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Expanding best practices for implementing evidence-based cancer control strategies in Africa: The 2019–2020 Africa Cancer Research and Control ECHO Program

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ABSTRACT

Background: Cancer is a major public health problem which requires evidence-based, resourced and well-managed National Cancer Control Plans (NCCPs). However, challenges exist for African countries in developing and implementing functional NCCPs. Hence, the Africa Cancer Research and Control ECHO Program (Africa Cancer ECHO) aims to increase knowledge and utilization of evidence-based practices to strengthen NCCPs in Africa.

Methods: The 2019–2020 Africa Cancer ECHO employed the Project ECHO® model™ to conduct monthly hour-long sessions about cancer control, among cancer control professionals in Africa and international partners. Sessions ran from March 2019 to August 2020. Sessions outcomes were documented throughout the year, followed by an online self-evaluation survey of the participants in July 2020. Quantitative data was analysed using Excel and qualitative data analysed thematically.

Results: 157 participants registered for the Africa Cancer ECHO. 24 sessions were conducted for the year 2019–2020. More than 70 % of the participants increased their knowledge, confidence, and ability to implement evidence-based cancer control strategies in their settings. Over 80% indicated that sessions were relevant to their work and met their learning goals and expectations. Recommendations included: use of evidence from population-based cancer registries to direct cancer control; encouraging clinician scientists to generate locally-relevant research questions; embracing information technology and electronic medical records systems; forming partnership and leveraging existing initiatives; and using regular costed cancer control priorities for advocacy and government involvement.

Conclusion: The 2019–2020 Africa Cancer ECHO increased utilization of evidence-based cancer control practices among cancer control leaders; and recommends use of data, partnerships, and locally-driven solutions to direct the cancer control effort in Africa.

Policy summary: The Africa Cancer ECHO is a viable method for engaging leaders and partners in a continuous learning and networking process. There is value to investing in such initiatives, as they advance knowledge, familiarity, confidence, partnerships, and leadership in cancer control.

1. Background

Cancer is increasingly becoming a pressing public health issue globally and in Africa, where the number of cancers is expected to more than double by 2040 [1]. Even in the face of the COVID-19 pandemic, governments must find ways to prioritize cancer control for their populations to avoid increases in exposures to risk factors, delays in timely cancer diagnosis and treatment, and increased mortality.

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National Cancer Control Plans (NCCPs) are an effective vehicle to design, coordinate, and prioritize country-level cancer control strategies [2]. A NCCP is a public health program designed to reduce the number of cancer cases and deaths and improve the quality of life of cancer patients [2,3]. When evidence-based, resourced, and well-managed, NCCPs help reduce the cancer burden and improve services for cancer patients and their families [2]. According to the International Cancer Control Partnership (ICCP) portal (https://www.iccp-portal.org/map) [4], which maintains a comprehensive listing of publicly available cancer-related national plans, about 136 countries have Non-Communicable Disease Plans that include cancer, and 110 countries have National Cancer Control Plans on the ICCP portal. Twenty countries in Africa have a plan on the portal, making up 20.9 % of plans globally.

However, challenges remain in creating and implementing NCCPs, further confounded by the significance and primacy of the COVID-19 pandemic. Some identified challenges include: mobilization of adequate resources to implement and sustain priority programs; identifying, creating, and leveraging partnerships to implement NCCPs; and access to reliable surveillance data for NCCP development, implementation, and monitoring [5]. Intra-Africa collaborations and Africa-specific best approaches to implementing and improving cancer control are valuable in improving NCCP implementation in the region. This principle provides the basis for the Africa Cancer Research and Control ECHO Program (Africa Cancer ECHO). The Africa Cancer ECHO was first convened by the US National Cancer Institute (NCI) Center for Global Health to provide an opportunity for knowledge exchange about the utilization of evidence and research to inform development and implementation of NCCPs in the Africa region [6]. The 2018 Africa Cancer ECHO included participants from the areas of research, clinical practice, policy, advocacy, and program implementation. At the culmination of the 2018 Africa Cancer ECHO, participants committed to continuing the Africa Cancer ECHO under the leadership of a volunteer-led expert Steering Committee from within the Africa region. This 2019–2020 Africa Cancer ECHO Steering Committee spanned six countries, and included ECHO participants from 17 countries on the continent, and partners from Europe and North America [6].

The Africa Cancer ECHO uses Project ECHO's model to increase knowledge and utilization of national cancer control planning principles and strategies in Africa. Project ECHO® was developed in 2003 as a method to improve equitable access to healthcare and demonopolize knowledge to improve capacity. The platform uses technology for combined case-based and didactic, multi-directional learning [7,8]. Currently, there are 84 ECHO Hubs in 15 countries for cancer, running 150 programs [9]. Many of these ECHO hubs focus on specific elements of cancer control such as, cancer prevention, screening and diagnosis, treatment, and survivorship. The Africa Cancer ECHO is the first ECHO platform to focus on the whole continuum of cancer control and uses the Project ECHO® model to strengthen the interactions of experts working in cancer control programs with researchers, advocates, policy makers, and regional and international partners to increase use of evidence in directing national cancer control programs in Africa [5].

The Steering Committee continuously monitored the outcomes and impact of the ECHO throughout the year and conducted an online self-evaluation survey of the Africa Cancer ECHO participants to understand the extent to which the Program met its objectives. The outcomes and impact of the 2019–2020 Africa Cancer ECHO, including the results of the participants' evaluation survey, are reflected here with recommendations for strengthening cancer control in Africa and further strengthening this community of practice.

2. Methods

The 2019–2020 Africa Cancer ECHO was convened by a Steering Committee of 13 individuals, comprised of experts and leaders in cancer control in Africa. The steering committee responsibilities included: curriculum development; session leadership; member relations; and program evaluation. The Kenya Network of Cancer Organizations (KENCO) hosted the Africa Cancer ECHO sessions using the Zoom® videoconferencing platform. Participation in the 2019–2020 Africa Cancer ECHO was open to participants from the 2018 Africa Cancer ECHO, which had been convened by the US National Cancer Institute to advance knowledge about development and implementation of NCCPs in Africa [5]. In addition, more participants and partners were welcomed throughout the year after learning about the ECHO from colleagues and collaborators. The target populations for this ECHO were professionals involved in cancer research and control at country level and partners who support research and program implementation in the African region.

The Africa Cancer ECHO followed Project ECHO's model, conducting monthly, hour-long sessions that included a participant's case presentation on a cancer control challenge at the country level, a didactic presentation on technical considerations to address that challenge, and discussion about how to solve the challenge in a locally-relevant, sustainable way [10]. The cancer research and control topics covered in each session were identified through a Needs Assessment of the Africa Cancer ECHO participants at the culmination of the 2018 Africa Cancer ECHO. At the onset of the COVID-19 pandemic, sessions were adapted to address the knowledge gap and needs of COVID-19 pandemic and its effects on cancer control in Africa. Case and didactic presenters were identified by the Steering Committee, or by recommendation from within the Africa Cancer ECHO community. Sessions were organised and led by the Steering Committee, through planning meetings via Zoom and group discussions via WhatsApp® group chat. In case of any further support at the end of each session, case presenters were referred to regional colleagues for mentorship in a given topic area, or to the ICCP for additional technical support in NCCP development and implementation [11]. Between monthly sessions, the Africa Cancer ECHO community was encouraged to share resources and continue the dialogue on the Africa Cancer ECHO Basecamp® portal.

The Africa Cancer ECHO Steering Committee conducted an evaluation survey of participants and partners in July 2020 using the Google Forms® online platform. The survey used both qualitative and quantitative questions, based on Kirkpatrick's model of evaluation which seeks to evaluate the relevance of the program to the participants, knowledge acquired over time, application of knowledge gained, and the overall outcomes of the program [12]. The survey used self-assessment of the participants, because adult learners rely on their own perceptions of their learning cycle, which is directed by social and professional influences [13]. Hence, the survey questions included: length and frequency of participation in the Africa Cancer ECHO; barriers to participation in the ECHO sessions; relevance of the topics to respondents' work in cancer research and control; acquisition and application of knowledge; and the extent to which the Africa Cancer ECHO met its objectives (including response to the COVID-19 pandemic). Survey responses were based on ordinal scale, involving three response categories including: Not at all or Disagree; somewhat or partially agree; and very much or Agree. Survey responses were analysed using Excel PivotTables. Qualitative responses were coded deductively into themes by two of the co-authors, using thematic analysis [14].

3. Results

3.1. Africa Cancer ECHO participants' engagement

A total of 157 participants registered for the Africa Cancer ECHO, including 2018 participants who continued on in 2019–2020. These participants came from a range of countries in the region and partner organizations/institutions across the world, with varying expertise and experiences (Appendix A). Participants actively engaged by attending the ECHO sessions; presenting cases and didactics for the ECHO sessions; sharing relevant research findings and technical resources; conducting research surveys among ECHO participants; and offering technical

support to individual countries towards developing and implementing NCCPs.

3.2. Africa Cancer ECHO metrics for 2019–2020

There were 24 sessions and 11 cases discussed in 2019–2020. Session participation ranged from 17 to 45 participants per session including: researchers, policy makers, health advocates, epidemiologists, cancer registry experts, radiation oncologists, medical oncologists, and palliative care specialists. The sessions covered a wide range of topics along the cancer control continuum which provided contextual experience and dilemmas for implementing cancer control strategies in Africa. Participants discussed various approaches and solutions to the dilemmas and made recommendations. Cross-cutting recommendations included: use of evidence to direct cancer control by linking data from population-based cancer registries to risk factor data; encouraging clinician scientists to generate locally-relevant research questions; embracing information technology and electronic medical records systems; involving stakeholders and leveraging existing initiatives; and having regular costed cancer control priorities as a tool for advocacy and government involvement (Table 1).

Table 1
2019-2020 Africa Cancer ECHO session information and recommendations.

Session Date	Session topic	Case presenter Institution	Didactic presenter Institution	Key points and recommendations
7th March 2019	Building cancer control research capacity	Kenya Medical Research Institute, Nairobi Kenya	Dana-Farber/Harvard Cancer Centre, Boston, MA, USA	• Strengthen the pipeline of clinician researchers • Utilize local data to identify unique research questions • Seek dissemination beyond publication
4th April 2019	Integrating cancer into existing health services	I-TECH Namibia, Windhoek, Namibia	Duke University, Durham, NC, USA	• Seek opportunities to piggyback on existing initiatives • Explore use of Mobile-Health • Focus on community input and wrap-around services
2nd May 2019	Monitoring and evaluation of cancer control efforts	Rwanda Biomedical Center, Ministry of Health, Kigali, Rwanda	Uganda Cancer Institute, Kampala, Uganda	• Ensure government/sustainable support for a robust population-based cancer registry • Link risk factor, screening, primary care, treatment, follow-up care data (using unique identification) • Role of electronic medical record system
30th May 2019	Increasing access and improving referral pathways for diagnosis/treatment	Eswatini Ministry of Health, Mbabane, Eswatini	American Society of Clinical Pathology, Chicago, IL, USA	• Start with situational analysis • Ensure baseline capacity exists and resources are used efficiently
27th June 2019	The process of costing the NCCP and building political will for cancer control	Kenya Ministry of Health, Nairobi, Kenya	Clinton Health Access Initiative - Africa Regional Office, Kampala, Uganda	• Epidemiologic data and stakeholder engagement are key • Ensure costing tools are flexible to country's needs – • Using costing as a planning tool
25th July 2019	Setting priorities for implementation of NCCP strategies	Ethiopia Federal Ministry of Health, Addis Ababa, Ethiopia	World Health Organization AFRO Regional Office	• Use cancer burden data as a guide • Planning for human resource development • Political buy-in and partner engagement are vital • Review and refine priorities regularly (at least annually)
29th Aug. 2019	Mobilizing resources to finance cancer control and cancer treatment	Uganda Cancer Institute, Kampala, Uganda	World Health Organization Headquarters, Geneva, Switzerland	• Costing is a multi-sectoral process • Link specific costs to the implementation plan - tool for engaging donors, priority-setting
26th Sept. 2019	Implementation and scale up of evidence-based strategies	Zimbabwe Ministry of Health, Harare, Zimbabwe	Uganda Cancer Institute, Kampala, Uganda	• Ensure quality of data in the population-based cancer registry (fix issues of loss to follow up, lack of follow-up care tracking) • Integrate various initiatives into overarching plan (separating HPV vaccination plan not necessary)
31st Oct. 2019	Building political will for cancer control	Uganda Cancer Society, Kampala, Uganda	International Cancer Institute, Eldoret, Kenya	• Communicate priorities clearly; align initiatives with national priorities • Engage and communicate with stakeholders • Share data, results, recognize achievements
21st Nov. 2019	Partnerships for NCCP implementation	Rwanda Biomedical Center, Ministry of Health, Kigali, Rwanda	Strategic Health Concepts, Denver, CO, USA	• Conduct a partnership mapping • Ensure multi-stakeholder representation, including academe • Communicate the long-term nature of NCCP implementation
30th Jan 2020	Primary prevention: Tobacco and other risk factor control	Eswatini Ministry of Health, Mbabane, Eswatini	International Institute of Legislative Affairs, Nairobi, Kenya	• Need for greater prioritization of tobacco control in the Africa region • Seek opportunities to link cancer control and tobacco control efforts
27th Feb 2020	Financing cancer control	Kenya Ministry of Health, Nairobi, Kenya	Union for International Cancer Control, Geneva, Switzerland	• Need for engagement with government (non-health ministries) for increased resource allocation for cancer control
12th Mar. 2020	Tobacco Control: Network analysis and tobacco control research agenda for Africa	Centre for Tobacco Control in Africa, Kampala, Uganda	National Cancer Institute, Rockville, MD, USA	• Need for future collaboration between tobacco control actors in Africa. • Need for research results to be disseminated and used in advocacy
26th Mar. 2020	Treatment: Addressing issues of distance/patient cost	Uganda Cancer Institute	Brigham and Women's Hospital; and Harvard Medical School	• Transport and patient costs play a key role in the success of treatment and need to be discussed with the patient as part of treatment planning
Apr. to Aug. 2020	COVID-19 and cancer series	Due to the COVID-19 pandemic, the agenda was changed to focus on the impact of the pandemic on cancer research and control in the region. 11 sessions were conducted and analyzed for presentation in a separate publication		• Pandemic will have long-term impact on full continuum, including prevention, research, treatment protocols, access to medicines, palliative and follow-up care • Need to address cancer preventive services during the pandemic (role for Mobile-Health and telemedicine) • Must ensure building of public trust for cancer care services, reduction of stigma

3.3. Characteristics of the survey respondents

The evaluation survey was sent out to all participants and thirty-eight (38), out of the 45 usual participants, responded to the survey. The majority of respondents were cancer advocates (14; 37 %), followed by researchers (8; 21 %); government officials, including policy makers at the Ministry of Health (MOH) (7; 18 %); Health workers (5; 13 %); and technical advisors to government and MOH/NCCP partners (4, 11 %). 18 % of the respondents had been part of this community since the regional Cancer Control Leadership Forums in 2014–2017 [5]; 29 % had participated in the Africa Cancer ECHO since its inception in 2018; 16 % joined in 2019, and 37 % joined the ECHO in 2020. In terms of attendance, four respondents (11 %) reported never or seldom attending sessions in 2019–2020, while 34 (89 %) reported occasionally or regularly attending sessions (data not shown).

Respondents indicated obstacles to regularly attending the ECHO sessions including: workload and pressures at work; time conflicts with other meetings and programs; internet connectivity, electricity, and cost issues; time zone differences and scheduling challenges; and high frequency of the weekly sessions during the COVID-19 series.

3.4. Satisfaction with the 2019–2020 Africa Cancer ECHO sessions

Respondents reported whether the topics and sessions covered by the Africa Cancer ECHO were engaging, relevant to their work, and accommodated their learning style. Overall, most of the participants were satisfied with the ECHO sessions: over 90 % of the respondents indicated that they found the sessions engaging and relevant to their work. In addition, 80 % of the respondents felt that the Africa Cancer ECHO met their learning goals and expectations and that the sessions suited their personal learning styles (Table 2).

3.5. Knowledge acquisition and confidence in cancer control principles

Participants were asked to rate their knowledge acquisition and confidence after attending the Africa Cancer ECHO sessions, on cancer control best practices including: implementing evidence-based cancer control strategies, networking and partnership skills, and navigating available cancer control resources. The majority of participants indicated that they possessed relevant knowledge about cancer control principles and strategies and gained confidence in implementing

Table 2
Satisfaction, Knowledge, Applicability and Outcomes of the 2019–2020 Africa Cancer ECHO.

Rating measure	*Number in agreement N=38
Satisfaction with the Africa ECHO	
1. The topics covered were relevant to my work	35 (92%)
2. The sessions were engaging and worth my time	36 (95%)
3. The structure of the sessions accommodates my personal learning style	33 (87%)
4. I feel the Africa ECHO met my learning goals and expectations	31 (82%)
Knowledge acquisition and confidence in implementing evidence-based cancer control strategies	
5. I now possess relevant knowledge about cancer control principles and strategies after attending the Africa ECHO	30 (79%)
6. I have gained confidence in planning and implementing evidence-based cancer control strategies by attending the Africa ECHO	26 (68%)
7. As a result of participation in the Africa ECHO, I feel confident to professionally interact with colleagues in cancer control.	30 (79%)
8. As a result of participation in the Africa ECHO, I have ideas on how and where I can find support for dilemmas in cancer control from subject matter experts within Africa and internationally.	22 (58%)
9. As a result of participation in the Africa ECHO, I feel a sense of belonging to a community/team of cancer control leaders in the region and internationally.	33 (87%)
Knowledge application	
10. I have put the knowledge I gained from the ECHO sessions to use.	28 (74%)
11. I am able to transfer the knowledge, skills or attitudes that I have gained from the ECHO to others.	31 (82%)
ECHO Outcomes	
12. To what extent has the Africa ECHO disseminated best practices and engaged partners/participants in a continuous mentoring and learning process?	29 (76%)
13. To what extent has the Africa ECHO increased knowledge and utilization of evidence-based cancer control principles and strategies?	30 (79%)
14. To what extent has the Africa ECHO created opportunities to network and learn from regional and global colleagues and experts?	28 (74%)
15. To what extent has the Africa ECHO responded adequately to the need for information about cancer control during the COVID-19 pandemic?	30 (79%)

*Survey responses were based on ordinal scale including: 1) Not at all or Disagree; 2) somewhat or partially agree; and 3) very much or Agree. Although no participants indicated response # 1, "Number in agreement" was only considered for those who indicated "very much or Agree" (response 3).

evidence-based cancer control strategies as a result of participation in the ECHO. In addition, most of the participants reported feeling confident to professionally interact with colleagues in cancer control and were aware of where to get support in case of cancer control dilemmas. Also, the majority indicated that they had a sense of belonging to a global community of cancer control leaders, (Table 2).

3.6. Knowledge application

Participants were asked if they could transfer the gained knowledge to others and whether they had put the skills gained from ECHO sessions to use. Most of the participants indicated that they could transfer the knowledge gained and had practically used the knowledge gained as a result of attending the Africa Cancer ECHO (Table 2). All 38 (100 %) survey respondents shared ways in which they applied knowledge from the Africa Cancer ECHO in their setting, including: communicating about cancer and COVID-19 to colleagues; applying communications skills and patient navigation techniques; developing or implementing National Cancer Control Plans based on strategies and lessons learned from other countries in the region; and grant writing, program development, and utilization of evidence in cancer advocacy. Appendix B shows a case from Uganda, about the process and procedures taken to develop an evidence-based NCCP, that benefited from technical support from ECHO participants and continuous engagement in the Africa Cancer ECHO sessions.

3.7. Africa Cancer ECHO outcomes

Participants were asked to rate how the Africa Cancer ECHO fared in achieving its intended goals and outcomes. Most of the participants indicated that the ECHO had done tremendous work in disseminating best practices for cancer control and in engaging partners and participants in a continuous learning process. Similarly, the majority felt that the ECHO had increased utilization of evidence-based cancer control principles and strategies in the Africa region and created opportunities for networking. 28 (78 %) respondents provided suggestions for how the Africa Cancer ECHO could be improved including: having more local expertise and mentorship available; increasing the time for discussion during each ECHO session; and ensuring follow-up after each session.

3.8. Training needs assessment

The survey also identified the need for future training by asking participants to indicate additional topics they would like to see in future Africa Cancer ECHO sessions. The results of the needs assessment formed the basis for the curriculum and training objectives for the 2020–2021. Topics were identified across the cancer control continuum, with many suggestions around cancer treatment (patient navigation, access to medicines, telehealth, vulnerable populations, impact of COVID-19); cancer survivorship and palliative care (most often cited topic of interest); and system strengthening (measuring impact, resource mobilization and priority-setting for cancer control interventions).

4. Discussion

The 2019–2020 Africa Cancer ECHO set out to expand best practices for comprehensive cancer control and use of evidence in directing the cancer control efforts in the region. The Africa Cancer ECHO achieved and exceeded its intended outcomes in many ways, as a result of engaging its participants in a continuous learning and networking process that embraced knowledge exchange and sharing across countries and continents.

One interesting outcome from the 2019–2020 Africa Cancer ECHO was the increasing number of participating countries from twelve African countries in 2018 to seventeen in 2020. Similarly, the total number of individual participants also increased from approximately 106 in 2018 to 157 (about 50 % increase) in 2020. This growing number of participants indicates increased interest in knowledge exchange about cancer control in Africa. Another important finding was the increase in methods of learning that evolved, from using Zoom meetings only, to various methods including informative research surveys and timely awareness of available resources and opportunities via Basecamp. This recognises the principal of Adult Learning upon which the ECHO model was built, that adult learning is a multidimensional phenomenon that takes place in various contexts from iterative practice in case presentations, to direct application of best practices learned [15]. This is in line with experiential learning theory which emphasizes that knowledge is created through transformation of experience and that adults must continually choose which set of learning abilities they will use to acquire knowledge in a specific learning situation [16,17]. While some choose to start implementing what they have learned, others tend to carefully watch others' experience and reflect on what happens [16]. This was apparent in the survey results, where participants found the structure, content and support mechanism of the Africa Cancer ECHO very engaging, relevant to their work, and well-suited to their learning styles.

The most important impact of the Africa Cancer ECHO was the progress made towards its goals. As shown by the survey results (Table 2), this ECHO program increased participants' global networking skills, knowledge of cancer control principles, confidence in implementing evidence-based cancer control strategies, and sense of belonging to a community of cancer control leaders. Participants reported the transfer and application of knowledge gained to their local context, resulting in tangible achievements towards cancer control in Africa, some of which are shared in Appendix B. It was also remarkable that over 80 % of the respondents had their learning goals and expectations met by the Africa Cancer ECHO. This self-reflection of the participants is in line with Kolb's individual's learning cycle of acquiring knowledge (based on Piaget's theory), that learners rely on their own perceptions of their learning cycle, which is directed by social interaction and professional influences and experiences [18]. This suggests that the Africa Cancer ECHO is a viable method for expanding best practices for cancer control at regional and global level; as self-assessment is now widely recognized in the learning culture and underscores the importance of self-monitoring and active participation in real-world practice [19].

While the 2019–2020 Africa Cancer ECHO registered tremendous impact in expanding the knowledge about cancer control in Africa, the high number of suggested topics to be discussed in 2020–2021 indicate a great information need about the topic of cancer control in Africa, more so in the presence of the COVID-19 pandemic. The demand also highlights the importance of this knowledge sharing forum, and, coupled with its substantial impact over the last year, supports the continuation of this ECHO program. While the experience of the Africa Cancer ECHO demonstrates that volunteerism and good-will from the stakeholders are effective and essential to operate ECHO, additional resources could serve to support the core roles and activities of the ECHO and improve sustainability. Aligning and integrating the Africa Cancer ECHO with existing cancer control organizations in the Africa region will strengthen the efficacy of the ECHO program to meet the increasing demand for knowledge and support of cancer control principles in Africa.

5. Limitations

The impact of capacity building and some cancer control interventions take time to be realised and this survey assessed only short-term achievements and outcomes of the Africa Cancer Research and Control ECHO Program. Hence, there is a need for continuous, long-term, and objective assessment of the Africa Cancer ECHO to assess its contribution towards the long-term goal of reducing cancer incidence, morbidity and mortality in Africa. In addition, this assessment mainly used quantitative methods and some of the concepts may not have been explored in detail. A detailed qualitative analysis of the outcomes could

be useful in the future to attach meaning to the quantitative achievements.

6. Conclusion

The initial goal of the Africa Cancer ECHO to expand best practices for cancer control was met and, in many ways, exceeded. This is a result of the continuous engagement and networking process of the participants. The rapidly growing interest in the Africa Cancer ECHO and the tangible achievements among African countries highlights the need for investing in such initiatives to provide opportunities for knowledge sharing and continuous learning, as they advance knowledge, familiarity, confidence, partnerships, and leadership in cancer control.

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Declaration of Competing Interest

The authors report no declarations of interest.

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Africa Cancer ECHO Steering Committee

Internal Reviewers: Lucca Cirolia, Clayton Richards, Elise Garton, Nwamaka Lasebikan, Benda Kithaka, Cissy Nassolo, Noleb Mugisha and Jackson Orem

Case study graphics: Allison Johnson

Appendix A. Participating institutions in the 2019–2020 Africa Cancer ECHO

Africa Region Participating Countries (n=103 from 56 institutions; 17 countries)	JHPIEGO, Gaborone, Botswana Ministry of Health and Wellness, Gaborone, Botswana Ministry of Health, Bujumbura, Burundi University of Burundi, Bujumbura, Burundi Humanity at Heart International, South-west Region, Cameroon Mboppi Baptist Hospital, Douala, Cameroon Ministry of Health, Yaoundé, Cameroon University Hospital Centre, Yaoundé, Cameroon Ministry of Health, Mbabane, Eswatini Addis Ababa University, Addis Ababa, Ethiopia Mathiwos Wondu-YeEthiopia Cancer Society, Addis Ababa, Ethiopia Ministry of Health, Addis Ababa, Ethiopia Africa Cancer Foundation, Nairobi, Kenya Faraja Cancer Support Trust, Nairobi, Kenya International Cancer Institute, Nairobi, Kenya Kenya Medical Research Institute, Nairobi, Kenya Kenya Medical Research Institute-FACES, Kisumu, Kenya Kenya Network of Cancer Organizations, Nairobi, Kenya Kenyatta National Hospital, Nairobi, Kenya Maseno University/JOORTH, Kisumu, Kenya Ministry of Health, Nairobi, Kenya National Cancer Institute – Kenya, Nairobi, Kenya SOS Kenya, Nairobi, Kenya Tenwek Mission Hospital, Nairobi, Kenya Women for Cancer Early Detection & Treatment, Nairobi, Kenya Ministry of Health, Lilongwe, Malawi Nkhoma Mission Hospital, Nkhoma, Malawi UNC Lilongwe, Lilongwe, Malawi Cancer Association of Namibia, Windhoek, Namibia I-TECH Namibia, Windhoek, Namibia Ministry of Health and Social Services, Windhoek, Namibia University of Namibia, Windhoek, Namibia Clinton Health Access Initiative, Abuja, Nigeria Ministry of Health, Abuja, Nigeria University of Nigeria Teaching Hospital, Enugu, Nigeria Rwanda Biomedical Center/Ministry of Health, Kigali, Rwanda Rwanda Children's Cancer Relief, Kigali, Rwanda Rwanda Military Hospital, Kigali, Rwanda Hôpital Général de Grand Yoff, Dakar, Senegal African Organisation for Research and Training in Cancer, Rondebosch, South Africa ICON Oncology, Cape Town, South Africa University of Gezira, Wad Madani, Sudan Aga Khan Hospital, Dar es Salaam, Tanzania Jhpiego, Dar es Salaam, Tanzania Ministry of Health and Social Welfare, Dar es Salaam, Tanzania African Palliative Care Association, Kampala, Uganda Clinton Health Access Initiative, Kampala, Uganda Makerere University, Kampala, Uganda Uganda Cancer Institute, Kampala, Uganda Centre for Infectious Disease Research, Lusaka, Zambia Ministry of Health, Lusaka, Zambia Cancer Association of Zimbabwe, Harare, Zimbabwe

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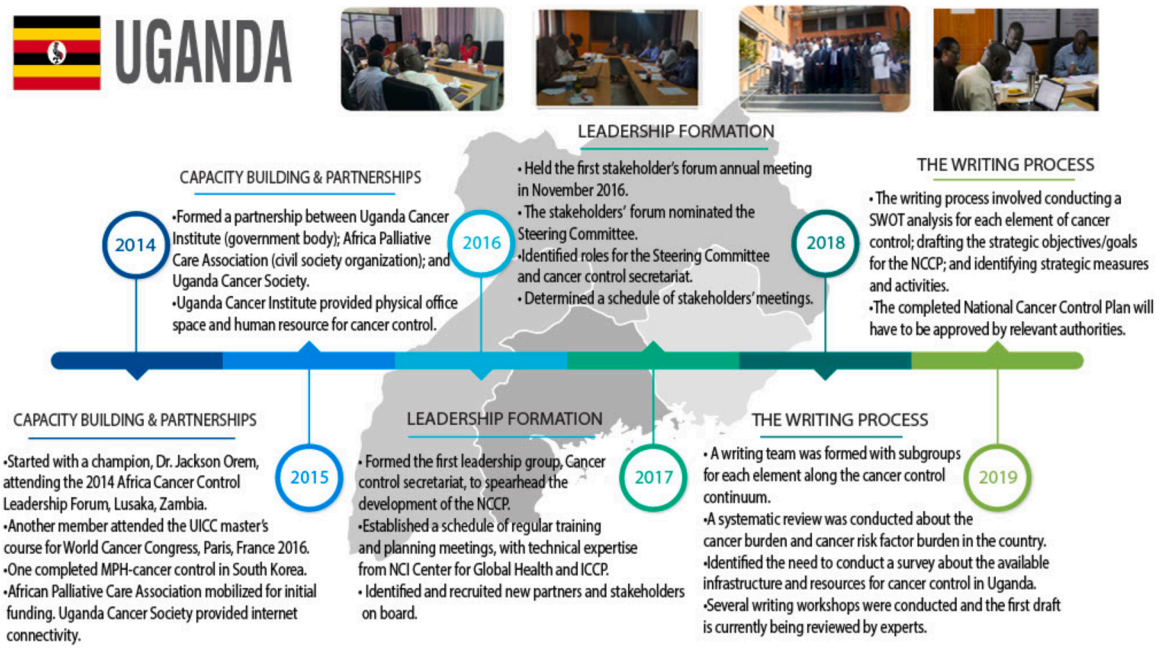
Global Partners (n=54 from 19 institutions; 4 countries)	Hospice and Palliative Care Association of Zimbabwe, Harare, Zimbabwe Ministry of Health and Child Care, Harare, Zimbabwe Parirenyatwa Hospital, Harare, Zimbabwe International Atomic Energy Agency, Vienna, Austria European Institute of Oncology, Milan, Italy Union for International Cancer Control, Geneva, Switzerland American Society of Clinical Pathology, Chicago, IL, US Dana-Farber/Harvard Cancer Center, Boston, MA, US Duke University, Durham, NC, US ECHO Institute, Albuquerque, NM, US Global Focus on Cancer, Port Chester, NY, US National Comprehensive Cancer Network, Philadelphia, PA, US NYU Langone Perlmutter Cancer Center, New York, NY, US Partners in Health, Boston, MA, US Strategic Health Concepts, Arvada, CO, US University of California San Francisco, San Francisco, CA, US University of North Carolina, Chapel Hill, NC, US University of Texas MD Anderson Cancer Center, Houston, TX, US University of Washington/Fred Hutch Cancer Consortium, Seattle, WA, US US Centers for Disease Control and Prevention, Atlanta, GA, US US National Cancer Institute, Rockville, MD, US World Bank, Washington, DC, US

Appendix B National Cancer Control Plan development process: Uganda case study



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