research on Cancer (IARC/WHO), Lyon, France

DR CAROLINA ESPINA

Cancer prevention is the most cost-effective strategy that countries have, to contain and revert the increasing numbers in cancer cases and deaths worldwide. The Latin America and the Caribbean Code Against Cancer first edition is a cancer prevention instrument to raise awareness to about the established risk factors and effective preventive actions and interventions, to guide governments of Latin America and the Caribbean to implement the most urgent measures, and to build capacity to healthcare professionals and cancer prevention advocates.

Cancer is already the leading cause of death in almost half of the countries of Latin America and the Caribbean, with 1.5 million new cancer cases (7.7% of all cases worldwide) and 700,000 deaths estimated in 2020 (7.3% of all deaths worldwide) *(1)*, being prostate, breast, and colorectal cancers the most common ones. More alarmingly, this cancer burden is projected to increase by at least 67% reaching 2.4 million new cases annually by 2040 *(2)*. The Latin America and the Caribbean Code Against Cancer first edition is a multi-risk factor cancer prevention educational tool to raise awareness to the public and policymakers about the established risk factors and existing effective preventive actions and interventions. It consists of 17 recommendations on primary and secondary prevention of cancer for the public of Latin America and the Caribbean, complemented by 17 recommendations related to the public policies and services that countries should invest in, to support primary prevention while strengthening health systems to provision early detection and subsequent effective treatment of cancer *(3)*. The recommendations are divided in the following four groups of topics. Seven recommendations on lifestyle risk factors such as not using any type of tobacco, neither nicotine-related products in non-smokers, encouraging quitting, and respecting and promoting smoke-free places; achieving or maintaining a healthy weight throughout life, with support of daily physical activity and a healthy diet that includes fruits, vegetables and whole grains, limits red meat, ultra-processed foods and very hot beverages, and avoids processed meats, sugar-sweetened beverages and alcohol; and promoting breastfeeding *(4,5)*. Four recommendations on environmental and occupational risk factors to protect oneself from sun exposure, including workers; to avoid building up smoke from coal or firewood in households; to limit time outdoors when air pollution is high; and to find out the carcinogens in the workplace, and request and adopt the recommended protective measures *(6)*. Two recommendations on infections and related interventions to screen and treat for the bacteria *Helicobacter pylori*, as well as for infections caused by hepatitis B and C viruses (HBV and HCV), human papilloma virus (HPV) and human immunodeficiency virus, in addition to vaccinating against HBV and HPV and to practise safe sex *(7)*. And four recommendations on drugs and cancer screening, such as not using hormonal replacement therapy unless prescribed, and requesting the corresponding age-dependent screening methods for colorectal, breast and cervical cancers *(8)*. The corresponding policy recommendations focus on population level interventions needed to set the infrastructure that will allow individuals to put in practice the cancer prevention messages, for example, implementing taxes and warning labels in harmful products, create healthy environments in the community, schools, and public buildings; implementing programmes to allow switching to cleaning energies, establishing environmental air quality standards and ensuring that economic activities will eliminate or at least control the use of carcinogenic substances; ensuring access to vaccines, diagnosis and treatment of infections, along with implementing sex education programmes; or prohibiting the over-the-counter sale of hormone replacement therapies for menopause, implementing secondary prevention programmes for colon and rectal cancer and ensuring early detection and treatment of breast and cervical cancers in alignment with the corresponding WHO Global Initiatives *(3)*. In addition, the Code has also a specific output dedicated to the primary

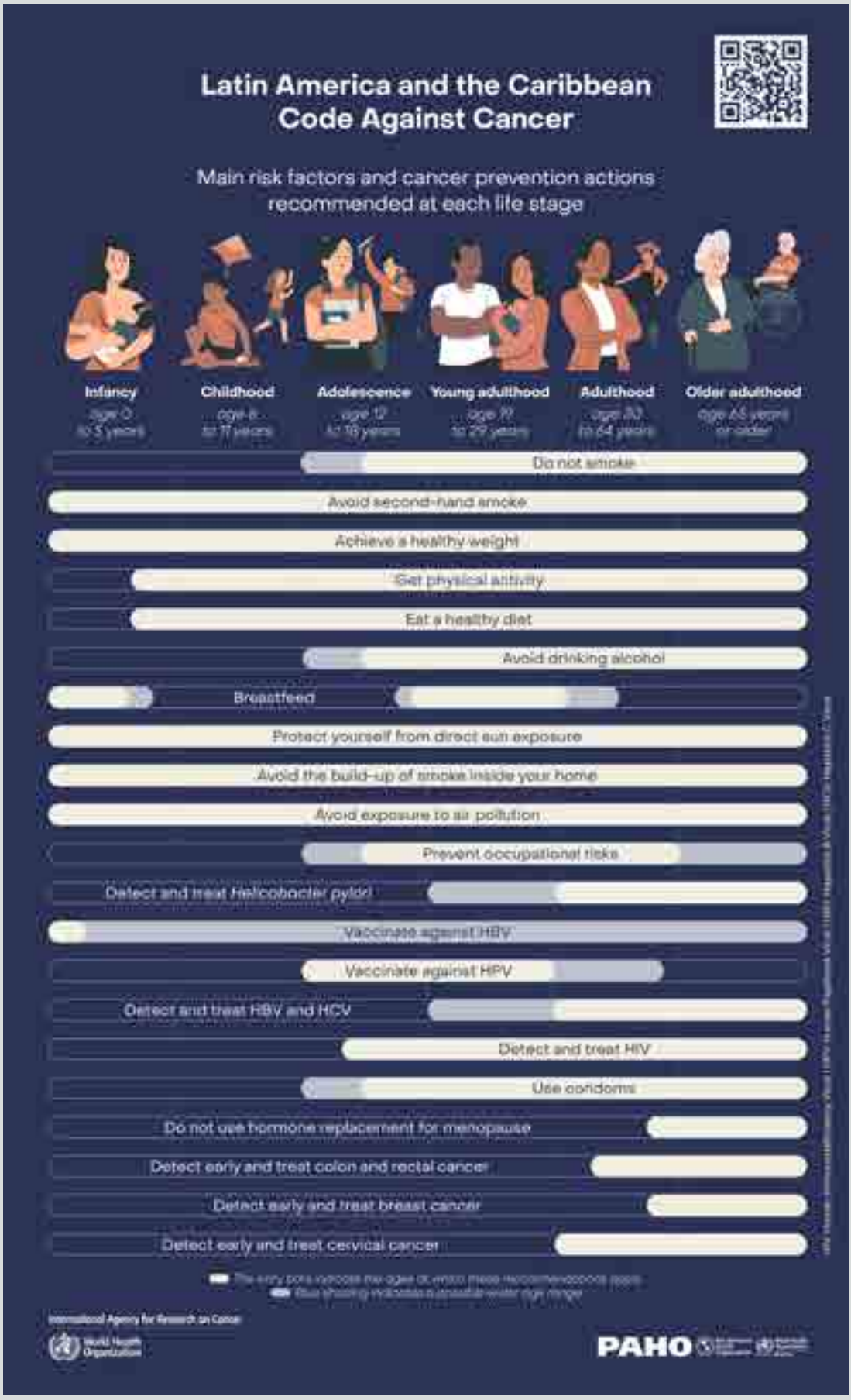
healthcare professionals of the region, including physicians, nurses, pharmacists, psychologists, nutritionists, etc., to be hosted soon at the Pan-American Health Organization (PAHO) Virtual Campus for Public Health *(9)*. It is a free 40-hour competency-based microlearning programme, containing not only a comprehensive learning module per recommendation, but also extra modules on communication to the patient, the social determinants of health, intercultural competencies, and other topics of interest for the primary healthcare professional.

The Latin America and the Caribbean Code Against Cancer first edition is the first regional adaptation of the European Code Against Cancer *(10)* under the umbrella of the World Code Against Cancer Framework *(11)*, an initiative from the International Agency for Research on Cancer (IARC/WHO) that aims at transforming the knowledge from etiological cancer research and preventive interventions into actionable information. IARC, the World Health Organization (WHO) specialized agency on cancer research, has developed the methodology that includes a standard and iterative process to review and assess the regional epidemiological patterns, the socio-economic and cultural conditions *(12)*, and also comprises communication research to test the understandability and persuasiveness of the messages in the general public *(13)*. The Latin America and the Caribbean Code Against Cancer first edition was internationally launched on 17 October 2023, in a double event: a virtual launch organized by PAHO and a second event at the UICC World Cancer Leaders' Summit in California. These events were the culmination of almost three years of a scientific and communication project, with more than 60 experts from Latin America and the Caribbean with a balanced geographic and gender representation and key partners involved, guided by IARC and PAHO, and working in a collaborative manner with the common mission of promoting cancer prevention. The Code has been developed in Spanish and translated into English and Portuguese *(14)*. The key features of the Latin America and the Caribbean Code Against Cancer first edition are:

- it is evidence-based, anchored in a thorough methodology supported by the credibility of authoritative organizations and sources of evidence;
- it translates the latest science on risk factors and preventive interventions into straightforward and concise messages for the people and policymakers;
- it is a specific tool for cancer prevention, considering those risks factors common to other noncommunicable diseases and those specific to cancer, as well as secondary prevention of cancer;
- it describes the priority actions for a region with a large diversity in geography, urbanization, developmental progress and wealth, literacy, culture, ethnicity, and access to healthcare resources, taking into consideration that not all countries are at same speed in implementation, and hence providing the roadmap for setting mid- and long-term targets to achieve reducing the burden of cancer;
- it is a multi-sectoral approach to tackle cancer as, unfortunately, the healthcare sector cannot do it alone;
- it contains the know-how from the region, as it has been developed by regional experts in a collaborative way, building consensus for all aspects (therefore, the Code has been developed "by the region and for the region");
- it puts the person in the centre, having been tested in the general public of several countries of Latin America and the Caribbean (Brazil, Peru, Colombia, Chile, and Puerto Rico) *(13)*; and it provides primary healthcare professionals with the resources and competencies needed to promote prevention *(9)*.

As mentioned, there has existed a Europe Code Against Cancer for more than 30 years (with the fifth edition currently under development) *(10)* that has served as a model to design and develop Regional Codes Against Cancer that will comprise the priorities for a given region and recommendations that are feasible and implementable. Yet, the Latin America and the Caribbean Code Against Cancer is not a quick adaptation of the European one, but a scientific exercise in itself, and moreover, it is pioneer in including public policy recommendations based on prevailing guidelines from WHO, PAHO, but also from other international organizations such as the International Labour Organization or UNAIDS, to name a few. These Regional Codes Against Cancer do not aim to replace national guidelines but rather to enable governments to commit to reach the recommendations as targets, to inform policy formulation and programmes, while empowering the individuals to follow the recommendations. However, to move from outputs to action, active and sustained dissemination, as well as step-wise implementation and adoption of the recommendations, at individual and population levels, needs to be ensured. The united action of regional stakeholders including governments, national cancer institutes, cancer patient organizations, medical associations and the academia is crucial to overcome the possible barriers for dissemination and implementation that would represent the fragmented health systems, the lack of access to up-to-date information, the lack of resources and/or prioritization, the lack of political will, or the excess of bureaucracy. Therefore, with the Latin America and the Caribbean Code Against Cancer first edition providing the most up to date, authoritative, and clear evidence-based recommendations for the general public, prioritizing the most effective, feasible and implementable cancer prevention interventions for policymakers to implement in the region,

Figure 1: Brief representation of the recommendations of the Latin America and the Caribbean Code Against Cancer first edition throughout the course of life. This infographic shows the relevance of each of the 17 recommendations throughout the life course: for example, many recommendations may apply from the infancy to older adulthood, such as achieving a healthy weigh, avoiding exposures to the sun or different kinds of air pollution; whereas recommendations on interventions such as vaccination or cancer screening are targeted to specific ages.



and allowing stakeholders to unite cancer prevention under universal and consistent messages, there is hope for Latin America and the Caribbean to curb the increasing cancer burden in the years to come. ■

Dr Carolina Espina, PhD, MPH has 14 years of professional experience in cancer prevention research and public health. She is the leader of the initiative "The World Code Against Cancer Framework" to educate the public, to guide policymaking and to build capacity in cancer prevention. She has led the development of the European, and the Latin America and the Caribbean Codes Against Cancer and is leading the planning of an Asian one. In addition, she is involved in a variety of projects on implementation and dissemination research, and knowledge translation on cancer prevention. She has previously worked at the Pan-American Health Organization and the World Health Organization. She obtained her PhD degree in Molecular Biology of cancer, Master's degree in Public Health (Health Promotion) and Master's degree in Pharmacy.

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Cancer Treatment and Care

The language of cancer communication in Africa

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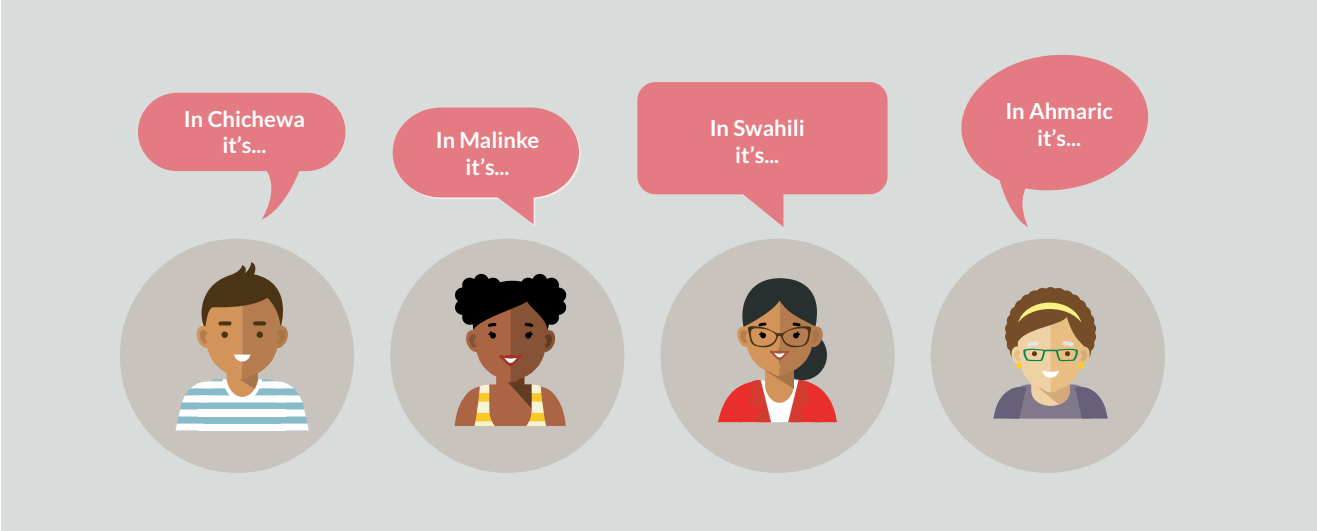
Effective communication plays a crucial role in cancer prevention, early detection and care. Despite its importance it has unfortunately been given insufficient attention, particularly within the African context where it remains an understudied and neglected issue. Barriers in cancer communication can foster stigma and disempowerment among both patients and healthcare professionals. Communication challenges between healthcare professionals and patients are not confined to a specific region – it's a widespread issue across the world, and across cultures and sociodemographic groups within a highly mobile globalized world. Healthcare professionals grapple with difficulties in conveying information to patients due to linguistic differences *(1,2)*. This not only shapes patients' interactions with the health system but also influences their perception of cancer, its preventability and treatability. Language, with its transformative power, can either empower individuals to actively participate in their care or disenfranchise them, hindering their engagement with the healthcare process.

How cancer is spoken about is important, given that language intricately shapes actions, influencing the process from symptom recognition to the proactive pursuit of treatment and care. Often in specific cultural contexts, the linguistic representation of a patient's experience with cancer and cancer care often employs metaphors of warfare and violence *(3)*. Several metaphors commonly employed, including "fighting cancer", "losing the battle" and "cancer warrior" are used within the healthcare setting, in patient narratives and in the community in general *(3)*. Individuals contending with cancer are often characterized as "warriors" or "fighters," while therapeutic interventions are metaphorically framed as "weapons" and part of an "arsenal" *(3)*. Tumours are figuratively depicted as being "blasted" or "exploded" *(3)*. The nuanced impact of these metaphors, specifically their potential to either disempower or empower patients, remains a subject of ongoing debate, criticism, and scholarly discourse.

Language is embedded in culture, and through language, individuals express and articulate their perceptions, emotions, and interpretations of their experiences with illness. The choice of words, narratives, and descriptions used to communicate

Figure 1: What is cancer in your language?



these experiences provides insight into the unique ways individuals make sense of and find meaning in their encounters with illness. In essence, language serves as a valuable tool for capturing and expressing the phenomenological dimensions of people's lived experiences of illness *(4)*.

It is crucial to highlight that globally, regardless of the presence of a term for cancer in various cultures, it often carries a significant stigma. For instance, in Western societies, cancer is commonly colloquially labelled as the "C word" *(5)* or "the big C" *(6)*, a designation rooted in its perceived ominous, intimidating and sensitive nature. In specific cultures, such as India, cancer is euphemistically referred to as "a problem". Adding to the complexity, in Dutch, a prevalent insult involves telling someone to "get cancer" *(7)*. Some discussions within the academic sphere have suggested refraining from using the term "cancer" when communicating cases classified as "low risk" to patients. This suggestion aims to alleviate patient anxiety that could influence decisions toward more invasive treatments *(8)*.

The challenges associated with language are not confined to cancer; rather, they extend to other medical conditions, as exemplified by tuberculosis. Tuberculosis, is often referred to as the "disease of poverty," attaching a stigmatizing label to those of low socioeconomic status affected by the condition (9). Within the realm of tuberculosis care and research, certain terms, some of which are also encountered in the context of cancer, perpetuate stigmatization by embodying "metaphors of transgression and punishment." Examples include "treatment defaulter" and "initial defaulter," which imply a judgment akin to loan non-payment, "tuberculosis suspect," insinuating that the patient has committed crime, and "non-compliant," attributing blame while overlooking systemic and structural barriers to treatment interruption *(9)*. Additionally, in the context of cancer, this issue extends to patient labelling and blame in various settings. Terms like "delayed presentation" or "loss to follow-up" may incorrectly imply that patients are at fault, whereas individuals experiencing delays in diagnosis often engage repeatedly with the health system *(10,11)*. This issue may be particularly pronounced in LMICs *(10,11)*. Initiatives such as the Stop TB Partnership's Tuberculosis Terminology Guide have been instrumental in delineating non-stigmatizing alternatives in terminology for tuberculosis care and research *(9)*.

IARC-AORTIC-Aga Khan University undertaking

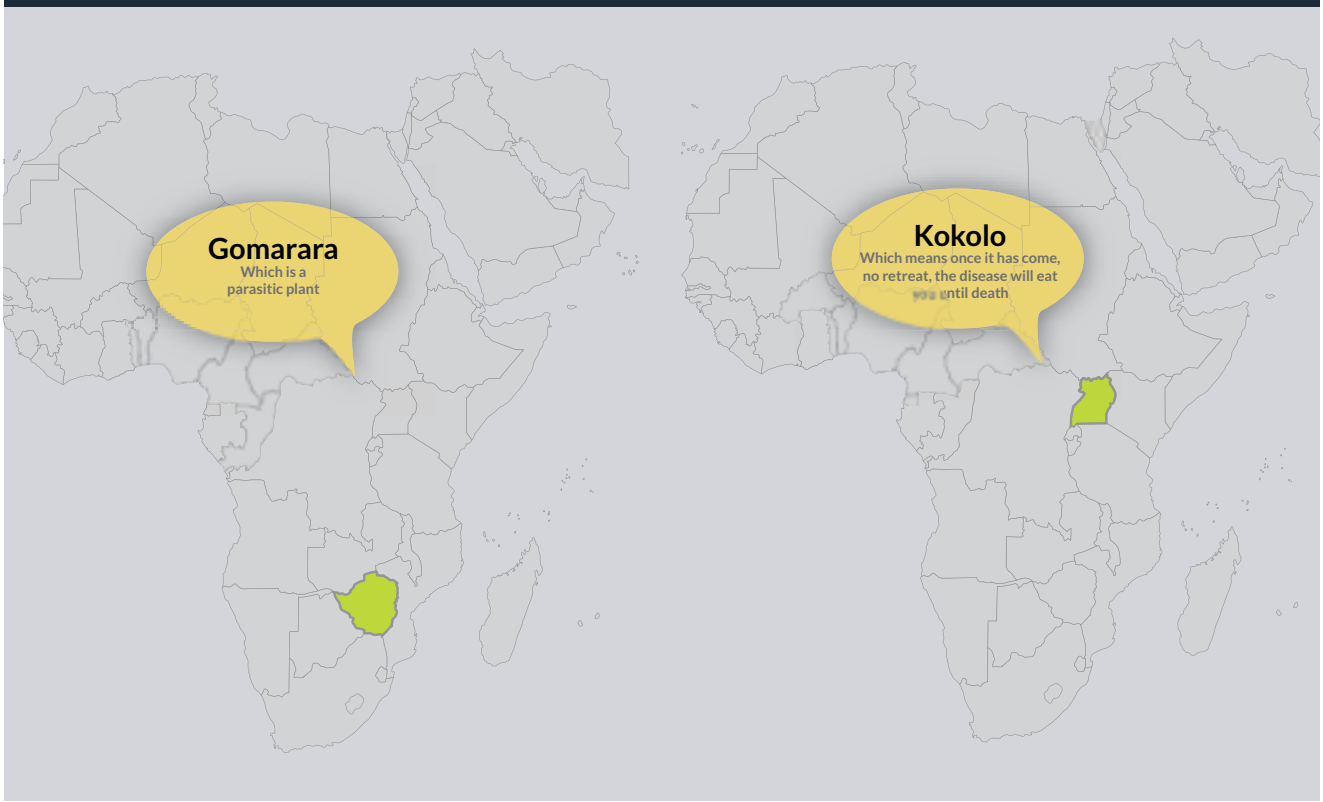
Exploring cancer communication in the African setting is particularly needed for several reasons. Infectious diseases have historically dominated the disease burden in the Continent, and only more recently have lifestyles changed and life expectancy increased to give rise to a substantial cancer burden in the population. The local languages may not necessarily be equipped with a language for this disease and its treatment. Furthermore, late-stage presentations, difficulties in accessing timely diagnosis and treatment, as well as incomplete completion of chemotherapeutic courses are prevalent problems *(12,13)*, possibly pointing to communication challenges amongst a myriad of barriers. Given the vital role of effective communication in providing competent healthcare and fostering active patient participation, in 2023, IARC and AORTIC, in conjunction with the Aga Khan University, Nairobi, commenced an investigation aimed to explore the nature of cancer terminology in African languages. This exploration is also necessary to comprehend how language might contribute to fear, stigma, and communication challenges for healthcare professionals and perpetuate misconceptions and myths about the disease.

Using an online survey, a list of cancer terms used in diagnosis and treatment were provided to participants who were asked to provide each term in their local language (if it exists) followed by a direct translation of the meaning of the term into English (if they know). Terms included cancer, tumour, biopsy, malignant, benign, staging, metastasis, surgery, chemotherapy, radiotherapy, trial, remission, palliative care, survival, recur, and chronic. Participants were invited to participate in the survey through an online survey which was available in English, French, Portuguese and Arabic. Participants invited included health professionals, community health workers, researchers and scientists involved in cancer care and/or research, as well as traditional healers. Thematic analysis was done on the English translated terms in order to identify common themes – topics, ideas and patterns of meaning that come up repeatedly.

Emerging themes

Analysis of the above survey has recently commenced and will be published in peer-reviewed literature in 2024. A flavour of some initial entries are as follows. A participant from Zimbabwe stated that the term "cancer" in Shona was "gomarara" which means a parasitic plant. The participant explained "This is a plant that grows on top of another plant, in a parasitic way, usually killing or disabling the plant". Another participant from Uganda provided the term for cancer in Luganda which is "kokolo" which means "Once it has come, no retreat, the disease will eat you until death". Similar elements of languages that instil fear/tragedy were found in other languages. The weightiness associated with the term "cancer" often extends to its connotation of being overwhelming, unbeatable, and frequently final, contributing to a sense of cancer fatalism. This connotation is evident in our results from the terms used for cancer in Luganda and Shona languages in Uganda and Zimbabwe, respectively, underscoring the gravity

Figure 2: The word cancer and translation in Shona (Zimbabwe) and Luganda (Uganda)



and inevitability of fatality. Some languages did not have a term for cancer in the local language. An added complexity in the African setting is that patient-centred communication and shared treatment decision-making may not be directly communicated to the person with cancer themselves, especially for older persons. Rather the diagnosis is first communicated to other family members and cultural norms dictate that further communication and treatment decisions are collective responsibilities.

The full results of our study will shed light on the nature of oncology terminology in African languages and how it may contribute to fear, health disparities, and pose communication difficulties for patients and healthcare professionals. The results reinforce the need for culturally sensitive oncology terminologies for improving cancer awareness and communication, and implications for prevention. It also highlights the need to develop a competent workforce well versed in the nuances and implications of effective and contextual communication in cancer. This work lays the groundwork for future in-depth studies on the topic, considering the diverse languages and cultures across the African continent. ■

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What really happens when someone is diagnosed with cancer? The case for personalized care

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A diagnosis of cancer impacts every aspect of a person's life, far beyond the physical issues related to the disease and treatment. Needs include finances, information, emotional and practical support, and personal care. As treatments are designed with great precision, care needs to be given with greater personalization.

Success in treating cancer should not only be measured by survival statistics but by attempts to understand quality of survival.

This article discusses the times and types of need for personalized care, the domains of living with and beyond cancer, and presents some of the systemic approaches required to meet holistic need.

A life is changed by a diagnosis of cancer. The moment of a cancer diagnosis is seismic for the person affected. At that point the person becomes a citizen of what Susan Sontag described as the "Kingdom of the Sick" *(1)*. The transition of this unwanted citizenship is undoubtedly a trauma. The US-based oncologist and pancreatic cancer survivor, Mark Lewis has written of the "tinnitus of terror" he experienced at his own diagnosis when he was unable to hear or absorb the information he was being given. He has seen the same effect in his own patients when "cancer" is mentioned in a diagnostic consultation *(2)*. The effect is such that information processing and fact retention are markedly affected. There is significant literature showing how clinical teams should and could improve the process of breaking the bad news of a cancer diagnosis *(3)*. Much is forgotten and important questions can go unasked. Recording the consultation is one first step in allowing the person affected to have full recall of the consultation and to share with their own networks. Studies prove the utility of recorded consultations, and now the availability of mobile phones mean that recording technology will often be at hand *(4)*.

A cancer diagnosis creates multiple information needs ranging from details of the diagnosis through to treatment options and the likely impact of therapy. Desire for information is high amongst people affected by cancer and this is frequently unsatisfied by their healthcare providers. People request information about all possible treatments and side effects, with only 6% not wanting this information *(5)*. It is neither possible nor appropriate to attempt to generalize groups who may not need detailed information. Neither age, gender nor education level has been able to distinguish a group that could safely be provided with less detail *(6)*.

Servicing information needs appropriately is challenging as patients will have different preferences for information materials (text, video etc) and different educational levels.

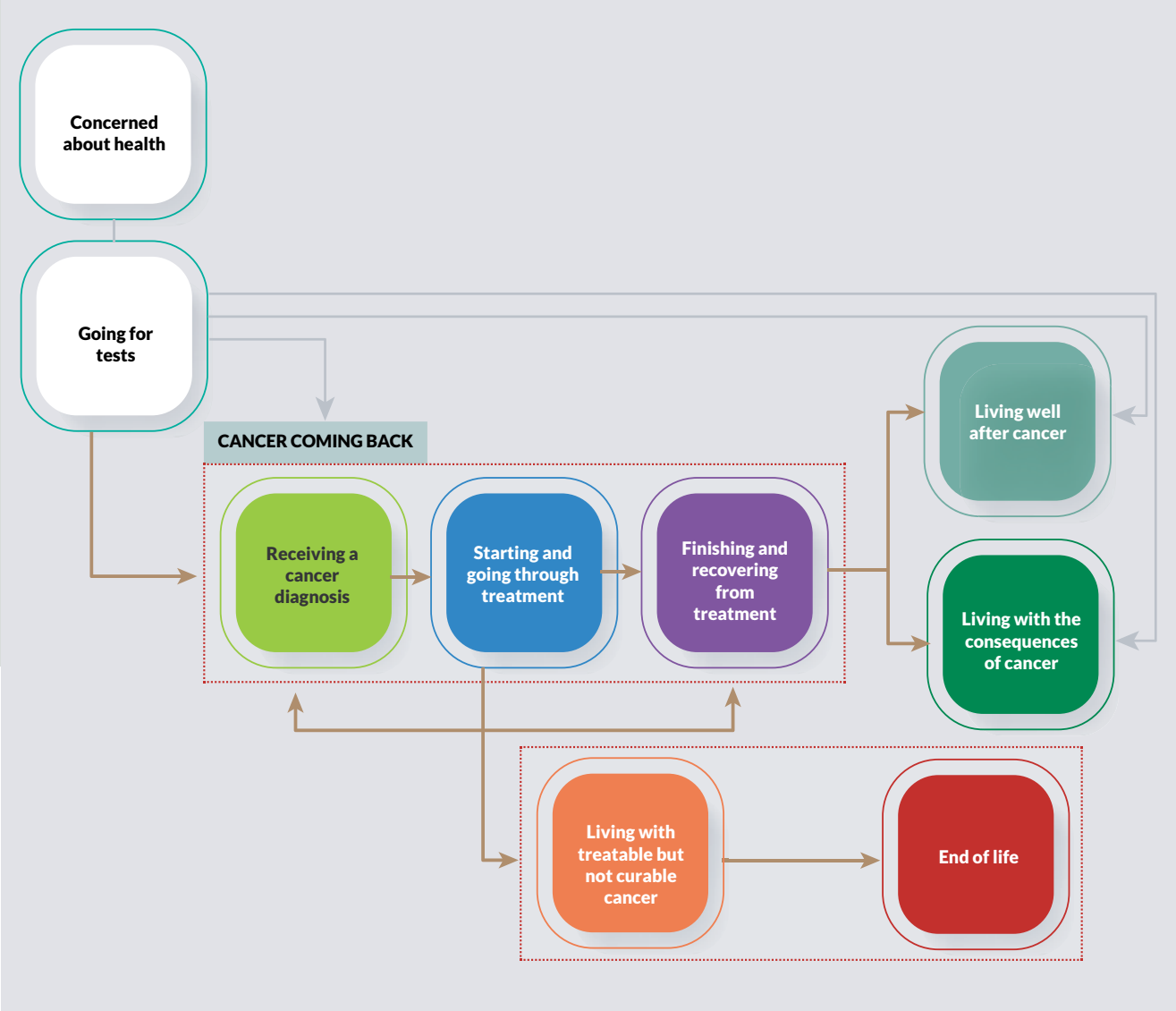
Personalized care in cancer

After the cancer diagnosis, a clinical team can begin to formulate and agree a treatment plan, and the person affected by cancer begins that therapeutic process. This moment is also the beginning of effects which will extend far beyond in both time and implication. Like a stone dropped in a pond, the diagnosis forms ripples which extend further onwards and outwards as all domains of life become affected; work, finances, relationships with family and friends are all potentially impacted. Treatments can cause short term side effects and late consequences which can impact any organ system. Fear of recurrence and worry can create existential distress and psychological morbidity. This is the territory commonly referred to as survivorship.

The US National Coalition of Cancer Survivorship defines survivorship as "the experience of living with, through and beyond a diagnosis of cancer" *(7)*. This concept of "living with and beyond" cancer is perhaps a preferable term to "survivorship". "Survivor" has unhelpful linguistic ties to "battles" and "fights" and some of the other militaristic terms that have righty become controversial *(8)*.

Another important term to define is "personalized care". Much of the modern dialogue around cancer therapy focuses on the issue of "precision therapy". Precision therapy refers to medical care delivered based on genomic or molecular

Figure 1: Times of need: diagram showing the times of need Macmillan has identified within the cancer journey. Target times of need are shown within the red dotted line



profiling. The FDA in the United States defines it as "an innovative approach to tailoring disease prevention and treatment that takes into account differences in people's genes, environments, and lifestyles." The term "personalized medicine" is often used to mean the same thing and the US National Cancer Institute uses interchangeable definitions for personalized and precision medicine *(9)*. The US National Research Council prefers the term precision, but only due to concerns that "personalized" may be misinterpreted to mean that theories are developed specifically for an individual *(10)*. The most important distinction here is between "treatment" and "care".

Personalized care is designed to meet the needs of an individual patient. This distinction is often captured by the adage; precision medicine is about tackling what is the matter with the patient whilst personalized care focuses on what matters to the patient. Macmillan understands personalized care as being "designed in collaboration with the person who needs it, or with someone who knows them well, so that it is tailored to meet individual needs" *(11)*.

Personalized care should be a foundation stone for all the care we deliver in cancer regardless of disease type, geography, or resource. Personalized care is agnostic of molecular mutations or therapeutic genomic targets. Treatments may vary enormously according to the cancer, local economy, and healthcare structure but the principles of care should be a universal truth centred on compassion, respect and putting the patient first.

In the United Kingdom, we have estimated that there are approximately 3 million people living with cancer and that 66% of them are aged over 65. By 2030 we estimate the number will be as high as four million, partly explained by average survival times which now exceed a decade *(12)*. Incidence rises as a consequence of ageing populations and better treatments

Table 1: Excerpt of Data from the Baseline Assessment

Time of need	Information needs
At diagnosis	Guidance on what to read is provided in a "read later" format as ability to process information is limited. Information pack signposting resources e.g., online nurses, welfare officer. Create opportunities to clearly signpost this.
During Treatment	Active check-in, support and guidance is necessary to begin processing and planning for financial impact. In-person check from nurse, welfare officer, volunteer. Clinical setting is key location for reaching people living with cancer however their time and energy may be low. Ideally one-to-one advice is desired – a consistent point of contact throughout providing continuity.
Finishing and recovering from treatment	Option for follow up support available by phone consultation or pre-booked appointment. Clear direction to online resources to help implement strategies and access resources. Returning to the new normal may require specific support e.g., rights returning to work, changes to benefits, provide guidance through online resources and a helpline.
Living well after cancer	Potential to engage people living with cancer as a peer advocate to support those newly diagnosed in understanding what to expect.

leading to higher prevalence. These citizens deserve holistic care of their multiple needs.

Healthcare systems will set key performance indicators for success usually built around metrics related to numbers of cancer diagnoses, stage at diagnosis and survival estimates. These are appropriate benchmarks for a governance system but counting people affected by cancer tells us nothing about the quality of their survival and whether lives are lived in distress or comfort. Survivorship metrics are difficult to agree and harder to collect but are possible. In England the commitment to use the EORTC QLQ-C30 to measure quality of life in people diagnosed with cancer is an example of attempts to collect meaningful data at scale on the experience of living with cancer *(13)*. The efforts to record these metrics should be respected and wherever possible improved, as to paraphrase the management consultant Peter Drucker: "What gets measured gets managed".

Times and types of need

Beyond the diagnosis, a person affected with cancer can expect to transition through different states of treatment and disease where needs will change accordingly. We can characterise these as "times of need" (Figure 1) and understand that people will follow different routes through these times of need and be in those states for varying lengths of time. We recognize that the term "palliative" is too often interpreted to mean care at end of life however the welcome advances in therapeutics mean that now in very many cases people may have incurable disease in which palliative treatment can extend life by many years. In this circumstance, the term "treatable but not curable" is preferred. For people with treatable but not curable disease there are new existential problems related to uncertainty of prognosis which impacts on important decisions, for example those related to work and finance.

It is recognized that the methods we choose to meet needs will change over time (see the example of cancer information in Table 1).

Addressing the information needs will also change over time as patients become familiar with treatment jargon and more expert in their own condition. Service providers should work with people affected by cancer to provide information resources that are accessible at all stages of a cancer experience.

Holistic needs assessment

To understand the multiple and varied needs of people affected by cancer, there needs to be a mechanism for

Table 2: **Types of need**

Time of need	Examples
Physical	Fatigue, nausea, sleep and eating issues and bowel problems can all affect people's ability to attend places of work or education.
Emotional and psychological	Sadness, anxiety, fear of cancer recurrence, depression. Cancer treatment related cognitive impairment. Loss of libido.
Financial (including work and education)	Unable to work or attend education due to fatigue, treatment burden or physical incapacity. Impact of loss of earnings on wider family group. Lack of clarity on state support and benefit. Financial toxicity of treatment from direct costs and indirect (travel to care, time off work).
Practical and personal care	Feeling so ill that they cannot complete everyday tasks, being too fatigued to leave bed etc. Needing support for activities of daily living.
Information	Details of treatment and side effects. Signposting for practical support. Details of alternative treatment options.
Spiritual and religious	Thoughts about death and dying, searching for a greater meaning in life after a cancer diagnosis, feelings about faith and religion.

systematic enquiry for the problems and concerns that the person is facing. In England this is recommended to be achieved by Holistic Needs Assessment (HNA).

In 2015, a Cancer Strategy for England was published and recommended an assessment of holistic needs, now accepted as best practice *(14)*. Through promotion, investment and training there is now a significant experience in using HNA for the benefit of people affected by cancer *(15)*. The HNA concept is well established across the United Kingdom but other forms of distress screening have been used in other geographies.

Distress screening/HNA can reveal multiple problems. A previous Institute of Medicine report identified four domains of survivorship care that are needed to comprehensively address medical needs after primary treatment; specifically prevention, surveillance, intervention, and coordination *(16)*. Within these domains at Macmillan we would recognize six distinct types of need (Table 2).

These needs require distinct and specialist approaches which will usually entail sourcing expertise, for example, related to financial support. Despite the high prevalence of these problems, they are rarely properly valued and recognized with National Cancer Plans *(17)*.

Key workers

In many clinical environments, the increasingly specialization of cancer care creates silos of expertise where the area of concern is narrow, but knowledge is deep. Expert care with high levels of specialization may drive improved outcomes for cancer control but may do so at the expense of holistic care. If an individual's cancer is being managed by many dedicated therapeutic experts, who is to assume the role of oversight and ensure that holistic assessment is conducted and acted upon? Consider the person with advanced breast cancer receiving pain relief advice from the palliative care team, regular medications from their primary care provider, systemic anti-cancer therapy from their local cancer centre, and stereotactic radiosurgery from a tertiary provider. In this complex network of healthcare professionals, we have recognized the value of a "key worker" concept. A healthcare professional tasked with ensuring holistic needs are assessed and met. In England this is most often a Cancer Nurse Specialist who would formulate a

care plan based on HNA outputs *(15)*. In other health economies this is often referred to as a Survivorship Care Plan. The key worker needs to have a good understanding of the local health economy so that a person affected by cancer can be signposted to appropriate care, which may often sit outside of healthcare and within the wider community. In some systems this role can be adopted by a care navigator with expert knowledge of local services which they can match to patient need.

Delivery

In order to deliver personalized care, systems need to provide the tools and spaces for holistic needs assessments and support the workforce to provide it. Workforce support requires both time and training.

Delivering comprehensive services that meet the holistic needs of cancer patients is likely to be beyond the capacity and ambition of most funded health services. Needs are complex, varied and will vary in different geographies. In that context it is often local communities themselves that are best suited to support holistic need. Cancer services are encouraged to stocktake available civic services, voluntary groups and charities within their communities that can be signposted as a result of HNA. Data sharing agreements may be necessary to allow flow of relevant details for patient care.

Conclusion

A personal reaction to a cancer diagnosis is likely to be as individual as a genomic signature. Cancer impacts people differently and that is why we want people to be treated as individuals. All of us have different motivations, experiences, fears, hopes and desires and to quote Walt Whitman from his 1855 poem "Song of Myself", we all "contain multitudes".

Access to personalized care means people have choice and control over the way their care is planned and delivered. It is based on what matters to them and their individual strengths and needs. Making care personalized aims to support people with cancer to make decisions about their care through identification of their concerns and goal setting facilitated by health and social care professionals.

To respect this, cancer services need systems that prioritize assessment of holistic need. These needs can be addressed in a care plan which may be best delivered in collaboration with community groups outside of cancer treatment.

Surviving cancer well depends on good quality personalized care. Personalized care should be valued as a fundamental of good cancer care and seen as a basic right, not a luxury item. ■

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INCTR

Mission, organization and achievements

The International Network for Cancer Treatment and Research (INCTR) is an international nongovernmental organization (NG0) that was established to address a neglected global health problem – the ever increasing burden of cancer in developing countries. The founder members of INCTR included the former Institut Pasteur in Brussels and the International Union Against Cancer, now known as the Union for International Cancer Control (UICC). The National Cancer Institute in the United States provided financial and technical support and the organization began its activities in 2000. INCTR's headquarters are located in Brussels and it has offices and branches throughout the world. INCTR became an NGO in Official Relations with the World Health Organization (WHO) in January 2010.

The need for INCTR: Cancer in developing countries

Approximately 85% of the world's people live in low- or middle-income countries (LMICs). In 2012, Globocan estimated that there were approximately 14.1 million new cases of cancer and 8.2 million deaths from cancer in the world, with 65% of deaths occurring in LMIC. The number of cancer cases continues to rise across the world, but much faster in LMICs because development brings decreased mortality and with their higher fertility rates, this rapidly translates into population growth and increased numbers of patients with common diseases. The birth rate subsequently declines, although population growth continues since people live longer. Eventually birth and death rates stabilize at a much lower level of both than was the case prior to development. These demographic changes are accompanied by the adoption of unhealthy lifestyles practiced in high-income countries, particularly smoking, and increasingly, overeating and a sedentary lifestyle.

Resources of all kinds for treating cancer are limited in LMICs, such that patients who develop cancer frequently lack access to a facility capable of making an accurate diagnosis and providing appropriate therapy. There is a lack of drugs, a paucity of radiation therapy facilities and very few cancer specialists or other health care workers who are needed to effectively care for cancer patients. Diagnosis may be so delayed that there is little that can be done even if the patient does finally reach a facility competent to care for them. Terminal care is not widely available, and regulations and attitudes are still largely directed towards preventing the misuse of opioids rather than relieving the pain of dying patients, such that most patients die without symptomatic relief or little or no mental or spiritual comfort. It is estimated, for example, that less than 1% of patients who need palliative care in India receive it.

INCTR is unique in that it focuses only on the developing world. It also works directly with its collaborators, sometimes visiting them many times in order to achieve its goal of helping to build sustainable capacity in LMICs in order to assist these countries in cancer prevention, early diagnosis, treatment and palliative care. It is not an advocacy organization, and all clinical projects are coordinated by a health professional. Its output is information collected in the field, lives saved by cancer prevention or treatment, and improved quality of palliative care.

Who INCTR works with

INCTR utilizes healthcare professionals familiar with the problems of developing countries to enable it to achieve its goals. See Box 1.

INCTR'S GOALS – MAKING A DIFFERENCE

- To reduce the incidence of cancer in resource-limited countries through public and professional education about the causes of cancer and how to use this information in cancer prevention
- To detect cancer early through public and professional education about the early signs of cancer and what to do if they appear
- To diagnose cancer accurately through pathology training and, where important and feasible, imaging techniques

INCTR develops local capacity within LMICs by training healthcare professionals to establish "centres of excellence" in the delivery of feasible, affordable and effective care, including palliative care, that is considered "best practice" so that they, in turn, can train others within their country or region.

INCTR works through its branches in implementing various programmes and projects conducted in collaboration with partner institutions in developing countries and monitored by field visits.

INCTR integrates research into its programmes by documenting and evaluating actual data (rather than projected economic or health benefits, for example). Such research may include a wide range of projects, from cancer education for the general public to developing treatment outcomes, including palliative care. This, in turn, enables healthcare professionals working in LMICs

Figure 1: Disease burden and resources

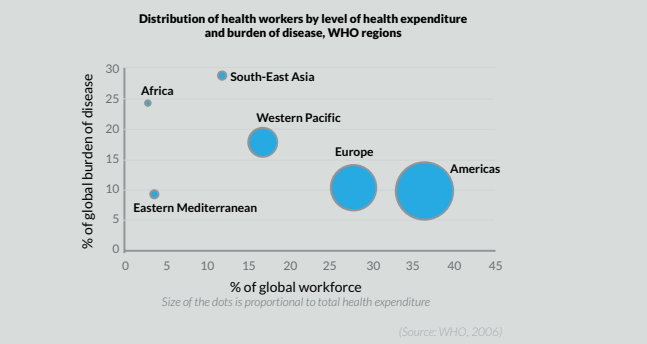
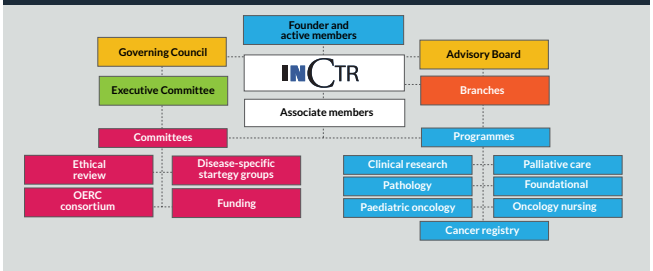


Figure 2: Disease burden and resources



to become familiar with the most pressing issues and to develop plans to improve efficiency and reduce cost. Although clearly many countries have limited health workforces and quantitation of such workforces can be valuable in terms of planning for the future, it realizes that many cancer plans have little impact because of the limited resources and great difficulty in expanding interventions to very poor populations which cannot "purchase" their own healthcare needs and which have little or no chance of expanding their present resources. Having a cancer plan is not enough. Successful cancer plans require knowledge and a budget in addition to educated health professionals.

INCTR's structure

INCTR has consultants and volunteers dedicated to the accomplishment of its goals. Although its headquarters are located in Brussels, it has branches in the United States, Canada, Brazil, United Kingdom, France, Egypt, Nepal and India. Branches are legally-established NGOs that contribute to and conduct programmes and projects that are relevant to INCTR's mission.

Resource development, administration and programmes (e.g., adult oncology, paediatric oncology, cancer registries, pathology and palliative care are supervised by an Executive Committee or directly by the branches. The Executive Committee is responsible to INCTR's Governing Council. Programmes and projects are developed with the participation, input and advice of various INCTR committees and strategy groups, as well as independent scientific advisers. Programmes and projects are conducted in collaboration with partner institutions involved with cancer research, diagnosis and treatment, including palliative care and education in countries with limited resources.

STRATEGIES

- To build capacity for cancer prevention, diagnosis, treatment and palliation through professional education and training
- To conduct, or provide materials for the conduct of educational campaigns for the public and primary care doctors about the causes of cancer and living a healthier life
- To work with experts in-country to conduct locally relevant research on cancer control

Individuals, institutions or organizations often choose to serve as Associate Members who contribute financially to the work of INCTR.

What does INCTR do?

INCTR addresses all aspects of cancer control with the overall goal of lessening the morbidity and mortality from cancer. It emphasizes training and education of healthcare professionals in LMICs to ensure that "best practices" are instilled in cancer prevention, early diagnosis, treatment and palliative care. Research is an integral part of its work with its partners in LMICs in order to accurately document the cancer burden – including the types of cancer and extent of disease, the outcomes of prevention and early detection campaigns and the efficacy, toxicity and cost of treatment delivered. It also emphasizes public awareness of cancer, which is an essential component of early diagnosis. INCTR has a variety of programmes that are carried out in close collaboration with its branches as well as its partner institutions in developing countries. INCTR's current programmes include:

- adult oncology;
- clinical research;
- palliative care;
- pathology.
- cancer registry;
- foundational;
- paediatric oncology;

INCTR's projects and achievements

Each INCTR programme has goals and objectives in line with the overall mission of the organization, divided into separate projects. Many projects have been conducted or are on-going and include:

Adult oncology

- Prevention, early diagnosis, and treatment of selected cancers in poor urban areas and in rural and tribal regions in the state of Rajasthan in India.
- Cervical cancer screening using visual inspection in Nepal and Tanzania.
- Training of Bolivian healthcare professionals in cervical cancer screening by Peruvian experts.
- HPV vaccination of young girls in Nepal.

Cancer registries

- Establishing an East African Registry Network (EARN) that subsequently became the African Cancer Registry Network

(AFCRN). As part of the Global Initiative for Cancer Registry Development in LMICs, the Network acts as a consortium to provide a "regional hub" for cancer registries in sub-Saharan Africa. The AFCRN is supporting or assisting the development of 22 cancer registries in the region, including English-and French-speaking countries.

- Provision of training courses in cancer registration and the use of CanReg 5.
- Participation in collaborative international research.
- Visits of INCTR consultants to the Kingdom of Saudi Arabia to review cancer registration procedures and data quality and to Uganda to offer advice on setting up a cancer registry.

Clinical research

- The treatment and characterization of acute Lymphoblastic Leukemia in children, adolescents and young adults in India – over 450 patients have been treated by four institutions.
- The treatment and characterization of Burkitt Lymphoma – over 750 patients have been treated by seven centres in Nigeria, Democratic Republic of Congo, Uganda, Kenya and Tanzania. Survival is greater than 60% at 5 years.
- Understanding problems faced by parents of children with Retinoblastoma before treatment – 435 parents interviewed from institutions in 10 countries in Latin America, Asia and Africa.
- Situational analysis of breast cancer – 8,800 medical records of women treated for breast cancer in four institutions in Peru, Egypt, Pakistan and India.
- Studies carried out in Brazil, India, Pakistan and Turkey to determine delays in diagnosing and treating nasopharyngeal carcinoma and assess the role of consanguinity and familial history in this cancer.
- A new initiative to characterize the lymphoproliferative diseases in adults in Senegal with initiated in partnership with Universities in Dakar.
- Development of a pathological and radiological review for Brazilian patients with medulloblastoma in partnership with the Brazilian Society of Paediatric Oncology.

Foundational

- Accreditation Programme in the conduct of clinical trials in institutions in Brazil.
- Educating school children about cancer in Nepal.
- Evidence-based development through preparation of bibliographies of published literature from developing countries relevant to breast cancer and selected cancers in Egypt.
- Open Educational Resources for Cancer available online.
- Thematic workshops to discuss challenges in cancer control in East Africa.
- Webinars for e-learning.
- Publication of five annual editions of *Cancer Control* from 2013, with specialist healthcare publisher, Global Health Dynamics, looking at all aspects of cancer policy, prevention, detection, treatment and palliation.

Palliative care

- Training and educating healthcare professionals – doctors, nurses and social workers in the principles of palliative care – in Brazil, Cameroon, Burkina Faso, Sénégal, Mali, Tanzania, India and Nepal.
- Sensitization workshops for government officials and the public in Brazil, Tanzania, India and Nepal.
- Development of a centre of excellence in palliative care for both adults and children in Hyderabad, India.
- Lobbying governments to improve access to opioids for terminally-ill cancer patients – Nepal and India.
- Establishment of twinning programmes with hospices in Canada that support palliative care efforts in Nepal.
- Fostering the establishment of palliative care societies – in Nepal and Pakistan.
- Promoting paediatric palliative care in Pakistan.
- Publishing a palliative care handbook describing the management of a wide variety of symptoms in English, Portuguese, French and Turkish.
- Development of the "Life at Your Doorstep" home care programme offering extensive, 24/7 support for patients and families struggling with advanced and terminal illness in the cities of Hyderabad and Secunderabad.
- Organized training course for Francophone sub-Saharan Africa in Uganda. This was led by HASPF and the Institute of Hospice and Palliative care in Africa with expert input by Hospice Africa Uganda and Alliance Mondial Contre le Cancer.
- Palliative care workshops and training courses for Francophone sub-Saharan Africa organized by AMCC in partnership with AFSO were held in Uganda and Ivory Coast.
- Establishment of palliative care centres of reference and training in sub-Saharan Francophone Africa (Mali, Cameroon, Ivory Coast).
- Canadian branch provides training in India for St Mary Hospital in palliative care and fosters a collaborative approach between palliative care and health care in Nepal.
- Development of palliative care programme in Rajasthan, India.

Paediatric oncology

- Establishment of centres of reference for the treatment of

development of a common treatment protocol for Wilms Tumour.

- Conducting workshops and symposia on topics of relevance in developing countries.
- Promotion of the establishment of paediatric oncology societies – Philippines and Pakistan.
- Development of a centre of excellence in paediatric oncology at the Santa Marcelina Hospital/TUCCA in São Paulo, Brazil.
- Conducting a campaign for the early diagnosis of retinoblastoma including, but not limited to, the translation of a film showing a child with early retinoblastoma into 12 languages and distributing the film around the world (Brazil); development and wide dissemination and display of posters (Mexico and Brazil); and establishment of a retinoblastoma day (Turkey and Brazil).
- Ophthalmology nurses from the Democratic Republic of Congo trained in France to fit prosthetic eyes following enucleation (surgical removal of the eye) for the treatment of retinoblastoma.

Pathology

- Central pathology review of Burkitt Lymphoma in institutions participating in the treatment protocol for this disease in Africa.
- Training and education workshops for pathologists and clinicians.
- Training and education workshops for technicians and pathologists in techniques to improve diagnostic capabilities.
- Use of iPath – an internet telepathology programme – for consultation, training and education.
- Provision of training and education of haematopathologists in Francophone African countries (Cameroon, Democratic Republic of Congo, Sénégal).
- "What can we learn from Africa" pathology workshop held in Arusha, Tanzania for pathologists from Senegal, Benin and Democratic Republic of Congo to improve the ability of African haemato-pathologists to diagnose haematopathologocal neoplasms using the World Health Organization Classification.
- Setting up of a project to characterize lymphoproliferative disorders in adults in Senegal in partnership with local universities.
- Programme to improve pathologic and haematologic diagnostics established in Ethiopia using onsite and online training, education, and consultations.

Psychosocial support

- Development of an educational programme relating to the psychosocial needs of cancer patients in conjunction with the Brazilian Society of Paediatric Oncology.

World Health Organization

- Organized the 2009 update of the WHO Essential Medicines List for Cancer.
- Participated in guideline updating and development (cervical cancer, Kaposi sarcoma and referral guidelines for breast and cervical cancer).
- Consultation with Dr Jean Marie Dangou, Head of AFRO (African Regional Office of WHO) on non-AIDS defining malignancies in HIV positive individuals.
- INCTR organized an advisory meeting for WHO AFRO relating to the issue of AIDS-related but non-AIDS defining cancers in Africa. A report was provided to AFRO.
- Advising EMRO on a planned high-level meeting in the region late in 2014.
- INCTR is participating in the development of recommendations for the management of cancer in the Eastern Mediterranean region. INCTR's particular focus will be cancer information and the development of a tool that countries can use to identify their strengths and weaknesses with respect to cancer control, and develop or modify plans accordingly.

Considerable attention will be paid to the identification of methods of collecting and assessing the quality of data, the use of data in making scientific observations and/or the creation of evidence essential to establishing effective treatment programmes. INCTR will work more closely with governments in this regard, and funding for training, projects, scientific studies etc. will come from both within the country and outside the country. Every attempt will be made to ensure that programmes are self-sustaining after a reasonable time has passed.

Cancer Control

"The World Health Organization warmly welcomes this first annual publication on cancer control, with its laudable aim of improving cancer management in low- and middle-income countries. The publication deliberately seeks to apply the world's best expertise in cancer control, from renowned research institutes and international groups, to real conditions and needs in the developing world. It further benefits from the frontline experiences of initiatives addressing these needs and finding solutions to seemingly intractable problems."

Dr Margaret Chan,
FORMER DIRECTOR-GENERAL, WORLD HEALTH ORGANIZATION

"It is a relief to many of us working in global health to see the momentum now gathering around the global movement against cancer and other noncommunicable diseases. This latest edition of Cancer Control reflects, and is an important part of, that movement"

Dr Ala Alwan,
WHO REGIONAL DIRECTOR FOR THE EASTERNMEDITERRANEAN

global health dynamics

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