



Core elements of national cancer control plans: a tool to support plan development and review

Andrew Oar, Fabio Y Moraes, Yannick Romero, Andre Ilbawi*, Mei Ling Yap*

When developed and implemented effectively, national cancer control plans (NCCPs) improve cancer outcomes at the population level. However, many countries do not have a high-quality, operational NCCP, contributing to disparate cancer outcomes globally. Until now, a standard reference of NCCP core elements has not been available to guide development and evaluation across diverse countries and contexts. In this Policy Review, we describe the methods, process, and outcome of an initiative to develop an itemised and evidence-based comprehensive checklist of core elements for NCCP formulation. The final list provides a ready-to-use guide to support NCCP development and to facilitate internal and external critical appraisal of existing NCCPs for countries of all income levels and settings. Governments, policy makers, and stakeholders can utilise this checklist, while considering their own unique contexts and priorities, from the drafting through to the implementation of NCCPs.

Introduction

Cancer is a leading cause of death and disability, with 18·1 million people diagnosed with cancer globally, and more than 9·5 million deaths in 2018.¹ Current projections anticipate the number of deaths per year to rise to 16·3 million by 2040.² To manage the growing cancer burden, co-ordinated national responses are required and must be founded on robust cancer policies and plans.

A national cancer control plan (NCCP) is a government document aiming to meet the strategic goals and support implementation of national cancer programmes.³ Cancer programmes should reduce the cancer burden and improve quality of life for patients with cancer, implementing evidence-based strategies, and making the best use of available resources.⁴ Evidence has shown that effective cancer control plans support implementation of cancer programmes and improve population outcomes.⁵ Governments have noted the importance of NCCPs and endorsed the inclusion of such plans for all countries globally in the World Health Assembly (WHA) Resolutions on cancer prevention and control in 2005 and 2017.^{6,7} In particular, the 2017 WHA Resolution (WHA 70.12)⁷ emphasised the importance of effective implementation with a focus on equity and access. NCCPs should thus be accountable and designed to help meet the targets of the 2030 Agenda for Sustainable Development and align with national health goals.⁷

The Organisation for Cooperation and Economic Development identified several essential elements for policy makers to address cancer at a population level by exploring current variation in resource allocation, government policy, and care practices to produce the best possible outcomes.⁵ Four major recommendations emerged: strong governance for cancer control, appropriate resource allocation, promotion of best practice care pathways, and lastly a means of evaluation. The foundation of strong governance, and thus the lynchpin of quality cancer control, is the development, implementation, and evaluation of an NCCP.^{5,8}

In the past decade, considerable progress has been achieved in cancer control awareness and planning. In 2000, 48% of countries had a non-communicable disease (NCD) plan, which included cancer, or they had an NCCP.⁹ A 2017 WHO survey of all 194 member states showed that 92% of countries reported having an existing policy, strategy, or plan for cancer, with 79% of these being operational.¹⁰ An increase in the number of existing NCCPs has been encouraging. However, multiple challenges to the development and implementation of effective national plans remain, and no global guidance defining core elements of cancer control plans is available.¹¹ A major challenge has been improving the quality of existing NCCPs, which persists in spite of the increasing number of operational NCCPs. Heterogeneity in the quality of NCCPs has been identified and reported, and it is apparent that an absence of a consensus on the core elements of an NCCP plan is limiting their implementation.^{11,12}

Although local and regional NCCP analyses have been done,^{3,12–15} a checklist of core elements that can be used to support or assess each individual country's cancer plan has not been reported. The differences in the quality of NCCPs that have been formulated so far is not surprising, given that few standardised tools exist and, prior to the global analysis by Romero and colleagues,¹¹ only local or regional studies of cancer plans were available. An increase in the availability of standardised tools would promote alignment and facilitate shared best practices.¹⁶ If used by policy makers, a comprehensive checklist tool would improve the quality of an NCCP. These core elements can make up a best-practice appraisal tool outlining the fundamental requirements, potentially aiding countries in realising commitments articulated in WHA 70.12 (2017).

In this Policy Review, we describe the methods, process, and outcome of developing an evidence-based comprehensive checklist to support NCCP formulation and to facilitate critical appraisal. Our Policy Review was motivated by the need to advance standards in cancer planning and fill gaps in existing guidance. A

Lancet Oncol 2019; 20: e645–52

This online publication has been corrected. The corrected version first appeared at thelancet.com/oncology on December 2, 2019.

*Joint senior authors

Collaboration for Cancer Outcomes, Research and Evaluation, Ingham Institute for Applied Medical Research, Liverpool, NSW, Australia (A Oar MBBS, M L Yap MBBS); Liverpool Cancer Therapy Centre, Liverpool Hospital, Liverpool, NSW, Australia and Macarthur Cancer Centre, Campbelltown Hospital, Campbelltown, NSW, Australia (A Oar, M L Yap); Icon Cancer Centre, Gold Coast University Hospital, Gold Coast, QLD, Australia (A Oar); University of Sydney, Camperdown, NSW, Australia (A Oar, M L Yap); Department of Oncology, Division of Radiation Oncology, Kingston General Hospital, Queen's University, Kingston, ON, Canada (F Y Moraes PhD); Union for International Cancer Control, Geneva, Switzerland (Y Romero PhD); Department of Surgical Oncology, MD Anderson Cancer Center, Houston, TX, USA (A Ilbawi MD); World Health Organization, Geneva, Switzerland (A Ilbawi); Western Sydney University, Campbelltown, NSW, Australia (M L Yap); and University of New South Wales, Kensington, NSW, Australia (M L Yap)

Correspondence to: Dr Mei Ling Yap, Collaboration for Cancer Outcomes, Research and Evaluation, Ingham Institute for Applied Medical Research, Liverpool 2170, NSW, Australia meiling.yap@health.nsw.gov.au

comprehensive overview of necessary cancer policy considerations has been done using multiple relevant dimensions including the cancer care continuum, health systems blocks, steps to national health planning, and the three Cs (comprehensiveness, consistency, and coherency).^{17,18} This Policy Review acknowledges new and emerging guidance in national plan formulation and cancer prevention and control. The final list provides ready-to-use guidance to support NCCP formulation and to facilitate internal and external critical appraisal for governments, policy makers, and other essential stakeholders.

Data collection

Recognising the heterogeneity of existing national plan assessment tools and the need to provide guidance that is relevant across settings, the development of a list of core NCCP content elements requires a detailed review of existing guidance and global expert consultation. For this Policy Review, the term evidence-based is used to reference the data inputs received through a systematic review regarding existing normative documents and an expert consensus approach to NCCP. Core elements describe components of the NCCP process and content on the basis of existing evidence and should be adapted to the country context. Checklist items must accommodate the diverse socioeconomic and political factors influencing cancer systems spanning the entire cancer continuum. Additionally, the checklist items should acknowledge varying epidemiological factors and cancer systems and how these might alter priorities for cancer policy within any specific country. The development of this checklist was founded on these principles and formulated in a four-step process involving: (1) reviewing existing guidance and developing a preliminary checklist, (2) aligning the checklist with established frameworks, (3) refining a preliminary list through expert consultation, and (4) validation, whereby the checklist was used in a global analysis.

Review of existing guidance and development of a preliminary checklist

A global review of normative guidance in cancer control planning was done, beginning with normative input from WHO and other standard-producing agencies. In 2002, WHO developed a four-part document directed at governments and policy makers providing guidance on: (1) challenges facing NCCPs; (2) cancer control, including prevention, detection or diagnosis, treatment, and research or surveillance; (3) management of an NCCP; and (4) prioritisation.¹⁹ Following on from the 2005 WHA Resolution on Cancer Prevention and Control, WHO published *Cancer Control—Knowledge into Action*.¹⁸ The six modules contained in this guide (planning, prevention, early detection, diagnosis and treatment, palliative care, and policy and advocacy) are to ensure the methodical development of country-specific NCCPs.

Additionally, WHO, working with the International Atomic Energy Agency, published self-assessment tools to guide NCCP and NCD formulation.^{20–22} In 2017, WHO published a handbook establishing a set of best practices to support strategic plans for health, which represents the wealth of experience accumulated by WHO.²³ In 2016, the International Cancer Control Partnership (ICCP) developed a stepwise guide for policy makers, governments, and stakeholders.²⁴ The US Centers for Disease Control and Prevention (CDC) has two documents for policy development.^{25,26} The first is a cancer plan self-assessment tool that allows policy makers to evaluate the quality of their cancer plan with 44 checklist items.²⁵ The second is the *Comprehensive Cancer Control Branch Program Evaluation Toolkit*—a how-to guide for planning and implementing evaluation activities in cancer prevention and control programmes.²⁶

Elements for NCCP were cross-referenced with previous regional and country reviews of best practice in NCCPs.^{12–16} To date, sequential analyses of European NCCPs have been the most detailed, with three reports available from the past decade.^{3,13,14} In 2012, an analysis of European country NCCPs by the European Partnership for Action against Cancer, as well as a guide for the quality of European NCCPs through a broader European collaboration was completed.¹³ Both reports noted a substantial degree of heterogeneity in NCCPs, which was in part attributed to the absence of an accepted framework to guide the development of a cancer control plan. In Africa, substantial variability in completeness and quality of NCCPs has been noted previously.¹² Moreover, a series of *Lancet Oncology* commissions have investigated the drivers of cancer control, including a comprehensive assessment of national health care policies in India, China, and Russia.^{15,27,28}

Finally, a systematic literature review was done to identify previous publications used to advise or assess NCCP or NCD plans. All identified resources were collated and distributed to three investigators (AO, AI, and MLY) for independent detailed review and identification of core elements articulated in each document.

Using a consensus approach, the same three authors discarded any elements that were not generalisable for countries across different income levels, health system complexities, or geographical regions. Each document underwent independent assessment by the three authors to create an initial list of potential checklist elements. Similar items were harmonised and duplicates removed. For each checklist element, the number of references or guidelines that referred to each item was recorded. These checklist items were refined to form the preliminary checklist. Items that were aligned with accepted global normative guidance on national health or cancer plans, such as UN agency recommendations, were prioritised for inclusion in the checklist.^{20–23,29,30}

Checklist items were categorised according to WHO and other normative guidance. First, items were selected

to represent characteristics of consistency, coherency, and comprehensiveness, as defined by WHO and recognised by governments.²³ Items were considered to fulfil the characteristics of consistency if evidence-based policies aligned with global norms and standards were present. Elements reflected coherency if they showed links to other national or regional health-related plans or strategies. Comprehensiveness was achieved if content addressed crucial components of cancer care across the care continuum and key health system functions. Additionally, items were structured according to the steps of national health or national cancer control planning—namely, population consultation on needs and expectations, situation analysis, priority setting, strategic planning, operational planning, cost implication, budgeting, and monitoring and evaluation of national strategies and plans.²³ Checklist items were structured to encompass both the (1) content and (2) process of cancer plans.

Content

Checklist items were structured to identify content that should appear in at least one cancer-related plan, according to the national context and mandate of specific government entities. For example, tobacco taxation might not appear in an NCCP but could be included in an NCD multisectoral action plan, in a national health plan, or both. A cancer-related policy, related to a specific checklist element, might have already been formulated in a separate national health document and therefore might not require duplication in an NCCP.

Process

Items were identified to assess or facilitate the process of robust cancer plan formulation, implementation and monitoring. Steps were included from WHO's *Strategizing National Health in the 21st Century: a Handbook*.²³ These included an analysis of when a cancer-related plan was developed and whether it occurred within the same planning cycle as the national health plan to facilitate coherency, appropriate stakeholder input, budgeting, and implementation. As such, the date of NCCP formulation was included as an item to cross-reference with the timeline and cycle of national health planning.

Linking of checklist items to established frameworks

To ensure completeness and inclusion of checklist items along the entire cancer continuum from prevention to palliative care and health system building blocks, it was necessary to link checklist items to specific core domains. A comprehensive overview of necessary cancer policy considerations must incorporate multiple dimensions, including the cancer care continuum, health systems platform, and steps in national health planning.^{17–19,31} Five cancer continuum domains were identified from the WHO strategy *Cancer Control: Knowledge into Action*, WHO

Guide for Effective Programmes.¹⁸ Four domains were founded on WHO *Health Systems Building Blocks*.¹⁷ The medical products, vaccines, and technologies domain (including access to essential medicines) from the WHO *Health Systems Building Blocks* was combined with the diagnosis and treatment domain from the WHO *Cancer Control: Knowledge into Action* strategy. The leadership and governance building blocks domain from the WHO *Health Systems Building Blocks* was combined with the policy and advocacy domain from the WHO *Cancer Control: Knowledge into Action* strategy. Additionally, a research domain was considered a priority, recognising the importance of cancer research in policy formulation and advancement of science.^{5,32,33} Finally, two general domains were included to facilitate checklist completion and assessment: introduction and overview, and overall summary. Checklist items were organised into major domains along the cancer continuum and health systems building blocks. This process resulted in 12 major domains: (1) introduction and overview; (2) prevention; (3) diagnosis, staging, and screening; (4) treatment; (5) palliative care and survivorship; (6) service delivery; (7) governance; (8) health workforce; (9) health information systems; (10) research; (11) finance; and (12) overall summary (figure 1).

Expert consultations

Two rounds of expert consultations were done. The first expert panel included experts involved in national control policies from public health agencies and provided directed input and feedback on the checklist elements selected from the systematic review of the literature. Feedback was specifically provided on elements focused on cancer goals, targets, and indicators, and inclusion of regional and national health targets. Additional items were added as necessary following review by the expert panel.

As part of a second-stage round of consultation and validation, independent reviewers from countries in all WHO regions and World Bank income classifications reviewed draft checklist elements. These experts were identified through an open invitation of participants in the ICCP. Two rounds of feedback were provided regarding the final structure and content of each item and the methods to be used to evaluate inclusion of a particular element. Additional items were incorporated following feedback.

For stakeholders interested in reviewing national cancer-related plans, keywords or search terms were developed for each element, promoting a more precise and accurate evaluation of whether or not elements were present in such plans.

Findings

Literature review

11 policy documents were identified in the literature review that met criteria of defining or characterising elements of national plans related to cancer or related to

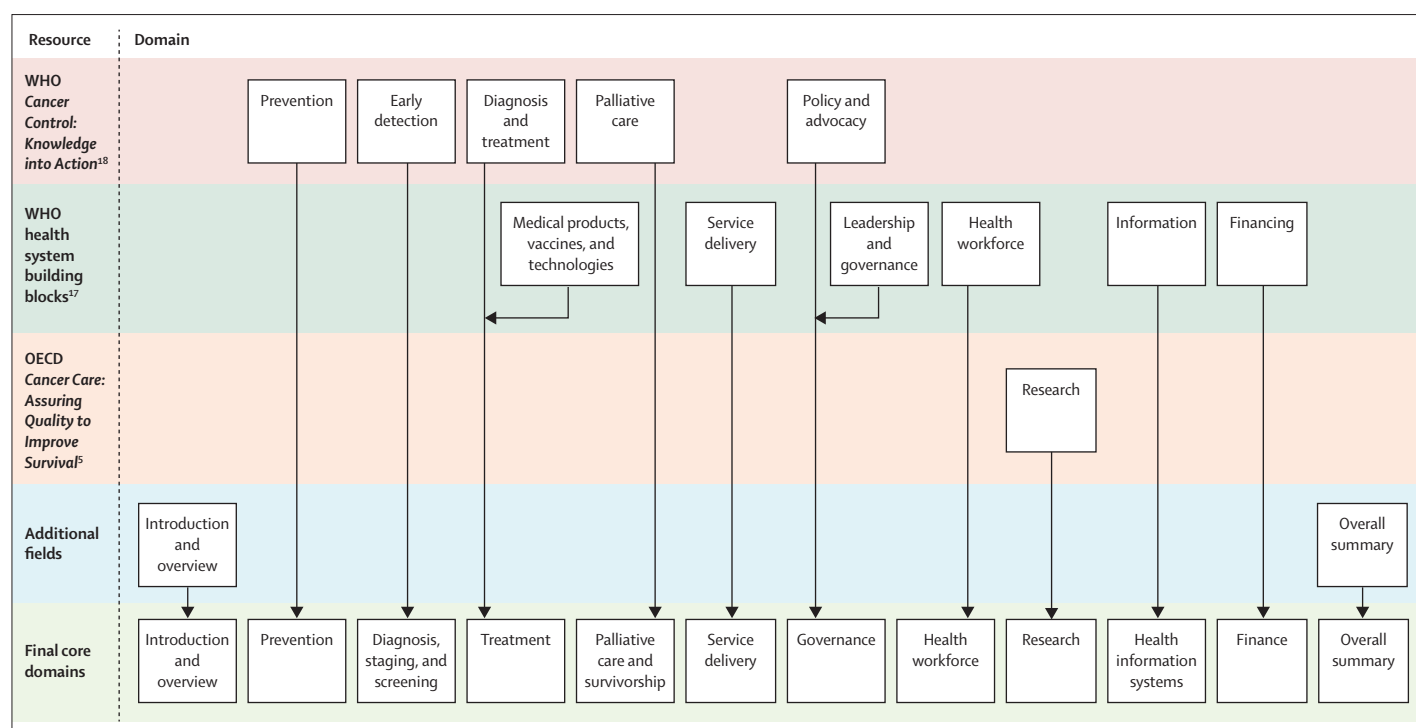


Figure 1: The development of 12 core domains to ensure checklist items spanned the entire cancer continuum
 OECD=Organisation for Economic Co-operation and Development.

plan formulation.^{18–26,33,34} These resources came from three different national or international organisations (WHO, Union for International Cancer Control, and CDC). A further two large regional reviews assessing NCCP content were included,^{13,14} to bring the total to 13 resources for preliminary checklist development.

Preliminary checklist

A preliminary review of 13 resources yielded 181 potential checklist items. Following removal of duplicates and harmonisation, 81 checklist items were included in the preliminary checklist. Each checklist item was included or advised in a median of two publications (range one–eight), with 29 items included in one publication, 21 in two, 18 in three, five in four, three in five, one in six, one in seven, and three included in eight publications.

Expert consultation

A further 11 checklist items were added after discussion between all authors and an expert panel (of four reviewers) in the first review phase, including items on patient navigation, palliative care, registries, finances, and radiotherapy equipment and safety. The majority of these items were identified in normative guidance from different *Lancet* commissions regarding palliative care,³⁵ radiotherapy,³⁶ and surgery.^{37,38} Finally, details were added for selected items to obtain more granularity in further analysis, such as risk factors (tobacco use, obesity,

physical inactivity, and harmful alcohol consumption) or palliative care requirements issues.

Second consultation, finalisation, and validation

Before checklist validation, independent reviewers from ICCP added an additional 18 checklist items. A question regarding overall quality was included in addition to the 18 to facilitate a summary assessment or comparative review between plans. This item allocated an overall impression of whether or not a plan was resource-appropriate, had outlined programmes to achieve its goals, and detailed the necessary funding and monitoring required to ensure successful implementation.

To confirm the ability of the final checklist to evaluate NCCPs, a large global analysis was done.¹¹ All available national cancer-related health plans in multiple languages were evaluated using this checklist tool. 67 independent reviewers from 16 nations in all WHO regions did the review of the publicly available cancer-related plans from 158 countries, constituting 81% of 194 WHO Member States. These countries addressed a mean of 36% of the key elements of the checklist in their plans. The final product, Core Elements of National Cancer Control Plans, included 111 checklist items (figure 2; appendix pp 1–9) within 12 major domains (panel).

Discussion

Despite the promotion of NCCPs as vital to effective implementation of cancer programmes, a practical and

See Online for appendix

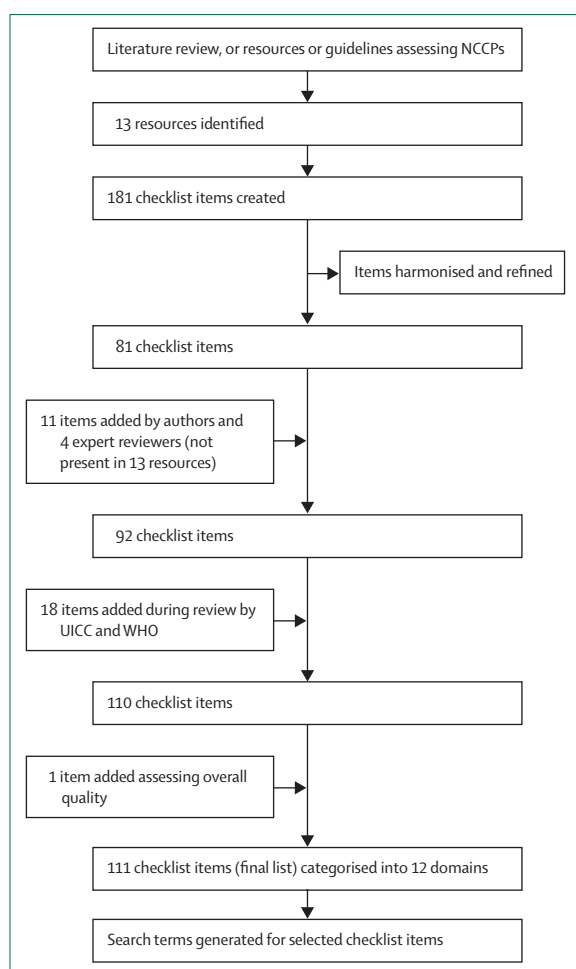


Figure 2: Outline of methods used to create 111 checklist items for NCCP evaluation

NCCP=national cancer control plan. UICC=Union for International Cancer Control.

Panel: Items in each domain of the Core Elements of National Cancer Control Plans checklist

- Introduction and overview: 18 items
- Prevention: 18 items
- Diagnosis, staging, and screening: 17 items
- Treatment: 15 items
- Palliative care and survivorship: 11 items
- Service delivery: 5 items
- Governance: 5 items
- Health workforce: 4 items
- Health information systems: 6 items
- Research: 2 items
- Finance: 9 items
- Summary: 1 item

are linked to these key steps. For example, as part of the application of this checklist, a situational analysis should be done that includes assessment of national cancer challenges, health system capacity, the budget available, and stakeholder mapping. Cancer planners should undertake a process of priority setting as part of national cancer plans, informed by this situational analysis. The core elements proposed provide a reference as to the strategies that should be evaluated and contextualised. The checklist also has elements that reference NCCP implementation strategies and monitoring, which have been traditionally omitted in cancer plans in the past.¹¹ The mere presence of a national cancer policy is futile without adequate implementation, budget allocation, and means for methodical and frequent evaluation. A timeline for formulation of national cancer plans and the timeframe for implementation are core elements that require particular consideration for policy makers. These components ensure alignment with broader national health planning and for defining operational steps. Priorities and resources for cancer programmes are subject to change, further emphasising the need for frequent evaluation. As countries consider adaptations, the importance of cancer registries and broader information systems must be highlighted. Context-specific data should inform cancer policies, and investment in cancer registries is a strategic priority to strengthen cancer planning. Finally, a multisectoral dialogue, as delineated in checklist items, ensures that the plan is applicable and relevant to all stakeholders, permitting integration into governmental policy infrastructure.

In this review of previous NCCP guidance documents, we identified that several key aspects of cancer control had not been highlighted. This delineation of comprehensive core elements allowed such gaps to be addressed. For example, although cancer is a leading cause of mortality for children worldwide, especially in low-income and middle-income countries, childhood cancer had not been highlighted as a component of

comprehensive guide on the necessary elements of such plans has been missing in the literature. This Policy Review provides an evidence-based checklist that has been validated by broad stakeholder input and consultation and applied by assessing the performance of a global comparative review of plans.¹¹ As such, this checklist of core elements can now be used for formulation or assessment of cancer plans at the national or regional levels and sequentially over time.

To support robust cancer policies, multiple domains form the foundation of this checklist, reflecting the whole cancer care continuum, health systems platform, steps to national health planning, and the three Cs (comprehensiveness, consistency, and coherency).^{17,18} The checklist is relevant to countries with different cancer systems, epidemiological burdens, and income levels.

Importantly, the checklist also facilitates the process of cancer plan formulation, implementation, and monitoring in a given context. Specific checklist elements

cancer planning in previous guidance documents. Accordingly, an item was added to this checklist in the treatment domain. Additionally, machine maintenance for radiotherapy delivery is a vital factor in determining the sustainability of a radiotherapy service, and an item was also added in the treatment domain to assess whether or not a programme for machine maintenance was referenced in national planning.^{39,40} Finally, patient navigation has emerged as a priority intervention for early diagnosis of cancer and had not been previously included in published guides on national cancer planning; accordingly, an extra item was included in the health workforce domain to capture this important strategy.⁴¹

An additional element of cancer research has been included in recognition of the importance of cancer research in policy formulation and advancement of science.^{5,32,33} Cancer research can span a multitude of different research types, including cancer-specific epidemiology, basic science, the clinical–surgical domain, health services, implementation science, and translation. Both the existence of a cancer research programme and research funding are important inclusions in this NCCP checklist. Integration of these items into NCCPs does not guarantee implementation; however, inclusion in this checklist represents an important shift in viewing research as a cancer prevention and control planning priority.

This checklist provides a novel and important tool to strengthen policy development and to link to further capacity building in cancer prevention and control. However, additional work is needed. We aim to create a user-friendly online platform, in English and other languages, where policy makers, cancer planners, experts, and stakeholders can apply this checklist of core elements. Such a platform will also provide case studies from selected plans, allowing national planners to review best practices pertaining to each of the checklist elements. This resource will build on the current global document repository hosted by the ICCP.

The global analysis¹¹ using this checklist tool provides validation and a snapshot of cancer control programmes within the global cancer control landscape and has confirmed that this checklist is a ready-to-use tool. Following up on that review, this checklist and its defined domains and categories will allow for targeted analysis of common progress and shortfalls using the results of the original analysis.

Future initiatives for this workstream are to strengthen the link between planning and financing, implementation, and monitoring. For example, the development of standardised metrics to facilitate monitoring of NCCP implementation is a work in progress, as is the development of platforms for costing and financing of national cancer programmes. This additional work should also include the development of guidelines around governance structures and an accountability

framework to improve clarity of responsibilities during NCCP development. NCCP development requires the input of many different stakeholders that can at times be very complex. Fragmented health systems and weak governance are known obstacles to an effective response to the growing cancer burden.⁴² A crucial next step for the effective application of this checklist is to support dissemination and application through platforms like the ICCP. Additionally, future evaluations and substudies on areas such as primary prevention, early detection, radiotherapy, governance, and pathology are planned.

This work should be considered in the context of its limitations. The defined core elements are available in a one-size-fits-all format for all countries across income groups, government structures, and geographical regions. Although this format allows the development of a standardised tool, it does not provide default adjustments depending on the specific political or economic situation of each country. Three specific types of adaptations exist that might be required when considering the country context. First, an overarching legal framework might be present, negating need for a particular element of the plan. For example, no alcohol committee would be needed in a country where alcohol is illegal. Second, adaptation to the health system capacity of a country should be considered. The primary example is for breast cancer screening, which is not recommended in countries with weak health systems.⁴³ The final adaptation is service availability; for example, radiotherapy service provision might not be a priority in some countries or in settings with a small population that is able to easily access radiotherapy services in neighbouring countries.⁴⁴ These adaptations should be considered, but overall, the identified elements are consistent with WHO-recommended interventions and should therefore be generalisable to countries of all income levels and settings.⁴⁵ Notably, the existing normative guidance documents found in this Policy Review were generally intended to inform national plans rather than state or federal plans. However, although governance structures vary substantially between countries and populations, the elements and process of cancer control plans might share best practices across settings. The development of the questionnaire involved various experts; however, the majority were based in high-income countries and thus might represent a biased sample. The four experts involved in the first expert panel process were based in four different countries with positions in government agencies, intergovernmental organisations, and civil society. The second round of review, through the ICCP, included experts in public health, cancer planning, and clinical oncology from countries of all income levels. NCCPs are inherently complex documents with diverse elements. We recognise that 111 is a large number of elements, but it does reflect this complexity. These elements describe content but not operational or implementation strategies. Finally, the checklist was

Search strategy and selection criteria

We did a systematic literature review in order to identify previous publications used to advise on or assess national cancer control plans (NCCP) or non-communicable disease (NCD) plans. We did a Boolean search on PubMed using the terms “national cancer control plan” or “national cancer control programme” OR “NCCP” AND “analysis OR review OR guide” from Jan 17 to March 14, 2017, restricting our search to publications in English language. A similar strategy was used to search Embase and the Cochrane Library databases from March 26 to May 18, 2017. Using a snowball search strategy, additional resources were identified from the WHO repository. A final reference list was generated based on applicability to core components of an NCCP.

created in the English language, and the applicability and translation of the checklist to other languages needs to be considered. Attempts were made to mitigate the various limitations of the project, including the selection of experts from low-income and middle-income countries to participate as expert reviewers, the use of existing normative guidance that has global inputs such as from UN agencies, and the application of this tool on plans written in several different languages.

Conclusion

A multitude of challenges face cancer control planners at present, ranging from shortfall of basic services, high cost of therapeutic modalities, insufficient professional human resources, and ineffective cancer control planning. The development of the Core Elements of National Cancer Control Plans checklist provides a structured framework that countries can use to set priorities and ensure an effective approach to NCCPs. This checklist tool provides a means of assessing the current landscape of cancer control in any specific country or region and supporting plan formulations. The next step is to link strong national cancer planning to effective implementation by strengthening stakeholder engagement, costing and financing of plans, and monitoring programmes. Through this comprehensive approach, the cancer community can effectively reduce or manage the cancer disease burden, efficiently use resources, and improve the lives of patients with cancer worldwide.

Contributors

AI and MLY provided mentorship from project conception to project completion. AO, AI, and MLY formulated the study design. AO, AI, FYM, and MLY did the data collection for the preliminary checklist. YR led the global analysis. All authors contributed to the data analysis and writing of this manuscript and approved the final submitted version. AI is an employee of WHO.

Declaration of interests

We declare no competing interests.

Acknowledgments

This project was possible thanks to the voluntary contribution of knowledge, expertise, and time from several global policy advisors

including Julie Torode, Zuzanna Tittenbrun, Sonali Johnson, Mélanie Samson, Lisa Stevens, Leslie Given, Karin Hohman, Dario Trapani, Eric Krakauer, Tit Albrecht, and Richard Sullivan. Furthermore, strong support from non-governmental organisations allowed for a coherent and relevant checklist (Union for International Cancer Control; International Cancer Control Partnership; and the National Center for Disease Control). The authors alone are responsible for the views expressed in this manuscript, and they do not necessarily represent the views, decisions, or policies of the institutions with which they are affiliated.

References

- 1 Globocan. Cancer fact sheet: all cancers. International Agency for Research on Cancer. 2018. <http://gco.iarc.fr/today/data/factsheets/cancers/39-All-cancers-fact-sheet.pdf> (accessed Jan 15, 2019).
- 2 Globocan. Cancer tomorrow. International Agency for Research on Cancer. 2018. <http://gco.iarc.fr/tomorrow/home> (accessed Jan 15, 2019).
- 3 Gorgojo L, Harris M, Garcia-Lopez E, et al. National cancer control programmes: analysis of primary data from questionnaires. European Partnership for Action Against Cancer. April 22, 2012. http://www.epaac.eu/from_heidi_wiki/Final_Report_on_National_Cancer_Control_Programmes.pdf (accessed Jan 15, 2019).
- 4 WHO. National cancer control programmes. World Health Organization. 2016. <http://www.who.int/cancer/nccp/en/> (accessed Feb 25, 2019).
- 5 Organisation for Economic Co-operation and Development. Cancer care: assuring quality to improve survival. Organisation for Economic Co-operation and Development. 2013. <https://www.oecd-ilibrary.org/content/publication/9789264181052-en> (accessed Feb 25, 2019).
- 6 WHO. Cancer prevention and control. Report to the Secretariat by the 58th World Health Assembly. Geneva: World Health Organization, 2005.
- 7 WHO. 70th World Health Assembly: cancer prevention and control in the context of an integrated approach. Geneva: World Health Organization, 2017.
- 8 WHO. Time to deliver: report of the WHO Independent High-Level Commission on Noncommunicable Diseases. Geneva: World Health Organization, 2018.
- 9 Alwan AD, Maclean D, Mandil A. Assessment of national capacity for noncommunicable disease prevention and control: the report of a global survey. World Health Organization. 2001. https://apps.who.int/iris/bitstream/handle/10665/67305/WHO_MNC_01_2.pdf (accessed Jan 15, 2019).
- 10 WHO. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2017 global survey. World Health Organization. 2018. <https://apps.who.int/iris/bitstream/handle/10665/276609/9789241514781-eng.pdf?ua=1> (accessed March 17, 2019).
- 11 Romero Y, Trapani D, Johnson S, et al. National cancer control plans: a global analysis. *Lancet Oncol* 2018; **19**: e546–55.
- 12 Stefan DC, Elzawawy AM, Khaled HM, et al. Developing cancer control plans in Africa: examples from five countries. *Lancet Oncol* 2013; **14**: e189–95.
- 13 Albrecht T. European guide for quality national cancer control programmes. Trubarjeva, Slovenia: European Partnership for Action Against Cancer, 2012.
- 14 Atun R, Ogawa T, Martin-Moreno J. Analysis of national cancer control programmes in Europe. 2009. <https://core.ac.uk/download/pdf/297067.pdf> (accessed Jan 15, 2019).
- 15 Goss PE, Strasser-Weippl K, Lee-Bychkovsky BL, et al. Challenges to effective cancer control in China, India, and Russia. *Lancet Oncol* 2014; **15**: 489–538.
- 16 Berrino F, De Angelis R, Sant M, et al. Survival for eight major cancers and all cancers combined for European adults diagnosed in 1995–99: results of the EUROCARE-4 study. *Lancet Oncol* 2007; **8**: 773–83.
- 17 WHO. Everybody's business: strengthening health systems to improve health outcomes—WHO's framework for action. World Health Organization. 2007. https://www.who.int/healthsystems/strategy/everybodys_business.pdf (accessed Dec 17, 2018).
- 18 WHO. Cancer control: knowledge into action. WHO guide for effective programmes. World Health Organization. 2005. <https://www.who.int/cancer/modules/en/> (accessed Dec 19, 2019).

For the WHO repository see <https://apps.who.int/iris/>

- 19 WHO. National cancer control programmes—policies and managerial guidelines. World Health Organization. 2002. <https://apps.who.int/iris/bitstream/handle/10665/42494/9241545577.pdf?sequence=1&isAllowed=y> (accessed March 17, 2019).
- 20 WHO. National cancer control programmes: core capacity self-assessment tool. World Health Organization. 2011. https://apps.who.int/iris/bitstream/handle/10665/44729/9789241502382_eng.pdf?sequence=1 (accessed Jan 15, 2019).
- 21 WHO. NCD MAP toolkit: the template and guidance for use. Geneva: World Health Organization, 2016. <http://apps.who.int/nmh/ncd-map-toolkit/developing/tool-template.html> (accessed Feb 25, 2019).
- 22 WHO. NCD MAP toolkit: the checklist and guidance for use. Geneva: World Health Organization, 2016. <http://apps.who.int/nmh/ncd-map-toolkit/developing/tool-checklist.html> (accessed Feb 25, 2019).
- 23 WHO. Strategizing national health in the 21st century: a handbook. World Health Organization. 2016. <https://apps.who.int/iris/bitstream/handle/10665/250221/9789241549745-eng.pdf?sequence=41> (accessed Jan 19, 2019).
- 24 International Cancer Control Partnership. National cancer control plan development and implementation assessment tool. International Cancer Control Partnership. 2016. <https://www.iccp-portal.org/sites/default/files/resources/ICCP%20Cancer%20Plan%20Dev%20and%20Impl%20Assessment%20Tool%20Jan%202016.pdf> (accessed Feb 25, 2019).
- 25 Centers for Disease Control and Prevention. Cancer plan self-assessment tool. Centers for Disease Control and Prevention. 2012. <https://www.cdc.gov/cancer/ncccp/pdf/cancerselfassessstool.pdf> (accessed Feb 25, 2019).
- 26 Centers for Disease Control and Prevention. Comprehensive cancer control branch program evaluation toolkit. Centers for Disease Control and Prevention. 2010. https://www.cdc.gov/cancer/ncccp/pdf/ccp_program_evaluation_toolkit.pdf (accessed Feb 25, 2019).
- 27 Collingridge D. Three countries—half of the global cancer burden. *Lancet Oncol* 2014; **15**: 483.
- 28 Sullivan R, Peppercorn J, Sikora K, et al. Delivering affordable cancer care in high-income countries. *Lancet Oncol* 2011; **12**: 933–80.
- 29 WHO. Report by the Secretariat to the 64th World Health Assembly. Health system strengthening: improving support to policy dialogue around national health policies, strategies and plans. Geneva: World Health Organization, 2011.
- 30 WHO. Implementation of the International Health Regulations. Geneva: World Health Organization, 2012.
- 31 WHO. Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies. Geneva: World Health Organization, 2010.
- 32 WHO. The WHO strategy on research for health. Geneva: World Health Organization, 2012.
- 33 WHO. World Cancer Report. Geneva: World Health Organization, 2014.
- 34 Union for International Cancer Control. Supporting national cancer control planning: a toolkit for civil society organisations (CSOs). Geneva: Union of International Cancer Control, 2012.
- 35 Kaasa S, Loge JH, Aapro M, et al. Integration of oncology and palliative care: a *Lancet Oncology* Commission. *Lancet Oncol* 2018; **19**: 373–78.
- 36 Jaffray DA, Knaul FM, Atun R, et al. Global task force on radiotherapy for cancer control. *Lancet Oncol* 2015; **16**: 1144–46.
- 37 Meara JG, Hagander L, Leather AJ. Surgery and global health: a *Lancet* Commission. *Lancet* 2014; **383**: 12–13.
- 38 Sullivan R, Alatisse OI, Anderson BO, et al. Global cancer surgery: delivering safe, affordable, and timely cancer surgery. *Lancet Oncol* 2015; **16**: 1193–224.
- 39 Abdel-Wahab M, Rosenblatt E, Holmberg O, Meghifene A. Safety in radiation oncology: the role of international initiatives by the International Atomic Energy Agency. *J Am Coll Radiol* 2011; **8**: 789–94.
- 40 Anakwenze C, Ntekim A, Trock B, Uwadiae I, Page B. Challenges of radiation therapy delivery at a Nigerian teaching hospital. *Int J Radiat Oncol Biol Phys* 2016; **96**: S37–38.
- 41 Freeman HP. The origin, evolution, and principles of patient navigation. *Cancer Epidemiol Biomarkers Prev* 2012; **21**: 1614–17.
- 42 de Moraes FY, Marta GN, Hanna SA, et al. Brazil's challenges and opportunities. *Int J Radiat Oncol Biol Phys* 2015; **92**: 707–12.
- 43 WHO. WHO position paper on mammography screening. World Health Organization. 2014. https://apps.who.int/iris/bitstream/handle/10665/137339/9789241507936_eng.pdf?sequence=1 (accessed April 28, 2019).
- 44 Barton MB, Zubizarreta EH, Rubio JAP. Radiotherapy in small countries. *Cancer Epidemiol* 2017; **50**: 257–59.
- 45 WHO. 'Best buys' and other recommended interventions for the prevention and control of noncommunicable diseases. World Health Organization. 2017. <https://apps.who.int/iris/bitstream/handle/10665/259232/WHO-NMH-NVI-17-9-eng.pdf?sequence=1&isAllowed=y> (accessed April 28, 2019).

© 2019 World Health Organization. Published by Elsevier Ltd. All rights reserved.