

Partnering to implement the Global Initiative for Childhood Cancer in the Americas: prioritizing systems strengthening

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ABSTRACT

Working with PAHO/WHO to prioritize childhood cancer in the context of systems strengthening is central to St. Jude Children's Research Hospital (SJCRH)'s role as WHO Collaborating Centre for Childhood Cancer. This manuscript focuses on how SJCRH and PAHO/WHO have partnered to apply C5 (Country Collaboration for Childhood Cancer Control) to define and implement priority actions regionally, strengthening Ministry programs for childhood cancer, while implementing the Global Initiative for Childhood Cancer since 2018. Using C5, a tool developed by SJCRH, PAHO/WHO and SJCRH co-hosted regional/national workshops engaging authorities, clinicians and other stakeholders across 10 countries to map health systems needs and prioritize strategic activities (spanning Central America, Dominican Republic, Haiti, Brazil and Uruguay). SJCRH provided English/Spanish/Portuguese C5 versions/templates for analysis/prioritization exercises, and worked with PAHO/WHO and country teams to implement C5, analyze findings, and develop outputs. In an eight-country regional workshop, countries defined priorities within national/regional initiatives and ranked their value and political will, incorporating country-specific surveys and stakeholder dialogues. Each country prioritized one strategic activity for 2022-2023, exchanged insights via storytelling, and disseminated and applied results to inform country-specific and regional action plans. National workshops analyses have been incorporated into cancer control planning activities and collaborative work regionally. Implementation success factors include engaging actors beyond the clinic, enabling flexibility, and focusing on co-design with stakeholders. Joint implementation of C5 catalyzed prioritization and accelerated strategic activities to improve policies, capacity, and quality of care for children in the Americas, supporting Ministries to integrate childhood cancer interventions as part of systems strengthening.

Keywords

Cancer; health policy; health planning, health priorities; public health systems research; national health programs; child advocacy; adolescent health.

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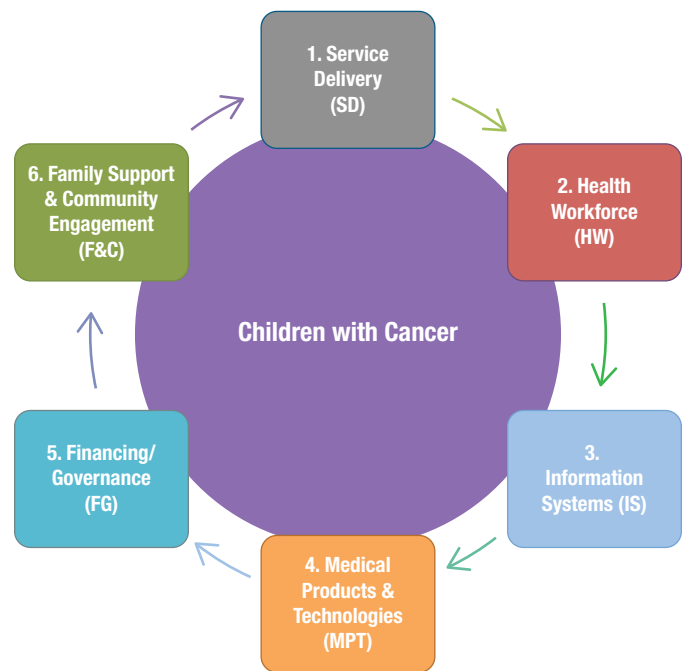
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Cancer is a leading cause of death in children and adolescents (aged 0-19 years), with an estimated 29 057 patients diagnosed annually in Latin America and the Caribbean (LAC). Of these, about 10 000 will die from this disease. The region is characterized by large inequity in survival rates, with some countries reaching the same levels as high-income nations (80%), and others as low as 40% (1). Governments can bridge this gap in a cost-effective manner by strengthening their health systems with a combination of strategies to improve access to diagnostics and treatment – starting with prioritizing childhood cancer in the public health agenda (2). Working with the Pan American Health Organization (PAHO) to prioritize childhood cancer interventions in the context of systems strengthening is central to St. Jude Children's Research Hospital ("SJCRH")'s work as World Health Organization (WHO) Collaborating Centre for Childhood Cancer. Designated by the WHO Director-General in 2018 as the first and only WHO Collaborating Centre globally dedicated to childhood cancer (3), this designation was extended in 2022 through to 2026 (4), in line with PAHO/WHO's standing procedures (5). SJCRH's vision and leading role in childhood cancer research, care and treatment around the globe were fundamental to the designation, as well as the years of partnership with PAHO/WHO. The core areas of work encompass supporting WHO to: i) integrate childhood cancer in National Cancer Control Plans (NCCPs) and programmes through tools or frameworks for prioritization, costing, and monitoring and evaluation; ii) develop tools and platforms for innovation and diffusion in childhood cancer management, research and education; and iii) strengthen childhood cancer control through technical support, training and stakeholder engagement (4).

This paper describes how SJCRH supports PAHO/WHO to achieve shared goals in LAC using the tool C5 (Country Collaboration for Childhood Cancer Control). C5 is a tool developed by SJCRH to facilitate multi-stakeholder strategic planning to improve childhood cancer care. C5 is underpinned by a Health Systems Plus framework (Figure 1) adapted for childhood cancer from the WHO health systems building blocks, as well as systems thinking (6-8). Part of the St. Jude Global Childhood Cancer Analytics Resource and Epidemiological Surveillance System (SJCARES) Systems tool suite, it is designed to appraise and strengthen the health system environment with sustainable interventions across national, regional, and global contexts (9). By integrating different stakeholders' perspectives, C5's collaborative outputs can support national/regional strategic and program planning, consensus building and advocacy, and define priorities for research and action (8, 10-12).

C5's successful implementation in LAC has been rooted in the increasing collaboration between SJCRH and PAHO, extended since SJCRH supported WHO to launch the Global Initiative for Childhood Cancer (GICC) in 2018. This work builds on collaborations that started in 2017 with regional networking involving partners across the Americas (13), and subsequent regional workshops organized by SJCRH and PAHO that promoted conversations between pediatric oncologists, foundations, PAHO regional and country offices, and Ministries from Central America, Dominican Republic, and Haiti (14-15). Such efforts are strengthened by the region's tradition of collaboration around childhood cancer through diverse regional groups, including the Association of Pediatric Hematology Oncology of Central America (AHOPCA), Latin American Group of

FIGURE 1. Health systems plus framework adapted for children with cancer



Note: Figure used with kind permission of Catherine Lam MD, MPH.

Pediatric Oncology (GALOP), and Latin American Consortium of Hemato-oncological Pediatric Diseases (CLEHOP), that have all worked alongside national professional associations and diverse programs. In December 2019, these efforts culminated in the launch of the Regional Initiative for Comprehensive Care of Pediatric Cancer by the Council of Ministers of Health of Central America and Dominican Republic (COMISCA) (16). Using C5, SJCRH and PAHO continued to support the development and/or implementation of NCCPs that include pediatric cancer, expanding this support in 2021 to six additional countries (Bolivia, Brazil, Chile, Colombia Ecuador, and Paraguay) where local teams have mobilized advances for children with cancer (17). SJCRH and PAHO also jointly supported the first regional focus country workshop for GICC in Peru in 2019, engaging stakeholders to develop a situational analysis and collaborative prioritization for GICC implementation (18). This has enabled ongoing work led by local teams in more than 16 countries now engaged in the Initiative in the Americas (15,17).

This report aims to describe the approach of C5 workshops co-hosted by SJCRH as WHO Collaborating Centre for Childhood Cancer together with PAHO, contextualizing childhood cancer needs through the lens of systems strengthening. Secondly, through illustrative experiences across 10 countries, this manuscript outlines success factors and sample outputs that were accomplished even amid the global pandemic, with relevance for the ongoing work towards achieving GICC targets, and PAHO/WHO's ambitious health mandates (5,19,20).

METHODS

C5 applies the Health Systems Plus framework, which considers six health systems dimensions and their implications

for children with cancer, as well as the interactions across the dimensions to optimize their function and outcomes: service delivery, workforce, information systems, medical products and technologies, financing, and governance, and explicitly recognizes family and community engagement (7). Consistent colors for each dimension (Figure 1) facilitate rapid appraisal within and across dimensions. By design, elements of the Health Systems Plus framework including dimensions' corresponding colors were later integrated into the **CureAll** framework underpinning GICC (20).

The C5 tool consists of 5 modules. Module *c1* offers a structured situational analysis of the country's health system variables (such as universal health care coverage and government health expenditure), policy context (e.g., existence of an NCCP and cancer registries), and national service delivery (e.g., existing workforce training and guidelines). Module *c2* maps clinical and non-clinical stakeholders, and module *c3* assesses internal/external factors across the broader health system impacting children with cancer, encouraging participants to consider needs beyond the clinic. The final two modules *c4* and *c5* offer tools for countries to identify collaboration areas and to prioritize interventions considering time, values, political will, and resources.

C5 can be applied in different formats, depending on the desired output: (a) separately as individual modules; (b) combining one or more modules in single or multi-day national/regional workshops; or (c) having all 5 modules applied sequentially as part of longitudinal, team-based roll-out (8). C5 can be adapted to country needs, and training and workshops can be led virtually. To define local preferences for the C5 format and implementation timeline, an initial meeting to review the childhood cancer situation and country objectives was held between PAHO, SJCRH, and country teams.

Country teams played an essential role in C5's successful implementation. These teams were multi-stakeholder groups whose participants were nominated by the Ministry of Health and included health authorities and leaders responsible for childhood cancer programs. Teams spanned all key sectors influencing the childhood cancer landscape, including representatives from ministries and national cancer control programmers, hospital administration, multidisciplinary clinicians, professional and civil society representatives, including patient/family groups and non-governmental organizations.

C5 was designed to enable country teams to efficiently contribute insights and reach consensus, with SJCRH and PAHO teams holding the responsibility of leading the analysis, consolidation, and preparation of outputs, including summary graphics and structured reports. Depending on the module selected and objectives set, pre-workshop homework was done by country teams in preparation for live workshops with the aid of pre-filled data and prompts from SJCRH and PAHO.

Using this information, stakeholder mapping was initiated by SJCRH and PAHO, and refined by local teams. Most activities were conducted virtually due to COVID-19 related travel restrictions. Through small group and 1:1 meeting with PAHO and SJCRH, multi-stakeholder country teams defined the objectives, desired outputs, validated the analyses, provided additional data when necessary, and co-designed and co-facilitated the workshops' activities, logistics, and reports.

Three SJCRH and PAHO co-hosted C5 workshop formats are highlighted:

- a) A regional workshop applying one or more modules, as demonstrated in an 8-country workshop with stakeholders from Central America, the Dominican Republic, and Haiti to prioritize strategic activities addressing childhood cancer using *c2*, *c4* and *c5*.
- b) A national workshop applying one or two modules (e.g., *c2* and/or *c3*) for national health systems stakeholder mapping and SWOT analysis, as exemplified in Brazil and Uruguay, in the context of national strategic discussions, independent of a regional workshop.
- c) A national workshop before or following a regional workshop to guide national childhood cancer control planning with stakeholders, applying one or more modules (e.g., *c2* and *c5*) as demonstrated in Panama.

SJCRH provided English/Spanish/Portuguese C5 versions and templates for analysis/prioritization exercises and country-specific surveys, and led training for facilitators with PAHO. Structured data collection was enabled using pre-designed Forms and Excel spreadsheets, in English/Spanish/Portuguese, as preferred by country teams. Facilitators from PAHO, SJCRH, and international and local cancer control experts received training to be familiarized with C5, and prepared for virtual breakout discussions and group activities. Virtual training included a demonstration of the activities and mock exercises applying C5 templates, with additional sessions as necessary to incorporate facilitators' feedback and preferences for the workshop exercises. SJCRH and PAHO provided technical and logistics support, including offering customized registration and meeting platforms, concept notes and facilitator guides for each workshop. During virtual workshops, participants selected from simultaneous multilingual interpretation channels (English, Spanish, or French), while a digital interactive whiteboard platform MURAL (mural.co) was utilized to facilitate group work and live brainstorming. Descriptive statistical analyses to determine average ratings for value and political will to support summary graphics were conducted using Excel and Stata (16.1, StataCorp LLC 2019). Additional C5 summary graphics, including mapped stakeholders and organizations, were created with PowerBI, Python and ArcGIS Pro (2.5, Esri Inc 2020).

RESULTS

Collaborative workshops were conducted across 10 countries in the Americas with distinct health systems characteristics (Table 1). Figure 2 summarizes how C5 modules can be flexibly applied in diverse geographic contexts.

a) Regional Workshop

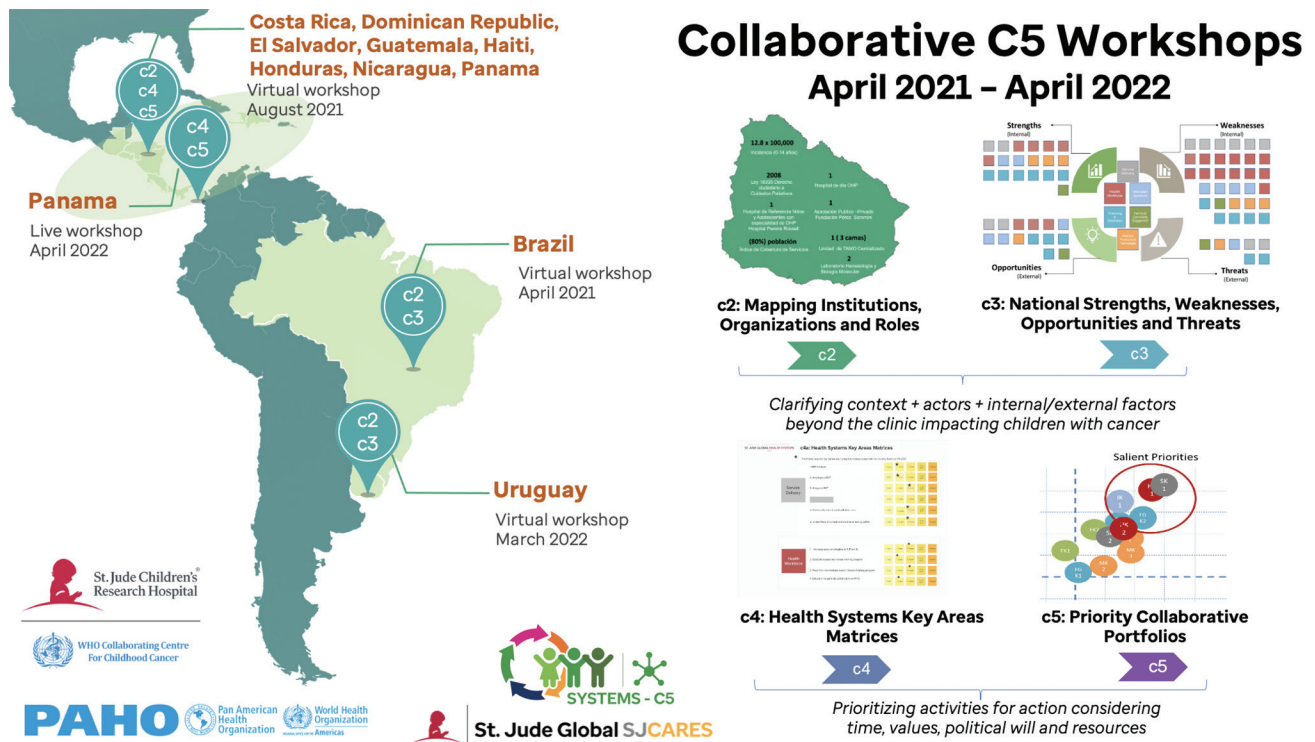
Following the identification in 2019 of the shared need to develop NCCPs inclusive of children by the countries of Central America, Dominican Republic, and Haiti, a regional workshop was planned to support the eight countries in implementing national and regional cancer control initiatives. To achieve this goal, countries used *c2*, *c4*, and *c5* (Figure 2) to each define 10 priorities and rank their value and political will, incorporating

TABLE 1. Health system context of 10 engaged countries in workshops applying C5 modules.

Country	Estimated new childhood cancer cases (per year), 0-19 years ^a	Estimated survival (1- Mortality/incidence ratio) % ^a	World Bank income classification ^b	Early detection programme/guidelines ^c	Defined referral system ^c	Pathology services ^c	Bone marrow transplantation capacity ^c	Palliative care ^c	Number of certified pediatric oncology units ^d	NCCP (WHO 2019) ^e	NCCP/ national policy including pediatric cancer ^e
Brazil	8 908	70%	UMIC	Yes	Yes	Yes	Yes	Yes	76	Operational	Yes
Costa Rica	237	78%	UMIC	Yes	Yes ^f	Yes	Yes	Yes	1	Operational	In progress
Dominican Republic	392	54%	UMIC	No	Yes	Yes	No	Yes	6	n/a	In progress
El Salvador	258	52%	LMIC	Yes	Yes	Yes	No	No	1	Operational	Yes
Guatemala	628	46%	UMIC	Yes	Yes	Yes	No	No	7	Operational	In progress
Haiti	285	46%	LMIC	Yes	ND	No	ND	No	1	Not in effect	In progress
Honduras	772	44%	LMIC	Yes ^g	No	No	No	No	3	n/a	In progress
Nicaragua	284	47%	LMIC	Yes	Yes	Yes	No	No	1	Under development	In progress
Panama	167	59%	UMIC	Yes ^h	Yes	Yes	No	Yes	5	Operational	Yes
Uruguay	150	85%	HIC	Yes	Yes	Yes	Yes	Yes	1	Operational	Yes

Notes: ^a Global Cancer Observatory, IARC, 2020. <https://gco.iarc.fr/today/home> Accessed: May 13, 2022.
^b World Bank Country and Lending Groups <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> Accessed: May 13, 2022.
^c WHO Country Cancer Profiles – 2020. https://www3.paho.org/hq/index.php?option=com_topics&view=rdmore&id=10473&item=cancer&cat=scientific_technical&type=4-cancer-country-profiles-2020&lang=en Accessed: May 13, 2022.
^d PAHO Childhood Cancer Profiles, 2021. <https://www.paho.org/en/topics/childhood-and-adolescence-cancer> Accessed: May 13, 2022.
^e St. Jude Global Policy Monitor (2022). Health Systems Unit, Department of Global Pediatric Medicine, St. Jude Children’s Research Hospital, Memphis, TN, USA. <https://www.stjude.org/global/sjcares/policies.html> Accessed: May 13, 2022.
^f Detección Temprana de Cáncer Infantil <https://alccicr.org/deteccion/> Accessed: May 13, 2022.
^g Guía de Detección Temprana de Cáncer en la población de 0 a 18 años de edad. Gobierno de la República de Honduras. https://www3.paho.org/hon/index.php?option=com_docman&view=download&alias=357-guia-completa-deteccion-temprana-de-cancer-infantil&category_slug=salud-materna-nino-y-adolescente&Itemid=211 Accessed: May 13, 2022.
^h Guía para la detección temprana y atención oportuna de la sospecha de cáncer en niños y adolescentes. Ministerio de Salud de la República de Panamá. https://www.minsa.gob.pa/sites/default/files/programas/deteccion_temprana_y_atencion_oportuna_de_la_sospecha_del_cancer.pdf Accessed: May 13, 2022.
ⁱ Community/home-based care
 Yes=Generally available, No=Generally not available, ND= No data/ Don’t know
 NCCP=National Cancer Control Plan, LMIC= low-middle income country, UMIC=upper middle-income country, HIC=high income country
Source: Prepared by authors based on references as cited.

FIGURE 2. Visual overview of 10 countries engaged in C5 workshops



Note: Figure used with kind permission of Catherine Lam MD, MPH. Workshops have been conducted across 10 countries in the region between April 2021 to April 2022, using two to three modules of the Country Collaboration for Childhood Cancer Control (C5) tool.

country-specific surveys and stakeholder dialogues. Nearly 150 participants, representing Ministries, foundations, the pediatric hematology/oncology community, PAHO/WHO, COMISCA, Harvard Humanitarian Initiative, Persistent Productions, and SJCRH were engaged. Each country prioritized one strategic activity for 2022-2023 and used a story-telling methodology to exchange insights gained with other teams (21). The film “How I Live” introduced participants to global health disparities in childhood cancer care through the lived experiences of patients, families, and providers, and encouraged participants to approach discussions through a different lens than the typical academic forum. Results were disseminated in webinars and used to inform country-specific and regional action plans. Collaboratively, participants identified and discussed national priority areas. Table 2 summarizes the final top priority area by health systems dimension established by consensus for each country, with sample activities prioritized.

Following the workshop, country teams continued to implement these action plans. Progress was presented by regional/country teams during monthly meetings held with PAHO, SJCRH, and teams from all LAC countries participating in the GICC. Upon request, individualized technical assistance was offered.

b) National Workshops

Brazil and Uruguay exemplify C5’s modular application in national workshops using *c2* and *c3* to examine the landscape of actors across the health system, as well as considering strengths, weaknesses, opportunities, and threats through the lens of C5’s health systems framework.

In Brazil, the workshop – held together with the Brazilian Society of Pediatric Oncology – aimed to discuss the country’s major health system barriers in caring for children with cancer.

TABLE 2. Sample applications of C5 modules in SJCRH-PAHO/WHO workshops in 10 countries (April 2021-April 2022).

Regional Workshop: Two-Year Prioritized Activities Based on Value & Political Will [<i>c2,c4,c5</i>]			
Country	<i>c2</i> : Stakeholders	<i>c4</i> : Key Area	<i>c5</i> : Prioritized Activity
Costa Rica	Ministry of Public Education, National Children’s Trust	HSK	Develop national cancer plan, including comprehensive approach to six index cancers
Dominican Republic	Society of Pediatricians, Society of Hematology, Ministry of Public Health, PAHO, National Health Service	HWK	Develop training on factors affecting childhood cancer survival
El Salvador	Ministry of Public Health Childhood and Adolescence Unit, Directorate of Hospitals/Directorate of Primary Healthcare Level, Fundación Ayúdame a Vivir	HSK	Design early diagnosis/referral program
Guatemala	Ministries of Public Health and Finance, Congress	GFK	Increase state budget for childhood cancer operations
Haiti	Ministry of Public Health, FHACI	ISK	Organize National Cancer Registry
Honduras	Ministry of Public Health, General Directorate of Health Services Networks/Primary Healthcare Level-SESAL, Human Resources Directorate-SESAL	HSK	Implement Early Detection Workshops for primary healthcare personnel
Nicaragua	Ministry of Public Health, National University, Social Security	HWK	Establish continuing education program based on AIEPI-WHO
Panama	Ministry of Public Health Childhood and Adolescence Program, National Association of Nurses, Society of Pediatrics	HWK	Develop early detection/timely care course - PAHO Public Health Virtual Campus – Panama Node
National Workshops: Stakeholders & National Systems Strengths, Weaknesses, Opportunities and Threats (SWOT) [<i>c2-c3</i>]			
Country	<i>c2</i> : Stakeholders	<i>c3</i> : National SWOT	
Brazil	Six categories (international organizations, government, public sector, private sector, NGO/civil society, users)	Breakout groups explored ideas/initiatives to strengthen four dimensions (MK, GFK, ISK, HWK) considering implications for childhood cancer	
Uruguay	Ministry of Public Health, State Ministries, public/private healthcare facilities, international partners, civil society, universities, scientific societies, Industry	During C5 workshop, national SWOT analysis was validated and completed; findings integrated into IAEEA/PAHO imPACT report	
National Workshop following Regional Workshop: 2022-2023 Prioritized Objectives in Childhood Cancer Strategic Plan [<i>c4-c5</i>]			
Country	<i>c4</i> : Key Area	<i>c5</i> : Prioritized Activity: Themes	
Panama	HSK	Nursing guidelines	
		Prioritized cancers’ guidelines	
		Nutritional guideline	
	HWK	Training on early diagnosis	
		Interdisciplinary community training tool for early diagnosis	
		Training on psychosocial care for children/adolescents with cancer	
	ISK	Cancer registration strengthening	
GFK	UHC law promotion for managing children/adolescents with cancer		
FK	Holistic approach to train providers/community volunteers to support families		

Notes: Sample stakeholders, analyses and themes from regional/national workshops outlined are illustrative and not exhaustive, and do not represent the spectrum of discussions and exercises by participants.

AIEPI = Atención Integral Enfermedades Prevalentes en la Infancia (In English, IMCI = Integrated Management of Childhood Illness), FK = key area of family support and community engagement, GFK = key area of governance/financing, HSK = key area of health service delivery, HWK = key area of health workforce, ISK = key area of information systems, MK = key area of medical products and technologies, UHC = universal health coverage

Source: Prepared by authors based on C5 workshops presented in this manuscript.

As a result of implementing *c2* and *c3*, more than 80 participants populated a SWOT analysis of the Brazilian health system, provided ideas to address identified gaps and mapped relevant stakeholders for the selected projects. The group, composed of health professionals of different disciplines, foundations, and associations, acknowledged the relevance of developing public policies specific to childhood cancer, collaborating with international partners, and joining GICC. Two groups identified the development of a Pediatric NCCP as the main priority in the Brazilian context.

Using the same C5 modules, the workshop in Uruguay integrated the tool in the framework of the International Atomic Energy Agency (IAEA) imPACT review for cancer control (22,23). Approximately 20 participants from the Ministry of Health, pediatric oncologists, foundations, PAHO, SJCRH and IAEA were engaged. Together, they used findings from both tools to review the status of pediatric cancer in Uruguay, analyze stakeholders, and identify challenges, opportunities, and priorities for the 2022-23 biennium for national activities, as summarized in Table 2.

c) Regional and National Workshops

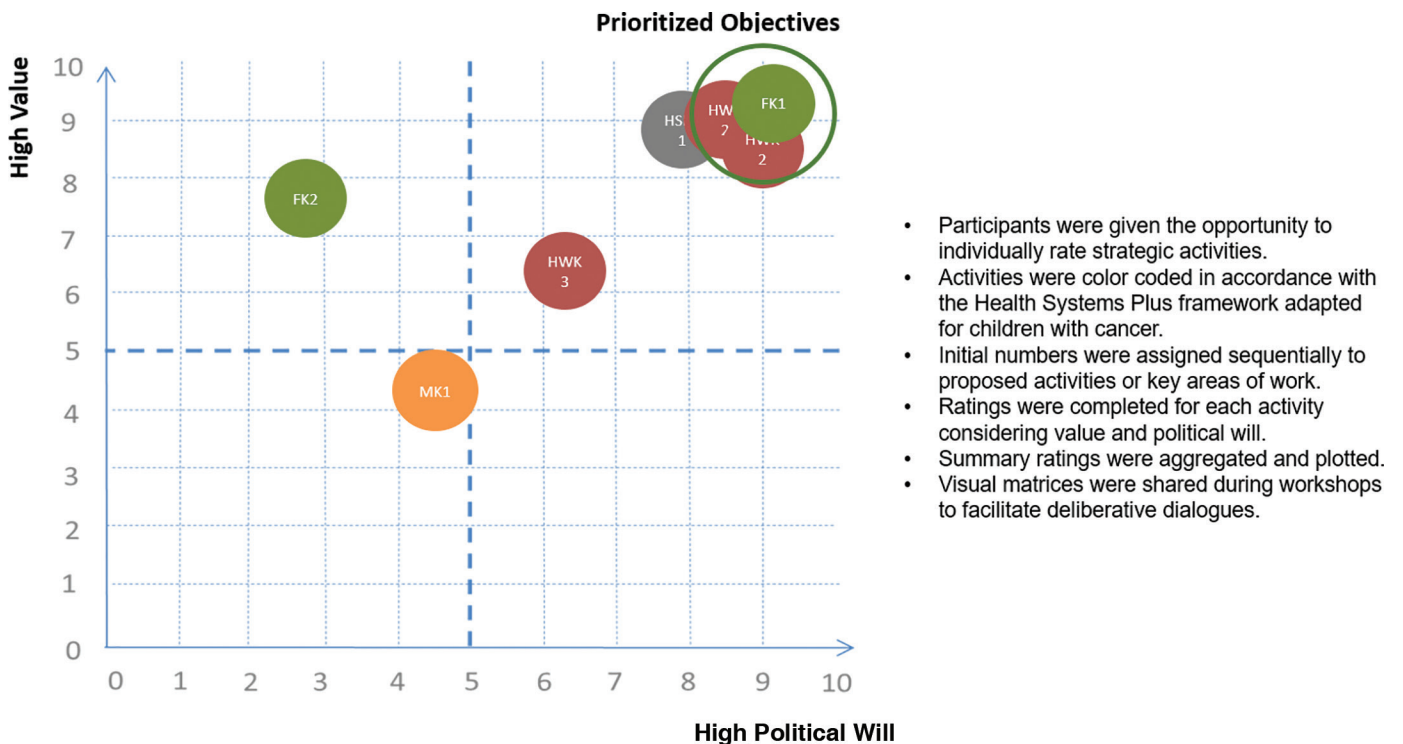
The final C5 workshop format was adopted by Panama. After participating in the virtual regional workshop described above in August 2021, Panama applied C5 to further explore opportunities to implement effective national cancer control planning. Conducted in a face-to-face meeting in Panama April 2022, the workshop consolidated the six childhood cancer commissions

(working groups) established by the 2019-2029 NCCP. Modules *c4* and *c5* were used to prioritize one objective per commission and develop its respective action plan, detailing activities and deliverables for a specific timeline. Table 2 details the prioritized objectives per commission and key health system area, and Figure 3 demonstrates the value and political will matrix, a C5 output used by each commission to select the prioritized objective.

DISCUSSION

This manuscript has outlined the approach through which SJCRH and PAHO partnered to apply C5 to prioritize childhood cancer interventions in the context of systems strengthening. Through all workshops, PAHO/WHO Country Offices and ministries played critical roles in successfully partnering with country teams, WHO/PAHO Regional Office and SJCRH alongside the multidisciplinary and multi-sector pediatric hematology/oncology community. Co-designed with local collaborators to be readily adaptable, C5 was successfully deployed in 10 countries with differing health systems strengths and capacities, and where the expected incidence of childhood cancer differed by more than fifty-fold (Table 1). The tool's outputs serve as a support to the development of national plans and programs that consider these differences in health systems capability and context. This way, each country could tailor the final report to their needs and resources and identify, for example, if resources needed to implement their priorities already existed, or which stakeholders needed further engagement.

FIGURE 3. Sample value and political will prioritization matrix using C5 tool



- Participants were given the opportunity to individually rate strategic activities.
- Activities were color coded in accordance with the Health Systems Plus framework adapted for children with cancer.
- Initial numbers were assigned sequentially to proposed activities or key areas of work.
- Ratings were completed for each activity considering value and political will.
- Summary ratings were aggregated and plotted.
- Visual matrices were shared during workshops to facilitate deliberative dialogues.

Notes: FK = key area of family support and community engagement. GFK = key area of governance/financing, HSK = key area of health service delivery, HWK = key area of health workforce, ISK = key area of information systems, MK = key area of medical products and technologies
 Source: Prepared by authors based on C5 workshops presented in this manuscript.

Engagement of local experts familiar with the health systems context and practical realities in the context of ongoing dialogues and partnerships, beyond a single workshop, was essential to the success of C5 exercises and co-hosted workshops, and enabled implementation even during the pandemic.

Partnering to apply C5 modules via workshops generated outputs that helped stakeholders come to a common understanding of how childhood cancer interventions could foster sustainable impact aligned with PAHO/WHO's broader mandates. Applying the *c2* module to analyze stakeholders across the health system helped identify those already engaged as well as those that may be engaged for the first time or more extensively, and allowed countries to exchange examples of roles actors may play, and cross-cutting benefits addressing needs beyond the childhood cancer community. By its nature childhood cancer care thrives on connecting stakeholders across disciplines, including nursing, palliative care, nutrition, and infectious diseases, as well as those working in cancer registration and child health rights. In practice, this means investments in childhood cancer can produce cost-effective and life-saving impact, and stimulate enduring strategies that benefit vulnerable children and adolescents with other chronic conditions, as well as adults with cancer and other noncommunicable diseases (2,24). To harness resources within local contexts, *c3* encourages participants to consider health systems strengths, weaknesses, opportunities, and threats, facilitating discussions of both targeted and cross-cutting interventions, as well as implementation considerations for strategic activities. Modules *c4* and *c5* supported teams to consider needs beyond the clinic and identify key activities spanning the health system, and how they may interact to influence outcomes considering time, political will and value from varied perspectives.

Many country teams elected to apply the tool to support national cancer control planning. Unfortunately, inequities persist in access to childhood cancer care across regions and globally (2,24-26), and at present, NCCPs in the region are uneven in addressing this challenge (27). Since the NCCP development process varies in each country, teams used C5 outputs in different stages of the process. For example, building on the workshop findings, participants from Costa Rica worked with local stakeholders to draft a new chapter dedicated to pediatric cancer in their NCCP, and successfully accomplished this, three months after utilizing C5. In Panama, one of the prioritized activities included the development of a national childhood cancer early detection policy. In April 2022, Panama's Ministry of Health launched the approved document on timely diagnosis of cancer in children, providing guidance to manage children with suspected cancer (28).

Access to essential medicines has consistently arisen in the workshops as a key strategic area in national programs. These workshops have offered opportunities to discuss the regional procurement mechanism for medicines, the PAHO Strategic Fund, as a means to potentially increase medicines access, affordability and quality for children with cancer (29) and contributed to the corpora of demand stimulating the development of a transformative global platform (30).

Participants in the initial C5 workshops have led the synthesis and sharing of their experiences and knowledge with other countries, within regional and cross-regional workshops as well as working group meetings. To date, five local teams have led abstracts that have been presented in international

congresses and are in the process of publication development. In addition, prioritization of health systems activities in Peru has been published by the local team (18), and this serves as a model for expanding work implementing GICC regionally. Ongoing work is underway with country teams to further document country-specific findings and next steps.

Collaborative work has extended to include other countries regionally. Currently, 16 countries (Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Suriname) are participating in GICC *CureAll* Americas activities, developing or strengthening NCCPs and expanding access to quality care. Initial discussions have been hosted with country teams, including in an April 2022 *CureAll* Americas webinar, as well as national/institutional leadership discussions. In the Caribbean, a subregional initiative has also been initiated with similar workshops to identify systems strengthening needs for childhood cancer care (31).

There have also been initial plans to incorporate the value/political will matrix from *c5* outside of the childhood cancer context, extending to social health protection for migrant populations in the region. C5 implementation experiences in the Americas have been featured in other global discussions, including as part of the St. Jude Global Alliance Convening in September 2021 where more than 1 100 participants from 90 countries registered (with live and on-demand content in six languages), the virtual Annual Congress of the Latin American Society of Pediatric Oncology (SLAOP) in November 2021 with 2 243 attendees from 25 countries (32) and in the virtual regional annual congress for AHOPCA in February 2022, where more than 1 360 participants from 24 countries registered (33). This methodology can be integrated with additional SJCARES tools, including those for national policy design and analysis (34) and comprehensive self-assessments extending from the hospital level (35), and leveraged for collaborative work between SJCRH and WHO (30) to enhance outcomes across the health system for children regionally and globally.

Overall, country, and regional teams implementing C5 should: 1) maximize multi-stakeholder engagement (spanning clinical and non-clinical sectors) from the start; 2) invest time in structured dialogues to consider multiple perspectives, towards developing a shared understanding of objectives and priorities; and 3) develop action plans cognizant of health systems resources and opportunities.

CONCLUSIONS

As WHO Collaborating Centre for Childhood Cancer, SJCRH has worked effectively with PAHO to jointly implement C5 to catalyze prioritization and accelerate strategic activities in the Americas. The collaborative approach and co-designed outputs can help strengthen childhood cancer programs and services of the Ministry of Health, including supporting the development and implementation of NCCPs. Success factors include: i) clear engagement of health authorities and diverse cross-sector partners; ii) the tool's flexibility, which allows it to be implemented in countries with different strengths and resources, and iii) emphasis on co-design from country teams to ensure that deliverables are context relevant. We recommend country teams working on cross-cutting issues to consider applying such an approach, where stakeholders beyond the clinic are engaged,

diverse perspectives are systematically integrated, and plans translated to feasible actions that strengthen the health system. Sustained, accelerated action is necessary to reach the ambitious global target set as part of GICC launched at the United Nations in 2018, to approximately double survival and save the lives of one million more children with cancer by 2030.

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REFERENCES

- Pan American Health Organization. Childhood cancer profiles - Region Latin America and the Caribbean. Washington, DC: PAHO; 16 September 2021. Available from: <https://www.paho.org/en/documents/childhood-cancer-profiles-region-latin-america-and-caribbean>. Accessed 12 May 2022.
- Atun R, Bhakta N, Denburg A, Frazier AL, Friedrich P, Gupta S, et al. Sustainable care for children with cancer: a Lancet Oncology Commission. *Lancet Oncol.* 2020;21(4):e185-e224. doi: 10.1016/S1470-2045(20)30022-X.
- St. Jude Children's Research Hospital. St. Jude named the World Health Organization's first Collaborating Centre for Childhood Cancer. Memphis, TN: SJCRH; 16 May 2018. Available from: <https://www.stjude.org/media-resources/news-releases/2018-medicine-science-news/st-jude-named-the-world-health-organizations-first-collaborating-centre-for-childhood-cancer.html>. Accessed 10 May 2022.
- World Health Organization. WHO Collaborating Centres Global Database: WHO Collaborating Centre for Childhood Cancer. Geneva: WHO. Available from: <https://apps.who.int/whocc/Detail.aspx?QS4mg1+BzznjBcnduPaB3w==>. Accessed 10 May 2022.
- Pan American Health Organization. PAHO/WHO Collaborating Centres. Washington, DC: PAHO. Available from: <https://www.paho.org/en/pahowho-collaborating-centres>. Accessed 1 November 2022.
- Savigny D de, Adam T, Alliance for Health Policy, and Systems Research & World Health Organization. 2009. Systems thinking for health systems strengthening. Geneva: WHO. Available from: <https://apps.who.int/iris/handle/10665/44204>. Accessed 13 May 2022.
- Lam CG, Challinor J, Hoffman R, Auste C, Atherton C, Cornier N, et al. Access to childhood cancer quality care: status, barriers and opportunities. Geneva Health Forum Workshop 2016 Issue Paper. 6th Geneva Health Forum: Sustainable and Affordable Innovations in Healthcare; April 2016. Geneva.
- Handayani SA, Batmunkh T, Gunasekera S, Kizyma R, Nogovitsyna Y, Atunlese J, et al. Co-designing collaborative health systems strengthening priorities for children with cancer in Ukraine, Sri Lanka, and Mongolia using C5 Tool. *International Society of Pediatric Oncology (SIOP) 52nd Congress, Oct 2021. Pediatr Blood Cancer.* 2021;68(S5). Available from: <https://onlinelibrary.wiley.com/doi/10.1002/pbc.29349>
- St. Jude Children's Research Hospital. The SJCARES Systems tool. Memphis, TN: SJCRH. Available from: <https://www.stjude.org/global/sjcares/systems.html>. Accessed 13 May 2022.
- Kizyma R, Nogovitsyna Y, Podvorchanska V, Kacharian A, Ryzhov A, Lysytsia O, et al. National childhood cancer control planning in Ukraine: collaborative implementation and outputs of St. Jude Global's C5 Tool. *International Society of Pediatric Oncology (SIOP) 52nd Congress, Oct 2021. Pediatr Blood Cancer.* 2021;68(S5). Available from: <https://onlinelibrary.wiley.com/doi/10.1002/pbc.29349>.
- Gunasekera S, Perera S, Hapuarachchi T, Vidanapathirana J, Gunawardena N, Gunaratne S, et al. Priority setting in childhood cancer using a novel health systems framework in a lower-middle-income country. *International Society of Pediatric Oncology (SIOP) 52nd Congress, Oct 2021. Pediatr Blood Cancer.* 2021;68(S5). Available from: <https://onlinelibrary.wiley.com/doi/10.1002/pbc.29349>.
- Tsetsegsaikhan B, Ayurzana O, Bavuusuren B, Dangaa B, Enkhmaa U, Guviraa C, et al. Experience of using C5 Tool for policy change on pediatric oncology in Mongolia. *International Society of Pediatric Oncology (SIOP) 52nd Congress, Oct 2021. Pediatr Blood Cancer.* 2021;68(S5). Available from: <https://onlinelibrary.wiley.com/doi/10.1002/pbc.29349>.
- Pan American Health Organization. Meeting of the Pediatric Cancer Working Group (Washington, D.C., 2-3 February 2017). Washington, DC: PAHO. Available from: <https://iris.paho.org/handle/10665.2/34024>. Accessed 14 May 2022.
- Pan American Health Organization. St. Jude Children's Research Hospital - Childhood Cancer in the Americas. Washington, DC: PAHO. Available from: <https://www.paho.org/en/partnerships/st-jude-childrens-research-hospital-childhood-cancer-americas>. Accessed 13 May 2022.
- Pan American Health Organization. Pediatric Cancer Initiative in Central America. Washington, DC: PAHO. Available from: <https://www.paho.org/en/topics/cancer/pediatric-cancer-initiative-central-america>. Accessed 13 May 2022.
- Sistema de Integración Centroamericana. Iniciativa regional para la atención integral del cáncer pediátrico en los países de la Región SICA, 2019-2030. La Libertad, El Salvador: SICA. Available from: https://www.sica.int/documentos/iniciativa-regional-para-la-atencion-integral-del-cancer-pediatrico-en-los-paises-de-la-region-sica-2019-2030_1_129137.html. Accessed 13 May 2022.
- Pan American Health Organization. National childhood cancer plans. Washington, DC: PAHO. Available at: <https://www.paho.org/en/topics/childhood-cancer/national-childhood-cancer-plans>. Accessed 13 May 2022.
- Vasquez L, Maradiegue E, Rojas N, Montoya J, Zapata A, Ugaz C, et al. Catalyzing childhood cancer care in Peru after one year of the

- Global Initiative for Childhood Cancer. *JCO Glob Oncol*. 2021;7:187-189. Available from: doi:10.1200/GO.20.00601.
19. World Health Organization. Cancer prevention and control in the context of an integrated approach [WHA70.12]. 70th World Health Assembly; 31 May 2017. Geneva: WHO; 2017. Available from: <http://www.who.int/iris/handle/10665/275676>. Accessed 10 May 2022.
 20. World Health Organization. Global initiative for childhood cancer. Geneva: WHO; 2 November 2020. Available from: <https://www.who.int/publications/m/item/global-initiative-for-childhood-cancer>. Accessed 13 May 2022.
 21. Pan American Health Organization. Workshop for the Pediatric Cancer National Plan/Global Initiative for Childhood Cancer (PCNP/GICC) Implementation in Centro America, Dominican Republic, Haiti. Washington, DC: PAHO. Available from: <https://www.paho.org/en/topics/childhood-and-adolescence-cancer/workshop-how-i-live-13-august-2021>. Accessed 13 May 2022.
 22. International Atomic Energy Agency. *imPACT Reviews*. Vienna, Austria: IAEA. Available from: <https://www.iaea.org/services/review-missions/impact-reviews>. Accessed 10 May 2022.
 23. Ministerio de Industria, Energía y Minería. Misión Impact para evaluar las capacidades y necesidades del control integral del cáncer en Uruguay. Montevideo, Uruguay: MIEM; 2021. Available from: <https://www.gub.uy/ministerio-industria-energia-mineria/comunicacion/noticias/mision-impact-para-evaluar-capacidades-necesidades-del-control-integral-del>. Accessed 13 May 2022.
 24. Lam CG, Howard SC, Bouffet E, Pritchard-Jones K. Science and health for all children with cancer. *Science*. 2019;363(6432):1182-1186. Available from: doi:10.1126/science.aaw4892.
 25. World Health Organization. Regional Office for Europe. Childhood cancer inequalities in the WHO European Region. Geneva: WHO; 2022. Available from: <https://apps.who.int/iris/handle/10665/351857>. Accessed 13 May 2022.
 26. World Health Organization. WHO report on cancer: setting priorities, investing wisely and providing care for all. Geneva: WHO; 2020. Available from: <https://apps.who.int/iris/handle/10665/330745>. Accessed 13 May 2022.
 27. Loggetto P, Ritter J, Marx K, Metzger ML, Lam CG. Equity in national cancer control plans in the region of the Americas. *Lancet Oncol*. 2022;23(5):e209-e217. Available from: doi: 10.1016/S1470-2045(22)00057-2.
 28. Ministerio de Salud de la República de Panamá. Guía para la detección temprana y atención oportuna de la sospecha de cáncer en niños y adolescentes. Panama City: MINSa; 2021. Available from: https://www.minsa.gob.pa/sites/default/files/programas/deteccion_temprana_y_atencion_oportuna_de_la_sospecha_del_cancer.pdf. Accessed 13 May 2022.
 29. Pan American Health Organization. Essential medicines for non-communicable diseases available through the PAHO Strategic Fund. Washington, DC: PAHO; 2021. Available from: <https://www.paho.org/en/news/1-12-2021-essential-medicines-noncommunicable-diseases-available-through-paho-strategic-fund>. Accessed 14 May 2022.
 30. World Health Organization. WHO and St. Jude to dramatically increase global access to childhood cancer medicines. Geneva: WHO; 2021. Available from: <https://www.who.int/news/item/13-12-2021-who-and-st-jude-to-dramatically-increase-global-access-to-childhood-cancer-medicines>. Accessed 13 May 2022.
 31. Pan American Health Organization. Health system strengthening for childhood cancer in the Caribbean. Washington, DC: PAHO; 2020. Available from: <https://www.paho.org/en/topics/cancer/health-system-strengthening-childhood-cancer-caribbean>. Accessed 14 May 2022.
 32. Sociedad Latinoamericana de Oncología Pediátrica. XXXII Congreso Latinoamericano de Oncología Pediátrica (SLAOP) virtual 2021. Puebla, Mexico; SLOAP; 2021. Available from: <https://slaop.org/congresos/congreso-slaop-2021/>. Accessed 13 May 2022.
 33. Centroamérica se une para lograr tratamientos de calidad en niños con cáncer. *Diario Salud Redacción*. 17 February 2022. Available from: <https://www.diariosalud.do/noticias/centroamerica-se-une-para-lograr-tratamientos-de-calidad-en-ninos-con-cancer/> Accessed 28 Dec 2022.
 34. St. Jude Children's Research Hospital. SJCARES Policies. Memphis, TN: SJCRH. Available from: <https://www.stjude.org/global/sjcares/policies.html>. Accessed 13 May 2022.
 35. St. Jude Children's Research Hospital. SJCARES PrOFILE. Memphis, TN: SJCRH. Available from: <https://www.stjude.org/global/sjcares/profile.html>. Accessed 13 May 2022.

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Alianzas para ejecutar la Iniciativa Mundial contra el Cáncer Infantil en la Región de las Américas: priorizar el fortalecimiento de los sistemas

RESUMEN

La colaboración con la OPS/OMS para priorizar el cáncer infantil en el contexto del fortalecimiento de los sistemas es fundamental para la labor del St. Jude Children's Research Hospital (SJCRH) como centro colaborador de la OMS contra el cáncer infantil. Este artículo se centra en la alianza entre el SJCRH y la OPS/OMS en la aplicación de la herramienta C5 (colaboración nacional para el control del cáncer infantil) para definir y ejecutar medidas prioritarias a nivel regional, fortalecer los programas contra el cáncer infantil del ministerio y poner en marcha la Iniciativa Mundial contra el Cáncer Infantil desde el 2018. Con C5, una herramienta elaborada por el SJCRH, la OPS/OMS y este hospital organizaron conjuntamente talleres regionales y nacionales con autoridades, personal médico y otras partes interesadas en diez países para determinar cuáles son las necesidades de los sistemas de salud y priorizar las actividades estratégicas (en América Central, República Dominicana, Haití, Brasil y Uruguay). El SJCRH proporcionó versiones y plantillas de C5 en inglés, español y portugués para actividades de análisis y priorización y trabajó con la OPS/OMS y los equipos de país para ejecutar la herramienta C5, analizar los resultados y elaborar productos. En un taller regional de ocho países, se definieron las prioridades en las iniciativas regionales y nacionales, se clasificó su valor y la voluntad política y se incorporaron encuestas específicas para cada país y diálogos con las partes interesadas. Cada país priorizó una actividad estratégica para el período 2022-2023, intercambió ideas por medio de narrativas, y difundió y aplicó los resultados para fundamentar planes de acción tanto regionales como específicos para el país. Los análisis de los talleres nacionales se han incorporado a las actividades de planificación del control del cáncer y al trabajo colaborativo a nivel regional. Entre los factores de éxito de la ejecución se encuentra involucrar a los agentes más allá de lo clínico, permitir que haya flexibilidad y centrarse en un diseño elaborado en colaboración con las partes interesadas. La ejecución conjunta de la herramienta C5 catalizó la priorización y aceleró las actividades estratégicas para mejorar las políticas, la capacidad y la calidad de la atención infantil en la Región de las Américas y brindó apoyo a los ministerios para integrar las intervenciones contra el cáncer infantil en el fortalecimiento de los sistemas.

Palabras clave

Cáncer; política de salud; planificación en salud; prioridades en salud; investigación en sistemas de salud pública; programas nacionales de salud; defensa del niño; salud del adolescente.

Parceria para implementar a Iniciativa Global para o Câncer Infantil nas Américas: priorização do fortalecimento dos sistemas

RESUMO

A colaboração com a OPAS/OMS para priorizar o câncer infantil no contexto do fortalecimento dos sistemas é fundamental para o papel do St. Jude Children's Research Hospital (SJCRH) como Centro Colaborador da OMS para o Câncer Infantil. Este artigo mostra como o SJCRH e a OPAS/OMS se associaram para aplicar a ferramenta C5 (Colaboração Nacional para Controle do Câncer Infantil), com o propósito de definir e implementar ações prioritárias regionalmente, fortalecendo programas ministeriais para o câncer na infância, durante a implementação da Iniciativa Global para o Câncer Infantil desde 2018. Com auxílio da C5, uma ferramenta desenvolvida pelo SJCRH, a OPAS/OMS e o SJCRH organizaram conjuntamente oficinas regionais/nacionais com a participação de autoridades, profissionais de saúde e outras partes interessadas em 10 países, com a finalidade de mapear as necessidades dos sistemas de saúde e priorizar atividades estratégicas (abrangendo América Central, República Dominicana, Haiti, Brasil e Uruguai). O SJCRH forneceu versões/modelos da C5 em inglês, espanhol e português para exercícios de análise/priorização e colaborou com a OPAS/OMS e as equipes dos países para implementar a C5, analisar resultados e desenvolver produtos. Em uma oficina regional com oito países, foram definidas as prioridades das iniciativas nacionais/regionais e classificados seu valor e vontade política, incorporando levantamentos nacionais e diálogos entre as partes interessadas. Cada país priorizou uma atividade estratégica para 2022-2023, trocou conhecimentos por meio da narração de histórias e disseminou e aplicou os resultados para informar planos de ação nacionais e regionais. As análises das oficinas nacionais foram incorporadas às atividades de planejamento para controle do câncer e ao trabalho conjunto no âmbito regional. Entre os fatores de êxito da implementação estão o engajamento de agentes de fora do segmento da saúde, a oferta de flexibilidade e a ênfase no planejamento conjunto com as partes interessadas. A implementação conjunta da C5 catalisou a priorização e acelerou atividades estratégicas para aprimorar as políticas, a capacidade e a qualidade da atenção às crianças nas Américas, apoiando os ministérios na integração das intervenções contra o câncer infantil como parte do fortalecimento dos sistemas.

Palavras-chave

Câncer; política de saúde; planejamento em saúde; prioridades em saúde; pesquisa em sistemas de saúde pública; programas nacionais de saúde; defesa da criança e do adolescente; saúde do adolescente.
