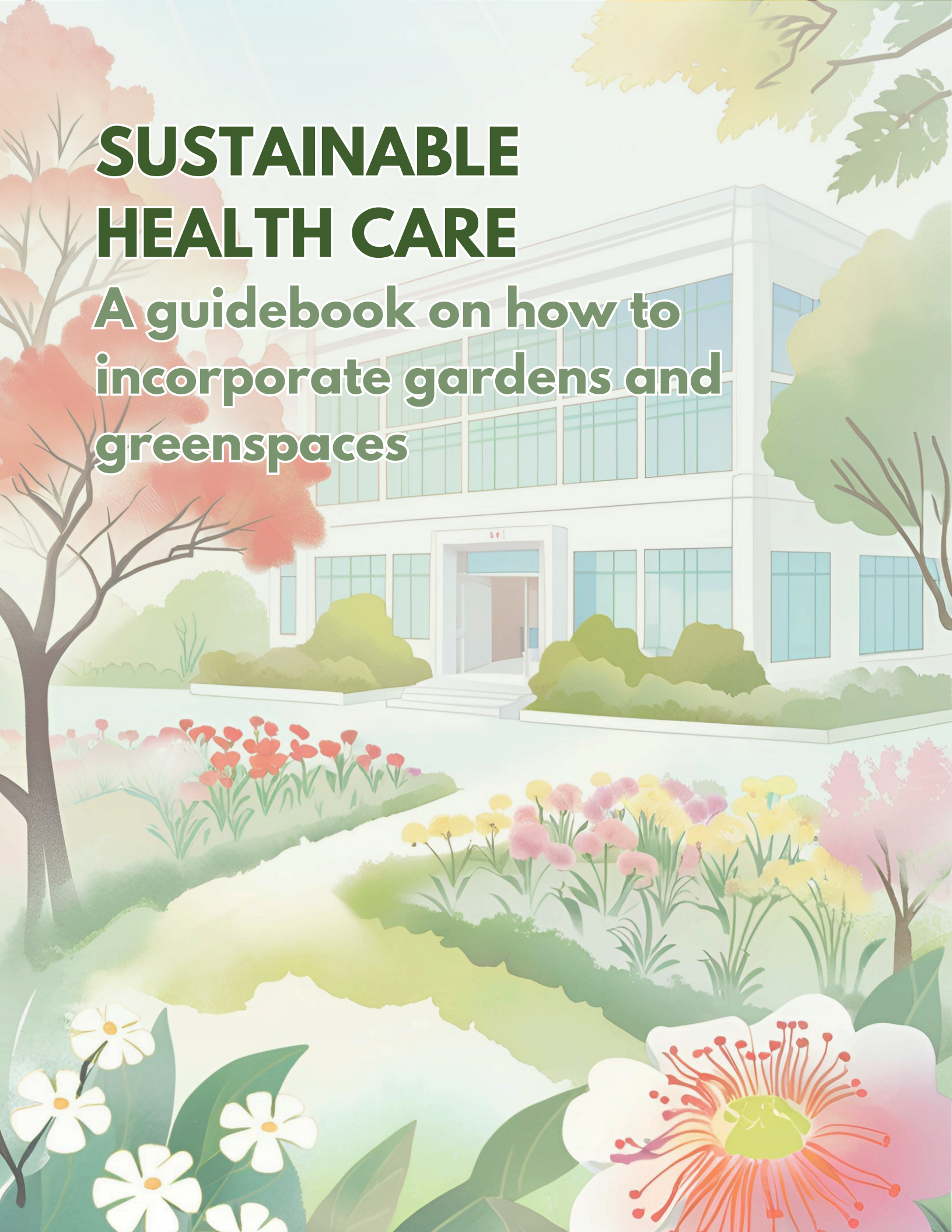

SUSTAINABLE HEALTH CARE

A guidebook on how to incorporate gardens and greenspaces

PURPOSE AND SCOPE

Planetary Health is a multidisciplinary, solutions-oriented approach to analyzing the impact of human activity on the environment. Ultimately, it is about addressing how the health of the planet affects our own human health.

The health care industry is responsible for approximately 4-5% of greenhouse gases (GHGs) worldwide and in Canada, **producing a carbon footprint higher than the aviation industry** (Tennison et al. 2021). As physicians and health care workers, we are in a trusted position to bring a scientific and social lens to these issues as we witness the direct and indirect impacts of the changing climate on health. A growing number of patients are experiencing climate-related distress directly, including respiratory exacerbations during wildfire season. While health care professionals are indirectly impacted, for example, helping flood-evacuated patients navigate their chronic disease management.

This guidebook is a call to action for all Canadian doctors and health care professionals to assess the need for change in food processing practices, and its direct impacts on climate change. It provides insight into Canadian food processing practices, and the associated contributions to GHG emissions and environmental degradation. The byproducts of which directly affect human and ecological health. We provide actionable items that can be implemented within health care practices to reduce carbon footprints while enjoying the plentiful benefits of greenspaces.

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THE IMPORTANCE OF GREENSPACES

OUR CURRENT RELIANCE ON THE INTERNATIONAL FOOD SUPPLY INDUSTRY

In Canada, we rely heavily on the importation of fresh fruit and vegetables from international markets, most notably from the USA and Mexico, which increases our vulnerability to supply chain disruptions (Canadian Agri-Food Policy Institute 2021).

The high dependency on imported products is a result of multiple factors, including Canada's geographical location and short growing season (Horticulture Section, Crops and Horticulture Division, and Agriculture and Agri-Food Canada 2023). In 2022, the Government of Canada reported that the country had been the fourth-largest fresh vegetable importer in the world - with a 10.6% increase in importation from 2021.

THERE IS AN URGENT NEED FOR CHANGE - THE WORST HAS YET TO COME

People who live in Canada have been dealing with food insecurity and instability at increased rates over recent years, as they regularly face increased prices and empty shelves. This is a result of a disturbance in the Canadian food supply - whether it be a stalling in production or the basic lack of supplies (Leyton 2022).

THE IMPACT ON OUR CLIMATE

Food systems alone accounted for 1/3 of global GHG emissions in 2015, and in Canada, 60% of produced foods is thrown out as waste each year, with 1/3 of it still being edible at the time it is thrown out (Crippa et al. 2021). This matters not just for the fact that we are throwing out perfectly good food, but because food waste in landfills produces methane - a potent GHG 25% more dangerous than carbon dioxide (Brown 2022).

Moreover, as Canada imports much of its produce, it is important to consider the effects of food transportation emissions. Fruit and vegetable transport alone contributes to 36% of global-food emissions (Li et al. 2022).

Additionally, plant-rich diets have a lower environmental strain within food systems. Plant-based agriculture generally requires less land, water, and energy than animal-based systems, resulting in a significantly smaller carbon footprint (Scarborough et al., 2023). For example, a vegan diet produces 75% fewer greenhouse gases and demands less land compared to the diets that include over 100g of meat per day on average (Scarborough et al., 2023).

THE BENEFITS OF GREENSPACES:

HUMAN HEALTH BENEFITS OF FRESH, LOCALLY GROWN PRODUCE

ENCOURAGES PLANT-FORWARD EATING

There are clear health benefits with increased consumption of fresh produce, and with a more plant-forward diet there are additional benefits for planetary health (Sabaté and Soret 2014). Involving patients in a health care-based garden fosters an inclusive community and those who contribute are more likely to try and enjoy what they have grown. Gardens can also provide quick "snack and go" options, encouraging more fresh fruit and vegetable consumption.

IMPROVED PATIENT STAY EXPERIENCE & QUICKER RECOVERY

Hospital greenspaces are beneficial for both patients and staff. Patients involved in gardening have reported increased satisfaction with their hospital stay (Li et al. 2022). Increased greenery has also been shown to reduce blood pressure, improve sleep, reduce stress and anxiety, increase mental health, and quicken recovery times (van Iperen, Maas, and Spronk 2023). These benefits influence patient experience and recovery, as well as job satisfaction for staff.

PROVIDES HIGHER NUTRIENT VALUE

Imported produce often has lower nutritional value due to early harvesting and long transport times, meaning people who live in Canada may get food past its peak nutrition (Hill 2008). As Canada heavily relies on imports, it raises the question of whether people are willing to trade quality for cost (York University 2017). While freshness remains the top factor in consumer decisions, cost is increasingly important, according to Foodland Ontario (2023). A practical solution to balance both factors is promoting community gardens and greenspaces.

RESTORES THE HUMAN-NATURE CONNECTION

Taking a walk outside can bring feelings of mental and physical relief. The concept of “Ecowellness” aims to bring attention to the human-nature connection, with studies suggesting a strong connection with nature can support patients in maintaining physical health, working through difficult life events, and inspiring creativity (Reese and Lewis 2019).

“It’s a fundamental part of a healthy diet. Fresh, local food simply tastes better than imported food and it’s better for you”, Peggy Brekveld, President of the Ontario Federation of Agriculture (Ontario Federation of Agriculture 2022).

THE BENEFITS OF GREENSPACES

SOCIAL IMPACTS, FOSTERING INCLUSIVITY, AND EQUITY PROMOTION

INCREASED USE OF FOOD PRESCRIPTIONS

On-site gardens can grow foods for the purpose of filling produce boxes distributed as “food prescriptions” to patients, Learn about current initiatives:

- **Nourish Leadership’s Food Prescribing Field Scan Webinar** to learn more.
- Hamilton, ON food prescribing efforts can be found **here**.

INCREASED AGRICULTURAL KNOWLEDGE AND NEW SKILLS

When patients, volunteers, newcomers, family and community members are able to join in on the activities of growing, new agricultural skills are learned - adding to the pool of knowledge for the next generation of farmers and local gardeners.

SUPPORT FOR COMMUNITY FOOD PANTRIES, MEAL MAKING, AND DONATIONS

Patient food gardens offer maximum control over the use of overages - allowing the donation of extra food to local charities or using them for patient literacy efforts.

HERBAL MEDICINES

Holistic health practices encourage and involve the use of herbal teas and tisanes to support health. Patients can benefit from education on these practices, as many herbs are easily grown in community or patient gardens. Dedicated garden spaces can also be set aside for local Indigenous organizations or friendship centers to grow culturally significant medicines such as tobacco, sage, sweetgrass, and cedar.

DECOLONIZING FOOD SAFETY AND SAFETY ASSUMPTIONS

Public Health Inspectors' standards are informed by the effects of colonisation, much like most professions across Turtle Island. More about the impacts of colonization of Indigenous food systems can be learned **here**.

On-site gardens are no more risky than food grown in industrial agriculture. Thus, pursuing community gardens places pressure on the food inspection sector to challenge their assumptions about food safety.

INCREASED CULTURAL DIVERSITY IN HARVEST

Conventional suppliers and broad-line distributors provide the most popular or widely available produce, limiting the available diversity among the crops. Self-led gardens have maximised control over crop diversity.

Community gardens can grow fruits, vegetables, and herbs that will provide cultural relevance and safety to patient populations. Some examples of such crops include okra, Mexican oregano, and Thai chili peppers.

CONNECTION WITH INDIGENOUS COMMUNITIES FOR GROWING PRACTICES & CONNECTIONS TO THE LAND

Collaboration should be supported by working with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and The Three Sisters as Indigenous Sustainable Agricultural Practice.

THE BENEFITS OF GREENSPACES

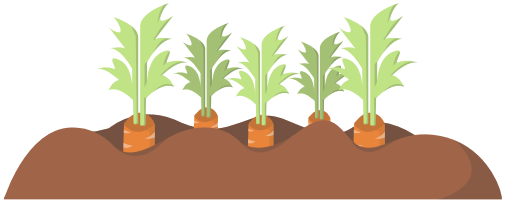
GARDENING FOR PATIENT THERAPY

COMMUNITY CONNECTION & ENGAGEMENT:

- Newcomers can form a connection to home via the cultivation of relevant plants
- Building social relations and ties to the community
- Farming and education tours, building an urban-rural connection
- Hands-on and early-learning for school groups

THERAPEUTIC & EMOTIONAL WELL-BEING:

- Calming space for patients, visitors, and staff
- Geriatric patients can reconnect to early year memories
- Benefits to mental and physical rehabilitation
- Beautifying healing spaces



INSTITUTIONAL BENEFITS:

- Improved patient satisfaction
- Demonstrate community leadership
- Reduced food waste
- Increased opportunity for social enterprise (eg. pop-up markets)
- Contributes to sustainability plans
- Reduced GHGs through a potential reduction in imported produce and food waste
- Builds new community partnerships
- Easy staff access to healthy food
- Improved status in the community
- Opportunities for new branding campaigns can support fundraising initiatives for hospital foundations

Check out the David Suzuki Foundation's Gardening tips for beginners!

GENERAL GARDEN LOGISTICS

So you have passion and a project champion - how do we go about creating your garden greenspace?

First and foremost: work with grounds maintenance and other stakeholders at your facility for project management and land options, which may require rezoning.

1. DETERMINE YOUR STAKEHOLDERS

☐ **Who do you need to engage with?**

- Consider connecting with patient and family advisory groups, youth councils, green teams, health care staff, hospital leaders, cafeteria staff and others who may have valuable input in the design and implementation of your garden.
- Infection Protection and Control staff can provide valuable input into any potential risk factors for immunocompromised patients who may want to engage with the garden.
- Community consultation with local Indigenous groups or other cultural groups in your area
- The accessibility community and those who use mobility devices are important stakeholders for ensuring your space is accessible to all.

☐ **Get creative!**

- Consider out of the box engagement ideas such as a community pot luck dinner, an art contest to create sample garden designs or a smudging ceremony in the proposed location of the garden.

2. DETERMINE YOUR BUDGET

☐ **Where is your money coming from?**
Explore local or government grants, as well as in-house money, local donations, and community groups.
Learn more about community planting grants here.

☐ **Consider the need for longevity with funding, as initial funding sources may not cover long term maintenance, upkeep or programming. Tracking cost savings and health benefits can reinforce sustainability efforts.**

3. FIND AN APPROPRIATE SPACE AND LOCATION

- ☐ **What space is available?**
  - Seek out accessible spaces on hospital grounds, such as a rooftop or courtyard, or an area in a local park
  - Check out the Farmer's Almanac's tips for gardening in small spaces

- ☐ **Connect with local community groups and Indigenous communities regarding use of the land.**
  - Any land used should be done in good faith and be in partnership with local Indigenous communities which includes honouring and answering to the calls to action set forth by the Truth and Reconciliation commission and UNDRIP

- ☐ **What are the growing conditions like at your garden location?**
  - The most successful gardens have a nearby water source, get 6-8 hours of sunlight, have little wind, and are not prone to flooding
  - Check out how to design a raised garden bed here - which can help with draining and accessibility
  - Learn more about designing a low-maintenance garden here

4. GET APPROVALS FOR YOUR PLAN - FOLLOWING BYLAWS AND ZONING REQUIREMENTS

- ☐ **This process may involve coordinating with facilities departments for project oversight and exploring possible land options**

- ☐ **Contact your local authorities and find out how the land is zoned and who owns it**

- ☐ **Consider further consultation with local Indigenous groups**

5. LABOUR

- [ ] **Do you have a crew of workers to support the project?**
  - Do you have volunteers at your facility?
  - Are there any local groups available to help?

- [ ] **Labour solutions - work with resources at your location and municipality to gain support**
  - **In house:**
    - Determine a project leader
    - Campaign for a green team
    - Reach out for volunteers
    - Add to current volunteer tasks
    - Reach out to hospital maintenance staff
    - Consider applying to the Canada Summer Job funding program for summer staff
  - **Out of house:**
    - Reach out to school groups
    - Hire students in the summer

- [ ] **Longevity and Institutional Knowledge**
    - Consider staffing needs for future, volunteers versus paid position of a garden coordinator to keep momentum throughout the duration of the project and into the future.

6. MAINTENANCE

- [ ] **Determine the capacity of labour involved**
  - Consider how large your space is

- [ ] **Understand the daily, weekly, monthly, and annual tasks to determine how many hands will be needed**
    - This can change seasonally and with the different crops you grow
    - Learn more about typical daily garden tasks **here**

7. SECURITY

- [ ] **Consider the community**
  - Sharing gardens vs. regulated community gardens
  - Sharing gardens have no security measures and operate in a “help yourself” fashion
  - For regulated community gardens - Is there access to the garden for the general public *outside* of operating hours?

- [ ] **Are there animals in the area that could be a potential threat to the crops?** Is there compost or open containers that could attract pests or animals?

- [ ] **Consider implementing security measures such as fences, locks, a key pass, or choosing a location that only has access from inside the hospital**

DESIGNING YOUR GARDEN

Now that you have figured out the general logistics for your garden, it's now time to design your greenspace!

1. GARDEN BED

- [ ] **Determine available space and accessibility needs**
  - **Raised beds are an accessible and space efficient option**
    - They should be a minimum of 18"(46 cm) tall, and consider having them be 24-30" (60 - 76 cm) tall for increased accessibility
    - Keep them to a maximum of 4 feet (1.2 m) wide to allow easy access to the centre of the garden - beyond that, it may be hard to reach the centre
    - Learn more about designing a raised garden bed **here**
    - Include options, such as an in-ground garden, hanging pots, planters, and grow bag gardens to increase diversity and accessibility
    - The length of your garden can vary depending on your available space so long as it is structurally sound
    - Learn more about different types of garden beds **here**
  - **Consider accessible doorways, ramps and flooring if your garden is indoor**

2. SOIL

- [ ] **Do a soil test on what is already available, checking for pH, the presence of heavy metals, and other contaminants**
  - You can purchase kits online to determine soil pH which dictates what you can grow in your garden
  - Consider the types of garden beds you have as the soil in in-ground gardens cannot be easily changed, limiting what you can grow. However, the soil in planters and pots can be changed regularly
- [ ] **Procurement**
  - Purchase nutrient-rich soil from a farm co-op
  - Use existing compost on-site
- [ ] **Feed your soil**
  - Select natural feeds - options can include compost, grass clippings, manure, coffee grounds, eggshells, seaweed extract, and worm castings
    - Learn more about natural feeds **here**

3. WATER SOURCE

- [ ] **Does the space you picked have an available water source?**
  - **Examples include:**
    - A rain barrel to collect rainfall - typically placed near a gutter or close to the building
    - A hose - if it is close-by, or if you have to get one installed
    - For in-ground gardens, explore the option of water collection gardens, where you essentially dig a hidden reservoir

4. EQUIPMENT AND TOOLS

- [ ] **Do you have an area where you can securely and safely store your equipment?**
  Note: Some equipment can pose a patient and staff safety risk and it is imperative to lock these items up when not in use

- [ ] **Typical *essential* tools include:**
  - **Trowels** for digging and moving soil and mulch
  - **Water container** for watering at close range
  - **Snips** for pruning and harvesting
  - **Buckets** for transporting and carrying away weeds for harvest
  - **Mulch** for a protective top layer of soil
  - The **seeds/plants** you wish to grow

- [ ] ***Optional* tools can include:**
  - A **trellis**
  - **String** for trellising - **jute twine** is an excellent compostable option
  - **Protective clothing,** such as gloves and hats
  - **Cloches** can be useful in the event of frost
  - **Seed starting material** are beneficial for indoor starts

5. PEST CONTROL

- [ ] **Is the area accessible by birds and potential predators?**
  - Deer are known to be detrimental to gardens - consider companion planting. Learn more here

- [ ] **You can protect the area from pests by using:**
  - A frame, net, fence, or other kinds of protective structures against larger animals.
  - Shiny objects to deter birds and noise machines to deter some rodents.
  - Learn more about naturally protecting your garden **here**

6. CROP CHOICES

- [ ] **Do the crops you wish to grow correlate to the local climate?**
  - What growing conditions do the plants need?
  - Is there a relevant 'micro climate' you can use?
  - Do seeds need to be started indoors, or plants started from seedlings?
  - Consider growing native plants

- [ ] **Do you want to grow foods to be on the cafeteria menu?**
  - Speak to food services about logistics

- [ ] **Do you want to grow a lot of plants in a small space?**
  - Consider succession planting and intercropping
  - Usually soil will need more feeding to be able to support intensive growth

- [ ] **Check out what you can learn about what you can grow, different seeds, and low maintenance gardens**

NEXT STEPS

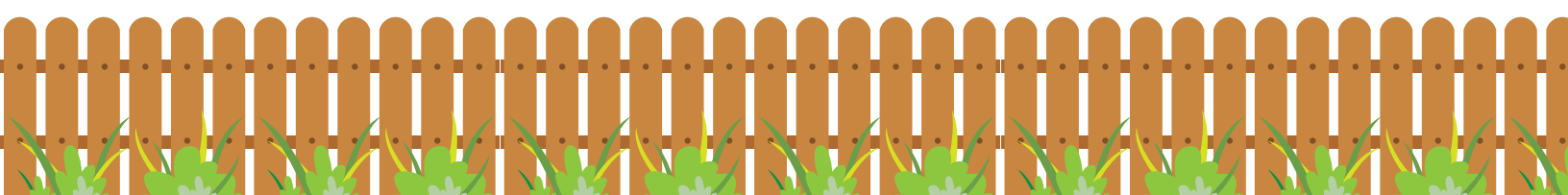
What comes after the implementation of your garden greenspace?

1. WHAT ARE YOUR MARKERS OF SUCCESS?

- ☐ **What are the goals for your garden**
  - Grow produce?
  - Create a greenspace?
  - Create a therapy space?
- ☐ **Have patients and staff tour the area**
- ☐ **Monitor the growth of your crops**
  - Are they actively growing?
  - Are the conditions right for the crops you wish to grow?

2. MARKETING AND STORYTELLING

- ☐ **How are you going to share your accomplishments?**
  - Host a local event inviting locals in the community to participate in the garden
  - Host a farmers market showcasing your crops
  - Reach out to local new networks
- ☐ **Loop back and re-engage with stakeholders!**
  - Have them share in the success of the garden
  - They may share on their social medias, community websites or in person events
- ☐ **Research and Publications**
  - Consider publishing research or CQI studies on the creation and implementation of your garden
  - Present at local or national Grand Rounds
  - Share resources with other health care facilities looking to create green spaces



CANADIAN HOSPITAL CASE STUDIES

We asked five facilities with community gardens and greenspaces questions regarding their spaces to gain insight into their challenges, successes and motivation behind the places.

North and South Apotex Gardens - 3rd floor Rooftop gardens

The Apotex Centre greenspace overlooks the Toronto city skyline and offers an outdoor space to experience nature, fresh air, and sunlight. It allows for the appreciation of the beauty of plants, herbs, and flowers. The Apotex Centre describes the space as an ideal area for therapeutic gardening and horticulture education, notably due to their inclusion of accessible garden beds.

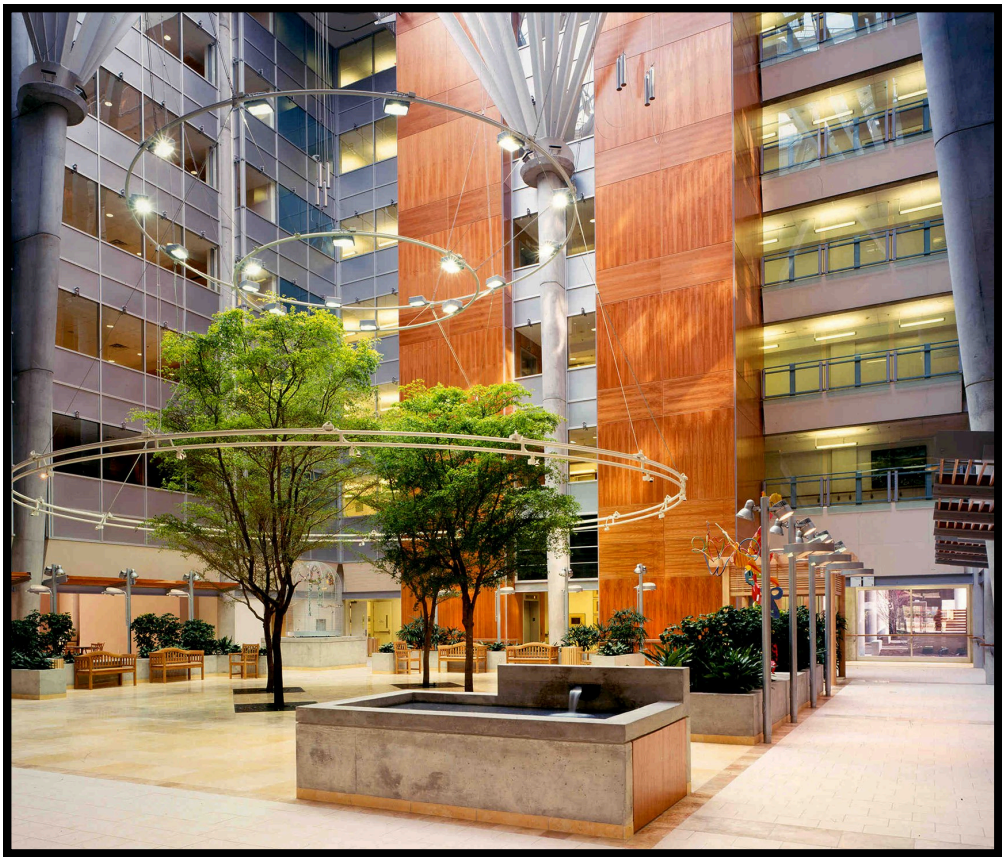
Along with these benefits, it is described as a social gathering space for patients and families where they can spend time together outdoors, away from the sterile, clinical environment. This project got started as a 3 week rehabilitation initiative, with initial funding allowing the project to get off the ground.

This garden space has been overseen and operated by Therapeutic Recreation, who has initiated special projects, ensuring all plants and flowers are cared for, and that the space is adequately maintained. The greenspace overall is cared for by various departments, facilities management, volunteers, and contractors.

North and South Apotex Gardens - 3rd floor
Rooftop gardens (continued)

This greenspace has seen significant success and received positive feedback from patients. Gardening activities have allowed for clients to connect with nature tangibly, therein promoting physical and emotional well-being. The act of gardening promotes the use of fine motor skills, hand-eye coordination, and concentration, as well as stimulating tactile, olfactory, and visual senses in the process.

Gardening has additionally promoted the psychosocial wellbeing of patients through the opportunity to nurture and care for living plants and engage in discussion about past experiences in gardening. Additionally, it offers patients choice and autonomy in choosing seeds, how to care for the plants, and ownership of a project. Overall, this greenspace has enhanced patient spiritual connectedness to the outside world, and takes advantage of the healing power of nature and greenspaces.



Baycrest Health Sciences - Greenhouse at the Terraces

Baycrest Terraces is a long-term care home and hospital in Toronto that puts a focus on a holistic approach to health care and wellness.

Baycrest Terraces describes their greenspace as a large greenhouse that is accessible to residents in the building. The space currently houses a variety of tropical plants, and the creation of an herb garden is underway. There is seating for roughly 20 people in the greenhouse, with tables and chairs throughout. The space is utilised for a variety of programming and individual use, such as art and exercise classes and gardening groups. These gardening programs are done in partnership with Shoresh, allowing the planting and caring for of plants, as well as discussions of the land and nature. Once successful, the recently added herb gardens will be utilised in the kitchen for residents' meals.

The space has been operational for approximately as long as Terraces itself, with residents stating they enjoy the space, finding it rather peaceful. There has been additional positive feedback received from gardening groups facilitated in the greenhouse.

Health Science North - Ramsey Lake Health Centre

This greenspace is described as a garden put in place for their Daffodil Terrace Lodge patients, an area that provides accommodation for those receiving cancer treatment. Over the years, the facility has started the process of transitioning use, but the garden continues to be used by a variety of patients. The garden space itself has been operational for many years, with planting facilitated by a gardening vendor, and it is funded through operations.

When the facility was operating as a lodge, the vegetable garden harvests were used regularly for meals, however, it is not being fully utilised at this time. The building is currently in transitional use, with expectations of full garden utilisation by patients once the building once again reaches full occupancy.

Ontario Shores Centre for Mental Health Sciences

This Ontario Shores greenspace is situated on 76 acres of land, and provides ample opportunities for staff, patients, and visitors to enjoy the outdoors. It is accessible to the public and includes beaches, picnic tables, baseball diamonds, a basketball court, and a trail that is a part of the Great Lakes Waterfront Trail System, which can be used for walking or biking. The space additionally features secured courtyards for all in-patients units, as well as two secured courtyards dedicated to staff use.

The publicly accessible areas and in-patient courtyards belong to the original design of the property, whereas the staff courtyards were made more user-friendly beginning in 2019, with the addition of a beehive in 2020 maintained by Alveole, and a patient program vegetable garden in 2022 maintained by a group of patients led by Noelle and other Rec Therapy staff. The grounds themselves are maintained by a third party landscaping contractor.

The inspiration to add the beehive came from hearing about an initiative at many downtown Toronto properties. From here, Noelle and her team worked together to add the vegetable garden working group, and the cleaning up of staff courtyards was a task taken upon by staff in 2019, with the goal of providing members their own space to enjoy the outdoors during meetings, lunches, or for a quick getaway. Funding for both the beehive and courtyards came from the Facilities Department operating budget, and the vegetable garden initiative was originally supported by their Innovation Fund application process, and it is now funded through their Recreational Therapy operating budget.

There are numerous benefits from the beehive and garden. The facility receives about 100 jars of honey from the hive, where some are donated and others sold through their foundation. The money earned is invested back into patient care. The harvested vegetables have been used in patient programming, as well as sold in their cafeteria.

These greenspace initiatives have received highly positive feedback from patients, and ultimately allow patients to participate in beekeeping workshops and work together with their caregivers in the vegetable garden.

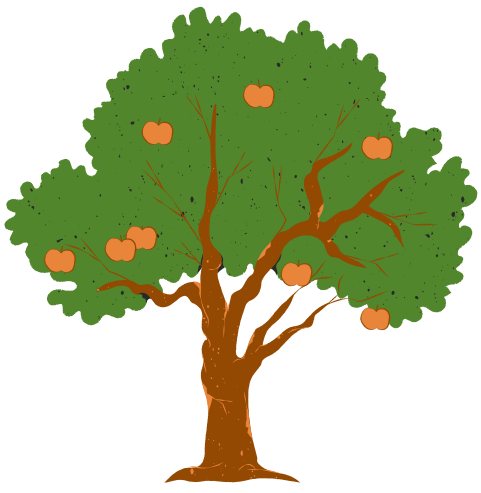
London Health Science Centre

London Health Sciences Centre (LHSC) offers a diverse range of greenspaces with various intended uses and purposes. The LHSC has a Prevention and Early Intervention Program for Psychoses (PEPP) started in 2020, that offers food from garden boxes to patients. These garden boxes have received rave reviews, and the greenspaces have provide a place for youth to interact and relax with each other; the social factor and sense of community the space provides has also helped patients positively progress in their treatment and care.

The PEPP patients and staff have made salads from the harvested produce, highlighting the versatility of the garden. This amazing space received funding and donated garden boxes through their Facilities Department and internal program funding as well.

Additionally, there are numerous outdoor spaces at Victoria Hospital, such as “Alex’s butterfly garden”, with a small native pollinator garden expansion in the works beside Alex’s butterfly garden. Such outdoor spaces are managed by their Facilities Management and Green Team volunteers, and are funded at cost work from their groundskeeping vendor.

On top of all these spaces, four recent staff garden boxes have been started this year, belonging to a variety of departments, offering both flowers and foods. This new staff greenspace has been organised by the Green Team volunteers and paid for by Facilities Management, and is funded at cost work from the groundskeeping vendor.



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This guidebook was adapted from "ENVIRONMENTAL STEWARDSHIP: AN IMPLEMENTATION GUIDE FOR BOARDS, EXECUTIVE LEADERS, AND CLINICAL STAFF by Neil Ritchie, Myles Sergeant, Curtis Lavoie, Kim-Chi Tran, Richard Webster, Sujane Kandasamy, Luz Paczka Giorgi, and Linda Varangu.

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This is a living document which will be revised as this field evolves.
We welcome your comments and suggestions.

SUPPORTED BY:

The Canadian Coalition for Green Health Care
Coalition canadienne pour un système de santé écologique

PEACH

McMaster University
Family Medicine

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Ellsey Kay Gardens

Queen's University
Postgraduate Medical Education

Manoomin Learning

Funded in part by:
Financé en partie par :
Canada

Suggested Citation:

Kroeker, L., Robinson, M., Markus, M., Sergeant, M., Parascandalo, F., Woodbury, A., Cass, J., Askari, S., Ford, A., Howie, B., Kaminski, J., Sypus, A., & Waddington, K. (2025). *Sustainable health care: A guidebook on how to incorporate gardens and greenspaces in health care*. Canadian Coalition for Green Health Care.