

GUIDE ON HOW TO

ESTABLISH KNOWLEDGE HUBS TO SUPPORT EVIDENCE-INFORMED CANCER CARE IN LOW- AND MIDDLE- INCOME COUNTRIES (LMICS)



TABLE OF CONTENTS

Purpose of the Guide	3
Introduction	7
Methodological Note	6
A Guide on How to Establish Knowledge Hubs for Cancer Care	7
1. Identifying needs and creating a purpose statement	8
2. Identifying stakeholders, resources and partners	9
3. Considering structures and models	12
4. Selecting capacity development strategies	13
5. Incorporating community engagement activities	18
6. Generating locally relevant knowledge	19
7. Translating knowledge into practice and policy	19
8. Evaluating success	21
9. Achieving sustainability	24
Putting it into practice: establishing a Knowledge Hub 25 Case Studies	27
Case Study 1. Multi-Country Network Approach (The Latin American Nurse Educator Network)	28
Case Study 2. City-Led Multisectoral Approach (Cali, Colombia)	30
Conclusions	32
Acknowledgements	33
References	34

PURPOSE OF THE GUIDE

The purpose of this guide is to provide practical guidance on processes and strategies that can be used to establish Knowledge Hubs (KHs) to support the generation, exchange and translation of evidence into cancer care practice and policy in diverse contexts of low- and middle-income countries (LMICs).

The guide offers practical, evidence-informed strategies derived from a dedicated systematic review⁽¹⁾ and complemented by stakeholder and implementation experience to design, operationalise, sustain and evaluate KHs, recognising that their purpose and configuration will vary according to local needs, priorities, capacities and resources.

The guide is intended for a range of stakeholders involved in establishing or supporting KHs, including healthcare professionals, programme implementers, ministry officials, policymakers, clinical teams, academic institutions, civil society organisations and funding bodies. It provides guidance on key considerations when establishing a KH, practical approaches and activities that can support KH functions, case studies showcasing different KH models, and guidance on evaluating KH implementation and outcomes.

Ultimately, KHs aim to strengthen local capacity to generate, adapt, share and apply evidence, support improvements in cancer care delivery, and inform policy and health system decision-making. The specific outcomes sought should be defined locally and aligned with the purpose and priorities of each KH.

INTRODUCTION

By 2050, approximately 35 million new cancer cases are projected globally, with the greatest relative increases expected in lower-HDI settings(2). Improving delivery of evidence-based cancer care is a priority in many countries. However, translating evidence into routine cancer care in LMICs remains challenging. Barriers may extend beyond resource availability and infrastructure to include governance, financing, workforce capacity and configuration, institutional processes, data systems, referral pathways and coordination across services. Evidence and interventions may also require adaptation to local health system structures, available resources and population needs before they can be effectively implemented. Knowledge Hubs (KHs) represent a promising mechanism to bridge this evidence-practice gap and support local capacity in resource-constrained settings(3,4).

The literature defines KHs as structured platforms or networks that serve as highly connected systems facilitating the generation, sharing and application of knowledge to improve the translation of evidence into policy and practice(3). Within the scope of this guide, we propose three additional dimensions: KHs should be locally anchored and responsive to locally identified needs; provide a platform for implementation and learning; and support the generation, adaptation and application of knowledge. Depending on their purpose and context, KHs can:

- identify and prioritise locally relevant knowledge and health system needs;
- generate and adapt locally relevant knowledge and evidence;
- strengthen capacities at individual, institutional and health system levels;
- facilitate knowledge exchange, peer learning and collaboration;
- support the implementation and institutionalisation of evidence-informed practices; and
- inform policy and health system decision-making.

Through these functions, a locally led KH can help connect identified health system needs with strengthened capabilities, implementation and institutionalisation, and ultimately contribute to improvements in cancer health systems.

Communities of Practice (CoPs) can form an important component of a KH, supporting sustained interaction, peer learning and the exchange of knowledge and expertise among members. However, they represent one mechanism within the broader functions of a KH, which may also encompass knowledge generation and adaptation, capacity development, implementation, and translation into policy and practice.

This guide aims to support local authorities, healthcare and academic institutions, implementation teams and their partners in establishing KHs that respond to locally identified priorities, strengthen local ownership and capabilities, and support the generation, adaptation and use of knowledge to improve cancer care.

The guide provides practical guidance across the key stages of establishing a KH, from identifying needs and engaging relevant stakeholders, to establishing governance, structures and ways of working; strengthening relevant capacities; generating and adapting knowledge; supporting implementation and institutionalisation; and evaluating, adapting and sustaining the Hub. In practice, these stages may not always be linear, and KHs should evolve as local needs, capacities and priorities change.

C/Can's role in supporting Knowledge Hubs

Within partner cities, C/Can supports the establishment and development of locally led KHs through its technical cooperation role. C/Can can act as a convenor and connector, bringing together local and international stakeholders and facilitating peer learning across cities; provide access to relevant technical expertise and evidence; and support quality and locally appropriate approaches throughout the establishment and development of the KH. Ownership, governance and long-term institutionalisation of the KH should remain locally anchored.

METHODOLOGICAL NOTE

This guide was developed using findings from a systematic review of KHs supporting evidence translation for NCD care in LMICs(1), complemented by relevant grey literature and insights from C/Can’s KHs programme. The guide was further informed through consultations with stakeholders from C/Can cities across different regions, to ensure its relevance, feasibility and applicability across diverse settings.

KHs vary considerably in their purpose, structure, scope and level of maturity. This guide therefore does not prescribe a single model but provides principles and practical options that should be adapted to the local context, existing capacities and resources. Evidence on the long-term effectiveness and sustainability of KHs remains limited, and the guidance should continue to evolve as further implementation experience and evidence become available.

Key Terms Used in this Guide on How to

Knowledge Hub (KH)	a locally-anchored, structured centre, platform or collaboration network for implementation and learning that facilitates the generation, adaptation, exchange and application of knowledge in response to locally identified needs, supporting its translation into policy and practice (adapted from (5)).
Community of Practice	a group of individuals who share a common concern or interest in a particular topic and deepen their collective knowledge and expertise through sustained, interactive engagement (adapted from (4)).
Knowledge Translation	the process of moving knowledge gained from research into real-world practice via synthesis, dissemination, exchange and application ((6))
Evidence Informed Practice	integrates the best practice research evidence with clinical judgement, individual preferences, and the context of care delivery (7)

A GUIDE ON HOW TO ESTABLISH KNOWLEDGE HUBS FOR CANCER CARE

While KHs should be adapted to their local context, their establishment can be considered as a series of interconnected stages, from defining the need and purpose and identifying and engaging relevant stakeholders, to establishing the structure and ways of working, implementing priority activities, translating knowledge into practice and policy, and evaluating, adapting and sustaining the Hub.

The sections that follow provide practical guidance across these stages. In practice, the process may not always be linear, and KHs should evolve as local needs, capacities and priorities change.

Figure 1: Overview of the overall Knowledge Hub development pathway



1. Identifying needs and creating a purpose statement

A KH can be structured and function in different ways depending on its purpose and the context in which it operates. Understanding the specific needs or gaps that the KH will meet is the first step in KH planning. Potential needs a KH could meet are:

Potential needs	Questions to ask
Support collaboration	Who are the partners or stakeholders?
Generate new evidence	What type of evidence is needed?
Develop capacity	What areas will capacity development focus on?
Reduce disparities	Which groups are facing inequity?
Disseminate knowledge	Who will receive the knowledge and how?
Support changes in practice	Who will provide and receive support to change?
Inform policy	What level of governance needs to be influenced?
Centralise knowledge	What data or resources will be held and where?

Considering these questions may help to achieve clarity about why the KH is being created and the specific needs it hopes to address.

It can also be useful to develop a purpose statement or overall goal of the KH, for example: “To improve access to equitable, quality multidisciplinary cancer care by fostering knowledge exchange and peer learning.” OR “To support collaboration to develop and implement evidence-informed care pathways and build research capacity”.



We need to know what our goal is. What are our objectives and what do we want to achieve? When we see the common goal, that’s the way we can work together.

CITY STAKEHOLDER

2. Identifying stakeholders, resources and partners

STAKEHOLDER MAPPING

Once the objectives of the KH have been established, a mapping exercise can be performed to identify potential stakeholders who will be important for achieving the KH goals. Potential stakeholders can be local, regional or national entities and include:

- Government departments such as Ministry of Health or other health authorities
- Research and academic institutions or training colleges
- Healthcare providers and professional associations
- Patient groups, civil society and community organisations
- Non-governmental organisations (NGOs) and community health networks
- Funders and philanthropic organisations

Stakeholders from other LMICs may be identified depending on the KH goals. Private sector organisations (e.g. pharmaceutical firms) or organisations from HICs may also be considered. However, conflicts-of-interest and competing agendas should be carefully examined. Diversifying partnerships with multiple entities can reduce dependency and build sustainability.



A knowledge hub encourages people not to work in silos, it brings everyone together, and there's also that potential for standardisation of care if it's done well.

CITY STAKEHOLDER

RESOURCE ASSESSMENT

Before establishing a KH, a comprehensive resource and readiness assessment is essential to identify potential implementation barriers. This process should include mapping existing infrastructure, such as internet access, technology platforms, and shared clinical resources. To systematically gauge readiness for change, a checklist can be used to evaluate the enabling policy environment, political commitment, and local leadership. Furthermore, the assessment should aim to integrate key implementation enablers, including provider buy-in, local champions, committed leadership and team building, interdisciplinary coordination, effective partnerships, assigned expert mentors, and a non-hierarchical organisational culture that balances role formalisation with flexibility.

PARTNER SELECTION

When potential partners have been identified, it can be useful to hold structured meetings to explore mutual interests, expectations and resource commitments. Present priorities and invite partners to propose support they can offer that responds to those priorities. Finding shared goals with partners is optimal, rather than allowing partners to impose external agendas that do not meet local needs. Prioritise collaborations with organisations who can contribute to LMIC capacity development, strengthen local research ecosystems, and support national ownership. Ensure that all collaborations will support, rather than direct, LMIC priorities.

FORMALISING PARTNERSHIPS

It can be useful to establish a formal partnership agreement or memorandum of understanding (MoU) with partners to clearly outline roles and expectations. When creating partnership agreements, the following should be considered:

- A clear statement of shared objectives
- A plan for leadership and governance, including shared decision-making structures (co-chairs, advisory boards, stakeholder representation)
- An outline of responsibilities for shared activities
- Processes for joint budgetary arrangements and transparent financial reporting
- Language and dissemination commitments (local languages, accessible formats)
- Capacity development deliverables and timelines
- Data ownership, access and publication agreements
- Exit and transition clauses to avoid sudden loss of partner support



It's important that the system or structure is institutionalised. You need a system or structure, otherwise over time it won't work anymore. There needs to be a leadership structure and responsibilities established. But the right people need to be involved so that everyone has a voice, so that all members can contribute to it.

CITY STAKEHOLDER

Stakeholder and Resource Readiness Checklist

Before moving forward, consider whether you have:

- Defined the KH's objectives and priority needs
- Identified relevant local, regional and national stakeholders
- Included patient, community and civil society perspectives
- Mapped existing infrastructure, resources and relevant capacities
- Considered the enabling policy environment and institutional readiness
- Identified local leadership, champions and potential implementation barriers
- Identified potential partners based on locally defined priorities
- Clarified partner roles, expectations and resource commitments
- Agreed appropriate governance and decision-making arrangements
- Considered data ownership, access and dissemination arrangements
- Considered sustainability and transition arrangements from the outset

3. Considering structures and models

Knowledge Hubs can vary in their organisational structure and in the approaches they use to facilitate knowledge exchange, learning and capacity development. These approaches are not necessarily mutually exclusive and may be combined within the same KH depending on its purpose, context and available resources. The following examples illustrate different organisational structures and approaches to learning and knowledge exchange that have been used within KHs:

- **Hub and spoke:** this model of knowledge exchange and capacity development utilises a central, well-resourced 'hub' that provides specialised support and training to multiple 'spokes', which may be less resourced organisations or entities
- **Learning-by-doing:** this model focuses on active participation and hands-on learning via real-world situations, rather than formal instruction
- **Train-the-trainer:** this model focuses on intensive instruction of selected participants in both content and teaching techniques, so that they can train others in their local organisation or network
- **Peer-to-peer:** this model of knowledge exchange links peers in similar roles who can provide direct feedback and support of one another in their roles
- **All teach, all learn:** this model uses a flat hierarchy structure where all members of a team, regardless of seniority, contribute to both instructing and learning.



Some of these ideas come up, you start and there's momentum, and then before you know it, you have either lost the momentum or the people involved are not as committed as in the beginning. When you have a structure it improves the purpose and the commitment. It allows you to operationalise the knowledge hub and also sustain it.

CITY STAKEHOLDER

4. Selecting capacity development strategies

Capacity development strategies should be selected based on the change the KH is intended to support and an assessment of competency and capability gaps at individual, institutional and health-system levels. This should include consideration of the conditions needed to apply, embed and measure new capabilities, so that strategies form an interconnected package rather than a series of stand-alone training opportunities. Capacity development is recognised as a vital component of enhancing the translation of evidence into practice and policy(8). Eight areas commonly used to strengthen research capacity and best-evidence healthcare delivery in KHs include:

- conducting workshops, meetings and conferences
- conducting knowledge and skills training and outreach
- forming multidisciplinary learning collaboratives
- developing academic partnerships
- providing ongoing training and consultation
- developing and sharing local knowledge and resources
- providing exchanges, shadowing and mentoring; and
- centralising technical assistance.



A knowledge hub is often centered around how we can build multidisciplinary collaboration and continuous professional development. As much as you are promoting, evidence-based care, you are also trying to make sure teams can work together.

Professionally, a knowledge hub can support multidisciplinary team meetings, journal clubs, case discussions, and continuing medical education. They can facilitate our clinical expertise, improve our knowledge of guidelines, provide opportunities to discuss complex cases, and help us translate research findings into routine practice. They can also strengthen mentorship and decision making.

CITY STAKEHOLDER

These strategies can strengthen capacities at different and interconnected levels.

- At the **micro** level, capacity development can strengthen the knowledge, skills and competencies of individual professionals.
- At the **meso** level, it can strengthen organisational processes, multidisciplinary working, governance, data use, research and learning systems, and service organisation.
- At the **macro** level, it can strengthen coordination across institutions, evidence-informed policy and planning, standards and guidelines, and mechanisms supporting system-wide implementation.

KH capacity development strategies may operate across one or more of these levels. Individual capacity development is more likely to contribute to sustained change when new capabilities are embedded within organisational processes and supported by the wider health system.

Capacity development strategies, and examples of how these can be operationalised across these levels, are listed in the following table. Not all strategies need to be covered, but considering these options may identify how different strategies could meet different stakeholder needs. Potential strategies will need to be considered in the context of available resources, funding, infrastructure, and member preferences. Conducting a survey of member preferences for capacity development and creating a map of available resources may assist with these decisions.

Capacity development strategy		Example of the strategy's operationalisation
Conduct workshops, meetings and conferences		
Host annual symposiums or conferences	[Meso/Macro]	Invite attendees to submit abstracts and present on local initiatives and research
Host short expert presentations	[Micro]	Have expert presentations and case studies developed by local cancer care providers, to exchange knowledge
Host regional meetings and national level meetings	[Macro]	Arrange annual meetings with policy makers, healthcare professionals, and other stakeholders to facilitate networking and discuss issues of importance
Offer online professional development sessions	[Micro]	Create one-hour online professional development presentations on specific topics such as chemotherapy dosage or palliative care
Conduct topic specific workshops in-person or online	[Micro/Meso]	Organise one-day implementation science workshops, and if online use interactive methods such as Mural, Kahoot

Capacity development strategy		Example of the strategy's operationalisation
Conduct knowledge and skills training and outreach		
Offer formal instruction short courses with expert teachers	[Micro]	Offer formal short-term courses (4-8 weeks) with expert instruction, knowledge assessment, completion certificates
Support train-the-trainer models of knowledge and skills training	[Micro/Meso]	Train visiting staff from other institutions, who can then train staff at their own institution
Offer self-directed or self-paced learning modules	[Micro]	Create online courses hosted on digital platforms without teachers, but with self-assessment and knowledge testing
Create peer-to-peer learning platforms	[Micro/Meso]	Set up knowledge exchange digital platforms where peers can ask and answer each other's questions
Provide weekly lectures from senior staff	[Micro]	Have a standing 1-2 hour lecture each week by invited experts or senior staff, record for those who can't attend and keep on a digital platform for future access
Form collaboratives and facilitate problem solving		
Form groups to develop treatment protocols	[Meso/Macro]	Bring together teams from different institutions to develop treatment protocols based on clinical benefit and funding tiers
Host multidisciplinary team meetings	[Meso]	Support creation of multidisciplinary teams within and across institutions to discuss cases and treatment protocols
Host online problem-solving sessions	[Meso]	Host monthly online calls between institutions to discuss challenges and propose innovative solutions
Form multi-sectoral groups to design cancer care pathways	[Meso/Macro]	Bring together multi-sector partners and stakeholders to address contextual barriers to accessing treatment and care
Form special interest working groups	[Meso/Macro]	Form special interest working groups to develop solutions to specific issues, and develop guidelines or tools
Form intervention review committees	[Meso/Macro]	Form committees to review proposed research projects or interventions and provide structured feedback and suggestions prior to implementation
Form international collaboratives	[Macro]	Bring together national and international experts online via virtual sessions to problem-solve complex cases

Capacity development strategy		Example of the strategy's operationalisation
Develop academic partnerships		
Formalise collaboration between treatment centres and universities	[Meso]	Create formal collaborations with MOUs between hospitals, colleges, universities and other institutions
Offer formal degree and certificate programmes	[Micro]	Create opportunities for fee-reduced post-graduate certificates through academic institutions
Offer fellowship or post-doctoral training opportunities	[Micro]	Create programmes where early career health professionals can access a research fellowship in an academic institution
Offer access to academic infrastructure	[Meso]	Allow KH members access to university infrastructure such as online journals, online meeting software, and lecture theatres
Embed local context curriculum into academic courses	[Meso/Macro]	Work with local universities to ensure healthcare training and curricula is matched to local needs and contexts
Support co-development of academic courses	[Meso/Macro]	Encourage co-development of academic courses with multisectoral stakeholders
Provide ongoing training and consultation		
Establish a real-time advice peer network	[Micro/Meso]	Establish peer networks to help healthcare providers co-manage patients using real-time calls to discuss cases and make treatment recommendations
Establish individual and group consultation sessions	[Micro]	Set up weekly or monthly consultation sessions with senior staff to discuss cases and receive feedback on clinical decision making
Develop and share local knowledge and resources		
Develop local training manuals	[Meso]	Develop training manuals appropriate for local context to use with new health and research team members
Disseminate updates via briefs, presentations and publications	[Micro/Meso]	Share knowledge with different stakeholder groups via written updates, publications or presentations
Develop resources for use by local stakeholders	[Meso/Macro]	Develop resources such as survey instruments, planning and monitoring tools, decision aids, and standard operating procedures that can be used by local stakeholders
Support members to join national and international committees	[Macro]	Help to nominate and develop the capacity of KH members to serve on committees to share local findings

Capacity development strategy		Example of the strategy's operationalisation
Provide exchanges, shadowing and mentoring		
Facilitate clinical exchange programmes and secondments	[Micro/Meso]	Create formal arrangements with other institutions for visiting clinicians via exchange programmes or secondments
Facilitate mentoring by senior staff	[Micro]	Create formal mentor-mentee opportunities for early career professionals, and other KH stakeholders
Offer training days and shadowing	[Micro]	Arrange days when staff can 'shadow' equivalent staff members in partner organisations to enhance knowledge exchange and peer learning
Centralise technical assistance		
Adapt existing online infrastructure to serve as a resource repository	[Meso/Macro]	Utilise existing government, hospital, or academic institution websites to serve as a resource repository for cancer control plans, guidelines, and protocols
Appoint paid or volunteer research assistants or data managers	[Meso]	Look to appoint paid or volunteer research assistants or data managers who can maintain online resources and data
Use online sharing platforms to centralise resources	[Meso]	Set up shared resource folder using software such as Google Drive, SharePoint or Microsoft Teams
Connect with regional and global teams with technical expertise	[Macro]	Connect the KH with other regional and global technology experts to maintain online databases
Establish anchor centres	[Macro]	Use well-resourced institutions as anchor centres that can provide support and expertise to other facilities in the region.
Appoint centralized educators	[Meso/Macro]	Fund one or two centralised educators who can provide operational support and mentorship for staff across multiple sites

5. Incorporating community engagement activities

Many KHs that aim to improve cancer treatment and care in LMICs are likely to include healthcare professionals, policymakers, and researchers. However, evidence has demonstrated that community engagement and including patients in decision-making regarding health interventions is essential to ensure equity and relevance(9–11).

Community and people with lived experience engagement should therefore be considered a cross-cutting principle throughout the development and operation of a KH, rather than a discrete activity. Their perspectives can inform its design and governance, priority-setting and activities, and ongoing evaluation and adaptation.

When planning how the KH will operate, consider how patient groups and civil society organisations might contribute their expertise. For example, patients and community members can:

- identify unmet needs from the lived experience perspective
- contribute to advisory groups or leadership teams
- co-create protocols and guidelines
- contribute to the policy and practice decision-making processes; and
- assist with dissemination of cancer care knowledge beyond hospitals and clinics.

Capacity development opportunities can also be offered to people with lived experience as members of the KH, via organisational partnerships, or provided directly to members of the community.



The purpose of the knowledge hub is building the community to be strong. This requires continually engaging with stakeholders, not a one off event.

CITY STAKEHOLDER

6. Generating locally relevant knowledge

Depending on the needs and purpose identified for the KH, generating locally relevant knowledge and evidence may be one of its core functions. KHs can bring together stakeholders to identify and prioritise knowledge gaps, develop locally relevant research questions, undertake collaborative or implementation research, and analyse and make better use of existing local data and evidence.

Knowledge generation activities should respond to locally identified priorities and, where possible, build on existing research institutions, capacities and data systems. Partnerships with academic or technical institutions can provide additional methodological support while maintaining local ownership and leadership of the research agenda. Where KHs are connected through broader learning networks, evidence generated through local implementation can also be synthesised across cities and translated into shared methods and technical products. These can then be adapted in new settings, generating further implementation learning and continuously refining the collective knowledge base.

7. Translating knowledge into practice and policy

Knowledge translation within a KH extends beyond the dissemination of evidence to its adaptation and application in practice and policy. KHs in LMICs have reported using a range of integration and implementation strategies(8) to support this process, including approaches that facilitate the contextual adaptation, implementation and, where appropriate, institutionalisation of evidence-informed practices.

From evidence to policy: the INDEPTH approach

INDEPTH describes five steps used to support translation of evidence into NCD policy and practice:

1. Use existing information and surveillance data to demonstrate NCD mortality.
2. Collect additional data to demonstrate changes in NCD burden and determinants.
3. Evaluate existing health system interventions.
4. Integrate surveillance, prevention and control into routine practice.
5. Link policymakers with participating sites to support the development of NCD policies, programmes and guidelines.(12)

KHs have also used a range of practical strategies to support the translation of knowledge into practice and policy, including:

- developing standardised care protocols and context-informed guidelines
- using planning and needs assessment tools
- embedding monitoring and evaluation processes, such as audit and feedback, and performance metrics
- incorporating software to assist with data management and accessing technical support from partners
- adapting the roles and responsibilities of clinical staff
- modifying evidence-based care pathways, resources and tools to be more context and culturally relevant
- incorporating more multidisciplinary and multi-site approaches to care
- identifying champions who are passionate and committed to implementing the changes the KH seeks to achieve
- reducing overlap of the same research occurring by promoting knowledge sharing via online platforms



When we want to recommend something for the patient, we have to contextualise it and decide on the optimal treatment we can give them based on their level of financing. But this varies from one hospital to another, even within the city, not to mention the whole country, because we have different levels of service delivery.

We could develop a knowledge translation platform but it's about who can take on this extra work and who is going to be responsible for updating it.

Knowledge translation has to be driven by people who are passionate and who are committed to the cause, the people who will champion it.

CITY STAKEHOLDER

Examples of context-informed guidelines:

1. AMPATH-Oncology: Developed chemotherapy regimens to balance limited budgets and drug availability against the need to optimise benefits.(13)
2. RbCoLab (Retinoblastoma Collaborative Laboratory): Established consensus on pathology standard operating procedures, which led to the development of pathology guidelines within the Ministry of Health endorsed 'Kenyan Retinoblastoma Best Practice Guidelines'.(14)
3. LANEN (Latin American Nurse Educator Network): Provided nurse educators with standardised curriculum materials to create programmes to teach best practice care, which could be tailored according to the time allotted for sub-specialities, while also supporting these educators to contribute to the development and dissemination of evidence-based nursing practice guidelines.(15)

8. Evaluating success

From the initial establishment of the KH, procedures and timelines for monitoring and evaluation should be defined and aligned with its purpose and objectives. Evaluation should consider not only the activities and immediate outputs of the KH, but also how these contribute to strengthened capabilities, implementation and institutionalisation, and ultimately to health system and patient outcomes. A useful way to conceptualise this progression is through a results chain:

- **Outputs:** the immediate products and results of KH activities, such as stakeholders engaged, training delivered, evidence generated, resources developed or partnerships established.
- **Capabilities:** changes in the knowledge, skills, relationships and organisational or system capabilities needed to generate, adapt and use evidence.
- **Implementation and institutionalisation:** evidence-informed practices, processes, guidelines or policies that are adopted and, where appropriate, embedded within routine organisational or health system operations.
- **System and patient outcomes:** longer-term changes in areas such as quality and coordination of care, access, equity, health system performance, eventually contributing to patient outcomes.

The relationship between KH activities and downstream outcomes is influenced by multiple contextual factors. Evaluation should therefore examine the contribution of the KH to observed changes, rather than assume direct attribution, and consider the factors that may have enabled or constrained progress along the results chain.

Examples of Key Performance Indicators (KPIs) across the KH results chain may include:

OUTPUTS

- Attendance and engagement data: average attendance across sessions(16)
- Digital platform views and analytics: number of views on specific e-learning hubs(16)
- Time required for implementation: months required to complete initial activities, receive training, and pilot the intervention(17)

CAPABILITIES

- Changes in knowledge: measured knowledge gains in problem analysis, intervention development, and sustainability(18)

IMPLEMENTATION AND INSTITUTIONALISATION

- Self-reported practice change: percentage of participants making actual practice changes based on course learnings, measured up to 1 year later(19)
- Implementation of standard operating procedures: frequency/number of trained technicians actively applying new protocols in their routine work(14)
- Programme scale-up and expansion: number of hospitals successfully adopting the evidence-based practice over time(17)

SYSTEM AND PATIENT OUTCOMES

- Quality of intervention use: maintaining high-quality use of early warning systems past the initial post-implementation phase(17)

Such evidence would be extremely valuable for assisting KHs to:

- ensure they are meeting their purpose
- identify the data needed to assess progress towards their goals
- monitor ongoing adaptation and change
- support learning and decision making
- inform improvements to structures and strategies
- advocate for longer-term investments in the KH
- inform others about strategies that could be replicated in future KHs

Appropriate monitoring and evaluation approaches can help structure this process and support ongoing learning, adaptation and decision-making (20). Evaluation should incorporate diverse stakeholder perspectives and consider both short-term and long-term changes across the results chain.



It is important to track the implementation of the knowledge hub with its objectives, to check that they are being achieved. This may be one of the ways to motivate hub participants.

CITY STAKEHOLDER

9. Achieving sustainability

Sustainability of a KH extends beyond the continuation of individual activities or external funding. It depends on the extent to which its core functions are locally owned and embedded within existing institutions and systems, including through appropriate governance, defined roles and responsibilities, institutional processes and access to sustainable resources.

9.1. EQUITABLE LEADERSHIP STRUCTURES

While long-term evaluations of KHs are limited(1), a strong leadership structure has been identified as an essential component of driving the hub towards achieving its goals. However, challenges can arise if hierarchies are established and there are unequal power dynamics. Equitable leadership structures that facilitate diverse stakeholder voices, clear roles, and transparent communication have been identified as facilitators of team cohesion.



Agreeing on a leadership structure and appointment of a leadership group is very important for the long-term sustainability of a KH. Clear roles and responsibilities are critical, as without people driving the KH it will struggle to exist.

Succession planning is also important to ensure that when a leaders change roles or leaves the KH there is another member who has the knowledge and skills to replace them.

CITY STAKEHOLDER

9.2. MEMBER OPPORTUNITIES FOR NETWORKING AND SKILL DEVELOPMENT

Continued stakeholder engagement is necessary to achieve both the short and long-term outcomes of a KH. Evidence from the literature has reported that alongside broader aims of improving delivery of evidence-based care, KH members value opportunities for personal development via team building, multidisciplinary collaboration, network building, and mentoring. Identifying and building opportunities for individual capacity development into the structure of the KH, alongside organisational capacity building, may encourage sustained membership over time.



The shared goal of the KH is what will bring people together initially, but it may not be enough to keep people engaged over time. Personal fulfillment is also necessary.

Providing opportunities for leadership, capacity development, networking, and career development will help not only to achieve the goals of the KH, but also to meet the individual needs of its members.

CITY STAKEHOLDER

9.3. FINANCIAL SUSTAINABILITY

In LMICs it is often the sustainability of available resources that can allow KHs to achieve their long-term goals. In order to support financial sustainability of the KH, the following strategies should be considered:

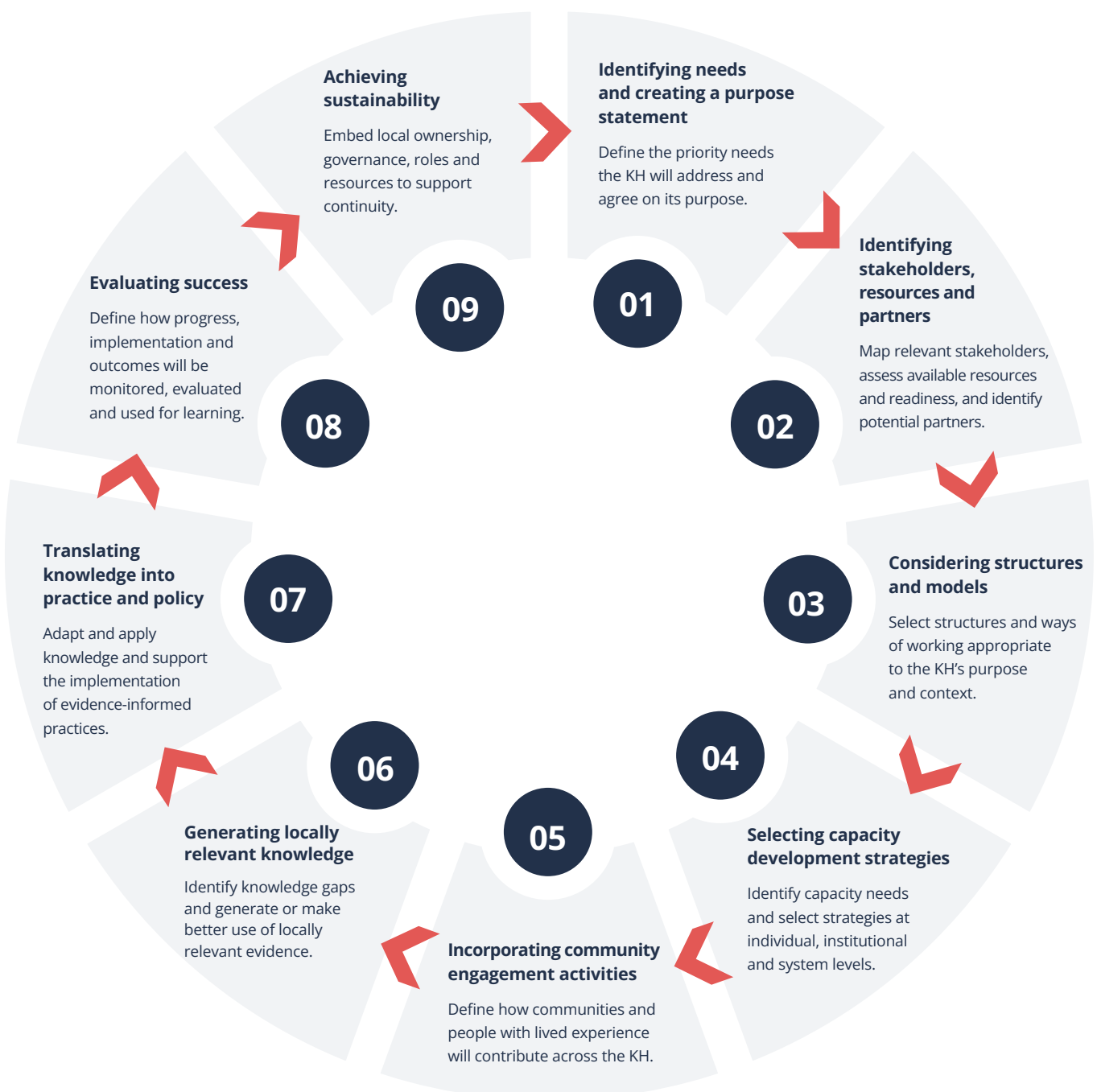
- Engage stakeholder groups early to identify income sources, funding timelines and resource gaps
- Include long-term financial sustainability as a core element of the KH strategic plan
- Prioritise locally sourced funding and ownership where possible
- Partner with existing organisations to benefit from in-kind support and to share infrastructure
- Diversify income streams as a safety net to minimise risk and protect against funding cessation
- If externally funded, plan a timeline to transition to local funding sources
- Create a leadership role with the responsibility of monitoring and addressing financial sustainability

Examples of approaches to support financial sustainability

- AMPATH-Oncology: Shares clinical infrastructure and personnel costs between the AMPATH-Oncology programme and USAID-AMPATH programme e.g. shared clinical and administrative staff, pharmacy(13)
- CEBHA+: Leverages the physical proximity of its sites to co-share administrative, financial, and human resources(6)
- ARGO: Leverages research infrastructure from existing communicable disease consortia to save time on building new infrastructure(21–23)
- PC-PAICE/EQuIP: Supports leaders to continue to participate as volunteer quality improvement coaches for the next cohorts of trainees coming through(18,24–26)
- Project ECHO: Utilizes low-cost tele-mentoring to remove in-person training and travel barriers while securing free access to necessary software and data management tools through partner agreements(27)

PUTTING IT INTO PRACTICE: ESTABLISHING A KNOWLEDGE HUB

The following pathway summarises the key stages and practical considerations described throughout this guide. While presented sequentially for clarity, these stages are interconnected rather than strictly linear, and should be adapted as local needs, capacities and priorities evolve.



Case Studies

The following case studies illustrate how different approaches can operationalise key elements of the Knowledge Hub establishment process across diverse contexts.

Case Study 1. Multi-Country Network Approach (The Latin American Nurse Educator Network)

1. Identifying needs and creating a purpose statement

Limited access to subspecialty paediatric oncology nursing education across Latin America led to the establishment of the Latin American Center for Pediatric Oncology Nursing Education in Santiago, Chile, in 2007. Using an educate-the-educator model, experienced nurses were trained to return to their hospitals as nurse educators. As demand grew and one-to-one twinning became difficult to sustain, the Latin American Nurse Educator Network (LANEN) was established in 2015 to support regional capacity development, mentoring, collaborative education and quality improvement.

2. Identifying stakeholders, resources and partners

The model brought together the Center, St. Jude Global Nursing, participating hospitals and trained nurse educators across Latin America and the Caribbean. Participating hospitals were required to establish dedicated full- or part-time nurse-educator roles, including protected education time, before nurses attended the Center, linking individual training with institutional commitment.

3. Considering structures and models

As the network expanded, the model evolved from individual twinning to a regional network. Two part-time regional nurse-education coordinators, themselves experienced Center graduates, provided mentoring and operational support, identified regional needs, supported collaborative programmes and reviewed activity reports.

4. Selecting capacity development strategies

Formal training was complemented by one-to-one mentoring, monthly online professional development and network meetings, peer problem-solving, annual in-person meetings, and support for institutional education and quality improvement initiatives. Together, these provided continued opportunities to apply new skills and address implementation challenges.

7. Translating knowledge into practice and policy

Nurse educators established orientation and continuing education programmes, implemented quality improvement initiatives, and contributed to evidence-based nursing guidelines. The network also developed a tiered orientation programme adaptable to different levels of protected training time and a multi-site initiative to strengthen patient identification practices.

8. Evaluating success

By the time reported in the study, 49 nurses from 32 hospitals in 15 countries had been trained at the Center, of whom 43 had assumed dedicated educator roles. LANEN had 32 active members from 27 hospitals in 14 countries, collectively overseeing education for more than 1,500 nurses. By 2019, 20 sites had implemented tiered orientation programmes, while sites participating for at least one year in the patient identification initiative reported improvements in identification and verification practices.

9. Achieving sustainability

Dedicated institutional educator roles, regional leadership through experienced graduates, decentralised mentoring and regular peer-learning mechanisms supported continuity and scale. The network continued to receive technical and financial support from St. Jude Global, combining institutionalisation within participating hospitals with an external technical partnership.

Note: This case study is based on Sullivan et al. (2021), identified through the systematic review informing this guide (15).

Case Study 2. City-Led Multisectoral Approach (Cali, Colombia)

The City Engagement Process Framework (CEPF), developed by City Cancer Challenge (C/Can), provides a structured approach for local stakeholders to assess, plan and implement cancer care solutions adapted to local priorities. Cali, Colombia, was the first city to implement the approach.

1. Identifying needs and creating a purpose statement

A city-wide needs assessment examined cancer care capacity and priority gaps. Local experts reviewed the findings through topic-specific working groups, resulting in a situation analysis and City Action Plan. Fifteen priority objectives were developed into 10 projects across areas including pathology, nuclear medicine, radiotherapy, palliative care, cancer registration and blood donation.

2. Identifying stakeholders, resources and partners

An 18-member City Executive Committee brought together national, regional and local government, public and private providers, academia, the cancer registry, health insurers and a patient organisation. The needs assessment involved 21 cancer care institutions, more than 180 professionals and advocates, and 188 patients.

3. Considering structures and models

The City Executive Committee provided strategic oversight, supported by a multidisciplinary Technical Committee and topic-specific working groups. Local interinstitutional and cross-disciplinary project teams translated identified priorities into projects with defined scopes, deliverables, methodologies and indicators.

4. Selecting capacity development strategies

Capacity development was integrated into implementation through expert consultations, workshops, peer exchange, scientific visits, knowledge-sharing and consensus-building. Local teams led the development of context-adapted solutions, complemented where needed by regional and international technical expertise.

5. Incorporating community engagement activities

Patient perspectives were incorporated through representation of a patient organisation on the City Executive Committee and participation of 188 patients in the needs assessment.

7. Translating knowledge into practice and policy

Locally developed solutions included breast and cervical cancer treatment guidelines; radiotherapy and nuclear medicine quality-assurance programmes; institutional cancer registries and a cross-institutional Cali Cancer Observatory; and regular immunohaematology training. Identified gaps in oncology nursing also contributed to Ministry of Education approval of an oncology nursing curriculum implemented at the local public university.

8. Evaluating success

Project plans incorporated locally defined indicators and targets. Reported early outputs and catalytic effects included two city-wide blood donation campaigns, reactivation of the HPV vaccination programme, political commitment towards a dedicated oncology building at the main public teaching hospital, and establishment of a multi-institutional cancer advisory board that subsequently developed a Departmental Cancer Control Plan.

9. Achieving sustainability

In 2019, C/Can established an agreement with ProPacífico as a local sustainability partner to continue oversight, implementation, monitoring and evaluation of ongoing projects, providing a mechanism for transitioning coordination and accountability towards locally anchored structures.

Note: This case study is based primarily on the implementation experience reported by Frech et al. (2021) (28).

CONCLUSIONS

A functioning Knowledge Hub enables local stakeholders to identify priority cancer-system problems, generate or adapt relevant knowledge, and translate that knowledge into sustained improvements in practice, policy and service delivery. The number of meetings, courses, resources or participating organisations describes the Hub's activity, but does not by itself demonstrate success.

Success becomes visible when professional competencies are strengthened; institutional roles and responsibilities are established; new practices are incorporated into routine operations; decision-making uses relevant evidence; and local organisations can continue to learn and adapt. Evaluation should therefore examine the progression from Hub activities to individual, institutional and system capabilities; from those capabilities to implementation; and from implementation to improvements in quality, coordination, equity and patient care.

Sustainability requires more than continued external funding. It depends on a locally owned mandate, accountable governance, embedded roles and routines, appropriate data and learning systems, succession arrangements, and access to domestic or diversified resources. External partners can support the Hub's development, but long-term success is achieved when local institutions can maintain and evolve its functions without continued dependence on external support.

As KHs mature, they can extend their value beyond their original setting. By documenting implementation experience, sharing tested solutions and providing structured peer support, a city or institution can become a regional anchor for others facing comparable challenges. This multiplier effect connects locally led implementation with wider learning while preserving the need to adapt every solution to its own context.

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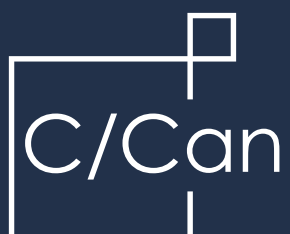
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