

FOOD INFRASTRUCTURES FOR PLANETARY HEALTH

Why • The Case for Change
What • The Tools for Change
How • Strategies and Partnerships

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 **CASCADDES**


Nourish

 GreenCare





NAVIGATION



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INTRODUCTION

This playbook aims to support informed decision-making related to **food infrastructures** for **planetary health** throughout the planning, design, construction and ongoing operation of Canadian healthcare facilities.

Food services are often considered ancillary within healthcare service delivery, but they are increasingly emerging as a priority area. Food is not only critical to provide adequate nutrition for healing, but it can further improve the patient experience, reduce greenhouse gas emissions and other negative environmental impacts, as well as foster valuable relationships with communities and food providers.

This playbook was conceived by the [Vancouver Team of the Nourish Anchor Cohort](#). To ensure it is relevant, accessible and impactful, the content was created collaboratively using an iterative co-design process with the input of over [60 participants](#) from across the healthcare system. We are especially grateful to colleagues from [Nourish](#), and [GreenCare](#).



PLANETARY HEALTH recognizes that human health depends on a healthy planet (i.e. healthy air, water, soil, climate, biodiversity, etc.) and on stewarding healthy intergenerational relationships with them (i.e. relationships that are just, equitable, respectful, reciprocal and caring).

Suggested citation

Cutbill J, Lalande A, Paczka Giorgi L, Devitt K, Janousek S. Food Infrastructure for Planetary Health version 1.1 [Internet]. (2024) CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis). [Cited DATE]. Available from: <https://cascadescanada.ca/resources/food-infrastructures>.





HOW TO USE THIS PLAYBOOK

This Playbook is structured to provide an overview of:

- WHY food infrastructures are important for health
- WHAT needs to be considered to leverage key opportunities
- Key strategies for HOW needed shifts can be achieved

This playbook provides information, resources and guiding questions for **diverse actors** within the healthcare system key to enabling change, including: leaders; food services, facilities, sustainability, and procurement staff; clinicians and public health professionals (including: dietitians, nurses, physicians, environmental health officers, etc.)

We especially recommend this Playbook for:

Executive and Operational Leaders

to provide an essential overview of the value of food as medicine and how investing in it directly supports **core health mandates and imperatives**.

Food Service, Facilities, Sustainability and Procurement teams

to help understand critical interdependencies and key intervention points for making integrated changes required, including **key action areas** (i.e. spaces and scopes), key points in decision-making processes (i.e. within **facilities delivery lifecycle stages**) and **strategies** for how.

Clinicians and Public Health Professionals

to support advocacy and collaborative initiatives to strengthen patient and planetary health.

Inspiring examples are interspersed as **"Experience Spotlights"**. Given the place-based nature of food and healthcare systems, these are not prescriptive recipes, but rather snapshots of innovative examples of overcoming challenges and some ingredients making them possible.



ACCOUNTABILITY AND ACTION TOWARDS DECOLONIZING

The lead authors of this Playbook are settlers of mixed European descent, working with/in the unceded territories of the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish) and səlilwətał (Tseil-Waututh) Nations - lands and waters they have stewarded to support the health of their communities and all their relations since time immemorial. We are working to actively decolonize our ways of knowing and doing; yet, we acknowledge that this work still remains largely rooted in a Western worldview.

We further acknowledge that the process of colonization intentionally disrupted these land-based relationships and continues to do so today. Canadian healthcare systems occupy the traditional territories of more than 630 Indigenous communities. Health inequities experienced by First Nations, Inuit and Métis and other marginalized communities are a result of harmful narratives, policies and practices perpetuated since European invasion.

As practitioners within these systems, the lead authors recognize that we each have individual and collective responsibilities to dismantle these harmful narratives, policies and practices, and to advance reconciliation using the [United Nation's Declaration on the Rights of Indigenous Peoples](#) the [Truth and Reconciliation Commission of Canada Calls to Action](#), and the [Principles for Change and Calls to Justice of the Final Report on the National Inquiry into Missing and Murdered Indigenous Women and Girls](#) as a minimum framework as a minimum framework. This includes:

- Respecting and upholding Indigenous rights, including self-governance and self-determination
- Establishing and maintaining ongoing respectful relationships that nurture intergenerational health equity - as defined and evaluated through [Indigenous knowledge systems](#) (fostering “ethical space”)
- Economic reconciliation, including working towards landback

We are extremely grateful to all those who have shared their expertise with us.

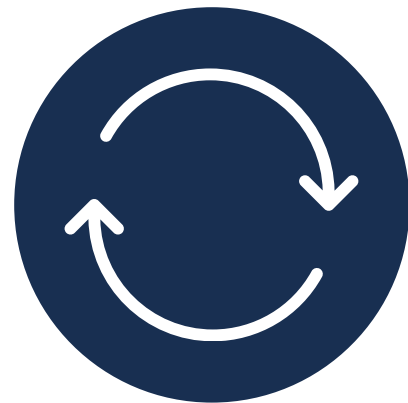
We look forward to the transformative change we can make together when we all invest in working alongside Indigenous communities in good ways, and we are excited to share

-- Jennifer Cutbill, Annie Lalonde, and Sonja Janousek





PLAYBOOK STRUCTURE



WHY

The Case for Change

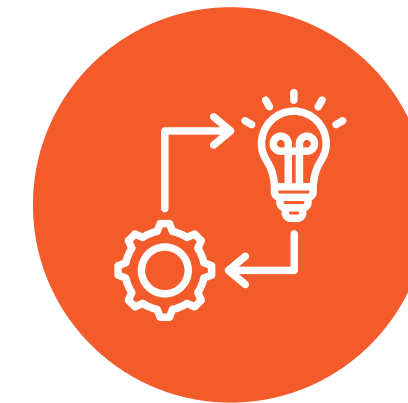
An introduction to the issues being addressed in the playbook



WHAT

The Tools for Change

A structured presentation of opportunities for action, impact areas and resources to support change



HOW

Strategies and Partnerships

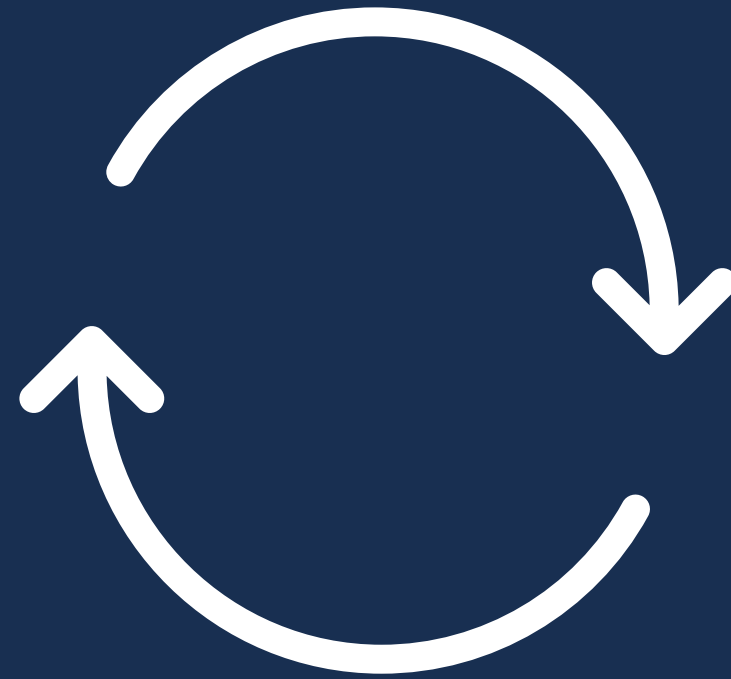
An outline of strategies for enabling and sustaining change





WHY

The Case for Change



- 1 Planetary Health and Food
- 2 Healthcare Mandates and Responsibilities
- 3 Healthcare Action on Reconciliation





Planetary Health and Food



“We are in an era of climate emergency, which has powerful health implications, requiring the healthcare sector to proactively integrate upstream approaches and climate action to their mission and mandate” (1).

Planetary health recognizes that human health depends on a healthy planet (i.e. healthy air, water, soil, climate, biodiversity, etc.) and on stewarding healthy intergenerational relationships across these living systems (i.e. relationships that are just, equitable, respectful, reciprocal and caring) (2).

The growing climate crisis threatens planetary health and health equity (3), now and across generations. This has direct impacts on the health of food systems and the availability and affordability of healthy food - with food security consequences disproportionately impacting equity-denied groups (4, 5). Yet, at the same time, Canada’s health sector emissions are one of the highest per capita in the world. In contrast, many countries, such as France and Cypress, have lower-emitting health systems with equivalent or even higher life expectancy than Canada (6).

Ecological degradation and social inequity are intersectional issues rooted in colonialism, capitalism, anthropocentrism and related supremacist logics. As such, determinants of planetary health recognize that social and ecological determinants are interdependent (5). Indigenous knowledge systems further deepen and enrich these understandings by providing essential wisdom for regenerative transformation (7).

RESOURCES

- [Lancet Countdown on Health and Climate Change: Imperative for a Health-Centred Response in a World Facing Irreversible Harms.](#) Romanello, et al. (2023)
- [Exiting the Anthropocene: Achieving Personal and Planetary Health in the 21st Century,](#) Prescott, et al. (2022)
- [The Determinants of Planetary Health,](#) Redvers (2021)
- [Determinants of Planetary Health: an Indigenous Consensus Perspective,](#) Redvers et al. (2022)
- [On the Possibility of Decolonizing Planetary Health,](#) Atleo, et al. (2022)
- [On safeguarding Human Health in the Anthropocene,](#) Whitmee, et al. (2015)
- [From Planetary Health to Planetary Healthcare,](#) MacNeill, et al. (2023)
- [First Nations Perspective on Health and Wellness,](#) First Nations Health Authority (BC)
- [A Sustainable Harvest: Weathering the Impacts of Climate Change on BC’s Food Supply,](#) PHSA (BC)
- [Protecting Health in a Climate Emergency,](#) VCH Chief Medical Officer (BC, 2024)





HEALTHY FOOD SYSTEMS



“Food is the single strongest lever to optimize human health and environmental sustainability” (8, p.5). Long known in Indigenous Knowledge Systems across and beyond Turtle Island, food is medicine (9); we ignore this at our collective peril.

Global industrial food systems are threatening people and the planet:

- Responsible for approximately a third of global greenhouse gas (GHG) emissions and other ecological impacts, e.g. deforestation, water scarcity, toxins, and loss of biodiversity (10, 11, 12);
- Business as usual GHG emissions from food systems alone, will make it impossible to limit warming to 1.5°C (13).

Food is not just what is on our plates, it is part of a system of living relations through which nutrients are continually cycled; requiring healthy soils, waters and practices. Healthy food and **food systems** are vital to planetary health, health equity, and individual, community, and quality care.

Health systems require appropriate supporting infrastructures. **Food infrastructures** are a critical part of putting food **levers** into practice.

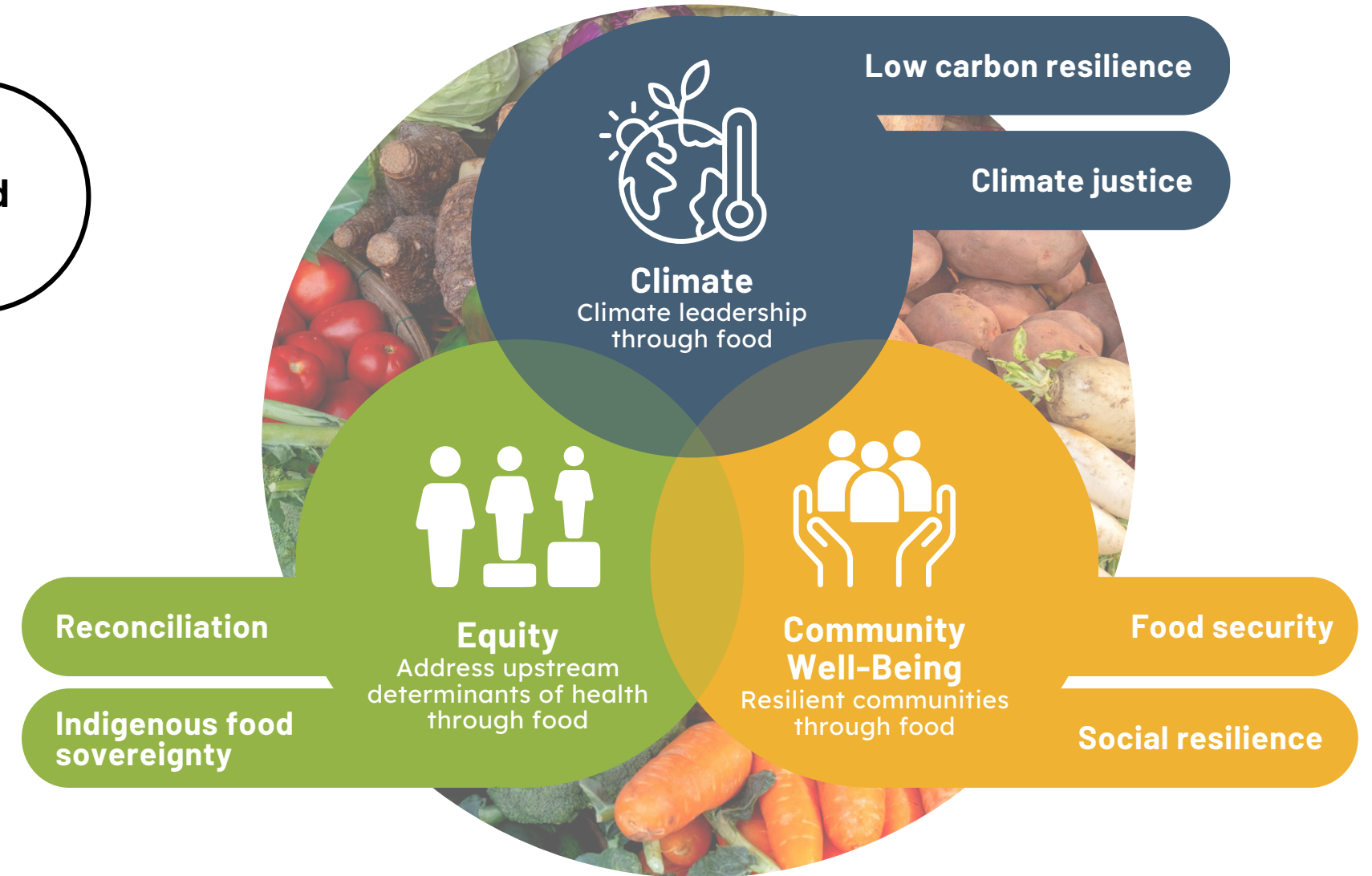


Figure 1: Relationships between planetary health and food.

(Adapted from Nourish Impact Areas)



SUSTAINABLE FOOD SYSTEMS “nourish all people, now and into the future, with sufficient, nutritious, affordable, tasty, diverse, and culturally meaningful food...support[ing] physical and mental health while respecting the integrity of ecological and social systems” (14).

INDIGENOUS FOOD SYSTEMS recognize that “all parts are inseparable...in contrast to the highly mechanistic, linear food...model applied in the industrialized food system...An Indigenous food is one that has been primarily cultivated, taken care of, harvested, prepared, preserved, shared, or traded within the boundaries of our respective territories based on values of interdependency, respect, reciprocity, and ecological sensibility.” (15)





RELATIONSHIPS BETWEEN FOOD AND INDIVIDUAL HEALTH

“Food is a significant part of our mental, emotional, and spiritual experience as human beings and that doesn’t change when we’re hospitalized. If anything, it becomes even more significant.” – Victoria Janzen, Clinical Dietitian at St. Paul’s Hospital (operated by Providence Health Care)

According to the [Lancet Countdown on Health and Climate Change 2023 report](#): “Unhealthy diets are a leading risk factor for chronic diseases in Canada” and “access to affordable, nutritious and culturally meaningful foods (including traditional diets for Indigenous groups)...must be considered to avoid exacerbating health inequities” (p8).

In Canadian hospitals:

- Over 40% of patients are malnourished (1 in 3 moderately, 1 in 10 severely; resulting in longer hospital stays and increased costs - economic costs approximately 31% to 38% more per patient (16)).
- On average in Canadian hospitals, an estimated 50% of food served to patients is thrown out (17, 18).



RELATIONSHIPS BETWEEN FOOD, ENVIRONMENT AND POPULATION HEALTH

Healthy food and food systems can directly and indirectly improve patient, public and ecosystem health in a number of ways, including:

- Providing nourishing, sustainable, accessible and culturally relevant food that can keep populations healthier, reducing the need for healthcare.
- Focusing on interventions that simultaneously decrease environmental impacts and increase planetary health co-benefits, for example:
 - embracing planetary health menus that favour ingredients with lower environmental impact and better health outcomes;
 - addressing food waste as a crucial lever for environmental impact and improved use of healthcare resources; and
 - integrating green space to improve patient healing and staff well-being while also improving biodiversity and resilience (19).

RESOURCES:

- [Food Is Our Medicine, Nourish](#)
- [Healthy Diets from Sustainable Food Systems - Food, Planet, Health: Summary Report, EAT-Lancet Commission. \[Full report here\]](#)
- [FoodSource: How are Food systems, Diets and Health Connected?, Food Climate Research Network \(2015\)](#)
- [Sustainable Food Systems Toolkit, International Confederation of Dietetics Associations](#)
- [Cooking in Two Worlds, a Process Guide for Incorporating Indigenous Foods into Institutions, Chef Andrew George and Jared Qwustenuxun Williams, commissioned by Feed BC](#)
- [Reflecting on Language and Its Impacts on Indigenous Foods and Nutrition; Common Language Project Report, First Nations Health Authority \(FNHA; 2024\)](#)
- [Traditional Food Fact Sheets, First Nations Health Authority \(FNHA\)](#)
- [Quantifying Waste and its Costs in Hospital Foodservices, Jorja Collins and Judi Porter \(2023\)](#)
- [Environmental Sustainability of Hospital Foodservices across the Food Supply Chain: A Systematic Review, Stefanie Carino et al \(2020\)](#)
- [Wasan Report: Equitable Access to Sustainable Food for All, Nourish](#)
- [Periodic Table of Food Initiative, American Heart Association and The Alliance of Biodiversity](#)





THE VALUE(S) CASE FOR FOOD IN HEALTHCARE

Food and food infrastructures need to be seen as central considerations in the planning, design and delivery of healthcare services and facilities rather than as generic cost centres targeted for easy savings. The latter view often leads to lowest-bid procurement policies and degenerative feedback loops, for example:

- poor food quality further decreasing patient health, which in turn, increases healthcare demand; and
- sourcing from industrial bulk producers with high emissions, food and packaging waste; thereby eroding planetary health, community resilience and Indigenous food sovereignty.

Instead of relying on traditional **cost-benefit analyses**, ensure that planetary health is integrated as a key consideration in decision-making. This can increase value and reduce **true costs** in the near term and over **facilities delivery lifecycles**.

“Food is not a commodity, it has cultural, spiritual, and healing dimensions” (9); it is a relation and a human right. As such, food infrastructure is not a site for value engineering, but rather, a vital opportunity for cultivating value - with cumulative co-benefits for people, place and planet across generations.

Accordingly, planning, designing and delivering food infrastructures to support planetary health requires **aligning what we truly value with how we value and measure it**.



Photo credit: Annie Lalonde

RESOURCES:

- [Food is Medicine: Actions to Integrate Food and Nutrition into Healthcare](#), Downer, et al. (2020)
- [Narrative Review: Food as Medicine Across the Pediatric Age Continuum](#), Fischer, et al. (2024)
- [Health Co-Benefits of Climate Action, Climate Change and Health Toolkit](#), World Health Organization (WHO)
- [Health Co-Benefits of Climate Action](#), Lancet, Andy Haines (2017)
- [Fatal Calculations: How Economics has Underestimated Climate Damage and Encouraged Inaction](#), Breakthrough - National Centre for Climate Restoration Melbourne, Australia (2019)
- [Food Systems and Contributions to Other Environmental Problems](#), Garnet, et al. (2018)
- [The Magic of “Multisolving”](#), Stanford Social Innovation (2018)





Healthcare Mandates and Responsibilities



“Health promotion begins with public policies that strengthen the social determinants of health, including ...food security...and a clean and safe environment... [This shift] requires patient-centred care that prioritises health and well-being over...the absence of disease (20, p66-67).”

Access to healthy food is a fundamental human right, internationally recognized since the 1948 Universal Declaration of Human Rights (21). In 2005, the [UN Food and Agriculture Organization \(FAO\)](#) provided further guidance on the “right to adequate food and achievement of **food security** stating that the aim is “to guarantee the availability of food in quantity and quality sufficient to satisfy the dietary needs of individuals; physical and economic accessibility for everyone...free from unsafe substances, [culturally] acceptable; and the means of its procurement” (22).

Healthcare systems and health authorities are poised, and have a responsibility to empower transformations necessary to realize these rights.

[Health Canada’s](#) mandate is “to help Canadians maintain and improve their health”(23). To deliver on this mandate, the [2023-24 Health Canada Departmental Plan](#) identifies health protection and health promotion as core responsibilities. Health Canada highlights the importance of “cross-cutting objectives” to realize these goals, including: “advancing reconciliation with Indigenous Peoples” and “leaving no one behind” (24).

“While Canada has been a leader in signing [onto these declarations]...domestic action has lagged and food insecurity [has] increased (25, p566)”. Further,

“food has long been used as a tool of colonialism ...separat[ing] Indigenous people from their land, [and] continues to have significant implications for Indigenous governance, culture and community. There are growing calls for Indigenous food sovereignty... to mend colonial ruptures and support...land return and restoration” (26).



RESOURCES:

- [Fact Sheet No. 34: The Right to Adequate Food](#), United Nations High Commissioner for Human Rights (2010)
- [International Declaration on the Human Right to Nutritional Care: A Global Commitment to Recognize Nutritional Care as a Human Right](#), Cardenas, et al. (2023)





Healthcare Action on Reconciliation

Healthcare institutions are responsible for developing relationships with Elders, Knowledge Keepers, and Indigenous communities to better understand traditional and country food.

Facilities can action reconciliation by advancing policies and practices recommended by the [Truth and Reconciliation Commission](#), the [Royal Commission on Aboriginal Peoples](#), [The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls](#), and the [United Nations Declaration on the Rights of Indigenous Peoples](#) that address the history of medical colonialism, systemic and institutional racism that continues to harm Indigenous people.

This includes, but is not limited to:

- Understanding whose traditional territory a facility is located on
- Building relationships with Indigenous governments, Elders, Knowledge Keepers/ Holders, and Indigenous Peoples who reside off-reserve or in urban settings
- Encouraging and offering Indigenous Cultural Safety educational opportunities
- Upholding, respecting and centering Indigenous Peoples' and communities' self-determination over their healthcare decision-making



VIDEO:
Why Hospital Food Matters for Reconciliation, Nourish Leadership (Turtle Island/Canada)



The Case for Change



RESOURCES:

- [Truth and Reconciliation Commission of Canada Final Report](#)
- [In Plain Sight: Addressing Indigenous-Specific Racism & Discrimination in BC Health Care: Summary Report, BC Government \(2020\)](#)
- [Why is Serving Indigenous Foods So Important, Feed BC](#)
- [First Nations Perspective on Health and Wellness, First Nations Health Authority \(FNHA\)](#)
 - [Food Systems Program, FNHA \(2023\)](#)
 - [A Journey Towards Indigenous Food Sovereignty, FNHA \(2023\)](#)
- [Cooking in Two Worlds: A Process Guide for Incorporating Indigenous Foods into Institutions, Feed BC - Lead creators: Chefs Andrew George \(Wet'suwet'en\) & Jared Qwustenuxun Williams \(Salish\). Companion resources:](#)
 - [Where Do We Begin?](#)
 - [Why Is Serving Indigenous Food So Important?](#)
 - [How Do We Build Relationships?](#)
 - [Where Can We Source Indigenous Foods?](#)
- [Indigenous Wellness & Reconciliation Action Plan, Providence Health Care](#)
- [Our Commitment to Truth and Reconciliation, Saskatchewan Health Authority](#)
- [How do you Like your Reconciliation, Yellowhead Institute - a reflexive self-evaluation framework](#)
- [Step into the River: Framework for Economic Reconciliation, Sxwpilemaát Siyám \(Skwxwu7mesh\) & Lily Raphael](#)





Start by understanding your organizations' existing efforts, and reaching out to Indigenous colleagues and departments within your organization for guidance on how best to make further connections with community. Institutions must continuously work to instill cultural awareness, sensitivity, safety and humility throughout institutional policies and practices among staff, and in physical spaces to ensure culturally safe facilities.

“Following the seasonal pathways through Food is Our Medicine has transformed my Western perspective and enriched my understanding of Indigenous foodways. The learning journey is a gift and a realization of responsibility. I encourage my peers to continue the work of reconciliation and decolonization in health care by enrolling!”

- Elaine Eppler, Clinical Dietitian, Vancouver Coastal Health

NOURISH'S FOOD IS OUR MEDICINE PROGRAM

The **Food is Our Medicine** Learning Journey has been designed to introduce health care professionals and leaders to new and different ways of understanding the complex relationships between Indigenous foodways, reconciliation, healing, and health care. It is designed to deepen participants relationship with history, food, land, and ultimately, with themselves. It is an opportunity to learn and reflect on (de)colonization, the perspectives, cultures, and foodways of various Indigenous communities, and steps you can take toward honouring Indigenous worldviews in health care.



Image from NOURISH's Food is Our Medicine





WHAT

The Tools for Change



1 Food Infrastructures

2 Towards Healthy Food Infrastructures

3 Food System Lifecycle

- Growing, Gathering, Harvesting
- Storing, Distributing
- Preparing, Prescribing, Serving
- Eating, Nourishing, Healing
- Circularity, Composting





“You can have the best chefs creating the best menus with the best quality ingredients, but if you don’t have the right infrastructure to execute it, everything falls apart.”

- Sunny Mak (Executive Director, Patient and Retail Food Services, Vancouver Coastal Health)

Infrastructures shape how we relate to our environments, and these relationships significantly impact our health and well-being (Figure 2).

Having the right physical space, structure, utilities and equipment, also depends on having the right social and natural infrastructures to support them.

This in turn requires shifts in how we understand, value and approach relationships between these different infrastructures. Together we could think of these as **infrastructural determinants of health**.

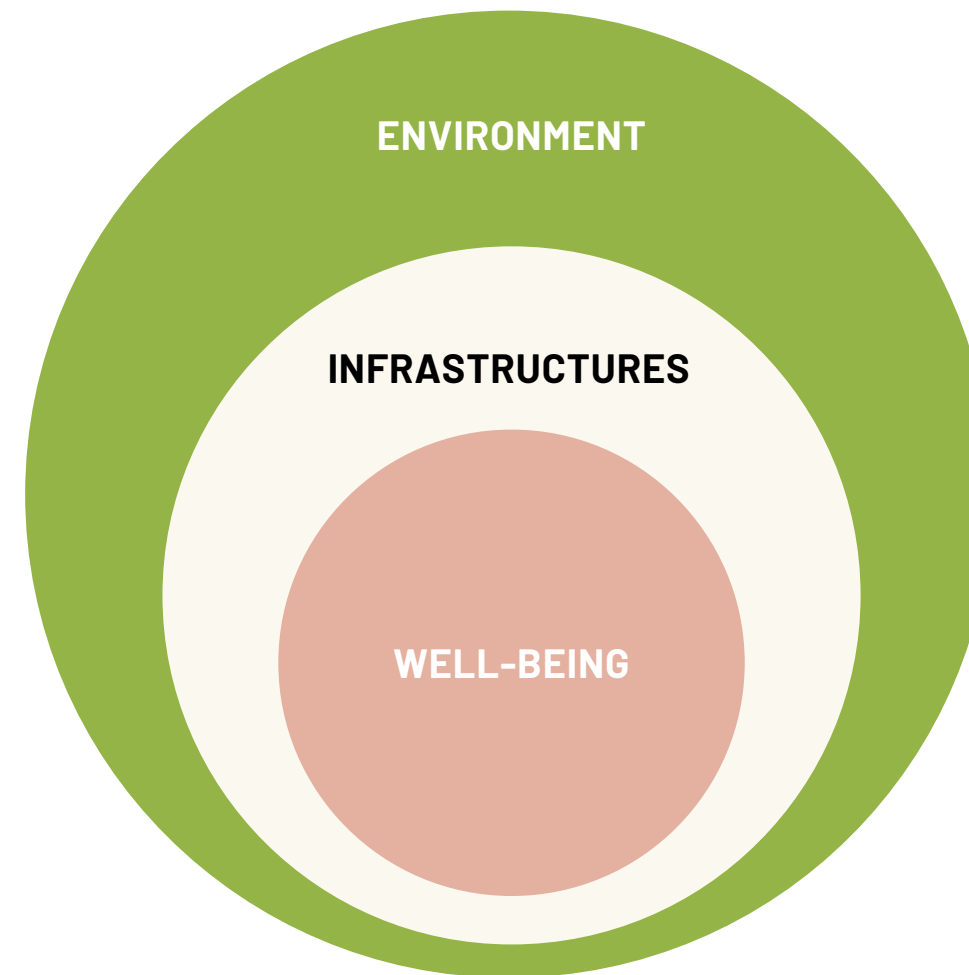


Figure 2: Infrastructure as connective tissue

(adapted from Waage et al, Lancet Global Health)



FOOD INFRASTRUCTURES

refer to physical infrastructures (i.e. tangible structures, utilities, equipment, and other hard systems) to support growing, harvesting, preparing, storing, serving, consuming and subsequent cleaning, composting and waste management. It is important to understand that physical infrastructures depend on social infrastructures (i.e. people, relationships, and other interconnected community “assets”), and both further depend on natural infrastructures (i.e. soils, waters, ecosystems). All three levels need to be considered to nurture healthy food systems.

FOOD INFRASTRUCTURES FOR PLANETARY HEALTH

reciprocally support the health and well-being of individuals, communities, and natural systems we all depend on.





Towards Healthy Food Infrastructures



SETTING GOALS

It is important to identify and align shared goals to ensure all involved have a shared understanding of what they are working towards and why, and the specific challenges and opportunities addressed within their specific context.

The ultimate goal is to nurture the interconnected health and well-being of individuals, communities and ecosystems so that all can mutually thrive. For this, it is essential to consider goals beyond harm reduction and “net zero” and nurture reciprocal synergies to increase health across efforts.

KEY CONSIDERATIONS

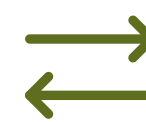
While general goals, values, or concerns may be similar, food and health systems are inherently complex and place-based. Hence, it is key to tailor goals, values and priorities to each specific site; integrating input from **key actors** in your specific context.

Place-based approaches are needed, and should be **co-designed with all impacted**, especially:

- Indigenous Rightsholders whose lands and waters systems are built on and sustained by
- Patients whom the infrastructures are ultimately designed to serve
- Frontline teams who are directly implementing them

HARM REDUCTION & MITIGATION GOALS

- Reduce GHGs (operational & embodied)
- Reduce waste (food, nutrients, packaging & other materials, time, value, other resources)
- Reduce or eliminate harmful substances
- Reduce risks
- Reduce costs



HEALTH PROMOTION & REGENERATION GOALS

- Increase planetary health, healing and health equity
- Increase co-benefits & lifecycle value by investing in planetary health
- Ongoing robust reconciliation centring respect for Indigenous rights, laws, knowledge systems, protocols & shared decision-making
- Empower transformative change





MAPPING PLANETARY HEALTH GOALS TO FOOD INFRASTRUCTURE OBJECTIVES



The health of people, place and planet is interdependent. Although health goals are listed discretely for each of the nested spheres below, all are interwoven and necessary to overall health. Co-benefits need to be prioritized over single-solution efforts.

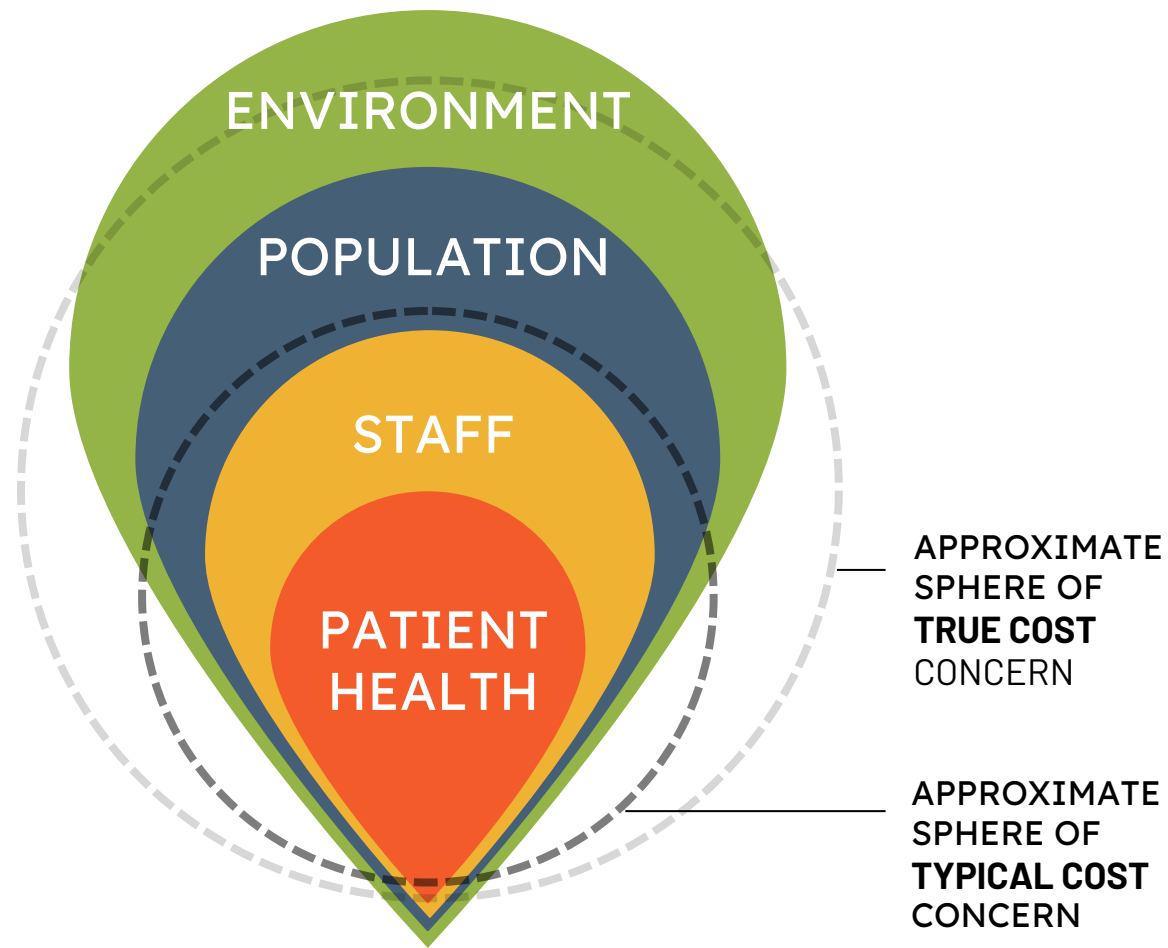


Figure 3: Nested health goals and related spheres of concern (adapted from Nourish)

CO-BENEFITS

PATIENT HEALTH & WELL-BEING



- Prioritize food as medicine for the health of patients as whole beings (body, mind, spirit)
- Value and integrate co-benefits of patient choice and comfort
- Recognize cultural safety and health equity as foundational to all efforts

POPULATION HEALTH



- Increase food security
- Support Indigenous food sovereignty and co-management and governance of ecosystems
- Prioritize intra- and intergenerational health equity and reconciliation

STAFF WELL-BEING



- Invest in staff well-being, education and capacity-building
- Nurture transformative learning, leadership, innovation and continuous improvement
- Prioritize equity and inclusion

ECOLOGICAL HEALTH



- Prioritize low carbon resilience to reduce operational and embodied GHGs while increasing resilience
- Reduce demand, wastes and prioritize reuse and re-cycling
- Prioritize nature-positive solutions (e.g. regenerative agriculture, Indigenous-led conservation)

ECONOMIC HEALTH



- Reduce risks and costs
- Increase resilience
- Prioritize co-benefits, true cost, and whole system lifecycle value





FOOD INFRASTRUCTURE CHALLENGES AND TENSIONS

Understanding key challenges and tensions is an important part of systems change work because it helps overcome assumptions that limit meaningful action. The six key themes below apply broadly across food infrastructures and are organized in increasing order of impact. See “[key action areas](#)” for specific challenges, tensions, opportunities, considerations and co-benefits.

1. SPACE ALLOCATION

- Space is at a premium, triggering tradeoffs in which food services are rarely prioritized
- Those involved in high-level [facility planning and budget decisions](#) often assume more space is needed; but [integrated processes](#) can unlock synergies for more effective layouts that increase functionality while decreasing GHGs and/or increasing resiliency

2. TIMELINES AND SCHEDULES

- [Key actors](#) may feel there is not enough time in project schedules to plan, engage, (co)design, train or invest in needed relationships
- Long gaps between planning and implementation stages make it hard to build resilience into plans and budgets
- [Integration and collaboration](#) can help address both the above

3. INFORMATION AND KNOWLEDGES

- Empirical evidence and/or data needed to make the business case is often not readily available to teams on the ground. See [CHU Ste-Justine’s experience](#) in overcoming these limitations
- Evaluations are often made without prioritizing “[ethical space](#)” and respectful inclusion of Indigenous Knowledge systems

4. RELATIONSHIPS

- [Key actors](#) across healthcare systems are eager to work with local communities and Indigenous partners but are often not sure how or with whom
- Long contract terms (e.g. with industrial suppliers) run counter to diversity, resilience and community development goals. But procurement departments can shift to [values-based models](#)

5. COSTS AND PERCEPTIONS OF VALUES

- Assumptions that local food increases costs (from less bulk purchasing power, increased labour costs, etc.). See this [experience spotlight](#) for how a municipal procurement leader is transformatively challenging these assumptions
- The value of food as medicine and a key dimension of quality care is too often overlooked and/or undervalued, meaning insufficient budgets and planning prioritization. [True costs](#) must be integrated into business case and decision-making

6. MISALIGNED PRIORITIES & VALUE SYSTEMS

- All of these tensions primarily stem from fragmented ways of knowing, doing and valuing, rooted in capitalist colonial worldviews. See [True-Cost Accounting](#) and the [Food is Our Medicine Learning Journey](#) to grow capacities to overcome these limitations





Food System Lifecycle

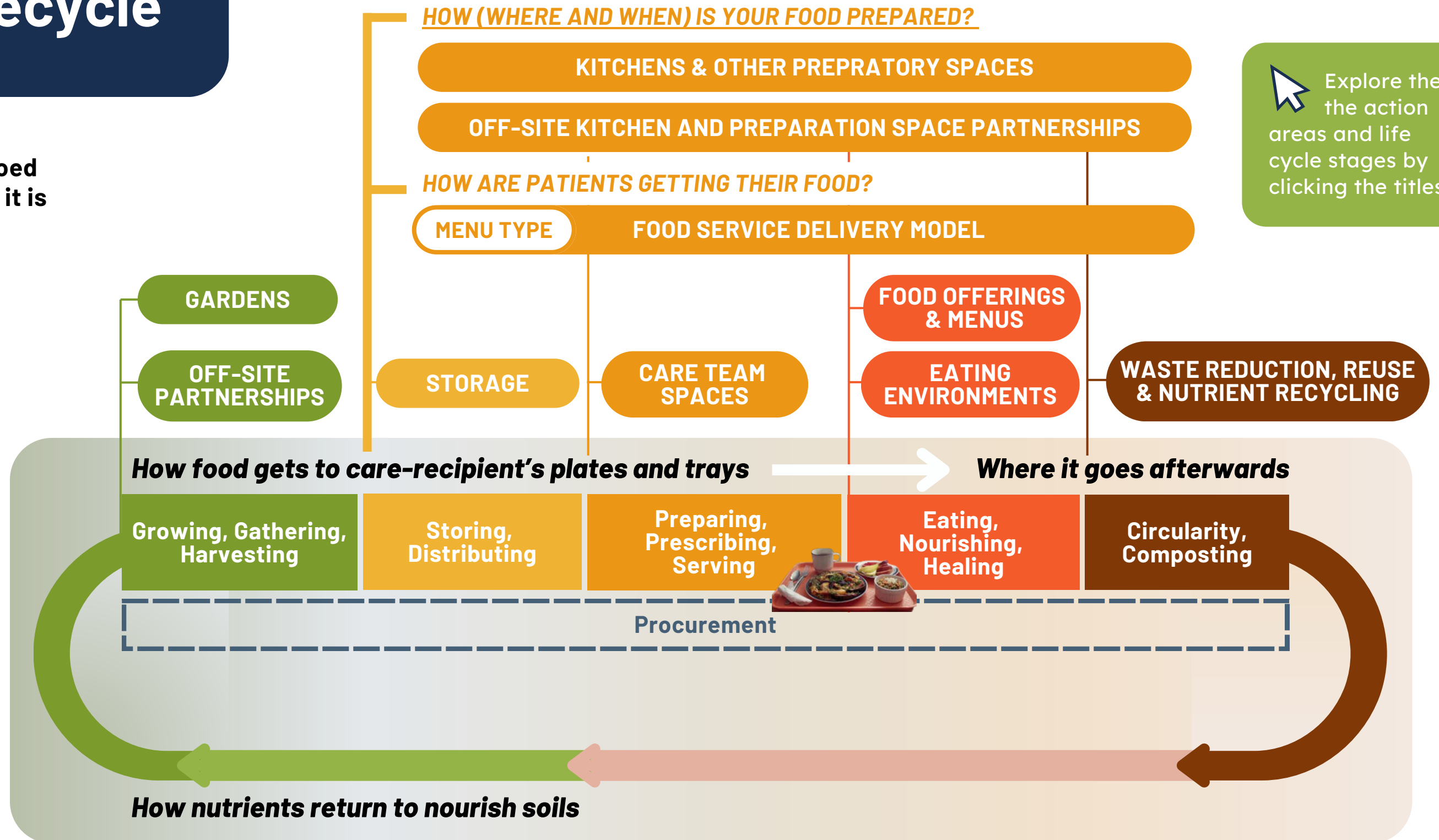


Food is often perceived as fragmented and siloed across scopes of work, departments, etc., but it is important to remember that food is rooted in systems of interdependent relationships.

Indigenous ways of knowing enable deeper understandings of what healthy holistic relationships mean and require.

This reinforces that key action areas (as shown in Table 1) are interconnected and require integration. It is also important to note that some decisions will significantly impact multiple action areas and the range of infrastructure options available, and as such, need to be considered at the outset (i.e. at early stages of the facility delivery lifecycle), notably these include:

- Where and when your food is prepared
- How patients access it
- Related technology considerations



Explore the the action areas and life cycle stages by clicking the titles

Figure 4: Simplified version of the food system lifecycle in healthcare (image of tray from "Ode to a Hospital Tray" video, Nourish)





CONSIDERATIONS TO GET STARTED

Food preparation and delivery models underpin the ways that hospital food systems ultimately operate. The following questions are critical to address early on, as they will impact multiple food infrastructures.



HOW IS YOUR FOOD PREPARED?

WHERE is your food prepared?

- On-site (i.e. a kitchen on the hospital grounds)
- Off-site (i.e. shipped from another location - local or global)

WHEN is your food prepared?

- Made and served fresh (i.e. “fresh prep”)
- Made, chilled then reheated (i.e. “cook-chill”)

SEE KITCHENS & OTHER PREPARATORY SPACES

ADDITIONAL REFLECTIONS

Food prepared on-site:

- Can use fresher ingredients, be made to order, and served fresh; thus, potentially increasing patient satisfaction and reducing waste
- Requires space for [kitchens](#), ingredient [storage](#), and highly trained staff

Food prepared off-site or made on-site and chilled:

- Requires space and infrastructure for [storing](#), distributing and re-heating meals
 - e.g. Heated carts or reheating units in a central area or distributed near clinical units
- Different technologies exist with different infrastructure implications
 - e.g. Steamplicity meals use less space but more plastic packaging waste



Photo credit: Leila Kwok





? **HOW ARE PATIENTS GETTING THEIR FOOD?**

HOW are patients choosing their meals? WHAT delivery models are you using?

- In-room service (i.e. on demand ordering from a fixed or rotating menu)
- Dining room service (i.e. choice from a rotating menu at point of service)
- Select menu (i.e. order in advance from a rotating menu)
- Non-select menu (i.e. rotating menu with fixed offerings, no patient choice)

SEE FOOD SERVICE DELIVERY MODEL

ADDITIONAL REFLECTIONS

In-room service models:

- Allow meals to be made to order, resulting in:
 - Increased patient choice (unless a fixed menu is used), flexibility in meal timing, decreased lags between meal selection and eating
 - Care teams being able to prescribe better food as medicine treatment plans
 - Potential for less waste at preparation source and improved patient consumption
 - More staff support needed for meal selection

Built-in vs Mobile equipment:

- Consider whether food service spaces are built-in or use mobile equipment that may allow a similar type of service
- Mobile is a work-around if unable to build or retrofit adequately. For example, dining rooms may utilize mobile hot food wagons for meal service or to transport food from kitchens to distributed service choice areas

Select or non-select menus:

- Production is predicted in advance, resulting in:
 - Less capacity to adapt to distinct patient needs or preferences, which may lead to more waste, less nutrition and increased service use
 - Variable time between meal selection and consumption, depending on how meals are selected (paper or digital)



Photo credit: Leila Kwok





BEFORE YOU GO ANY FURTHER

Some additional opportunities and considerations that apply to healthcare food infrastructures broadly relate to technology and network access.

TECHNOLOGY & NETWORK ACCESS

Especially for new construction or major renovation of kitchens, storage and patient units, consider:

- Use of technology and menu systems to organize food production to manage what is prepared and how much (note: this also impacts food waste)
- How meal selections are made by patients, for instance using built-in technology at bedside mobile devices (healthcare facility or patient-owned)
- How technology is used to communicate and validate meal selections back to the kitchen (i.e. print reports, digital tray tickets)

Technology lends itself to efficient food services and co-benefits if it helps integrate all processes that take place, from food ordering to waste management, for example:

- Sending food orders to food suppliers and distributors
- Recording and monitoring inventory of food products in storage
- Recording food safety temperature logs, food production, meal selection, etc.
- Tracking food preferences and food waste to inform menu design, future food production quantities, and providing direct feedback to clinicians on patient nutritional status





Key Action Areas



The next few pages identify opportunities, tensions, key considerations and potential co-benefits for each key action area.

As you explore each key action area, it is important to also keep in mind that some decisions need to be made earlier than others to be effective or even possible.

Table 1: Key action areas within food system lifecycle in healthcare

Lifecycle Stage	Key Action Areas
Growing, Gathering, Harvesting	Onsite gardens
	Off-site growing and harvesting partnerships
Storing, Distributing	Storage areas
Preparing, Prescribing, Serving	Food service delivery model
	Kitchen and other preparation spaces
	Off-site kitchen and preparation space partnerships
	Care team spaces
Eating, Nourishing, Healing	Food offering and menus
	Eating environments
Circularity, Composting	Waste reduction, reuse and nutrient recycling





Growing, Gathering, Harvesting

The Tools for Change



ONSITE GARDENS

OPPORTUNITIES

- On-site gardens can play important roles in growing awareness and re-connecting people to healthy food systems, practices and relationships
- Gardens can be integrated in a variety of ways, including: on rooftops, courtyards or other outdoor spaces, or indoor (vertical) hydroponics, in greenhouses, shipping containers, or small scale under grow lights on patient units
- On- and [off-site growing partnerships](#) and [Indigenous Healing Gardens](#) can be ways to learn from and uphold Indigenous stewardship laws and practices to [advance reconciliation](#) and [place-based innovation](#)

CHALLENGES AND TENSIONS

- Landscape infrastructures are often considered too late or are not properly funded in capital or operational costs
- Roof gardens require integration of structural, drainage and envelope requirements from early [planning and design stages](#)
- Real and perceived food safety concerns must be addressed when incorporating garden harvests into patient meals
- Misunderstandings about costs or risks can negate pursuing on-site growing options, limiting opportunities for value-creating co-benefits

Growing, Gathering, Harvesting

Storing, Distributing

Preparing, Prescribing, Serving

Eating, Nourishing, Healing

Circularity, Composting





FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- Ensure co-benefits are understood and integrated into **business case development** to ensure best fit for your context
- Ensure **key actors** are involved in determining potentials, priorities and key impact metrics (including horticultural therapists)
- If growing food, ensure planting plans are coordinated with menus, treatment plans and procurement, and engage Environmental Health Officers from pre-design onwards to address health safety requirements
- Ensure all relevant design disciplines are aware of the project's food-related priorities and regulations and that approaches are integrated. Specific considerations include:
 - Structure & envelope detailing for proper roof loading and drainage
 - Access and accessibility of paths, entrances, guard rails, and seating
 - Water supply and drainage
 - Lighting and electricity
 - Composting options
 - Barrier-free access to garden-related storage and tools
- Consider spatial adjacencies and program synergies for opportunities to support multiple functions to increase resilience, efficiency, value-creation and cost-reduction



Growing, Gathering, Harvesting

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Preparing, Prescribing, Serving

Eating, Nourishing, Healing

Circularity, Composting



RESOURCES:

- Gardening for Health, Thompson (2018)
- Gardens and Health: Implications for Policy and Practice (Report), D. Buck commissioned by King's Fund, UK (2016)
- Social and Therapeutic Horticulture: Evidence and Messages from Research, Aldridge & Sempik (2021)
- The Sustainable Prescription: Benefits of Green Roof Implementation for Urban Hospitals, O'Hara, et al. (2022)
- Joseph Rosalie Segal Family Health Centre: Vancouver General Hospital, Award Magazine (2018)
- Green Design for Climate Resilience & Well-being: a Better Practice Guide, GreenCare (BC)





CO-BENEFITS

Connecting with natural food systems supports holistic well-being. For example:



- Gardens provide health benefits (27,28) and thermal comfort during heat waves
- Tending gardens can increase confidence, social connection and skills (28,29), and cultivate appreciation for healthy eating and stewardship



Connections to nature and opportunities for social connections improve staff well-being and satisfaction.

On-site gardens support low carbon resilience, improving public and ecological health:



- Increasing reliable local food supply while reducing GHGs and supply chain disruptions
- Evaporative cooling reduces urban heat island effect
- Indigenous plant species increase biodiversity and improve air quality, drought-resistant species decrease stormwater loads



- Partnering with Indigenous and community groups can support Indigenous food sovereignty and strengthen community resilience



- Properly constructed green roofs can perform better than conventional roof systems, yielding further lifecycle cost savings through reduced maintenance costs and higher energy savings (30,31)
- Partnerships with Indigenous and other community groups can support economic reconciliation and community economic development

EXPERIENCE SPOTLIGHT: SEGAL FAMILY HEALTH CENTRE HORTICULTURAL THERAPY GARDENS

“For people with mental health and addiction issues, gardening can be meaningful therapy. It is gratifying, healing, and purposeful. It offers lessons on life, change, and hope. In fact, research shows that putting your hands in the soil can reduce anxiety and promote positive thinking and inner tranquility.”



Photo credit: Leo Gosselin

[Learn more](#)

Other inspiring examples:

- Hôpital Glengarry Memorial Hospital Therapeutic Garden (ON)
- London Anchor Cohort, Nourish (2023)
- Hackensack University Medical Center (NJ, USA)

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Circularity, Composting





OFF-SITE GROWING AND HARVESTING PARTNERSHIPS



Off-site partnerships can take many forms, including with local community groups (NGOs), local governments, and Host Nations. Each will have unique implications. Details should be determined collaboratively and reciprocally with all involved.

OPPORTUNITIES

- Host Nations have honed sustainable practices for nurturing the health of people, place and all relations since time immemorial; they are both valuable knowledge holders and **rightsholders**
- Partnerships are a way to advance **reconciliation** and **nature-based solutions**. This could include:
 - Partnering with Indigenous-led enterprises
 - Investing in community-owned or community-governed infrastructures for traditional food processing/storage and/or community-involved traditional food harvesting (on or off-reserve)
- Community partners may include local farms, farmers markets, community gardens; each with unique opportunities

CHALLENGES AND TENSIONS

- Partnerships, and potentials that stem from them, are often overlooked, undervalued, or considered too late
- Concerns about abilities to meet high supply volumes
- Standard contract language can deter smaller sized suppliers

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EXPERIENCE SPOTLIGHT: ST JOSEPH'S HEALTH CARE LONDON

"There's a difference in taste when you get something locally [grown], so we're trying to have that quality as best as we can...to reach some of those growers and farmers that maybe haven't always had that connection with hospitals but are just down the road."

- Lindsay Botnick, Director of Food & Nutrition Services at St. Joseph's Health Care London (CBC).

[Learn more](#)

Other inspiring examples include:

- Farmers Markets and CSAs on Hospital Grounds
- On-Campus Beekeeping & more Community Food Hub Partnerships
- Farmers on 57th (Vancouver, BC)
- Skwxwú7mesh Uxwumixw Hydroponic Garden Pods, Smeḱw'ú7ts (Food Sharing) Community Kitchen and S7ílhen (Food) Pantry



Photo credit: St Joseph's Health Care London





FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- [Map your food systems](#) early on to understand what local “food assets” already exist and whose traditional Indigenous territories they come from. Learn who needs to be included in scoping co-benefits possible and collaboratively designing approaches (i.e integrated co-design)
- Work with [Indigenous and Community Engagement Teams](#) to understand what relationships already exist and [how to co-design](#) to move forward in good ways
- Work with [Food Service](#) and [Procurement teams](#) to leverage returns on values-based procurement co-benefits

CO-BENEFITS



Understanding where your food comes from and who was involved grows awareness of and appreciation for local food networks and regenerative practices, for example:

- Connecting with and learning from food systems hands-on can enhance our personal relationships with food, each other and the lands we live on
- Regenerative growing practices can improve nutrient density (32,33)
- Both the above further improve patient and staff health and well-being



Local-scale food production can enhance local food security, support local economic development, grow trust and collaborative capacities – further enhancing community resilience. For example:

- Partnerships with Indigenous governments and communities can empower food sovereignty, land-based practices, economic reconciliation, co-management/co-governance and landback
- Regenerative practices can improve soil health and biodiversity, in turn enhancing nature-based carbon sequestration and improving nutrient density of foods (33,34)
- Local production also requires less distribution, further reducing embodied GHGs



Buying local can [reduce capital costs](#), increase quality care and enhance local economic development and economic reconciliation.



Growing, Gathering, Harvesting

Storing, Distributing

Preparing, Prescribing, Serving

Eating, Nourishing, Healing

Circularity, Composting





EXPERIENCE SPOTLIGHT: SALISH SEA REGENERATIVE FARM SOCIETY

The Salish Sea Regenerative Farm Society uses the power of compost to regenerate healthy soils, restore biodiversity, reduce GHG emissions, and enhance habitats - healing food systems, people and planet (35). In 2023 they started providing Sechelt Hospital with fresh produce.



Photo credit: SSRFS

[Learn more](#)

- Growing, Gathering, Harvesting
- Storing, Distributing
- Preparing, Prescribing, Serving
- Eating, Nourishing, Healing
- Circularity, Composting

EXPERIENCE SPOTLIGHT: BRINGING SALMON BACK WITH SYILX / OKANAGAN NATION ALLIANCE

Partnering with Syilx innovators to co-create pathways to integrate BC salmon as a regular menu item at the Forensic Psychiatric Hospital (FPH).



Photo credit: PHSA

“By working with First Nations we can help, not only preserve salmon species, but also raise awareness and acceptance of First Nations’ cultural values, learn to respect each other and work together.”

- José Morais, Director Food Services, Inter-Campus Operations, PHSA (former Manager Food & Nutrition Services FPH)

[Learn more](#)





Storing, Distributing



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STORAGE AREAS

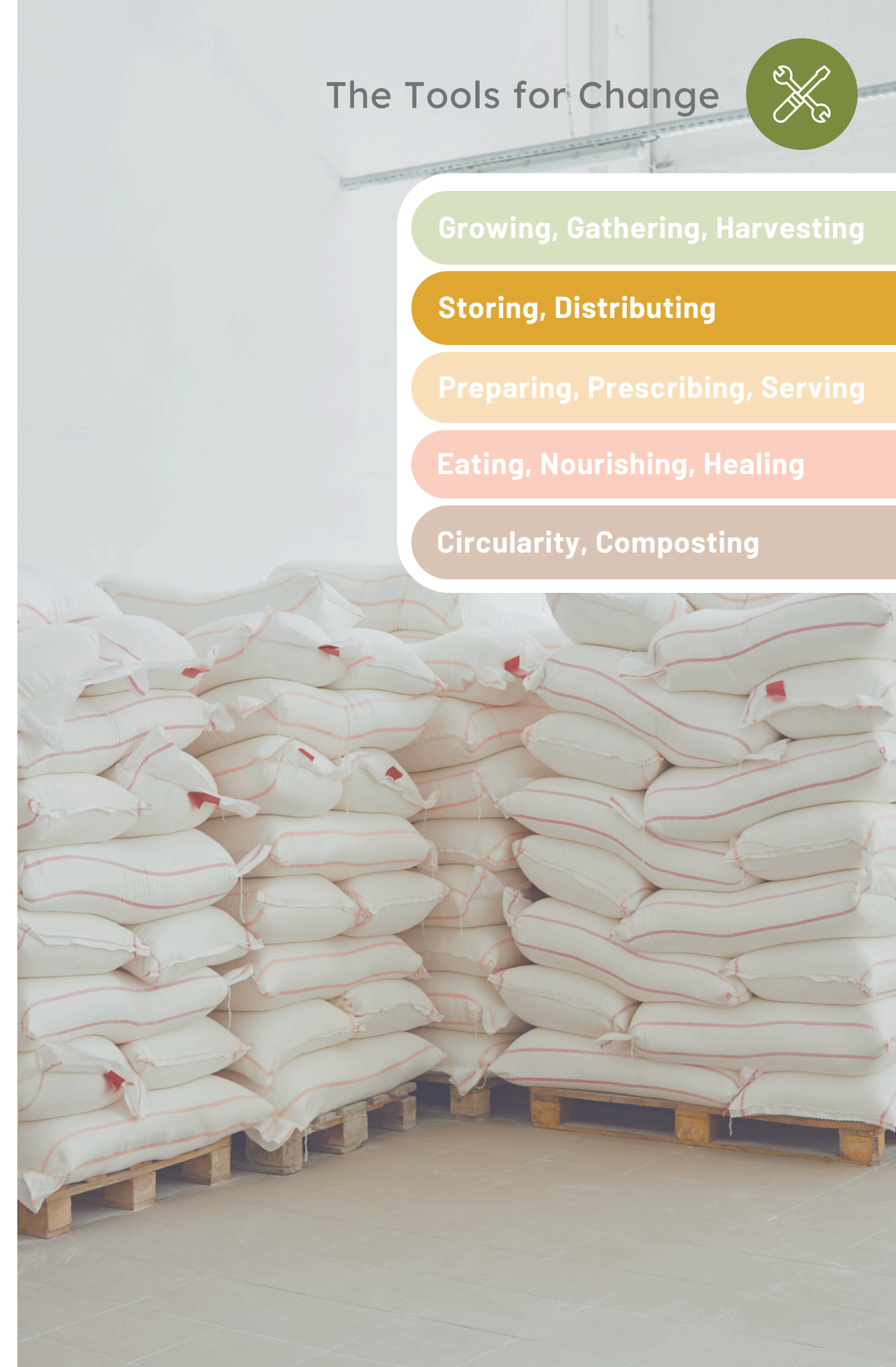
[Procurement](#) and the choice of [Food Service Delivery Model](#) will have a significant impact on needs and approaches to storage and other food infrastructures.

OPPORTUNITIES

- Food can be stored on-site or off-site through various forms of partnership
- Effective storage can support resilience during supply chain disruptions
- Community partnerships can expand storage capacity without increasing footprints and associated capital costs

CHALLENGES AND TENSIONS

- Addressing the complexity of dietary needs and preferences, and providing culturally meaningful, healthy and plant-forward menus involves shifts in conventional ingredients and practices and in turn what is stored and how
- There can be tensions between different ingredients and practices - see [Yukon Hospitals](#) and [Meno Ya Win Health Centre](#) for examples of overcoming related restrictions
- On-site storage takes lots of space, competing with other space priorities





FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- Different foods have different storage requirements in terms of shelf life, temperature, cultural practices, etc. resulting in different space and performance requirements. In some cases, innovations (e.g. dehydrating) can create efficiencies without compromising nutrients or flavour
- Ensure appropriate:
 - Space (e.g. size, configuration, adjacencies)
 - Supporting equipment
 - Loading capacities (e.g. floor structure, backing in walls for structural attachments, seismic considerations, etc.)
- Consider how to embed flexibility, resilience and adaptive capacity. [Scenario planning](#) is recommended
- Consider social infrastructures needed to support staff education and training

NOTE: Storage space needs to be considered in tandem with:

- [Key upfront decisions](#) about how food will be prepared and delivered to patients
- [Kitchen and preparation space](#) planning, design and operations
 - if decentralized, is there enough space to store between-meal snacks, nourishments and patient unit ward supplies?
 - if storing centrally, how often will stock replenishing be required (i.e. once or multiple times a day?)



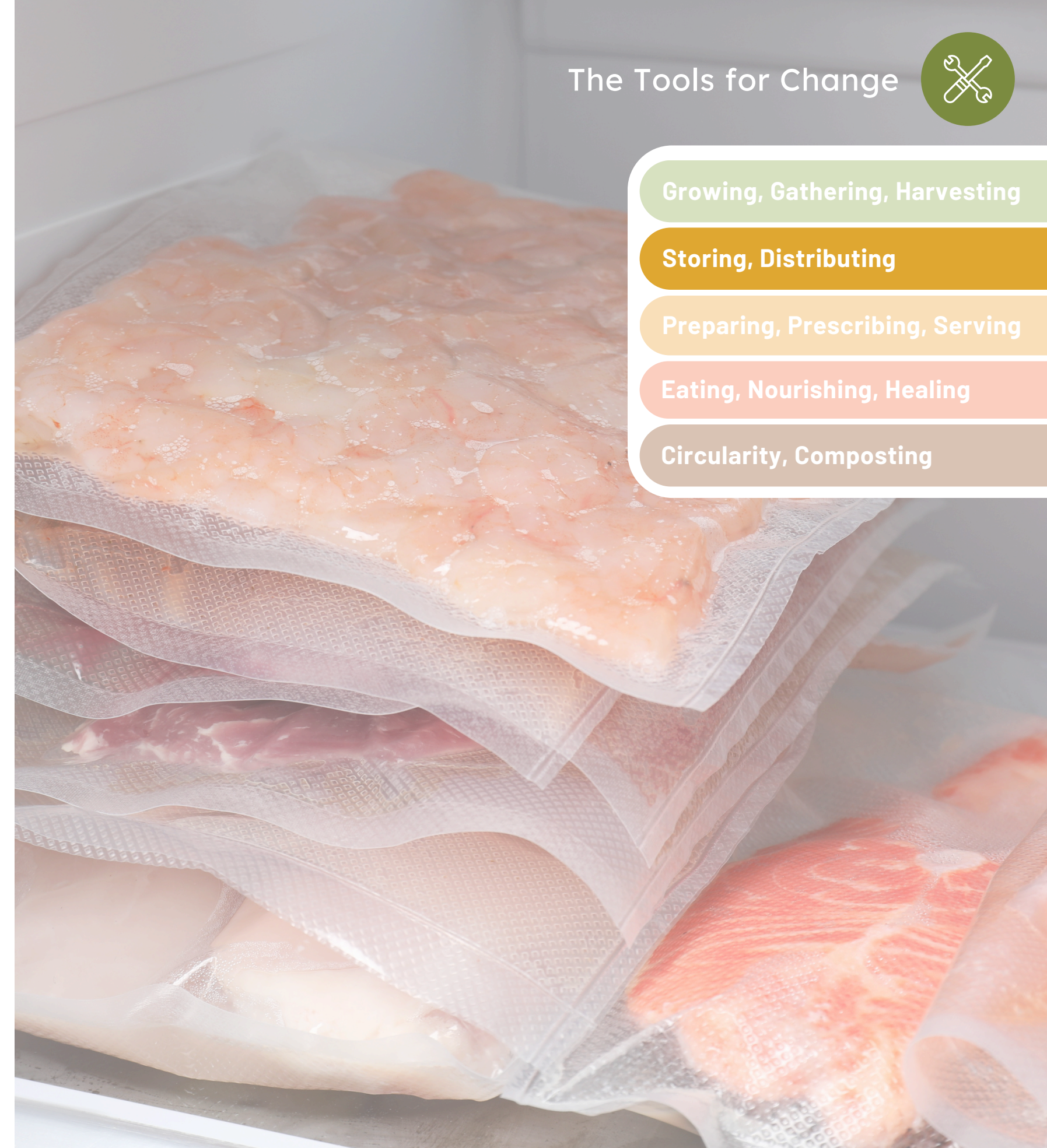
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CO-BENEFITS



Storing diverse ingredients supports menu diversity, enabling improved patient healing, satisfaction, comfort and health equity.



On-site and local off-site storage can support low carbon resilience - increasing food security while reducing GHGs and waste of conventional delivery. Local off-site storage may better support seasonal menus.



Well-considered storage can reduce retrofit costs; off-site can reduce capital and labor costs, and support local economy.

EXPERIENCE SPOTLIGHT: CITY OF THUNDER BAY POTATO PARTNERSHIP

The raw food cost of a plated meal is quite low, compared to its (internal) labour costs. Working with local potato growers, and leveraging procurement innovations (like forward-buy contracts) enabled creative local partnerships for supply, storage and preparation (e.g. slicing, dicing, cryovacing). Partnerships like this compound value: supporting local economic development, reducing GHGs (from long-haul shipping and industrialized farming practices) and increasing resilience and jobs for a just transition; all at little cost premium or even at cost savings (especially when integrating social cost of carbon and other externalities).

- Shared by City Procurement Manager, Dan Munshaw

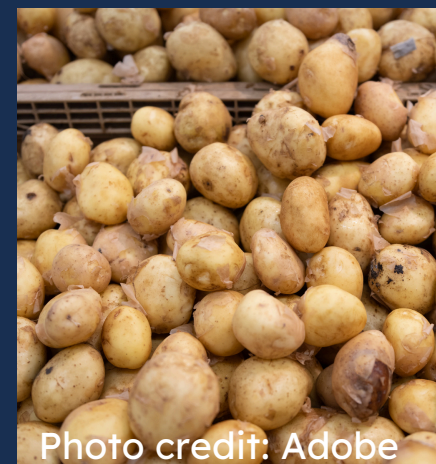


Photo credit: Adobe

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FOOD SERVICE DELIVERY MODEL

OPPORTUNITIES

Health care organizations can support models that:

- Increase choice for patients so that they can order foods they want to eat
- Increase flexibility for patients to eat when they want to eat (on-demand vs. rigid set meal times) and where (e.g. served directly in room, in a community-centred or other eating environments)
- Offer menus that are culturally mindful and less environmentally impactful

FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

To offer on-demand, food preparation must be done in advance (ie. mise en place, cook-chill or cook-freeze - depending on the dish complexity, menu size and kitchen capacity) for meals to be assembled or rethermed once patients place their order. There are ways to prepare specific foods that are simple on demand (e.g. sandwiches, pizzas, pasta).

Depending on the food service model, prepared foods can be transported in a number of ways, such as: bulk to central kitchens or serveries to be portioned out and served, to dining rooms for service, as individual pre-packaged meals to be reheated in a central kitchen or servery, or directly to the patient's room from the kitchen.

Each of these options have different impacts on planning and design for [Storage](#), [Kitchens and other Preparation Spaces](#), [Food Offerings](#) and [Eating Environments](#).

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Photo credit: Leila Kwok





KITCHENS AND OTHER PREPARATION SPACES

Kitchens are a key hub of food infrastructure, so their planning and design is key for nurturing the health and well-being of people, place and planet.

OPPORTUNITIES

- Food can be prepared on-site or off-site
- Kitchens and preparation spaces can:
 - Enable culturally relevant sustainable menus
 - Reduce GHG emissions and increase resilience, for example, via higher efficiency equipment, heat recovery, nutrient and material recycling, refrigerant management, and electrification
 - [Support menu innovation and capacity building](#)
 - Support cultural safety, cultural continuity, Indigenous self-determination, and reconciliation
- New construction generally provides more flexibility. [Integrated \(Co\)Design Processes](#) are valuable for innovation, especially for renovations or retrofits

CHALLENGES AND TENSIONS

- Lack of understanding of food as medicine means they are often lower priority than other care spaces
- Culturally mindful menus and practices can challenge and spark innovative shifts in conventional operations, regulations or emerging technologies, for example:
 - Will the preparation of Indigenous and other cultural foods require separate preparation and storage spaces?
 - How might electrification be approached to support preparation of cultural foods (e.g. wok cooking)?
- Shifts require adequate staff education and training to support changes in equipment and other practices



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RESOURCES

- [Low Carbon Resilience and Environmental Sustainability Guidelines for Healthcare New Construction](#), GreenCare (2023)
- [Electrifying Commercial Kitchens Across Sectors](#), US Department of Energy Better Buildings Initiative (2023)
- [Induction Eats: Kitchen inspirations from five gourmet chefs](#) (2024)
- [Refrigerant Management](#), Project Drawdown
- [Exploring Indigenous Kitchens of North America with Sean Sherman \(a.k.a. the Sioux Chef\)](#), Video (2017)
- [Teaching Kitchen Collaborative](#)
- [South Health Campus “Wellness Kitchen”](#) (AB)





FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- Concept plan, functional program, business case and budget will be largely determined by (i) what gets cooked on-site (vs off-site), (ii) whether cooked from scratch or reheated, and (iii) how it is served. These decisions will influence:
 - Centralized or distributed preparation spaces
 - Extent of in-house vs out-sourced food preparation
 - Degree of patient choice with implications for dietitian and integrated care team treatment plans
- Space, equipment and services will also depend on what types of foods may be served, what is required to properly prepare them, and how much is processed and prepared on-site vs. off-site. Consider if and how to address:
 - Fresh and plant-based ingredients that need processing (rinsing, cutting, soaking, etc.)
 - Culturally relevant foods and related practices that might need dedicated preparation and storage spaces
- Work with front-line staff, sustainability teams, specialty consultants, facilities management and other user groups to understand and leverage synergies for effective operations, adequate support space, staff well-being and capacity, and low carbon resilience. Factors to consider include:
 - Appropriate space for staff equipment, mechanical systems (including duct runs)
 - Proper ventilation, UV filtered fume hoods
 - Grease traps
 - Heat recovery, electrification
- Use scenario planning and mock ups during the **Design stage** and ensure proper commissioning and relevant training for Operations and Maintenance (O&M) staff when moving from **Construction** to **Occupancy**



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CO-BENEFITS



Properly designed and equipped kitchens and well-trained staff support menu diversity and quality of food and care; improving patient healing, comfort, health equity, and staff well-being.



Designing for low carbon resilience reduces GHGs while increasing resilience to climate impacts and other stressors. Values-based local partnerships can increase effectiveness while further reducing wastes and increasing community resilience.



Effective design, integrated innovation and values-based partnerships create cascading co-benefits; reducing costs while increasing lifecycle value.

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EXPERIENCE SPOTLIGHT: SIOUX LOOKOUT MENO YA WIN HEALTH CENTRE

“Sioux Lookout Meno Ya Win Health Centre (SLMHC) is a pocket of the future in the present - a showcase of what is possible when a hospital embraces an integrated approach to building culturally meaningful care. The hospital’s model of care provides patients with a culturally safe and empowering environment in which to heal. A crucial part of Meno Ya Win programming is Miichim, or traditional food, which the hospital has been serving for over 10 years.”



Photo credit: RichardJohnson.ca

SLMHC is the first of its kind in Canada and is an inspiring example of what is possible when healing, care and respect for Indigenous rights and knowledges are centered.



VIDEO: Miichim Nourish traditional territory of Lac Seul Ojibwe Nation / ON

Learn more





EXPERIENCE SPOTLIGHT: TRANSFORMATIVE CO-BENEFITS AT CHU SAINTE-JUSTINE

After identifying a room service model as a good option, Food Services had to make the value case to leadership. The team showed, through evidence from other hospitals, that it would improve patient satisfaction, reduce waste, climate impacts and costs, and save an approximate \$200,000/year.

“Josée and her team committed to building both the critical infrastructure and the critical relationships to ensure success.”

Further co-benefits included:

- Increased staff well-being:
 - Food Service was able to see happy patients and receive compliments first hand
 - Frontline staff were freed up, notably improving their workloads
- Extending room service to families improved social eating and created new revenue streams



Image from NOURISH



Image from NOURISH

[Learn more](#)



VIDEO: CHU Ste-Justine’s Delipapilles! Room Service (Kanien’kehá:ka territories/ QB)

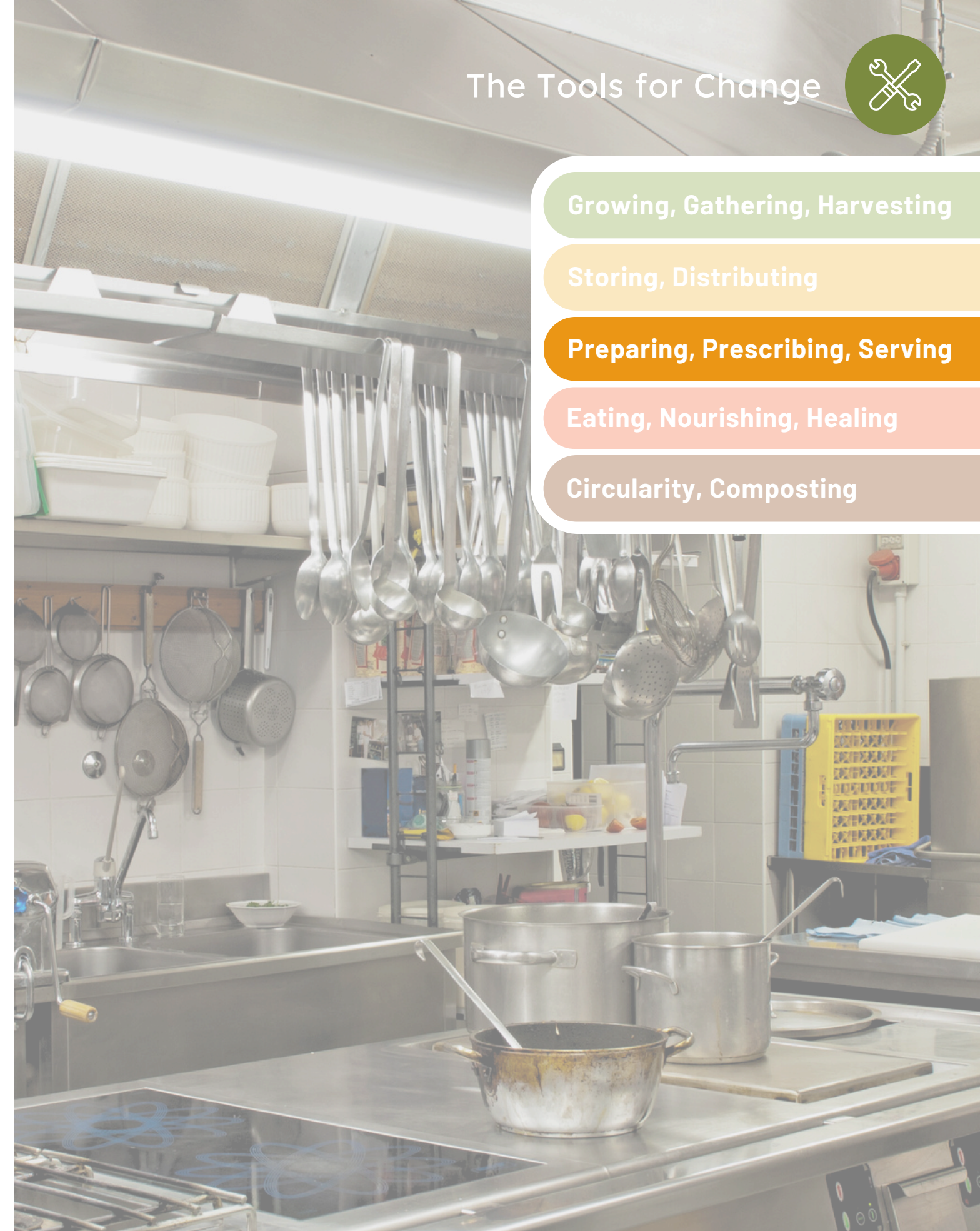
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OFF-SITE KITCHEN AND PREPARATION SPACE PARTNERSHIPS

OPPORTUNITIES

Food service teams can collaborate with local food suppliers to develop specific offerings, for example, food pack sizes or specific requirements and measurements, and how food is processed (e.g. diced, cut, cryo-vacuumed etc.). This works especially well with meat and produce suppliers and facilities managers are having more local vendors with high potential manufacturing capabilities reach out to offer such services.

CHALLENGES, TENSIONS AND KEY CONSIDERATIONS

- Need to consider how to maintain resilience in case of supply chain or service disruptions (use [scenario planning](#) as part of [integrated co-design processes](#))
- Existing service contract terms can be limiting and may require renegotiation
- Community scale partners (growers, harvesters, and processors) can find it hard to manage volumes. [Procurement innovations such as “forward buy contracts”](#) can provide the certainty local partners need to be able to deliver quantities required
- GHG reduction depend on distance, packaging, re-heat energy, etc.



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CO-BENEFITS



Off-site processing is especially favorable when kitchens have limited labour, skillsets, or space. It can also be more efficient for reducing food production waste.



Off-site partnerships can grow connections that contribute to social cohesion and community resilience. Using a combination of on-site and off-site processing may help increase resilience.



Off-site processing can further reduce healthcare capital and labor costs, and support community economic development while providing jobs for a just transition. Partnerships with Indigenous communities can also support economic reconciliation.

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CARE TEAM SPACES

OPPORTUNITIES

- Designing care team spaces to better support integrated care and treatment plans can enhance capacity to leverage food as medicine. This could include:
 - Dietitian offices
 - On-floor resource spaces
 - Collaboration spaces with other care teams (e.g. for larger integrated meetings)
 - Other potential innovations and synergies as co-designed with end-users
- These spaces close to patient rooms allows for direct observation and timely adjustment of menu patterns to optimize intake, suit preferences, and reduce food waste

CHALLENGES AND TENSIONS

- Space is typically at a premium
- The value of food as medicine as a critical component of quality care is often misunderstood; interdisciplinary spaces are often not prioritized or considered

FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- Ensure the value of food as medicine for quality care is understood in pre-design
- Involve dietitians, front-line staff, architects, interior designers, and others identified in [systems mapping](#), in exploring potentials to optimize integrated care through the lens of food as medicine
- Ensure potentials are embedded in the business case
- Explore value-adding synergies with your organization’s Indigenous Design Guidelines (if not yet developed, you might [start here](#))
- The above are important to consider from early planning stages and will generally have greatest impact. In design stages, details matter. This includes: size, configuration and adjacencies of core systems and programs in schematic design; and thoughtful integration of supporting systems and finishes (including: lighting; IT; materials that are easily cleanable, durable, ethical and toxin-free; colours/patterns that are comforting; views to nature, etc.)



Lions Gate Hospital HOpe Centre; Photo credit: Andrew Latreille

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CO-BENEFITS



Adequate space, proximity to patient’s rooms and enabling resources (IT, whiteboards, etc.) can support integrated care, improving staff well-being and capacity, and increasing quality of patient care.



Smart architectural and interior design can create more efficient spaces and program synergies that can increase flexibility and adaptive capacity, decreasing the need for subsequent retrofits and increasing low carbon resilience.



Synergies above can increase returns on investment and reduce capital and O&M costs.





Eating, Nourishing, Healing



FOOD OFFERINGS & MENUS

Food offerings have direct and indirect implications for all stages of food systems and healthcare facility delivery lifecycles, and should be considered in relation to all other impact areas.

OPPORTUNITIES

- Food offerings include:
 - Patient/resident menus
 - Retail and cafeteria offerings for staff and visitors
- Leading approaches include dimensions of:
 - Healthy sustainable diets including Planetary health menus
 - Traditional and cultural menus including Indigenous Foodways
- Food offerings present tremendous opportunity to improve quality of care and sustainable delivery

“Updating the menu is every hospital’s low-hanging fruit when it comes to climate change mitigation.”

— John Stoddard, AD Climate & Food Strategy, Health Care Without Harm



Figure 5: Planetary Health Menus (created by Nourish)

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CHALLENGES AND TENSIONS

- The complexity of patient’s dietary needs and preferences means dietitians can be juggling over 100 different dietary profiles at once
- Patients in acute settings often eat less (i.e. altered appetite) or crave comfort foods. Appetite and meal preferences may shift during recovery, especially during prolonged hospitalization
- Accommodating the diversity of nutritional requirements and integrating into daily operations is further complicated by:
 - Kitchen preparation and storage space, as well as staffing, that may determine the maximum number of meal options that can be offered at any given time
 - Availability/variability of local, in-season, plant-based, low-carbon, culturally-mindful, ethically produced ingredients, and/or lack of transparency to make informed determinations about them
 - Real and perceived cost challenges re above (due to scarcity, inflation, fewer providers at scale...)
 - Not all food retherms well, limiting options if this food service delivery model has been selected
 - Resilience and adaptive capacity in the face of supply chain and related logistics disruptions
- Integrating culturally mindful, sustainable menus requires shifts in conventional systems, infrastructures and approaches running against inertia of the status quo. Some policies/regulations that limit certain types of food can further complicate this (e.g. traditional Indigenous foods, garden produce, donated foods).
- Tensions between efforts to reduce packaging waste (i.e. bulk service) and improve flavour (e.g. adding garnish) v.s. reducing staff time and (labour) costs. Staff work flows are typically regimented, so meal preparation timing must fit into overall hospital schedules; but transformative innovations for co-benefits are possible
- Messaging, presentation and pre-conceived notions can impact intake (e.g. menu signage, servers’ micro-expressions, container type, and personal biases)

RESOURCES

- Planetary Health Diet, EAT-Lancet commission
- Planetary Health Menus, Nourish. Supporting resources:
 - Sustainable Menu Planning: Sustainable Menu Guide
 - Food-Related GHG Reduction: Coolfood Pledge
 - Values-based Procurement
- Guide to a Sustainable Menu: A Step by Step Approach, [webinar] Dietitians of Canada (2020)
- Sustainable Food Systems Toolkit, ICDA - Rich web-based resource library
- Waasegiizhig Nanaandawe’iyewigamig Traditional Food Guide, WN Health Center (Anishinaabe) - see page 4.
- Cooking in Two Worlds: A Process Guide for Incorporating Indigenous Foods into Institutions, Feed BC - Lead creators: Chefs Andrew George (Wet’suwet’en) & Jared Qwustenuxun Williams (Salish). Companion resources:
 - Where Do We Begin?
 - Why Is Serving Indigenous Food So Important?
 - How Do We Build Relationships?
 - Where Can We Source Indigenous Foods?
- Food Is Medicine Cooking Show and Recipe Book, FNHA





Growing, Gathering, Harvesting

Storing, Distributing

Preparing, Prescribing, Serving

Eating, Nourishing, Healing

Circularity, Composting

FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- Understand patient demographics and food preferences to design menu and food offerings.
 - Work with [Registered Dietitians](#) and integrated care teams to ensure menus meet patients' nutritional and holistic health needs.
 - Work with [Environmental Health Officers](#) to ensure approaches meet food safety and related health requirements; and to explore changes to allow incorporation of more local foods - especially traditional foods, donated foods, and garden/farm produce.
- Work with [Food Services](#), [Local Food Assets](#), [Local Distributors](#), [Chefs](#), and [Procurement teams](#) to source local, ethical, sustainable and specialty ingredients (traditional/cultural, plant-based, etc.) and with [Transformation teams](#) and [Leadership](#) to shift defaults - i.e. beyond lowest first cost, minimizing number of vendors/deliveries/trucks while maintaining required processes for verifying orders, processing invoices, etc.
- Work with [Ministries of Health](#), Agriculture, Climate (and others as relevant) to empower needed shifts.
- Work with [Indigenous Engagement/Health teams](#) to engage Indigenous networks and groups to advance Indigenous food initiatives and food sovereignty; to understand their laws, values, priorities and protocols to begin and move forward in good ways, and to learn from and further empower their existing and resurging practices.
- Work with [Food Services](#), [Dietitians](#), [Distributors](#), [Sustainability](#), [Procurement](#), [Quality Improvement/Transformation teams](#) to identify, monitor and responsively manage [values-based](#) metrics and [key performance indicators](#) (e.g.: nutritional value, food waste, carbon footprint, ethical standards, local food expenditures, local economic development, just-transition jobs, etc.).
- As noted in previous sections, [how food is prepared](#) will influence food offerings - not all foods retherm well; type of retherm equipment also influences options.
- Coordinate with all other [key action areas](#)
- Work with [Food Services](#) and other groups as needed to prioritize bulk reusables over individually packaged items (beverages, yogurts, etc.). Use [integrated co-design processes](#) to co-create solutions.





CO-BENEFITS



Focusing on creating food menus that are nutritious, culturally meaningful, sustainable, and ethically and locally sourced, enables benefits across health systems, including: faster healing times, fewer staff sick days, healthier communities, healthier ecosystems and greater health equity, across generations.

These investments add value and reduce true lifecycle costs, especially when procured with local Indigenous and community partners, using regenerative methods, and delivered via low-carbon local distribution networks.

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EXPERIENCE SPOTLIGHT: VANCOUVER GENERAL HOSPITAL - PLANETARY HEALTH MENU PROJECT

Led by Dr. Annie Lalande and Tiffany Chiang, the pilot brings together food services, dietitians, clinicians and planetary health experts with renowned chef and sustainable food champion Ned Bell to collaboratively develop over 20 new menu items for greater diversity of choice with less environmental impact.



Photo credit: Leila Kwok

[Learn more](#)

EXPERIENCE SPOTLIGHT: WHITEHORSE GENERAL HOSPITAL - INDIGENOUS TRADITIONAL FOODS

Yukon Hospitals is rooted in shared understandings that traditional food is an important part of Indigenous culture (36) and that healthcare facilities serving Indigenous populations have an obligation to remove barriers to it for health and healing. Cultural Programs Coordinators provide awareness of traditional medicines and assist First Nations, Métis and Inuit patients to support them in accessing traditional healing while in care. By investing in these core values, Whitehorse General Hospital has been able to provide traditional foods to in-patients for over 20 years.

Additional resources:

- Traditional Foods Protocols & Procedures Manual
- Yukon Hospitals Traditional Foods Key Actors Map

[Learn more](#)





EATING ENVIRONMENTS

The spaces and contexts in which food is shared matter. Environmental factors including colours, textures, lighting, smells, sounds, space for visitors to comfortably join while eating can all impact if, what and how much patients eat, which in turn impacts healing - meaning they all contribute to the quality of care.

OPPORTUNITIES

- Eating environments include: in-room environments; interior and exterior communal spaces; spaces for care-recipients, staff and visitors
- Opportunity to increase accessibility, inclusion and comfort
- Opportunity to embed Indigenous design for healing environments

CHALLENGES AND TENSIONS

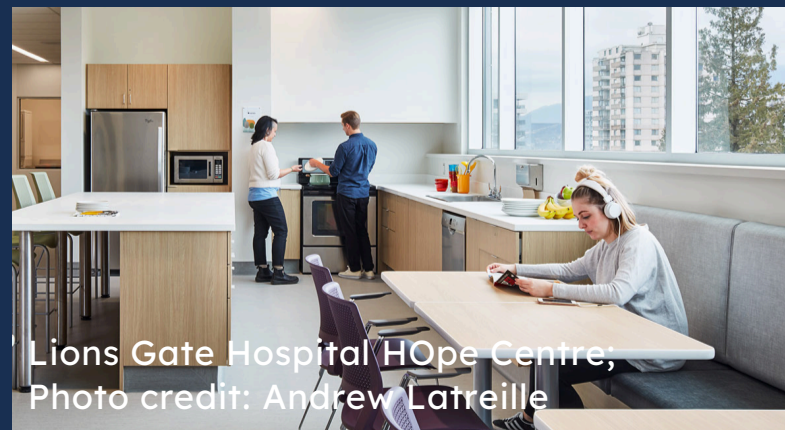
- Shared rooms present many challenges for spatial separation (smells, sounds, temperature, etc.)
- As with many other food infrastructures, the quality of eating environments are often not considered early enough or not viewed as important for quality care.

EXPERIENCE SPOTLIGHTS:

LIONS GATE HOSPITAL HOPE CENTRE

The design team used an **inclusive co-design process** reflecting input and expertise from diverse participants, including clinicians, youth, family, and facility planners.

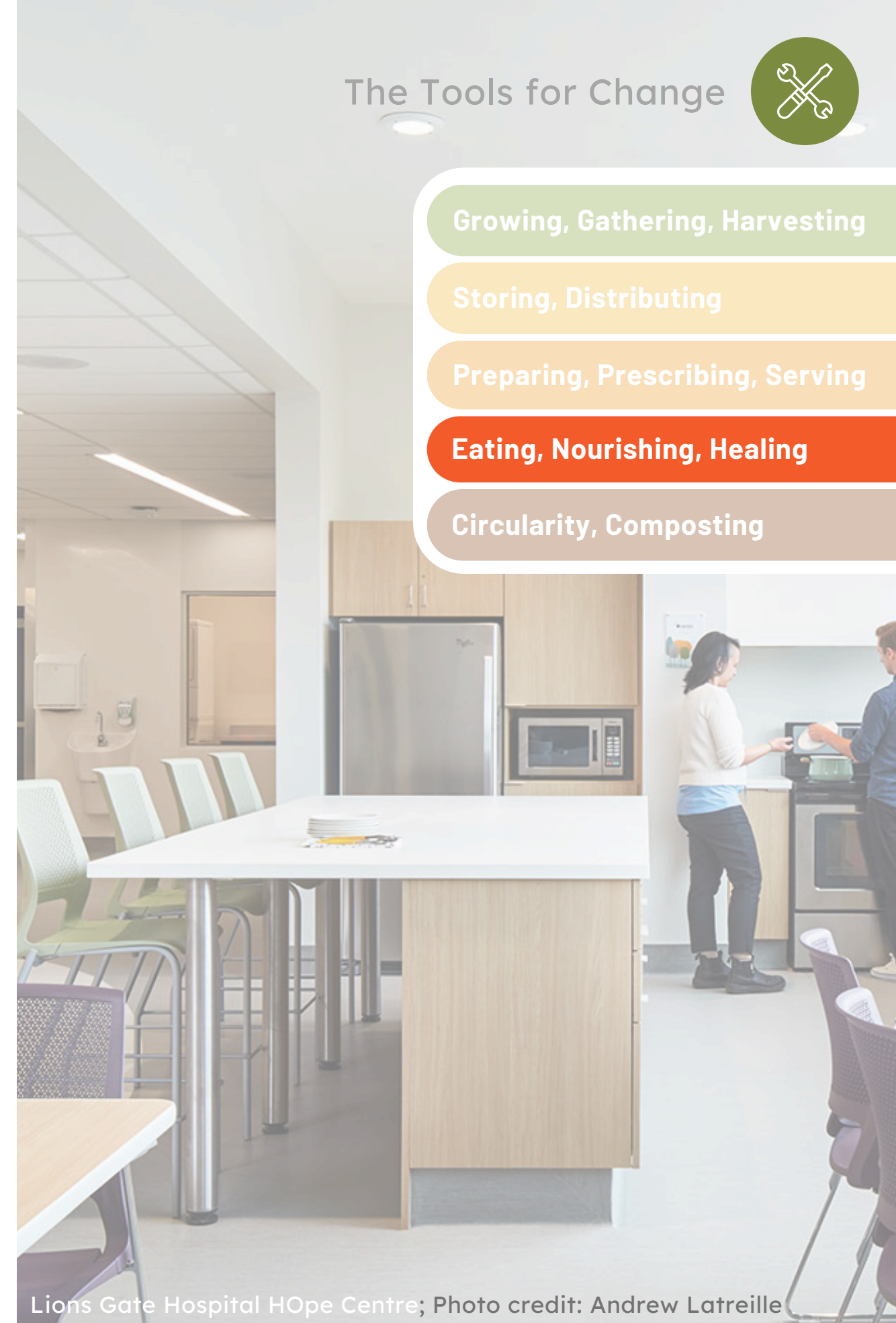
[Learn more](#)



Lions Gate Hospital HOpe Centre; Photo credit: Andrew Latreille



- Growing, Gathering, Harvesting
- Storing, Distributing
- Preparing, Prescribing, Serving
- Eating, Nourishing, Healing**
- Circularity, Composting



Lions Gate Hospital HOpe Centre; Photo credit: Andrew Latreille





FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

- Details matter and small changes can have big impacts, including natural lighting, materials, good acoustics, proper air quality and temperature
- Studies show that views of nature, natural elements (e.g. plants) even natural patterns, colours and sounds can have healing benefits (37,38,39)
- Engage specialty design teams, care-recipients and front-line care teams early on using [integrated co-design](#) processes to ensure needs are understood and reflected to leverage co-benefits and cost effectiveness
- Ensure place-based Indigenous Design Guidelines are embedded; where not yet established work with Indigenous Engagement teams to understand and embed key cultural values, principles, protocols, languages, etc. (the [International Indigenous Design Charter](#) may be useful as a starting point)
- Ensure accessibility is embedded and all users needs reflected (for both acute and long term care); beyond meeting code requirements in your jurisdiction, use best practice guidelines as a baseline (e.g. [Rick Hansen](#))
- Avoid “[Red Listed](#)” chemicals and [chemicals of concern](#) and employ the “[precautionary principle](#)”
- Consider [design for deconstruction, disassembly or re-use](#)



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EXPERIENCE SPOTLIGHTS:

CHURCH HEALTH COMMUNITY TEACHING KITCHEN

Teaching Kitchens are a powerful way to grow food as medicine capacities. Church Health has been a longtime leader in this space, providing patients and community members, [Cook Well Be Well](#) programs from their Crosstown Concourse Nutrition Hub to support holistic health and health equity.

[Learn more](#)



Photo credit: Ziggy Mack





For Long Term Care facilities:

- Comfortable, enjoyable dining experiences are critical to support quality of life
- Socialization is important; provide home-like environments to accommodate communal and social interaction (e.g. family-style dining area)
- Consider areas to display menus (weekly and daily) and flexibility in food options outside regular meal times (i.e. station or trolley with snacks and beverages)
- Ensure accessibility best practices are properly integrated

CO-BENEFITS



Well designed spaces can provide improved experiences - this includes: access to daylight; views of nature; colours, patterns and materials that are biophilic and culturally-informed; well-ventilated and acoustically-separated to reduce smells and noise; accessible seating for visitors.



Together these can make eating more comfortable and inviting, increasing social connection and nourishment.



Thoughtful material selection and designing to improve comfort, durability, deconstruction and recycling etc., can reduce embodied GHGs and improve population and ecosystem health.



Relatively small capital investments can yield significant cumulative lifecycle returns.



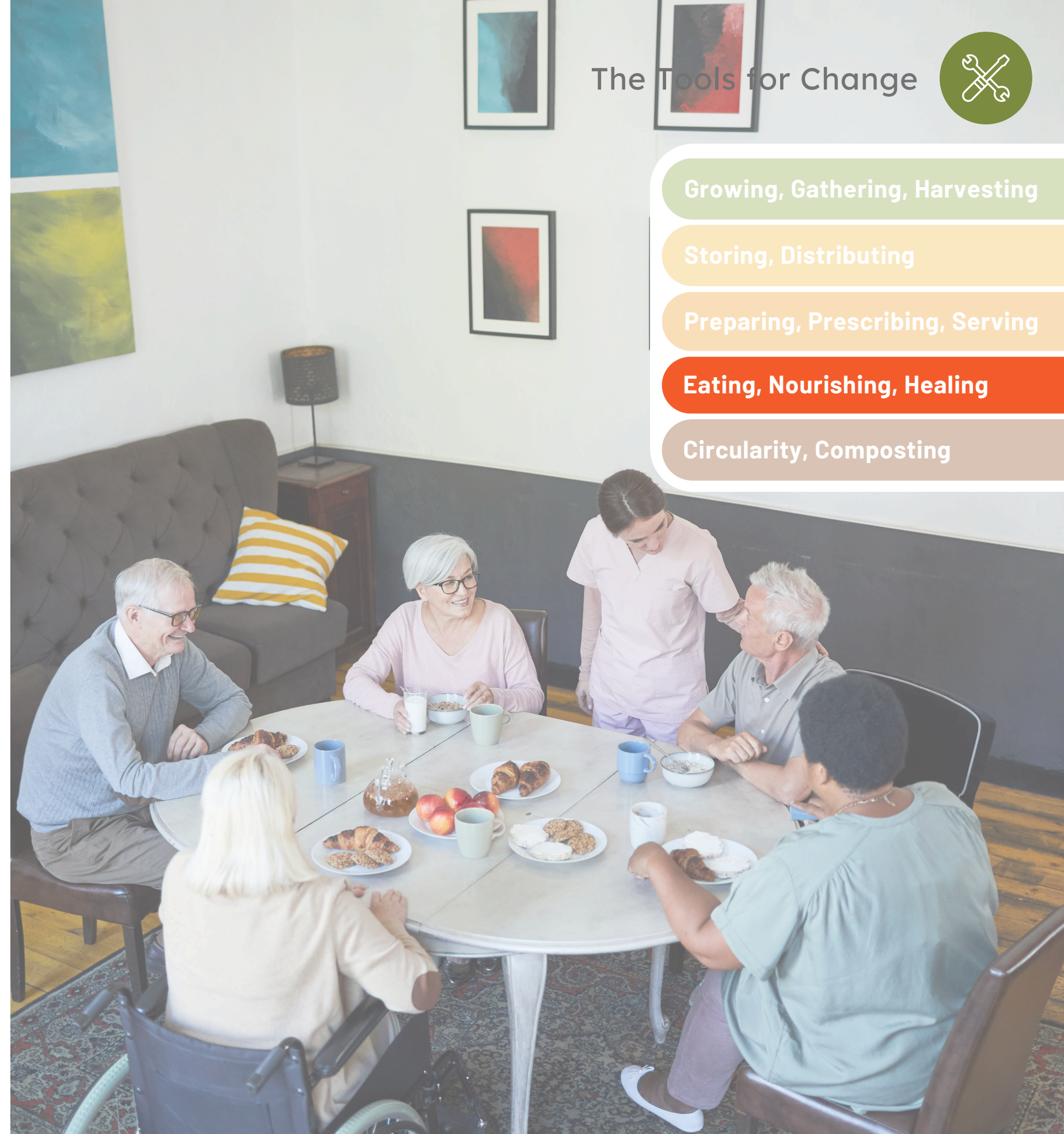
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Circularity, Composting

WASTE REDUCTION, REUSE & NUTRIENT RECYCLING

OPPORTUNITIES

Reducing, reusing and recycling includes opportunities for:

- Reducing demand as a powerful lever for reducing downstream waste
- Shifting to or integrating reusable servicewares (e.g. plates, cutlery, tray lines) that could be sorted in-house or through subscription-based partnerships
- Recycling or bioprocessing nutrients via composting of food scraps, compostable packaging and/or servicewares

CHALLENGES AND TENSIONS

- Not all “compostable” materials may be commercially compostable in your area. Work with Sustainability teams, Waste contracts managers, and any others involved to understand potentials and communicate accordingly (e.g. via signage, training)
- Health regulations need to be understood and contaminants safely managed (seek guidance from [Environmental Health Officers](#))
- Transitioning away from single-use plastics and individually portioned foods/beverages means using more reusable serviceware. This requires extra equipment (dishwashing capabilities), storage, staff time and upfront costs. However, long-term lifecycle impacts tend to favour reusables.
- Waste diversion systems can be confusing for users (patients, residents, visitors, staff) if not properly integrated (e.g. locations, signage, etc.)



The Tools for Change



Growing, Gathering, Harvesting

Storing, Distributing

Preparing, Prescribing, Serving

Eating, Nourishing, Healing

Circularity, Composting

CO-BENEFITS



Communicating reuse and recycling can increase awareness, appreciation and satisfaction of care in patients, visitors and staff.



Enhances place-based circular economies by creating social and economic benefit, for instance creating jobs for just transition.



Reducing waste and purchase of new materials also reduces GHG emissions and improves conservation of natural resources.



All of the above can yield immediate cost savings, increase lifecycle value, and provide opportunities for economic reconciliation with Indigenous-led partners.





FACILITIES DELIVERY LIFECYCLE CONSIDERATIONS

Follow the principles of the [zero waste hierarchy](#): (1) reduce; (2) reuse; (3) compost and recycle; (4) recover; (5) residuals management.

For example:

- Explore [food redistribution](#), [plant rescue](#), and equipment reuse options
- Provide adequate space, equipment and staff capacity to collect, sort, clean and store - including adequate structural loading capacities, grease traps, Health Safety and Worksafe requirements and training
- Develop solutions with input from front-line staff, patients, residents, sustainability teams, facilities management, Environmental Health Officers, waste management contractors, local circular economy networks, supply chain partners, manufacturers, specialty consultants, etc.
- Explore technological innovations to reduce waste, such as heat recovery options, UV fume hoods, emerging integrated composting systems
- Explore circular economy partnerships to decrease lifecycle costs and impacts, increase reciprocal value (e.g. [Salish Soils](#))

EXPERIENCE SPOTLIGHT: HOLY FAMILY HOSPITAL

Decreasing food waste by increasing food satisfaction of Long Term Care residents.

[Learn more](#)

The Tools for Change



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Circularity, Composting





EXPERIENCE SPOTLIGHT: ROYAL COLUMBIAN HOSPITAL

“What difference does a spoon make? On its own, a disposable spoon might feel like a drop in the barrel, but Royal Columbian Hospital’s Food Service Department realized that changing how they used this one, everyday piece of cutlery could lead to positive environmental impacts.”



[Learn more](#)

The Tools for Change



Growing, Gathering, Harvesting

Storing, Distributing

Preparing, Prescribing, Serving

Eating, Nourishing, Healing

Circularity, Composting

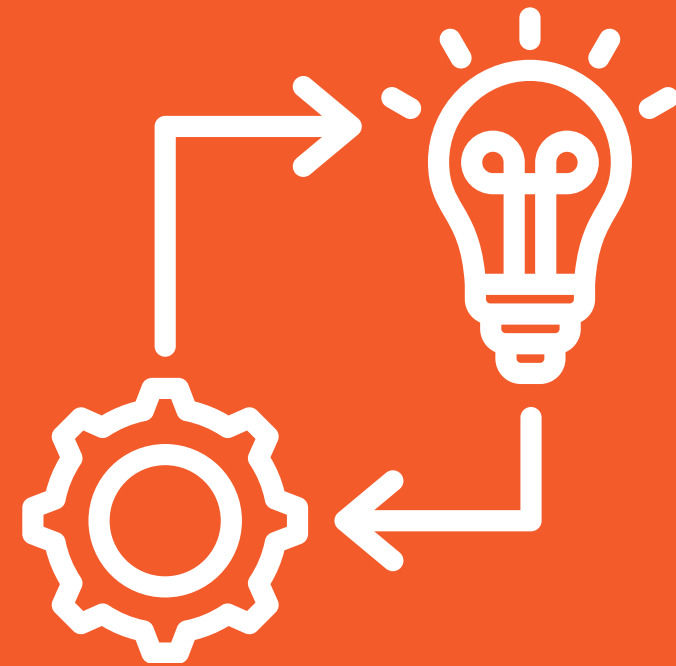
RESOURCES

- Reduce Food Waste, Project Drawdown
- Wasted Food Scales and Prevention Pathways, Environmental Protection Agency
- Waste Reduction Toolkit: Recycling and Beyond, GreenCare (BC)
- Food Waste to Food ‘Cycling’: The Reinstatement of Natural Law for the “Future Taste of our Homelands”, Atlanta Grant (Iroquois scholar working with Kitsoo/Xai’xais First Nation)
- Zero Waste Foodware Strategy, University of British Columbia (UBC)

Examples of implementation in healthcare from GreenCare (BC):

- VGH Partners With ShareWares To Make Safe and Reusable Cups An Option For Their Customers
- Forensic Psychiatric Hospital Kitchen Goes Paperless
- Waste to Energy at VGH





HOW

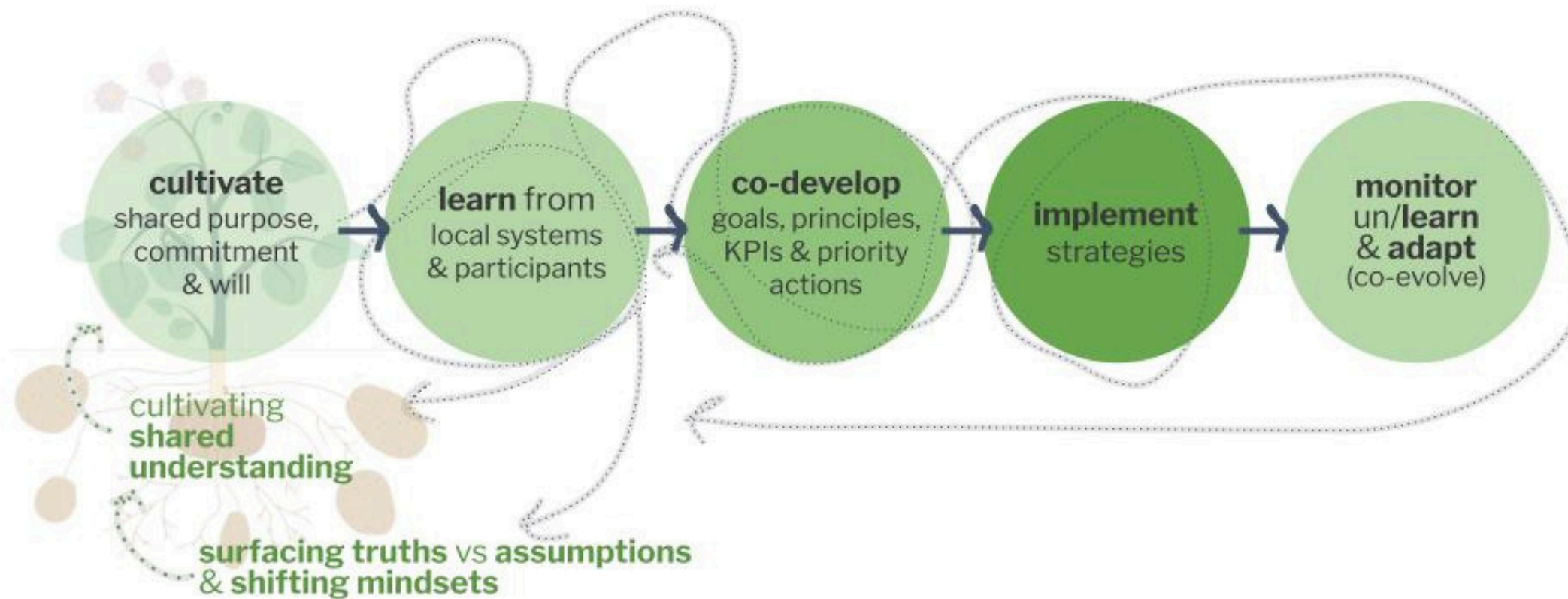
Strategies and Partnerships

- 1 How Change Happens
- 2 Facilities Delivery Lifecycle
- 3 Getting and Staying Aligned
- 4 Guiding Principles for Creating Change






How Change Happens



ALL grounded in **Indigenous rights, knowledges, cultural safety, respect, humility, justice, equity, diversity, inclusion & anti-oppression**

Figure 6: Transformation is not linear, but iterative, cyclical and inclusive.

Key Actors table:
 details on who should be involved in each stage 

KEY QUESTIONS

- How do we get **everyone on board**? (i.e. how do we shift mindsets, communicate value case, grow capacity?)
- How do we make **good decisions**? (i.e. that embed true value and JEDII (justice, equity, diversity, inclusion, Indigenous))
- How do we **implement** them?
- How do we **adapt** to continually changing contexts?
- How do we know if the interventions we make are **successful**? (i.e. what do we measure and how; how do we stay aligned?)
- How do we nurture **continual quality improvement**? how do we cultivate a culture of continuous learning, adaptive capacity-building and transformative leadership)





Facilities Delivery Lifecycle



Figure 7 shows the key stages in the development of healthcare facilities and an overview of the relationships these have to budget, schedule and agency. The following pages describe and provide key considerations for each of these stages in the context of sustainable food infrastructures.

PROGRAM-BUDGET-SCHEDULE

Beyond understanding stages of the facilities delivery lifecycle, it is also important to understand key relationships between them, especially those between program, budget, and schedule.

The **cost-opportunity curve** shows how the ability to make changes is greatest, and the cost of those changes is lowest during pre-design - making interventions here most impactful. Notice how this inverts during construction.

The **lifecycle cost iceberg** shows the relationship between capital costs (i.e. upfront costs to design and construct facilities) and long-term operational and maintenance (O&M) costs that often are much larger yet not considered in cost-benefit analyses in the business planning stage.

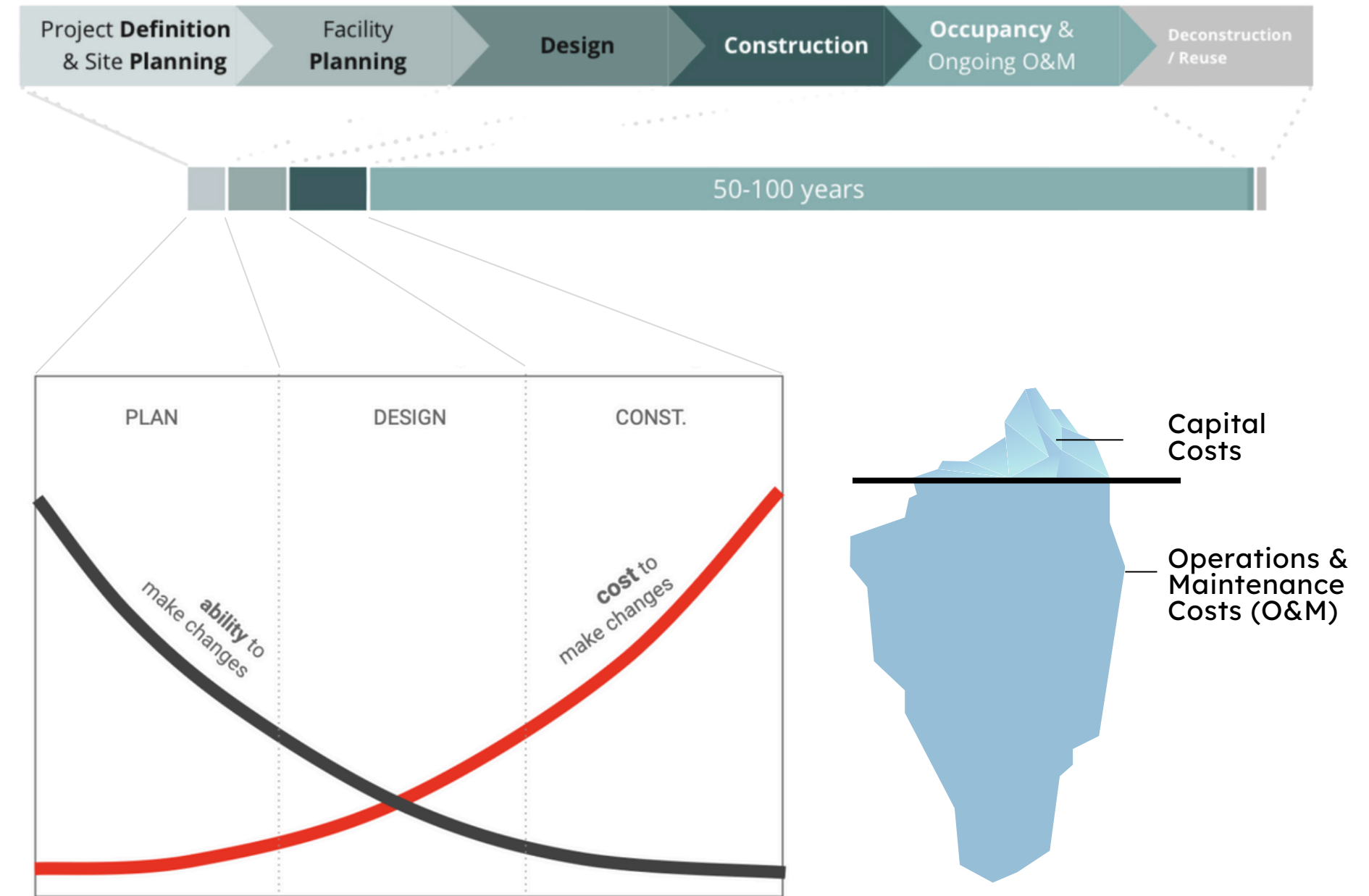


Figure 7: Facilities delivery lifecycle (top) with cost-opportunity curve (bottom left) and lifecycle cost iceberg (bottom right) (curve adapted from [Wideman, M. \(2001\) Project Management Simply Explained: a logical framework to help your understanding](#))





These initial scoping stages pose the greatest windows of opportunity for integrating food infrastructures and their co-benefits.

Project Definition & High Level Planning

(Region or Campus Plan, Site Program and Priorities Plan)

Facilities Plan & Business Case

(Opportunity Brief, Concept Plan, Clinical Services Plan, Functional Program, Business Plan, Budget)

- **Initial stage when the project’s purpose, ideas, goals, and objectives are established**
- All involved in this stage must understand **food as medicine** as a key component of quality care
- Supporting tools include: inclusive **engagement and co-design**
- NOTE: Health authorities and organizations build new facilities and renovate existing ones to meet existing and future clinical services demands. High Level Planning is often done to prioritize efforts at a regional scale, sometimes involving multiple health authorities. Some projects may advance directly from idea to Opportunity Brief or Concept Plan.

- **Stage when opportunities are explored and costed to test for viability and feasibility**
- It is critical that the business case includes all food related strategies to effectively integrate food infrastructures and consider all **co-benefits**. The business case must include food-related key design strategies (spaces, systems, etc) and sufficient budget for them since it is nearly impossible to add them later
- NOTE: An Opportunity Brief and Concept Plan are typically done before the Business Plan when no High-level Plan is in place. The Business Plan typically includes a Conceptual Design that is costed, typically by a Quantity Surveyor (at this stage, costing is typically a **“Class D” i.e. +/-25% accuracy**). Some jurisdictions have a specific template that must be used. The Functional Program and Clinical Services Plan will be referenced if not included.

Key Actors table:
who should be involved
in each stage



**Facility Delivery Lifecycle Key
Considerations Worksheet:** what
needs to be considered at each stage





Design

(Schematic Design, Design Development, Contract Documents)

Construction

- **Stage when details are worked out and tensions worked through** (i.e. how much space, where exactly, specific equipment and services, etc.).
 - This is also when construction drawings and specifications (i.e. Contract Documents) are developed
 - All relevant design disciplines need to be aware of the project's food-related priorities as these will affect their respective areas of work and how they interface with others'
 - Specific requirements related to food infrastructures need to be included, integrated across disciplines and scopes of work, and continually reviewed for alignment and effectiveness
 - NOTE: interfaces between areas of work are key opportunities for synergies. If not integrated and properly coordinated, they can also be a potential risk. A robust [Integrated co-Design Process \(IcDP\)](#) can mitigate risk and reduce costs.
- **Stage during which facilities are physically built** (i.e. structures erected or renovated, equipment installed, services connected, etc.)
 - During this stage, the number of people involved grows significantly, making coordination critical to ensure alignment and achieve the desired performance
 - NOTE: while efficiencies can be discovered at this stage, changes made during this stage are typically the most expensive to make (see cost curve in [Figure 7](#)). This is where the benefits of investing in robust, integrated and inclusively collaborative pre-design and design processes pay off

Key Actors table:
who should be involved
in each stage



**Facility Delivery Lifecycle Key
Considerations Worksheet:** what
needs to be considered at each stage





While deconstruction and re-use happen at facilities' end-of-life, considerations need to be included from pre-design through design and construction to be effective; doing so, can significantly mitigate future environmental costs and inefficiencies during replacement and retrofit:

Occupancy & "Post Occupancy" (including Operations & Maintenance)

Deconstruction and Reuse

- **Occupancy is when the facility can be used for functions as planned**
- Before "moving in", a process of measurement and verification is required to ensure all systems and equipment function as designed
- It is also critical to ensure that staff know how to operate and maintain equipment properly
- **Post Occupancy is when you can start measuring key performance indicators (KPIs) in relation to priority impacts and benefits, such as care-recipient health, staff well-being, environmental performance, and low carbon resilience**
- This input can also help Operations and Maintenance (O&M) teams maintain proper function and adaptively manage systems as conditions change. Note that these metrics should be both quantitative and qualitative - from energy use and GHG emissions to evaluating patient and staff experience

- **Deconstruction and adaptive reuse are more sustainable alternatives to conventional demolition**
- Deconstruction processes involve dismantling structures and systems in ways that allow parts to be separated and reused, or properly recycled to divert them from landfill
- Adaptive reuse means using an existing structure for a new function
 - e.g. reuse of an old Sears department store for community healthcare facilities at [Crosstown Concourse in Memphis, TN](#)
- Reuse can also refer to the reuse of materials and equipment
 - e.g. older models given to an NGO after upgrading

Key Actors table:
who should be involved
in each stage



Facility Delivery Lifecycle Key Considerations Worksheet: what needs to be considered at each stage





Getting and Staying Aligned



Shared understandings and alignment of goals and efforts are key to the success of any change effort.

To embed food as medicine and unlock its potential as a core dimension of quality care, there must **be re-aligning of understandings, values, purpose and goals**, as well as the subsequent priorities, practices and performance indicators used to evaluate success over a facility's lifecycle.

General strategies include:

- **Start early** (i.e. invest in pre-design)
- **Get key decision-makers on board and cultivate local champions**
- **Engage** the right people at the right time (i.e. early and ongoing)
- **Collaboratively** develop goals, priorities, strategies, designs, and measure progress
- **Adaptively** measure, manage and continuously improve:
 - Values and valuation approaches, such as KPIs
 - Inherent complexities and tensions across quantitative and qualitative, monetary and non-monetary metrics (e.g. lifecycle emissions, social cost of carbon, planetary health economics)

The following pages provide more detail, focusing on **four key strategic areas**:

INTEGRATION AND COLLABORATION

EVALUATION AND
CONTINUOUS IMPROVEMENT

PLACE-BASED INNOVATION

TRANSFORMATIVE LEARNING
AND LEADERSHIP





INTEGRATION AND COLLABORATION

SYSTEMS MAPPING

This is an approach for understanding the parts, purpose, actors and interrelationships within complex place-based systems. It is most effective when it is started early in the process, involves the full diversity of peoples impacted, centres equity, and is iterative. Key elements to map food infrastructures include:

- Food systems, lifecycles and key action areas
- Facilities delivery lifecycles
- Related community “food assets”

INCLUSIVE ENGAGEMENT

Engagement is critical for reimagining transformative potentials of food as medicine, in ways that can ensure ideas and approaches are effective, viable and centre justice, equity, diversity and inclusion. Effective engagement means engaging early and throughout. Generally, the fuller the diversity of representation and the earlier engaged, the more effective and feasible the possible solutions. A useful guiding principle commonly referenced is “nothing about us without us” (40, P8).* Work with your [Indigenous and Community Engagement Teams](#) to understand what relationships and resources already exist and how to move forward accordingly.

FIND LEVERAGE

Interventions in key places can have outsized impacts – often referred to as “[leverage points](#)”. Spending the time upfront to identify, understand and prioritize efforts at key leverage points can greatly increase both your impacts and your returns on investment.



INTEGRATED CO-DESIGN PROCESS (IcDP)

An [integrated design process \(IDP\)](#) is an inclusive approach to collaboration across disciplines, involving more perspectives from the start to enable value-adding synergies (i.e. “[multi-solving](#)”). Co-design is a participatory approach to designing integrated solutions together with end-users and community members as valued participants; recognizing the critical value of different knowledge systems and lived experiences for creating effective, inclusive and equitable solutions.

RESOURCES:

SYSTEMS MAPPING & LEVERAGE POINTS:

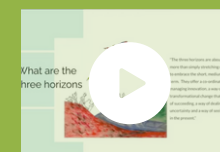
- [Rethinking Our Food Systems: A Guide for Multi-Stakeholder Collaboration](#), FAO (2023)
 - [ICDA Sustainable Food Systems Toolkit](#) (see: “[Mapping Institutional Food Services](#)” and “[Food Traditions and Cultural Wisdom Activity](#)”)
- [Food for Health Levers](#), Nourish
- [Systems Practice](#), Omidyar Group
- [Ethics of Indigenous Research](#), Castellano (2004)
- [Food Asset Maps](#), VCH (BC)

ENGAGEMENT

- [Pillars of Public Participation](#), IAP2
- [Inclusive Community Engagement Toolkit](#), C40 Knowledge Hub
- [Field Guide to Power Literacy](#), Goodwill.

INTEGRATED CO-DESIGN:

- [Integrative Design Guide](#), Reed, et al. (2009)
- [Integrated Co-Design: A Model...](#), Kerr, et al. (2022)



VIDEO: Three Horizons Webinar, Nourish Anchor Cohort, 2023



VIDEO: Braiding the Three Horizons, Nourish





LOW CARBON RESILIENCE

Low carbon resilience strategies reduce GHG emissions while also increasing climate resilience in the capacity to anticipate, cope with, recover from, adapt to and ideally bounce forward from shocks and stressors. Prioritizing these strategies addresses climate mitigation and adaptation together, in ways that leverage synergies and create added co-benefits.

NATURE-POSITIVE, NATURE-BASED

Strategies designed to restore/regenerate nature - a.k.a. “nature positive”, “nature-based solutions” or “regenerative design”. Host Nations have been designing nature-based solutions that reciprocally support the health of people and all relations since time immemorial.

REGENERATIVE AGRICULTURE

This is a holistic, systems-based approach to recycling nutrients across the food cycle to improve the health of soils, ecosystems, communities and future generations, drawing on Indigenous practices honed since time immemorial. It can produce food with higher nutrient densities (33,34). See the Salish Sea Regenerative Farm Society “[Experience Spotlight](#)” for an inspiring Indigenous-led example.

CIRCULAR ECONOMY, CRADLE TO CRADLE

This is an approach to production and consumption that seeks to create circular loops between the inputs and outputs of a system to eliminate waste. This can be done through the sharing, reusing, repairing, retrofitting or recycling of materials, products or equipment.

In the context of healthcare food infrastructures, this can include:

- Avoiding and composting food waste; reusable and compostable service wares and packaging
- [Materials and equipment reuse](#)
- [Designing facilities for disassembly and reuse](#)
- [Partnerships with local Indigenous and community groups](#)

Cradle to Cradle is a concept that reframes all “waste” as food for other systems. **Biological nutrients** (e.g. compost) can be returned to nurture healthy soils, while **technological nutrients** can be reused or “upcycled” as materials for new products. Such strategies seek not just to close loops and reduce waste, but to improve health across nutrient systems and lifecycles.

RESOURCES:

- [Cradle to Cradle](#), McDonough, W & Braungart, M. (2002)
- [Food and the Circular Economy - Deep Dive](#), The Ellen MacArthur Foundation
- [Food Waste to Food 'Cycling': The Reinstatement of Natural Law for the "Future Taste of our Homelands"](#), Grant, A-M. (2023)
- [Low Carbon and Environmental Sustainability Guidelines for Healthcare New Construction](#), GreenCare (BC)





RE-VALUATION AND CONTINUOUS IMPROVEMENT

TRUE COST (TRUE VALUE) ACCOUNTING

This is an emerging approach for understanding the often hidden costs and benefits of food systems and their impacts on the health of people and ecosystems. It includes societal costs (e.g. of biodiversity loss, global heating, “forever chemicals” and resultant costs for public and planetary health) as well as co-benefits (e.g. from cradle-to-cradle strategies like regenerative agriculture) to be counted and valued.

PERFORMANCE MANAGEMENT

Performance targets should be established during **pre-design** so that they can be embedded in contract requirements for design and construction. Key performance indicators should integrate quantitative and qualitative metrics and be co-developed with all key actors impacted to ensure methods and outcomes are aligned.

DEVELOPMENTAL EVALUATION

In addition to conventional outcome-based evaluation, **developmental evaluation** can be instrumental in supporting adaptive management as part of continuous Quality Improvement.




VIDEO: An Illustrated Look at Quality Improvement in Health Care, Dr. Mike Evans

VALUES-BASED PROCUREMENT

This is an emerging approach to the purchasing of goods and services in which evaluation is based on agreed-on values, not just lowest upfront costs.

For healthcare food infrastructures this can include:

- Contracts for planning, design and construction (including procurement tool innovations like “**forward buying**”)
- Purchasing of equipment
- Purchasing of ingredients



VIDEO: Values-based Procurement Webinar, Nourish, April 2023

ACCOUNTABILITY

A robust accountability framework is important to ensure that efforts remain on track.

The **Energy and Environmental Sustainability team** in BC is developing guidelines for food infrastructures for planetary health as part of their **Low Carbon and Environmental Sustainability Guidelines (2023)**.

EXPERIENCE SPOTLIGHT: THUNDER BAY PUBLIC SECTOR FOOD SUPPLY CHAINS

Lessons from Procurement Leaders at the City of Thunder Bay.

[Learn more](#)

RESOURCES:

- True Cost Accounting, Sustainable Food Trust
- Values-based Procurement of Food in Health Care: A Primer for Anchor Institutions to Harness their Buying Power for the Health of Patients, People, and Planet, Nourish Leadership (2023)
- Creation of National Food RPF Model(s), Nourish Leadership (2018)
- Food Services Vision, Mission and Values, University of British Columbia/UBC (2022)
- Tips and Tools for Integrating Local Food in RfX for Food Services, FeedBC (2023)
- Sustainable Food Procurement Guide, WHO-ATACH





TRANSFORMATIVE LEARNING AND LEADERSHIP

COMMUNICATIONS

How healthy eating and healthy food systems are presented can be as important for affecting change as food quality. This includes:

- Language used (e.g. “climate friendly”, “nourishing”, “cultural practice”)
- How the food is served (e.g. body language, facial expression, etc.) and promoted (e.g. placement, advertising, etc.)
- How interconnected health impacts are communicated (e.g. visually, verbally and experientially)

TRANSFORMATIVE LEARNING, LEADERSHIP AND CAPACITY-BUILDING

All are reflexive and system-based, and involve:

- Understanding ones own role and potentials in systems
- Expanding perspectives to grow individual and collaborative capabilities and capacities to in turn support internal, interpersonal and institutional change. See the [Food is Our Medicine](#) learning journey for a powerful capacity-building resource.

Transformative leadership requires, nurtures and empowers transformative learning and the shifts it enables.



Introducing UBC's first ever Climate-Friendly Food Label



Most Climate-Friendly. **The best option!**



Somewhat Climate-Friendly. **A good option.**



Least Climate-Friendly. **Less good option.**

Now available at **Mercante**

Figure 7: University of British Columbia (UBC) Climate Friendly Food Labels





POLICY, REGULATIONS AND ADVOCACY

While transformative policies are emerging (e.g. [City of Vancouver Local Food Systems Action Plan, 2021](#)) many policies and regulations are lagging behind. Change will require a combination of advocacy and iterative renegotiation.

COMMUNITIES OF PRACTICE (COPs)

COPs are well-established means of growing individual capabilities and collaborative capacities. Below are some relevant examples, and we encourage you to seek out similar communities in your region:

- [CASCADES](#)
- [International Confederation of Dietetics Associations GROW](#)
- [Nourish Cohort](#)
- [FeedBC Food Hub Network](#)
- [GreenCare](#)
- [FNHA Community Champions Model](#)

FROM INDIVIDUAL ACTION TO SYSTEMS CHANGE

How Municipal Supply Management leader Dan Munshaw is leading new ways forward, exemplifying transformative learning and leadership.

[Learn more](#)



RESOURCES:

- [Climate-Friendly Food Labels](#), University of British Columbia/UBC
- [Playbook for Guiding Diners Toward Plant-Rich Dishes in Food Service](#), World Resources Institute
- [Planetary Health Education Framework \(and related resources\)](#), Planetary Health Alliance
- [Food Is Our Medicine Learning Journey](#), and [Planetary Health Menu COP](#), Nourish Leadership
- [Healthy Diets-Sustainable Food Systems: Brief for Food Service Professionals](#), EAT-Lancet Commission
- [How Public Sector can take Control of their Supply Chain](#), Dan Munshaw (Nourish)
- [Organizational Readiness for Sustainability Playbook](#), Cascades





Guiding Principles for Creating Change



1. FOOD IS MEDICINE

- Food is a form of treatment, care and healing - nurturing healthy people, communities, ecosystems and improving planetary health

2. CULTIVATE SHARED UNDERSTANDING; CENTRING EQUITY & JUSTICE

- Equitable access to determinants (5, 7) and determination of health (42)
- Sort facts from fictions by integrating diverse perspectives in just and equitable ways; respecting different knowledge systems and ensuring “ethical space”

3. INVEST IN LAND-BASED RELATIONS

- “Honour the food and the hands [and all relations] that made it”
- Invest in reciprocal place-based relations
- Reconciliation (including economic)

4. “NOTHING ABOUT US WITHOUT US”(40, p.8)

- Engage from the start and throughout to co-create solutions and make decisions with those directly impacted

5. GET IN EARLY & GET ALL ON BOARD

- Invest in pre-design (planning, project definition, business case development)
- Meet people where they are, cultivate champions and grow momentum

6. PRIORITIZE CO-BENEFITS

- Invest in efforts that create reciprocal and cumulative value for planetary health

7. ELIMINATE WASTE & NURTURE RECIPROCITY

- Invest in circularity in ways that create cascading value for local communities, ecosystems and all relations

8. MEASURE (AND INVEST IN) WHAT TRULY MATTERS

- (Co)create metrics to support shared values, measure true costs, use values-based procurement
- Invest in lifecycle value and reciprocal relations for compounding co-benefits

9. GROW CAPACITY & CONTINUOUS IMPROVEMENT

- Transformation requires adaptive management and continuous learning across individual and institutional levels, grounded in humility, respect, curiosity and care
- Embrace developmental evaluation

10. WHOLE-OF-HOSPITAL & WHOLE-OF-HEALTH APPROACH

- Integrate efforts across all levels and departments
- Take into account efforts and ability to impact planetary health beyond the hospital (i.e. whole community, whole food system, etc.)





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