Facilities Management for Foodservice Managers

Facilities Management for Foodservice Managers

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Contents

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Prompt: Please create a photo of a food services manager holding a clipboard in front of an empty commercial kitchen. The image should be in portrait format.

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Collaborators

This project was a collaboration between the author and the team in the OER Design Studio at Fanshawe. The following staff and students were involved in the creation of this project:

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Reviewers

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About This Book

Facilities Management is a broad-based discipline focused on coordinating the physical environment, people, and organizational processes to effectively meet the needs of the users. Facilities Management for Food Service Managers focuses on the role of the Nutrition and Food Service Manager in the daily operations of the property. From strategic planning, design and workflow to sustainable practices and infection prevention and control, this guide provides an overview of the responsibilities of the Nutrition and Food Service Manager in supporting the goals of facilities management.

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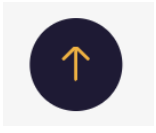

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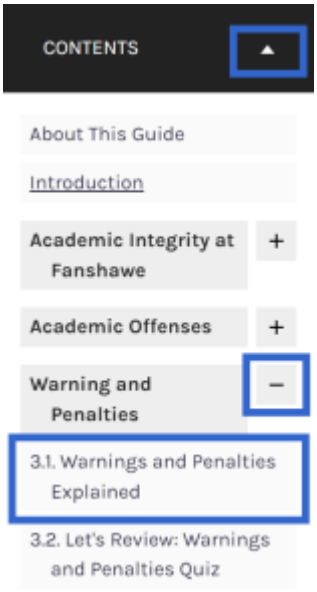


CHAPTER 1: INTRODUCTION TO FACILITIES MANAGEMENT

Chapter Outline

1.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Define facilities management.
- Match the facilities management tasks with the professional responsible for the execution of the task in food service.
- Recognize how strategic planning impacts facilities management.
- Summarize elements of facilities management that would be the responsibility of a Nutrition and Food Service Manager in the workplace.

1.1 What is Facilities Management?

Facilities management (FM) involves the maintenance and efficient operation of buildings and infrastructure to ensure the comfort, safety, security, and efficiency of the place, processes and people working on the property.

Physical infrastructure that requires management and maintenance are known as **hard services**. These include equipment; building systems, such as heating, ventilation, and air conditioning (HVAC); utilities, such as lighting; and physical structures, such as windows and roofs.

Facilities management also includes non-physical elements, known as **soft services**. Soft services focus on creating a productive, safe, and comfortable environment for the staff. These services include security, custodial, catering, and waste management.

"What is facilities management?" by FMX. Used under FDEd (CAN). Mods: recoloured.

Image Description

A circle with Facilities Management written in the middle. Hard Services is in the top semi-circle, and Soft Services is in the bottom semi-circle.

Hard Services: Facility maintenance, HVAC, Fire safety systems, Electrical, Occupancy (leasing, relocation, purchasing), Lighting, Construction & Renovation, Plumbing, Grounds & pest control.

Soft Services: Staffing & space planning, Energy management, Information technology, Custodial & waste management, EHS compliance, Administrative services, Public safety & security.

The following table outlines various facilities management (FM) services and provides examples of tasks associated with each category. It emphasizes the diverse responsibilities of maintaining a functional, safe, and efficient environment.

FM Service	Example of Service Task
Property Services	Building Maintenance, Repairs to Infrastructure or Preventative Maintenance Activities
Security Services	Security Guards, Closed-Circuit Television CCTV, Fire Protection Systems, Locked Entrance or Code Systems for Entrance
Health and Safety	Joint Health and Safety Committee, Ergonomic Equipment, Safety Policy and Protocols for Equipment Use such as Lock Out/Tag Out
Cleaning/Housekeeping	Routine Cleaning, Deep Cleaning, and Special Cleaning, such as Hood Vents
Contract Service Management	Plumbers, Heating, Ventilation and Air Conditioning, Electricians, Waste Management, Hood Cleaning, Grease Trap Cleaning
Strategic Planning	Participating in the Process that determines Objectives (tasks) to be completed with a specific timeline in the future (usually a five-year plan)

Watch: This is FM

Watch “This is FM” by International Facility Management Association (IFMA) at https://www.youtube.com/watch?v=uUALysiJ49U

1.2 Facilities Management Professionals

Successful facilities management requires a team of many professionals to ensure the comfort, safety, security, and efficiency of the place, processes, and people working on the property. Professionals you will work with often, sometimes daily, include **custodians**, **security personnel**, members of the **maintenance team,** and **waste disposal workers**. You may interact with others less frequently or not at all. This group could include **architects**, **engineers**, skilled trades, such as **plumbers**, **electricians**, **gasfitters**, **millwrights**, **HVAC** and **interior designers,** and **service contractors**, such as **pest control professionals**.

Photo by Cottonbro Studio, Pexels License.

Each professional provides a specific required skill necessary to continue successful facilities management. It is common for Nutrition and Food Service Managers to work with the following facilities management professionals on a daily or weekly basis.

- *Custodians* are responsible for the surface cleanliness of the physical space. You might see them sweeping or mopping floors, washing walls, shelves, and high-touch surfaces, or cleaning washrooms and common areas, such as lunchrooms. Custodians are experts in cleaning and disinfecting, which reduces infection transmission in the workplace.
- *Security personnel* are often found stationed at the entrances and exits of a building. It is the role of the security to monitor, patrol, and control access to the building, but they are also trained to provide safety education, first aid, emergency response, and de-escalation services when required on site.
- *Members of the maintenance team* are involved with safety inspections, small-scale installations, such as a new tile floor in the dining room or extra shelving in the storage area, and general repairs. The type and amount of work that can be performed by the maintenance team depends on the training and skill set of these handy people.
- *Waste disposal personnel* can include garbage removal, recycling, composting, and septic waste care if the property is rural and not connected to city sewage services.

Photo by Pixabay, Pexels License.

There are more professionals who contribute to successful facilities management. If a Nutrition and Foodservice Manager is working for a company that is involved in building or rebuilding a facility, then an **architect** may be involved in designing the physical space. An architect provides blueprints, which are plans and instructions for the construction of the physical space. Interior Designers work closely with Architects to select decor, such as lighting, furniture, paints, wallpapers, and window coverings, that create a functional and safe space.

Engineers also create blueprints and plans for the construction. However, where an architect focuses design on aesthetics and appearance, an engineer focuses on technical and structural aspects. They are often required to complete the work on sewage or electrical systems.

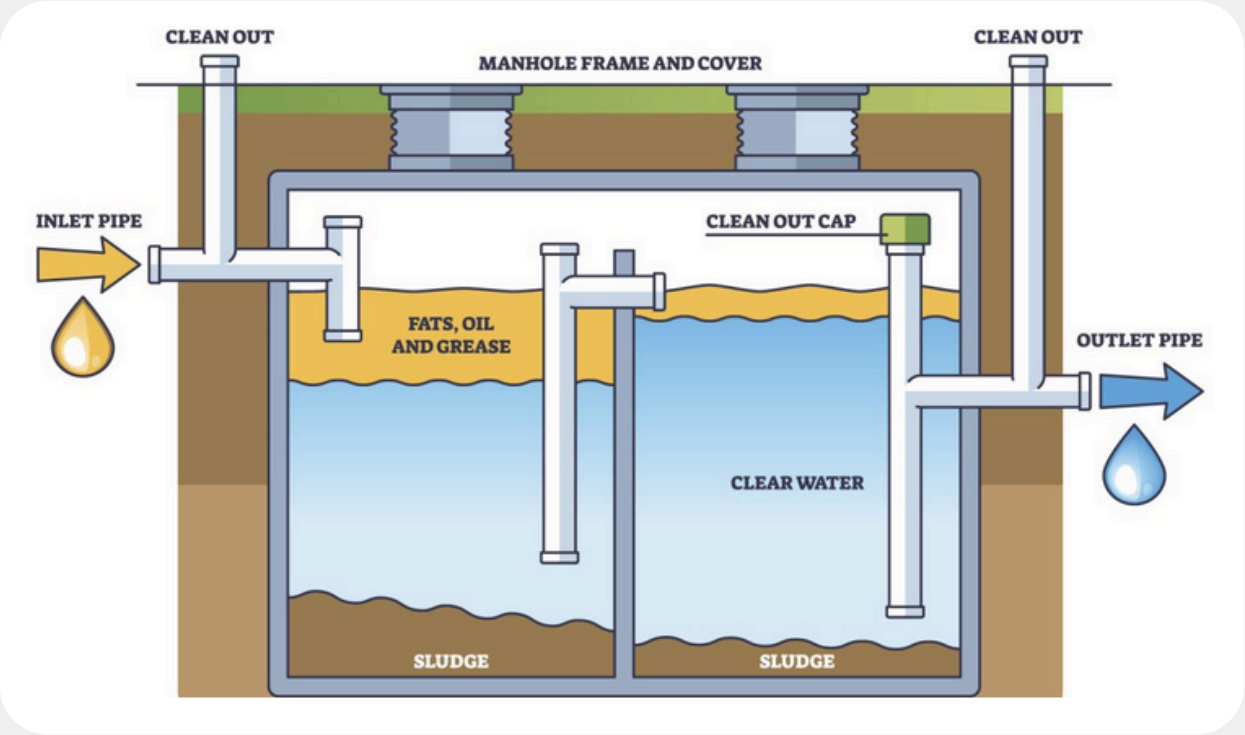
Skilled trades workers are other professionals who support facilities management in a new building or existing location. Plumbers have expertise in installing, repairing, cleaning, and maintaining pipes and fixtures used to supply and dispose of water. Electricians install, repair, and maintain the safety of electrical wiring, fixtures, and equipment. Heating Ventilation and Air Conditioning or HVAC technicians install, repair, and provide maintenance to the systems that regulate air quality in the building. In the food service department, this includes hood vents, return air, refrigerators, and freezers. Gasfitters install, inspect, and repair gas lines and equipment, such as gas ranges. Millwrights read blueprints and schematics to assemble mechanical equipment and machines, such as a commercial dishwasher. Unless you are working for a larger company, such as a hospital, it is unlikely that you will have a plumber, electrician, HVAC technician, gasfitter, or millwright on staff. This means that you will be reaching out to a local contractor for these services.

Other contract services include pest control, hood vent cleaning, and grease trap cleaning.

- ***Pest control professionals*** educate, inspect, and create a plan for long-term pest control at the premises. Long-term pest control supports food safety by preventing the infestation of rodents, bugs, and other insects.
- ***Hood vent cleaning services*** work to remove grease and debris from the exhaust system—an important part of routine maintenance that may need to be contracted out.
- Grease trap cleaning services work to remove fats, oils, and grease buildup from the water system. See the example below that outlines the process for grease trap cleaning.

Example: Grease Trap

Grease trap cleaning is a service routinely contracted out to service professionals. The grease trap is located under the floor, usually by the dishwasher, in commercial kitchens. The job of the grease trap is to collect fats, oils, and grease before the disposal of water into the sewage or septic systems. Cleaning the grease trap is an important part of maintaining a clean and safe work environment for your staff.



Grease Trap Image by *Andersons Waste Management*. *Used under FDEd (CAN).*

Image Description

An illustrated cross-sectional diagram of a grease trap. The grease trap includes an inlet pipe on the left, where wastewater flows in, and an outlet pipe on the right, where treated water exits. The trap is divided into two chambers, with the first chamber collecting fats, oils, and grease floating on the surface above, with settled sludge at the bottom. The second chamber primarily contains clear water, with additional sludge settling at the bottom. The system features clean-out pipes on both sides for maintenance and a manhole frame and cover at the top for access. A clean-out cap is positioned between the chambers.

Activity: Profession Flashcards

Which professional is responsible for the tasks described?

1. Cleans floors, walls, and high-touch surfaces in common areas and washrooms.
2. Inspects and repairs pipes, plumbing fixtures, and systems for water supply and disposal.
3. Designs blueprints and plans for the construction of buildings.
4. Provides safety education and first aid emergency response at building entrances.
5. Removes grease and debris from exhaust systems, often in kitchens or foodservice areas.
6. Installs and repairs electrical wiring, fixtures, and equipment in the building.
7. Inspects and maintains systems that regulate air quality, such as HVAC units and refrigeration systems.
8. Provides pest control plans and inspections to prevent infestations.
9. Removes and disposes of waste, recycling, and septic waste in rural areas.
10. Designs and selects decor, furniture, and lighting for functional spaces.
11. Assembles mechanical equipment like dishwashers based on blueprints.
12. Cleans grease traps, a regular service contracted out for maintenance.

Answers:

1. Custodian
2. Plumber
3. Architect
4. Security Personnel
5. Hood Vent Cleaning Service
6. Electrician
7. HVAC Technician
8. Pest Control Professional
9. Waste Disposal Personnel
10. Interior Designer
11. Millwright
12. Grease Trap Cleaning Service

1.3 Strategic Planning

The Merriam-Webster dictionary defines planning as “the act or process of making or carrying out plans.” **Strategic planning** is when the leadership team looks towards the future, with an awareness of the current environment and likely future events in mind, to determine the best way to achieve organizational objectives in the upcoming years.

The strategic plan is the document used to communicate organizational objectives and the actions required to achieve the goals. A strategic plan’s job is to guide the employee’s actions toward the achievement of the stated goals.

> Think of the strategic plan as a New Year’s Resolution. Each New Year, it is common for people to write out a list of goals that they intend to achieve in the upcoming year. The strategic plan is a list of goals that the company intends to achieve in the upcoming three to five years.

Why is a Strategic Plan important?

A strategic plan provides individual employees with a clearer role perception. It outlines expectations so that staff know and work together to achieve the goals. Role perception includes the employee’s understanding of specific duties and consequences for which they are responsible, company expectations and performance criteria, and preferred procedures for accomplishing tasks.

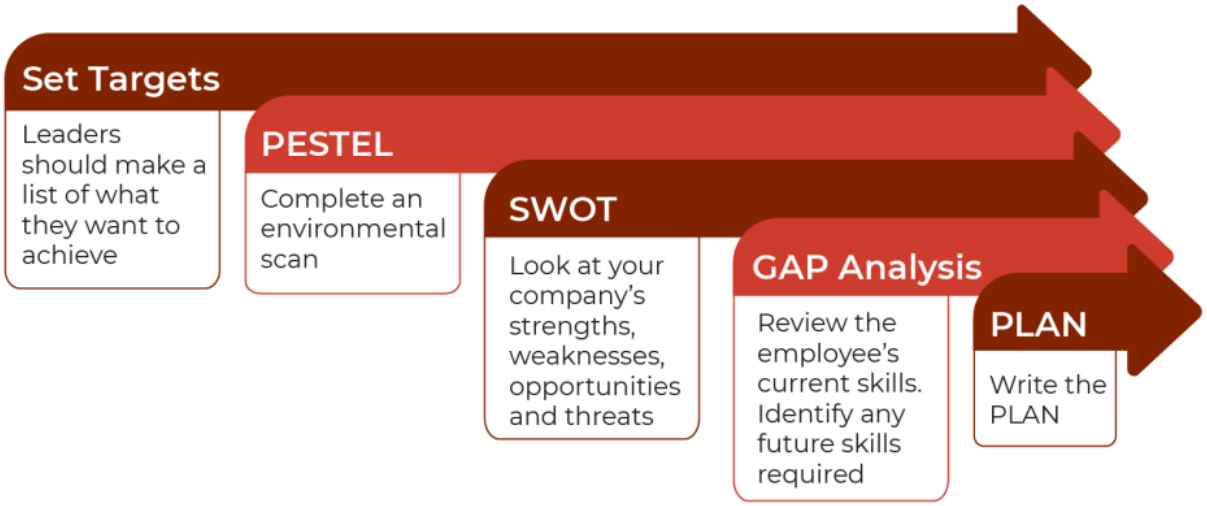
Organizational behaviour (OB) studies how people think, feel, and behave individually or in groups within organizations. The MARS model of individual behaviour examines how **M**otivation, **A**bility, **R**ole perception, and **S**ituational factors affect organizational behaviour and results. Studies show that employees with role perception clarity perform better than employees with role perception ambiguity (Bray & Brawley, 2002). Role perception includes the employee understanding specific duties and consequences for which they are responsible, company expectations and performance criteria, and preferred procedures for accomplishing tasks (van der Meer, 2023).

Examples of strategic goals related to facilities management:

- Provide a clean and safe environment to our residents and staff.
- Engage in a proactive preventative maintenance program to ensure business continuity.
- Design a functional new dining room for residents and staff.

How are Strategic Plans Created?

Steps in the Strategic Planning Process



"Steps in the Strategic Planning Process" by Tracy Rieger & Freddy Vale, CC BY-NC-SA 4.0.

Image Description

A series of arrows from right to left, each with a step of the strategic planning process.

Set Targets: Leaders should make a list of what they want to achieve.

PESTEL: Complete an environmental scan.

SWOT: Look at your company's strengths, weaknesses, opportunities, and threats.

GAP Analysis: Review the employee's current skills. Identify any future skills required.

PLAN: Write the plan.

*__PESTEL__ is an acronym for Political, Economic, Social, Technological, Environmental, and Legal. PESTEL requires the company to focus on the external environment and identify issues that may impact the company's business goals and processes.

*A **SWOT** analysis is a method used to identify an organization's strengths, weaknesses, opportunities, and threats. Strengths should focus on what makes the organization unique. What separates the organization from the competition? Weaknesses identify areas for improvement. Opportunities are found in the external environment. What is happening in the external environment that is beneficial to the company? Threats are elements that have the potential to impede the organization from achieving its objectives.

Once the strategic plan is created, the leadership team should identify resources that will be helpful in executing the strategic plan. The next step is the implementation of the plan, which includes the presentation of the plan to employees. The strategic plan should be presented in a way that encourages employee buy-in. What does the leadership team need to do to encourage the employees to support the strategic plan? The plan should be evaluated on an annual basis.

1.4 The role of the Nutrition and Food Service Manager in Facilities Management

As a leadership team member, the Nutrition and Food Service Manager plays an active role in facilities management with responsibilities similar to those of a project manager.

Responsibilities include:

Identifying specific tasks required to complete the project.

There are many elements required to provide meal service to a large number of people on a daily basis. Just think about what it takes to serve a breakfast consisting of juice, hot cereal, eggs, toast, sausage, and coffee. This simple task requires a working refrigerator to keep cold foods at the correct temperature for food safety; it requires a stovetop or steamer to cook eggs, a toaster, an oven to cook sausages, a coffee maker, a physical space with safe flooring and the correct lighting, hot holding carts to move the food to the service area, a functional service area for everyone to eat in and of course, a commercial dishwasher to handle cleaning and sanitizing the equipment and dishes used in breakfast service.

The Nutrition and Food Service Manager needs to know what is required for a clean, safe, and secure meal service. Evaluating the physical space on a regular basis and identifying specific maintenance and other facilities management tasks that need to be completed is the responsibility of the manager.

Contracting or assigning the work to the correct skilled worker.

A Nutrition and Food Service Manager is responsible for assigning work in their service area. This can include facilities management tasks identified in a job routine for employees, such as recycling packaging, garbage removal, cleaning and sanitizing the work area, or communicating with another service department, such as maintenance, to request the repair of a stand mixer or broken floor tile. Remember to supervise any professional who works on facilities projects involving your service area.

Facilities management work may require the company to secure services from outside professionals. A proactive approach to working with professionals who are not employed by your organization is to research and connect with them before you require their services. Keep a list of contacts for local plumbers, electricians, and other service professionals. Ask your company to review and vet outside contracts so that you have a list of contacts handy.

Being aware of communication tools and resources required to ensure that FM goals are met.

Communication tools allow everyone who is involved in the process or project a clear and transparent method of sharing information. Communication tools can include policies and procedures for completing a task, such as how and when to remove garbage from the kitchen and where to dispose of the garbage once it has been removed from the food service area.

Communication tools can be formal work orders or contracts for service provided by professionals outside of the organization, such as a contract for bi-annual hood vent cleaning or a service contract for the repair of the dishwasher.

Contributing to the creation of the strategic plan.

Ensure that FM goals are part of the strategic plan. The Nutrition and Food Service Manager should make themselves aware of facilities management tasks and projects that would support a clean, safe, and secure environment for the staff and clients. You can do this by learning more about facilities management and by constantly and consistently evaluating the physical space in your service area. Make a note of what needs to be done to support the goals of facilities management. Take any concerns or large project needs to the leadership team to ensure that they become part of the company's strategic plan.

Make decisions regarding your service area, which can include the kitchen, the dining room, housekeeping, laundry services, or other support services.

You are the facilities management leader for your team. Communicate with your staff often regarding the work process and what they need to do their jobs effectively and efficiently. Educate yourself about facilities management so that you can make the decision required to provide a clean, safe, and secure work environment for you, your staff, and the people you serve.

1.5 Chapter Summary

Key Takeaways

- *Facilities Management (*FM) involves maintaining and efficiently operating buildings and infrastructure to ensure comfort, safety, security, and efficiency for the place, processes, and people working on the property.
- *FM includes* managing physical infrastructure (hard services) like HVAC systems, utilities, and building structures, as well as non-physical elements (soft services) such as security, custodial services, catering, and waste management.
- *Successful facilities management* requires a diverse team of professionals, including custodians, security personnel, maintenance team members, and waste disposal workers, who ensure the comfort, safety, security, and efficiency of the property and its operations.
- *Each professional provides specific skills* essential for facilities management, such as custodians maintaining cleanliness, security personnel monitoring and controlling access, maintenance team handling repairs and installations, and waste disposal personnel managing garbage, recycling, and composting.
- *Strategic planning* involves the leadership team looking toward the future, considering the current environment and likely future events, to determine the best way to achieve organizational objectives over the next three to five years. The strategic plan is a document that communicates these objectives and guides employee actions toward achieving the stated goals.
- *The strategic planning process* includes analyzing external factors (PESTEL) and internal factors (SWOT), identifying necessary resources, implementing the plan, and presenting it to employees to encourage buy-in. The plan should be evaluated annually to ensure its effectiveness.
- *The Nutrition and Food Service Manager* plays a crucial role in facilities management, similar to a project manager, by identifying specific tasks required for meal service, evaluating the physical space, and ensuring a clean, safe, and secure environment. This includes contracting or assigning work to the correct skilled workers and supervising professionals involved in facilities projects.

OpenAI. (2025, January 23). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summarize the passage into key points. *Edited & Reviewed by author.*

Key Terms

Architect: Provides blueprints, which are plans and instructions for the construction of the physical space.

Contract Services Management: Tasks such as plumbers, heating, ventilation, and air conditioning, electricians, waste management, hood cleaning, and grease trap cleaning.

Custodians or Housekeeping: Responsible for the cleanliness of the physical space. Experts in cleaning and disinfecting, which reduces infection transmission in the workplace.

Electricians: Install, repair, and maintain the safety of electrical wiring, fixtures, and equipment.

Engineers: Create blueprints and plans for construction, focusing on technical and structural aspects. They are often required to complete work on sewage or electrical systems.

Facilities Management (FM): Involves the maintenance and efficient operation of buildings and infrastructure to ensure the comfort, safety, security, and efficiency of the place, processes, and people working on the property.

Gasfitters: Install, inspect, and repair gas lines and equipment such as gas ranges.

Hard Services: Physical infrastructure that requires management and maintenance. These include equipment, building systems such as heating, ventilation, and air conditioning (HVAC), utilities such as lighting, and physical structures such as windows and roofs.

Health and Safety: Tasks such as the joint health and safety committee, ergonomic equipment, safety policy, and protocols for equipment use, such as lockout/tag out.

Heating, Ventilation, and Air Conditioning (HVAC) technicians: Install, repair, and provide maintenance to the systems that regulate air quality in the building. In the foodservice department, this includes hood vents, return air, refrigerators, and freezers.

Hood Vent Cleaning Services: Work to remove grease and debris from the exhaust system, an important part of routine maintenance that may need to be contracted out.

Interior Designers: Work closely with architects to select décor, such as lighting, furniture, paints, wallpapers, and window coverings that create a functional and safe space.

Maintenance Person: Involved with safety inspections, small-scale installations, and general repairs.

Millwrights: Read blueprints and schematics to assemble mechanical equipment and machines, such as a commercial dishwasher.

Pest Control Professionals: Educate, inspect, and create a plan for long-term pest control at the premises. Long-term pest control supports food safety by preventing the infestation of rodents, bugs, and other insects.

PESTEL: An acronym for Political, Economic, Social, Technological, Environmental, and Legal. PESTEL requires the company to focus on the external environment and identify issues that may impact the company's business goals and processes.

Plumbers: Have expertise in installing, repairing, cleaning, and maintaining pipes and fixtures used to supply and dispose of water.

Property Services: Tasks such as building maintenance, repairs to infrastructure, or preventative maintenance activities.

Security Personnel: Often found stationed at the entrances and exits to a building. Their role is to monitor, patrol, and control access to the building, but they are also trained to provide safety education, first aid emergency response, and de-escalation services when required on site.

Security Services: Tasks such as security guards, closed-circuit television (CCTV), fire protection systems, and locked entrance or code systems for entrance.

Soft Services: Non-physical elements that focus on creating a productive, safe, and comfortable environment for the staff. These services include security, custodial, catering, and waste management.

Strategic Planning: Participating in the process that determines objectives (tasks) to be completed with a specific timeline in the future (usually a five-year plan).

SWOT Analysis: A method used to identify an organization's strengths, weaknesses, opportunities, and threats.

Waste Disposal Personnel: Can include garbage removal, recycling, composting, and septic waste care if the property is rural and not connected to city sewage services.

Review Questions

Multiple Choice Activity

1. What is the primary focus of facilities management (FM)?

   a. Increasing property value
   b. Ensuring the comfort, safety, security, and efficiency of the place, processes, and people working on the property
   c. Reducing operational costs
   d. Enhancing aesthetic appeal

2. Which of the following is considered a hard service in facilities management?

   a. Security
   b. Custodial services
   c. Heating, ventilation, and air conditioning (HVAC)
   d. Catering

3. Who is responsible for the surface cleanliness of the physical space in facilities management?

   a. Security personnel
   b. Custodians
   c. Engineers
   d. Architects

4. What is the role of security personnel in facilities management?

a. Designing the physical space
b. Monitoring, patrolling, and controlling access to the building
c. Installing and repairing HVAC systems
d. Cleaning and disinfecting surfaces

5. What is a strategic plan in the context of facilities management?

a. A document outlining daily cleaning tasks
b. A list of goals the company intends to achieve in the upcoming three to five years
c. A maintenance schedule for HVAC systems
d. A blueprint for building design

Answers:

1. b.
2. c.
3. b.
4. b.
5. b.

Microsoft. (2025, January 23). CoPilot. [Large language model]. https://copilot.cloud.microsoft Prompt: Create five multiple-choice questions with four answer options from the following information. *Reviewed by author.*

CHAPTER 2: PRODUCTION SYSTEMS, DESIGN, AND WORKFLOW

Chapter Outline

2.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Explain the concept of workflow analysis.
- Describe the importance of facility design in maintaining a safe, sanitary, and secure environment.
- Evaluate the positive and negative aspects of each type of food production system.
- Discuss strategies or ideas on how to improve ergonomics in the workplace.

2.1 What is Workflow?

Workflow is the "sequence of steps involved in moving from the beginning to the end of a working process" (Merriam-Webster, n.d.). The big picture of food service workflow involves the series of tasks involved in meal service, from receiving raw food products to cleaning up and disposing of waste after the meal has been served to the client.

"Food Service Workflow" by Martin Torres, CC BY-NC-SA 4.0

Workflow analysis is the evaluation of processes through observation of the tasks. The purpose of workflow analysis is to confirm that processes meet the facilities management goals of safety, cleanliness and good design. Good design means that the processes are performed in the most efficient manner possible. Efficiency is when desired results are achieved with little to no waste of time or materials.

Observing everything big-picture food service entails can be a daunting task. To make workflow analysis more manageable, observations can be compartmentalized into smaller tasks, such as receiving food and storing it or making soup.

Example: Workflow Analysis – Making Soup

Visualize yourself as the Nutrition and Food Service Manager observing the cook making soup for meal service. How does the process go?

Wash Hands

Where do you wash your hands?

- At the handwashing sink.

Gather Ingredients

Where do you gather ingredients for the soup?

- From the refrigerator and the dry storage area (pantry).

Prepare Raw Ingredients for Cooking

Where do you prepare the raw ingredients?

- At the table in the food preparation area.

Cook the Soup

Where do you cook the soup?

- On the stovetop at the stove or in the large tilt pot kettle.

Serve the Soup

Where do you serve the soup?

- In the resident dining area (server).

Each new task in the process of making soup requires the cook to move to a different physical area in the facility. Ask yourself if the process supports safety and efficiency. Could improvements be made to the facility's physical structure to improve safety and efficiency? Can adjustments be made to the process to improve safety and efficiency?

Being knowledgeable about good facility design allows the Nutrition and Food Service Manager to perform workflow analysis to evaluate the safety and efficiency of the physical space.

2.2 Facility Design

Facility Design involves “the process of planning and creating the physical features and architectural elements of a building or structure, with the aim of improving functionality and aesthetic appeal” (Science Direct AI, 2025). Facility Design has an impact on facilities management goals, such as security, and safety. Design also impacts efficiency. The ability of the staff to navigate the physical structure and complete tasks in a timely manner without excess waste is often dictated by facility design.

Workflow analysis should be completed for the big picture of food service looking at how food will flow or move through the facility. A smooth and efficient process flow that maximizes the use of space, enhances communication between staff and provides flexibility for future growth is the objective of the analysis.

Examples of food service with good flow. Follow food through the big picture of food service from the receiving door to waste disposal.

Image by Martin Torres, CC BY-NC-SA 4.0

Ask the following questions:

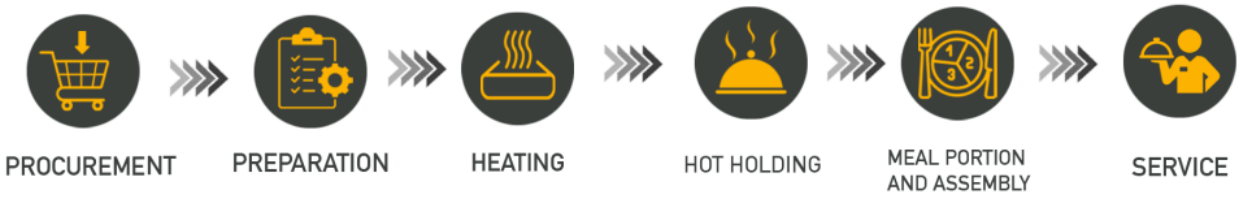
- At any point in time, is there an opportunity for food cross-contamination?
- Does each person have enough space to complete the task?
- How many steps does each person need to take to complete their task? Is this reasonable?
- Can the layout be changed to reduce the number of steps required?

2.3 Food Production Systems

Food production systems consist of the inputs (equipment, food, skilled staff) used to create outputs (meals for clients). This section examines the advantages and disadvantages of four different types of food production systems: Conventional, Ready-Prepared, aka Cook-Chill, Commissary, aka Centralized Kitchen, and Assembly /Serve, aka Tray Line.

Conventional

In a conventional food production system, most menu items are prepared in a kitchen in the same facility where meals are served. Food preparation often begins with raw ingredients, which are prepared into menu items. In recent times, with advances and growth in commercial food production, shelf life, transportation, packaging, and holding techniques, the conventional system has evolved to include some ready-prepared menus.



"Conventional Food Production System" by Martin Torres, CC BY-NC-SA 4.0.

Since this is the system that people tend to be the most familiar with there is a preconceived perception of a higher quality product being produced by a conventional system. This may or may not be true as it is dependent on several factors, including the skill level of the staff, the quality of the raw ingredients, and the efficiency of processes.

Absolute advantages do include the ability to control the quality of the raw product by means of procurement practices and receiving policy and procedures, adaptable menu item flexibility as menu items are not dependent on ready-prepared products, economical as ingredients can be purchased in season at lower prices and there is less costly freezer space required to support the menu.

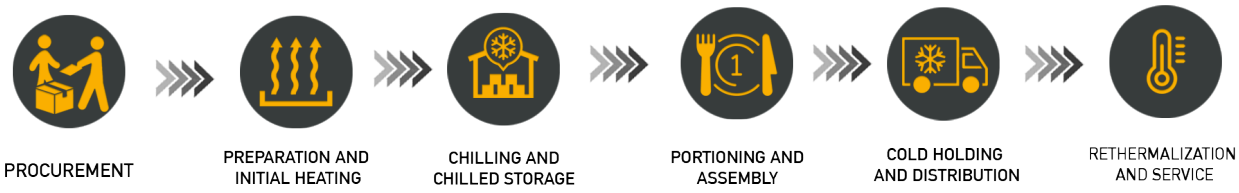
Disadvantages can include a stressful workday for the staff due to peak demand periods and uneven workloads. Scheduling can also become difficult if skilled staff are required to perform specific tasks.

Table 2.3.1 The Pros and Cons of a Conventional Kitchen

Advantages	Disadvantages
• Quality Control over raw ingredients and recipe • Unique to operation (your kitchen) • Flexibility – not dependent on commercially prepared items, can make changes to recipe or substitutions • Economical – Can purchase seasonally, take advantage of sales • Requires less freezer space • Adaptable to regional, ethnic, or individual preferences	• Stressful workday due to peak demand periods / uneven workload • Difficult to schedule because it requires skilled staff for specific tasks

Ready-Prepared or Cook-Chill

Menu items are prepared in large quantities. Some are chilled and stored, ready for assembly and rethermalization. **Rethermalization** is the process used to bring chilled or frozen foods to a safe, hot consumption temperature before service. Some items are frozen for use at a later time. The separation between the time of preparation and service is the distinguishing characteristic of a Cook-Chill food production system.



"Cook-Chill Food Production System" by Martin Torres, CC BY-NC-SA 4.0.

The biggest advantage of the Cook-Chill food production system is control over the workload by eliminating the time crunch of service, which removes the stressful peak periods. This makes scheduling easier, which, in turn, leads to an increase in employee retention.

There is also an argument for improved nutrient retention, as individually quick-frozen vegetables have a higher nutrient value than fresh vegetables. According to a study, frozen fruits and vegetables have equal or greater nutritional value than their fresh cousins. This is in large part because fresh produce has been shown to decline in nutrients the longer it sits between harvesting and eating, whereas frozen produce stops its nutritive shot clock the moment its temperature drops (Bouzari et al., 2015).

Disadvantages include increased cost due to the equipment and storage space requirements for the products. Food safety requires additional diligence to ensure compliance. Any time the length of time between food production and service increases, there are more critical control points to monitor. Critical control points are points in the food production process when food hazards, such as allowing foods to remain in the temperature danger zone, can be eliminated or reduced to acceptable levels. Another disadvantage is that recipes may need to be scaled up and adjusted to produce the desired product. This means an increase in labour cost.

Table 2.3.2 The Pros and Cons of a Ready-Serve/Cold-Chill Kitchen

Advantages	Disadvantages
• Control over workload – reduction in peak stressful periods • Easier to schedule • Decreased employee turnover due to less stress • Improved nutrient retention	• Increased cost due to increased need for fridge and freezer space and cost of Rethermalization equipment • Food safety concerns and an increase in Critical Control Points (CCP) in processing • Recipes need to be scaled up and modified

Commissary Centralized Kitchen

In a commissary food production system, menu items are prepared at a centralized kitchen facility and then moved to another site for final preparation and service. An example of this system is the Boulder Valley School

District in Colorado, which has a centralized kitchen that produces meals that are served at over 40 different schools in the district.

Watch: Behind the Scenes of a Central Kitchen

Watch “Behind the Scenes of a Central Kitchen” by Chef Ann Foundation at https://www.youtube.com/watch?v=HiNaCU_oSVk

“Commissary Food Production System” by Martin Torres, CC BY-NC-SA 4.0

An advantage to commissary food production is cost savings due to large quantity production and purchases. There can also be a reduction in skilled labour cost. One skilled person can produce 200 eclairs at the centralized kitchen rather than 40 skilled cooks producing eclairs at each individual facility.

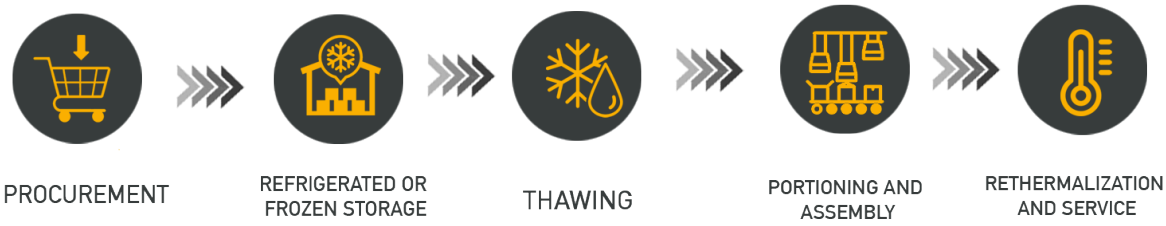
Disadvantages are the additional need for diligence to increase food safety critical control points, the additional cost of vehicles required for transportation, and the need to modify and scale large quantity recipes.

Table 2.3.3 The Pros and Cons of a Commissary Centralized Kitchen

Advantages	Disadvantages
• Cost savings due to large volume production and reduced labour cost • Less skilled labour required	• Food safety concerns lead to an increase in Critical Control Points (CCPs) in processing and transportation • Requires additional vehicles for transportation/delays in deliveries due to traffic or weather • Recipes need to be scaled up and modified

Assembly/Serve

The assembly service food production system is sometimes called the cookless kitchen because very few menu items are prepared onsite. Food is procured in a ready-to-serve form from commercial food companies, such as Nestle, Kraft Heinz, Campbell’s, and McCormick. You may recognize some of these brands for grocery store shelves. Production in the assembly service kitchen resembles a factory assembly line, with each staff member responsible for adding a particular item to each tray that passes by on the tray line.



"Assembly Service Food Production System" by Martin Torres, CC BY-NC-SA 4.0.

This type of food production system saves money on labour costs, procurement costs, and waste. Less specialized capital equipment is required to provide food service. It is easier to schedule as there are fewer peak stressful work periods during each shift.

Disadvantages include limited menu adaptability and flexibility, making it tougher to provide substitutions for menu items. High cost for some menu items; for example, it costs approximately three times as much to purchase a prepared soup than it does to buy raw ingredients required for making a soup. This system requires additional freezer space, materials, and packaging.

The assembly serve food production system required consistent evaluation of food quality and portion sizes as it is common practice for food manufacturers to reduce the portion size of their product in an effort to maintain a competitive pricing model.

Table 2.3.4 The Pros and Cons of an Assembly/Serve Kitchen

Advantages	Disadvantages
• Economical – saves on skilled labour cost • Lower procurement costs • Less waste • Better portion control • Decreased equipment cost/space cost • Control over workload – reduction in peak stressful periods • Easier to schedule	• Limited selection and flexibility for substitutions and change • Higher cost of menu items, soup is a good example • Requires consistent evaluation of quality, portion sizes, and customer satisfaction • Additional freezer space required • Managing materials, packaging

Choosing which type of food service production system to implement or whether or not to change to a different type of food service production system from the one you are currently working with can depend on many different factors. A good place to start thinking about this decision is to review the company's mission and value statements and ask:

- Do the advantages of this type of food service production system align with the company's overall goals?
- Do my food service values and goals align with the advantages of this system?
- Is there enough space to support this system?
- Can enough skilled staff be hired to support this system?

2.4 Ergonomics in Food Service

What are ergonomics, and why are we talking about them in this chapter? **Ergonomics** refers to the evaluation of the design of the physical space to ensure that people can interact efficiently and safely in the space.

Poor ergonomics in the workplace can lead to work-related musculoskeletal disorders (WMDS). A few examples are outlined in Diseases, Disorders and Injuries by the Canadian Centre for Occupational Health and Safety.

How can we prevent WMSDs?

Hazards are best eliminated at the source; this approach is a fundamental principle of occupational health and safety. In the case of WMSDs, the prime source of hazard is the repetitiveness of work. Other components of work, such as the applied force, fixed body positions, and the pace of work, are also contributing factors. Therefore, the main effort to protect workers from WMSDs should focus on avoiding repetitive patterns of work through job design, which may include mechanization, job rotation, job enlargement and enrichment, or teamwork. Where elimination of the repetitive patterns of work is not possible or practical, prevention strategies involving workplace layout, tool and equipment design, and work practices should be considered.

Job Design

Mechanization

One way to eliminate repetitive tasks is to mechanize the job. Where mechanization is not feasible or appropriate, other alternatives are available.

Job Rotation

Job rotation is one possible approach. It requires workers to move between different tasks at fixed or irregular periods of time. But it must be a rotation where workers do something completely different. Different tasks must engage different muscle groups in order to allow recovery for those already strained.

However, job rotation alone will not be effective in reducing WMSDs if it is not combined with the proper design of workstations. It will also not be effective while the high pace of work persists.

Job Enlargement and Enrichment

Another approach is job enlargement. This option increases the variety of tasks built into the job.

It breaks the monotony of the job and avoids overloading one part of the body. Job enrichment involves more autonomy and control for the worker (e.g., when to take a break or change tasks).

Team Work

Teamwork can provide greater variety and more evenly distributed muscular work. The whole team is involved in the planning and allocation of the work. Each team member carries out a set of operations to complete the whole product, allowing the worker to alternate between tasks, hence reducing the risk of WMSDs.

Workplace Design

The guiding principle in workplace design is to fit the workplace to the worker. Evaluation of the workplace can identify the source or sources of WMSD. Proper design of the workstation decreases the effort required of the worker to maintain a working position. Ideally, the workstation should be fully adjustable, providing a worker with options to work in standing, sitting, or sitting-standing positions, and fitting the worker's body size and shape. Detailed information about proper workplace design can be found in the OSH Answers documents Working in a Standing Position and Working in a Sitting Position.

Tools and Equipment Design

Proper design of tools and equipment significantly decreases the force needed to complete the task.

Providing the worker with the proper jigs or fixtures for tasks that require holding elements saves a lot of muscular effort in awkward positions.

Good tools, maintained carefully and, where necessary, frequently changed, can also save a lot of muscle strain. More information about hand tools and preventing WMSD resulting from their use can be found in the OSH Answers document Hand Tool Ergonomics.

Work Practices

A well-designed job, supported by a well-designed workplace and proper tools, allows the worker to avoid unnecessary motion of the neck, shoulders, and upper limbs. However, the actual performance of the tasks depends on individuals.

Training should be provided for workers who are involved in jobs that include repetitive tasks. Workers must know how to adjust workstations to fit the tasks and their needs. Training should also emphasize the importance of rest periods and teach how to take advantage of short periods of time between tasks to relax the muscles, and how to control muscle tension throughout the whole work shift consciously.

Increased communication and support, together with an increased ability of the worker to control

their job (where possible), are work practices that improve worker satisfaction and have a positive impact on reducing the risk of WMSDs.

Work-related Musculoskeletal Disorders (WMSDs), https://www.ccohs.ca/oshanswers/diseases/rmirsi.html, *OSH Answers*, Canadian Centre for Occupational Health and Safety (CCOHS), *May 17, 2024*. Reproduced with the permission of CCOHS, 2025.

Remember that one of the goals of facilities management is to provide a safe physical space for your staff.

Image by Robyn Wright, Pixabay License.

Examples of Ergonomics in the Workplace:

- Adjustable tables
- Anti-fatigue mats
- Carts with wheels for moving heavy items

When it comes to ergonomics, the biggest supporting factor is well-designed workstations that reduce the number of steps and lifting required to complete a task. They allow people to complete tasks using natural movements, not movements that require twisting and bending in unusual ways.

Exercise: Good vs Poor Ergonomics

Visit page 2.4 in Facilities Management for Foodservice Managers to complete this activity.

2.5 Chapter Summary

Key Takeaways

- *Workflow* is the process of steps made to move from the start to the end of work.
- *Workflow Analysis* is the task-based analysis of workflows to understand and improve them.
- *Facility Design* makes use of workflow analysis to improve the functionality and aesthetic appeal of a workspace.
- F*ood Production Systems* differ in their inputs (equipment, food, staffing, transportation requirements) and have different requirements, benefits, and drawbacks.
- *Ergonomics* aims to analyze and improve the efficiency and safety of a workspace.

OpenAI. (2025, January 23). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summarize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Assembly/Serve Food Production: A food production environment in which ready-to-serve foodstuffs are procured or assembled from ready-made ingredients step-by-step.

Commissary Centralized Food Production: A food production method in which food is prepared in large quantities at one location and transported to another for finishing and service.

Conventional Food Production: A food production method in which food is made in the same environment that the meals are served using raw ingredients.

Ergonomics: The evaluation of space with consideration of how efficiently and safely it can be interacted with/in.

Facility Design: The process of planning and creating the architecture, physical features, and functionality of a building.

Ready-Prepared/Cook-Chill Food Production: A food production method in which ready-made portions of food are created and frozen to be reheated for service.

Rethermalization: The process of reheating frozen and ready-made food portions for service in a Cook-Chill food production environment.

Workflow: The sequence of steps involved in moving from the beginning to the end of a work process.

Workflow Analysis: The evaluation of workflow processes through task analysis.

Review Questions

1. Which of the following is a primary component of a food service workflow?

   a. Customer feedback
   b. Inputs, processes, and outputs
   c. Marketing strategies
   d. Employee satisfaction

2. What is one key factor to consider when designing a food service facility?

   a. The number of employees
   b. The proximity to suppliers
   c. Space utilization and layout
   d. The cost of food ingredients

3. Which food production system involves cooking food on-site and serving it directly to customers?

   a. Ready-prepared system
   b. Conventional system
   c. Assembly-serve system
   d. Commissary system

4. What is one of the primary goals of ergonomics in food service?

   a. To increase food variety
   b. To reduce worker injury and strain
   c. To improve food quality
   d. To streamline inventory management

5. Which of the following is a common ergonomic risk in food service environments?

   a. Long customer wait times
   b. Improper workstation design
   c. Excessive food variety
   d. Limited food production systems

Answers:

1. b.
2. c.
3. b.
4. b.
5. b.

OpenAI. (2025, January 23). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Create five multiple-choice questions with four answer options from the following information. *Reviewed by author.*

CHAPTER 3: HOUSEKEEPING AND LAUNDRY

Chapter Outline

3.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Recognize the key elements required to manage a successful custodial program.
- Discuss Personal Protective Equipment and the use of chemicals in the workplace.
- Evaluate a cleaning and sanitation program.

3.1 Housekeeping and Laundry

Nutrition and Food Service Managers often work in roles such as Environmental Services Managers, Custodial Operations Managers, and in smaller facilities Nutrition and Food Service Managers supervise the housekeeping and laundry departments in addition to the kitchen.

Example: Job Posting Excerpt

An excerpt from a job posting for the role of Environmental Services Manager from Omni Quality Living (n.d.):

> The Environmental Services Manager (ESM) reports directly to the Executive Director and is responsible for coordinating and scheduling the activities necessary to operate the home's environmental services, including housekeeping, laundry, and maintenance. This role ensures that each resident receives the support, care, and services tailored to their needs and preferences, with a strong emphasis on excellence in customer service.

Housekeeping and **laundry** play an important role in meeting the goals of facilities management, specifically cleanliness and safety, in protecting people against diseases and infections that can spread in healthcare facilities. In the workplace, this is part of the **infection prevention and control** process.

Public Health Ontario defines infection prevention and control as "evidence-based practices and procedures that, when applied consistently in a healthcare setting, can prevent or reduce the risk of transmission of microorganisms to healthcare providers, clients, patients, residents, and visitors" (Public Health Ontario, n.d., para. 1).

The laundry department oversees collecting soiled linens, transporting them, washing, drying, folding, and distributing clean items to the appropriate areas for use in operations. Laundering items removes dirt and bacteria from the items, helping to prevent the spread of disease and infections in the facility.

"Laundry Operation Flow" by Fanshawe College, CC BY-SA 4.0. Adapted from "Laundry Operation Flow Chart" by Set up My Hotel. See below for individual photo attributions.

Housekeeping or custodial teams are responsible for the cleaning and sanitation of the physical space. It is important to note the difference between cleaning and sanitation. **Cleaning** refers to the physical removal of dirt and debris. This is accomplished with water, detergents and mechanical action, such as scrubbing, which requires mechanical force from the person's hands and shoulders. **Sanitizing** is the application of a disinfectant to surfaces whose purpose is to kill harmful **microorganisms**, like Influenza (the flu) and Staphylococcus (staph infections).

Laundry Operation Flow Photo Attributions

Collecting Linens: Photo by Priscilla Du Preez, Unsplash License.

Transporting Linens: Photo by Tima Miroshnichenko, Pexels License.

Sorting and Washing Linens: Photo by Tima Miroshnichenko, Pexels License.

Drying Linens: Photo by Tima Miroshnichenko, Pexels License.

Folding Linens: “Jensen Supercentro Feeder” by Samuli Lintula with Turun Tekstiilihuolto Oy, CC BY-SA 3.0.

Using Linens: Photo by Albert Vincent Wu, Unsplash License.

3.2 Hotel Clean Versus Healthcare Clean

Healthcare facilities may require two different levels of clean depending on what is happening in the area: **hotel clean** and **hospital clean**. Hospital clean (disinfected) is not achievable unless there has already been a hotel clean (tidy) established.

Hospital Clean: "Cleaning the Operating Theatre" by Community Eye Health, © Kanagaraj R, CC BY-NC 2.0; Hotel Clean: Image by Lilana Drew, Pexels License.

Hotel Clean

- Floors and baseboards are free of stains, visible dust, spills, and streaks.
- Walls, ceilings, and doors are free of visible dust, gross soil, streaks, and handprints.
- All horizontal surfaces are free of visible dust or streaks (including furniture, window ledges, overhead lights, phones, picture frames, and carpets).
- Bathroom fixtures, including toilets, sinks, tubs, and showers, are free of streaks, soil, stains, and soap scum.
- Mirrors and windows are free of dust and streaks.
- Dispensers are free of dust, soiling, and residue and are replaced/restocked when empty.
- Appliances are free of dust, soiling, and stains.
- Waste is disposed of appropriately.
- Items that are broken, torn, cracked, or malfunctioning are replaced.

Hospital Clean is Hotel Clean Plus...

- **High-touch surfaces** in patient care areas are cleaned and disinfected with a hospital-grade disinfectant (the product has a DIN number).
- Medical equipment is cleaned and disinfected between patients.
- Clean first and then disinfect: organic material deactivates disinfectant solutions.
- Proper contact time: different products require varying 'wet' times to kill microorganisms.
- Proper mixture: the concentration is strong enough to clean but not so strong to be harmful to staff and patients.
- Frequent changes in cleaning equipment and solutions.
- Use of the proper Personal Protective Equipment (PPE) to protect health care workers.

Hospital clean standards are important for both patient and staff safety.

Exercise: High Touch Areas

In the image below, identify the high-touch areas. Hint: Think about the areas a body touches.

"Example of High-Touch Sites Patient Bathroom" by J. Otter & T. Galletly. Used under FDEd (CAN). Mods: High-touch sites removed.

Answer:

"Example of High-Touch Sites Patient Bathroom" by J. Otter & T. Galletly. Used under FDEd (CAN). Mods: Added indicators to the second faucet, back of the toilet, and door handrail.

3.3 Chemicals and Personal Protective Equipment

Chemicals

The following section provides an overview of common disinfectant chemicals that may be used by the housekeeping and custodial staff.

Isopropanol Alcohol

Isopropanol alcohol or rubbing alcohol requires water to act as a catalyst to allow the alcohol to permeate the bacteria cells. Contact time, the amount of time that surfaces are exposed to the disinfectant, is 3 to 12 hours. Adhering to the correct **contact time** increases the effectiveness of the product. Allowing isopropanol alcohol to evaporate (dry in open air) creates a protective layer on the surface. The most effective mixture is a concentration of 50 to 70%. A mixture below 50% isopropanol alcohol is not effective as a disinfectant. Isopropanol alcohol is considered a disinfectant, not a sterilization agent, because it does not destroy spore bacteria or hydrophilic viruses. Sterilization agents eliminate all microorganisms and bacteria, whereas disinfectants reduce the number of microbes.

Chlorines

Chlorines or bleach disinfect by means of an **oxidizing agent** that works by adding or removing electrons from other molecules. Bleach was a very common disinfectant for facilities up until the introduction of quaternary ammonium compounds (QUATS), which are far safer to use than chlorine.

Phenolic

Phenolics work by disabling enzymes means that the cell cannot reproduce – killing off the organism. Phenolics are mixed with water and applied to a surface. A phenolic can be used as a disinfectant agent or, by increasing the concentration level of phenolics, a sterilization agent.

Quaternary Ammonium Compounds (QUATS)

Quaternary ammonium compounds are considered to be the safest choice of disinfectant when used in a diluted solution. Prepare the diluted solution following the manufacturer's directions and then spray, allowing a minimum of 30 seconds of contact time to be effective. The strength and effectiveness of the mixture can be tested using a quaternary ammonium test strip.

Iodophors

Iodophors or iodine are not always the first choice in kitchens because they require a long contact time of two minutes for effectiveness, and water temperature is important. The mixture requires dilution in cool water. They also leave an orange-brown residue on the surface.

Hydrogen Peroxides

Mix 50% hydrogen peroxide with 50% water. Spray the mixture on surfaces and allow a contact time of five minutes. Hydrogen peroxide is an economical, cost effective disinfectant which is also eco-friendly. Being knowledgeable about different chemical disinfectants allows managers to compare the positives and negatives of each one, enabling them to make the best choice for their team.

Disinfectant	Expectations
Alcohols – 60-90% ethyl or isopropyl alcohol	Lengthy contact time
Chlorines – most common bleach	Harmful in terms of human exposure
Phenolics	Can also be used as a sterilization agent
Quaternary Ammonium Compounds (QUATS)	Safe choice in terms of human exposure/short contact time
Iodophors: Iodine, detergent, and water	Water temperature sensitive. Leaves an orange/brown residue
Accelerated hydrogen peroxides	Cost-effective, environmentally friendly

What is Personal Protective Equipment (PPE)?

PPE is equipment worn or used by a worker to minimize exposure to specific hazards. Examples of PPE include respirators, gloves, aprons, fall protection, and full body suits, as well as head, eye, and foot protection. Using PPE is only one element in a complete hazard control program that would use a variety of strategies to maintain a safe and healthy environment. PPE does not reduce the hazard itself, nor does it guarantee permanent or total protection.

When Should Personal Protective Equipment (PPE) be Used?

PPE is used to reduce or minimize the exposure or contact to harmful physical, chemical, ergonomic, or biological agents. Remember, a hazard is not “gone” when PPE is used, but the risk of

injury may be reduced. For example, wearing hearing protection reduces the likelihood of hearing damage when the earplugs or muffs are appropriate for the kind of noise exposure and when the PPE is used properly. However, using hearing protection does not eliminate the noise.

PPE should only be used:

- as an interim (short-term) measure before more effective controls are implemented;
- where other controls are not available or adequate;
- during activities such as maintenance, clean up, and repair, where more effective controls are not feasible or adequate;
- during emergency situations.

Designing an Effective PPE Program, https://www.ccohs.ca/oshanswers/prevention/ppe/designin.html, *OSH Answers*, Canadian Centre for Occupational Health and Safety (CCOHS), *January 21, 2025*. Reproduced with the permission of CCOHS, 2025.

In housekeeping and laundry departments, PPE often consists of gloves, aprons, eyewear, and masks.

Image by voltamax, Pixabay License.

View a Personal Protective Equipment PDF from the Canadian Centre for Occupational Health and Safety.

For information on safe chemical handling and proper PPE use, consult the resources offered by the Canadian Centre for Occupational Health and Safety.

3.4 Managing a Custodial Program

Step 1: The Plan

There are a number of steps involved in managing a successful custodial program, starting with a plan. The plan involves evaluating the square footage of the facility, floor types, room types, fixtures in the rooms, and the equipment that the team will work with to do the job. Analyzing this will help you decide how many staff you need and what tasks they will do in each area.

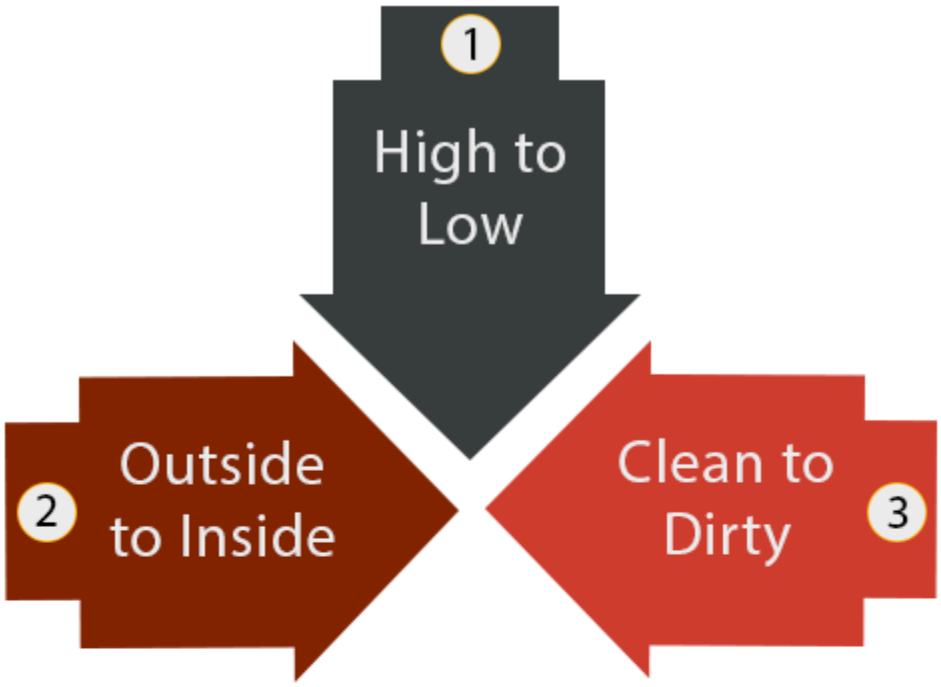
Net Cleanable Square Footage:	Areas that require cleaning. May not include closets, storage areas, or offices.
Floor Types:	Carpet vs. Tile.
Room Types:	Kitchens versus Dining Rooms versus Patient Rooms
Fixtures in the Rooms:	Lights versus Ceiling Fans, Tables versus Shelves
Equipment:	Mops, Steam Cleaners, Vacuums, Chemicals, Carts, PPE

Once you have a plan in place, it is time to share the plan with the staff.

Step 2: Education and Staff Training

Training staff on cleaning and disinfectant basics starts with how to manage a room or area. Cleaners should work from the highest point in the room to the lowest point in the room, from outside walls to the centre of the room, and from the cleanest surfaces in the room to the dirtiest. For example, in a bathroom, start with the mirrors and light switches and move to the sink, finish with the toilet.

There are three basic rules when cleaning a room or an area:



1. Work from the **highest point in the room to the lowest point in the room**. For example, environment cleaning should start by cleaning any ceiling lights and fans, then move down to the objects closest to the floor.

2. Work from the **outside walls of the room to the centre of the room**. For example, clean the wall attached objects first before the horizontal objects such as counters and sinks. Then, finish up with items that come in contact with clients like chairs and exam tables.

3. Work from the **cleanest surfaces in the room to the dirtiest surfaces in the room**. For example, when cleaning a bathroom start cleaning the mirrors and lights switches and then move onto cleaning the sink and finish up by cleaning the toilet and then the floor.

"Cleaning Basics" from Infection Prevention and Control, Copyright © Government of Nunavut. Used under the terms of Non-commercial Reproduction. Mods: Recoloured.

Image Description

Three arrows highlight the cleaning basics: 1 – High to Low, 2 – Outside to Inside, and 3 – Clean to Dirty. These are fully explained below.

1 – Work from the highest point in the room to the lowest point in the room. For example, environment cleaning should start by cleaning any ceiling lights and fans, then move down to the objects closest to the floor.

2 – Work from the outside walls of the room to the centre of the room. For example, clean the wall-attached objects first before the horizontal objects, such as counters and sinks. Then, finish up with items that come in contact with clients, like chairs and exam tables.

3 – Work from the cleanest surfaces in the room to the dirtiest surfaces in the room. For example, when cleaning a bathroom, start cleaning the mirrors and light switches, and then move on to cleaning the sink and finish up by cleaning the toilet and then the floor.

Education and staff training should also include workplace hazardous materials information system (WHMIS) training, preparing the staff to work with workplace chemicals and disinfectants. Personal protective equipment should also be included in staff training. (Note: see 3.3 Chemicals and Personal Protective Equipment for information on chemicals and personal protective equipment specific to environmental services.)

Step 3: Quality Assurance

Quality assurance or ensuring that standards are met involves auditing and corrective action. The first task of the quality assurance process is to develop an audit. An **audit** is a list of standards or expectations that need to be met by the staff. Auditing provides an opportunity to inspect the end results of the cleaning process and ensure that staff are compliant in meeting the set standards. It provides a chance for corrective actions. **Correct actions** are actions that can be taken to correct an issue. For example, you notice that the chairs in the dining room have not been cleaned and sanitized as required by the audit. Is this because the workload is too heavy on that shift? Do the staff need more time? Or is it because some residents are a bit slower leaving the dining room after a meal? Does the order of the work need to be adjusted so the staff can access the chairs at a later time in their shift? Maybe the results of the audit lead to a few questions that require a bit of investigative work. Get the information you need to make a decision and put the correct action in place.

Example Audit for Dining Room Cleaning and Sanitation:

Item	Comply: Yes/No	Comments	Corrective Action
Vents & Lighting Clean	☐		
Windows Clean, Smear Free	☐		
Walls and Baseboards Clean	☐		
Soiled Linens Removed	☐		
Recycling Bins & Garbages Emptied and Cleaned	☐		
Tables and Chairs Cleaned and Sanitized	☐		
Table Condiments and Common Items Wiped, Cleaned, and Refilled	☐		
Service Counters Cleaned and Sanitized	☐		
Floor Free from Debris	☐		

3.5 Managing a Laundry Program

As with a custodial program, the goal of the laundry department is to clean and disinfect, specifically the linen used in the facility. Linens include everything from bed sheets, blankets, and personal clothing to tablecloths, bibs, napkins, and kitchen towels. Many linen items can be contaminated by human blood, saliva, vomit, and even urine. Here are some best practices for operating a laundry program that ensure safe protocols for the staff.

Step 1 – The Collection Process

Provide the laundry staff with personal protective equipment. Laundry staff should wear gowns or lab coats that provide an outer layer of protection against contamination, gloves, and masks. Linen should be separated into coloured bins or bags. It is suggested to use yellow bags for infectious linen, such as bed sheets and bibs, and clear bags for noninfectious linen, such as kitchen towels and tablecloths. Choose to use plastic bins or bags, as cloth bags can get wet and leak contaminants. The staff should collect the bags in plastic wheeled bins and return them to the laundry room for sorting.

Step 2 – Partition the Laundry Room

Best practices recommend two separate rooms, one for dirty or contaminated linens and one for clean linens.

Step 3 – Use Hot Water Washes

Wash water should be between 65 – 79 degrees Celsius for a specific time. The time will be dependent on the chemical detergent used in the workplace. The correct temperature and time are key to effective cleaning and disinfecting.

Step 4 – Label Chemicals

There are many types of chemicals used in laundering linens to effectively clean and disinfect them. Get to know the chemicals. Read the manufacturer's instructions. Provide this information to the staff. Every chemical used in a workplace should have a **Workplace Material Data Sheet (MSDS)** available to the staff.

Example: MSDS Sheet for Laundry Detergent

Look at this example of an MSDS sheet for laundry detergent: Concentrated Laundry HE Detergent Safety Data Sheet [PDF]

Step 5 – Distribution of Clean Linens

Staff should change into clean personal protective equipment. Linens should be sorted and placed on clean carts to be delivered back to the areas of the facility where they are required for use.

Maintaining the laundry equipment in good working order is important to staff safety and the efficacy of the laundry program.

3.6 Chapter Summary

Key Takeaways

- *Nutrition and Food Service Managers* often oversee housekeeping and laundry services in smaller facilities, and housekeeping ensures cleanliness and sanitation, while laundry prevents infection by properly handling linens.
- *Infection Prevention and Control* follows evidence-based practices to reduce disease transmission in healthcare settings.
- *Hotel Clean* is basic tidying and general cleaning, while hospital clean is a more thorough disinfection process necessary for healthcare environments.
- *Proper contact time and dilution* are crucial for cleaner effectiveness.
- *Personal Protective Equipment (PPE)* (e.g., gloves, masks, eyewear) is essential when handling chemicals and contaminated materials.
- *Custodial programs* require planning (e.g., assessing square footage, equipment, and staff needs), and operations follow protocols. For example, laundry operations have protocols like sorting contaminated linens, using correct wash temperatures, and maintaining equipment for efficiency.

OpenAI. (2025, March 3). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summarize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Audit: A systematic review or inspection of processes to ensure compliance with established standards and identify areas for improvement.

Cleaning: The physical removal of dirt and debris.

Contact Time: The required amount of time that a disinfectant must remain on a surface to effectively kill microorganisms.

Contaminated Linens: Fabrics such as bed sheets, clothing, or towels that have been exposed to bodily fluids or infectious agents and require proper handling and disinfection.

Corrective Action: Steps taken to fix issues identified in an audit or review to maintain quality and compliance with standards.

Disinfectant: A chemical agent used to eliminate bacteria, viruses, and other harmful microorganisms from surfaces, reducing the risk of infection.

Fixtures: Permanent or semi-permanent items in a facility, such as lights, ceiling fans, shelves, and tables, that require cleaning and maintenance.

High-Touch Areas: Surfaces frequently touched by multiple people, such as doorknobs, light switches, and handrails, which require frequent cleaning and disinfection.

Hotel Clean: A level of cleanliness that involves tidying and general cleaning of an area, but not necessarily disinfecting all surfaces.

Hospital Clean: A higher standard of cleanliness in healthcare facilities, involving thorough disinfection to eliminate harmful microorganisms.

Housekeeping: The process of cleaning and maintaining a facility, including tasks such as dusting, vacuuming, sanitizing surfaces, and ensuring overall cleanliness and order.

Hydrogen Peroxide: A disinfectant used to kill bacteria and viruses; known for being cost-effective and environmentally friendly.

Infection Prevention and Control: A set of evidence-based practices designed to reduce the risk of spreading infections in healthcare and other facilities.

Iodophors: A disinfectant containing iodine that is effective against bacteria and viruses but requires longer contact time and can leave a residue.

Laundry: The process of washing, drying, folding, and distributing linens and clothing to maintain hygiene and prevent the spread of infection.

Material Safety Data Sheet (MSDS): A document that provides detailed information about a chemical substance, including its hazards, safe handling, and emergency procedures.

Microorganisms: Tiny living organisms, such as bacteria, viruses, and fungi, that can only be seen with a microscope and may cause infections or diseases.

Net Cleanable Square Footage: The total area within a facility that requires regular cleaning, excluding storage areas, closets, and non-cleanable spaces.

Oxidizing Agent: A chemical substance that kills bacteria and viruses by breaking down their cell structures through oxidation (e.g., chlorine in bleach).

Partitioning: The practice of separating areas, such as having separate rooms for clean and contaminated laundry, to prevent cross-contamination.

Personal Protective Equipment (PPE): Equipment worn by workers to minimize exposure to hazards, such as gloves, masks, gowns, eye protection, and respirators.

Phenolics: A type of disinfectant that disrupts bacterial and viral cell functions, preventing them from multiplying.

Quality Assurance: The process of ensuring that a service or product meets established standards through auditing, inspections, and corrective actions.

Quaternary Ammonium Compounds (QUATS): A group of disinfectants commonly used in healthcare and cleaning services that are considered safe and effective when properly diluted.

Sanitizing: The application of disinfectants to surfaces to kill harmful microorganisms, reducing the risk of disease transmission.

Sterilization: The process of eliminating all microorganisms, including bacteria, viruses, and spores, to create a completely germ-free environment.

Workplace Hazardous Materials Information System (WHMIS): A Canadian system that provides safety information about hazardous workplace chemicals, including their handling, storage, and health risks.

Review Questions

1. Which of the following is a key element in managing a successful custodial program?
    1. Ignoring the square footage of the facility
    2. Assigning cleaning tasks randomly to staff
    3. Evaluating room types, fixtures, equipment, and staffing needs
    4. Using the same cleaning process for all rooms regardless of use
2. What is the primary purpose of Personal Protective Equipment (PPE) in housekeeping and laundry operations?
    1. To make employees look more professional
    2. To minimize exposure to physical, chemical, and biological hazards
    3. To eliminate all hazards in the workplace
    4. To increase the efficiency of cleaning product
3. What is the key difference between cleaning and sanitizing?
    1. Cleaning refers to the removal of microorganisms, while sanitizing removes dirt and debris
    2. Cleaning removes dirt and debris while sanitizing kills harmful microorganisms
    3. Cleaning and sanitizing are the same process
    4. Sanitizing is only necessary in hospital settings
4. Which of the following disinfectants is considered the safest choice when diluted properly?
    1. Chlorines
    2. Phenolics
    3. Quaternary Ammonium Compounds (QUATS)
    4. Iodophors
5. When evaluating a cleaning and sanitation program, what is a key factor to consider in quality

assurance?

1. Auditing and inspecting cleaning results to ensure compliance with standards
2. Assuming that staff members follow cleaning procedures correctly
3. Reducing the amount of disinfectant used to save costs
4. Only checking cleaning effectiveness once a year

Answers:

1. c.
2. b.
3. b.
4. c.
5. a.

OpenAI. (2025, March 3). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: From the passage, create 5 multiple choice questions with 4 possible answers each that assess the following outcomes: Recognize the key elements required to manage a successful custodial program; Discuss Personal Protective Equipment and the use of Chemicals in the workplace; Evaluate a cleaning and sanitation program. Indicate the correct answers with an asterisk before the statement. *Reviewed by author.*

CHAPTER 4: EQUIPMENT MAINTENANCE

Chapter Outline

4.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Identify Standard Operating Procedures (SOPs), safety and Hazard Analysis Critical Control Point (HACCP) procedures for common kitchen equipment.
- Differentiate between corrective maintenance and preventative maintenance.
- List the elements of a preventative maintenance program.

4.1 Kitchen Equipment

Foodservice production systems (as discussed in Chapter 2) require a variety of **commercial kitchen equipment** in order to facilitate production. This section will provide an overview of common commercial kitchen equipment.

Examples of common equipment used in commercial food service production

Ranges combine a stovetop cooking surface, which could be an open flame or solid griddle surface, and an oven.

Walk-in Cooler is a large, enclosed, insulated and refrigerated storage space. Most facilities will have walk-in coolers and walk-in freezers.

Rational iCombi Oven functions as a steamer, convection or conventional oven. The unit is fully sealed so the humidity levels, air speed and temperature can be controlled during cooking. This oven has a computer interface which allows cooking programs to be preset. For example, a preset could be set up for cooking Creme Brule.

Steamers use high-temperature steam as the cooking method for foods. Great for cooking vegetables quickly.

Convection Ovens use a fan-forced hot air circulation to decrease the required cooking time and promote consistent, even heat distribution.

Stand Mixers have a large capacity bowl and different attachments, whisk, paddle and dough hook that can be used to mix large quantities of doughs, mousses, and puddings.

Conveyor Dishwashers allow multiple racks of dishes to be washed and sanitized efficiently.

Ice Machines make ice cubes.

Meat Slicer used to slice meats and cheeses.

Image by Brice Australia, CC BY-SA 4.0

Blixer used to texturize foods.

Steam Table provides heat to keep hot foods hot for service.

All images from Nella and used under Fair Dealing unless otherwise indicated.

Standard Operating Procedures (SOPs)

Standard Operating Procedures (SOPs) provide staff with step-by-step directions on how to safely and efficiently operate the equipment. It is useful to include the SOP in the preventative maintenance plan because it serves as a communication tool for staff training. Having written documentation of SOPs supports the facilities management goals of safety, cleanliness, and maintenance. Staff training on SOPs reduces workplace injuries and accidents, which in turn supports business continuity and quality service.

Example of SOP for Stand Mixer

Example of a bowl truck. Image by CKitchen, Used under FDEd (CAN).

1. Follow capacity charts to avoid overfilling the mixing bowl.
2. Minimize heavy loads by using bowl trucks to move the mixer bowl from the prep area to the mixer. If the mixer bowl is heavy, 2 workers must lift the bowl.
3. Ensure the mixer is turned off. Lift bowl. Line up the shaft pin. Lock the bowl in place with clamps.
4. Add the attachment (whisk, paddle, dough hook). Line up the agitator slot and push upwards and clockwise into place.
5. Lift the bowl into a locked position. Move the guard into a locked position.
6. ALWAYS start the mixer on LOW speed.
7. Do not open the guard until the mixture has come to a complete STOP.
8. Open the guard and lower the bowl.
9. Remove the attachment before removing the bowl.

Watch: Globe Mixers Instructional Video

Watch the video Globe Mixers (10 to 80 Qt) Instructional Video at https://www.youtube.com/watch?v=zZpAbb-_5Og

4.2 Hazard Analysis Critical Control Point (HACCP)

The **HACCP** system is used to identify hazards to food production and implement procedures at **critical control points** to prevent, remove or reduce the hazard. Hazards can be physical, chemical or biological. An example of a **physical hazard** is a piece of broken glass falling into a food mixture. **Chemical hazards** can come from chemical contamination of a food product, and **biological hazards** are harmful microorganisms that grow in foods in the correct environment.

How HACCP Works

1. Hazards are identified.
2. Critical Control Points (CPPs) are established.
3. Establish CCP limits. What will be done to prevent, remove or reduce the hazard?
4. Monitor the process to ensure set limits are met.
5. Implement corrective action if required.
6. Document actions taken.

CPP	Hazard	Critical Limits	Monitor	Corrective Action	Verification	Documentation
Receiving Goods	Dairy	Temperature between 0-4°C.	**WHAT:** Check the temperature **HOW:** Use laser thermometer **FREQUENCY:** On delivery **WHO:** Receiver	If the temperature is outside the zone, return the product to the supplier.	Manager to sign off on return.	Temperature Log.
During mixing	Dairy	Temperature between 0-4°C. Total time outside the temperature zone is no longer than 2 hours.	**WHAT:** Monitor temperature and time **HOW:** Use laser thermometer **FREQUENCY:** During the process **WHO:** Cook	If the temperature is outside the zone for longer than 2 hours, discard the product.	Manager to sign off on discard of product.	Log. Record on the Waste Sheet if the product is discarded.
Cleaning and Sanitation of Equipment	Dairy in mixture	Remove any food particles from the equipment.	**WHAT:** Clean and sanitize equipment **HOW:** Use workplace chemicals **FREQUENCY:** After use **WHO:** Cook	If food particles are found on equipment, clean and sanitize.	Manager to audit.	Cleaning and Sanitation Log.

Nutrition and Food Service Managers should reference HACCP in the preventative maintenance plan. CCPs should be noted in cleaning and sanitation procedures. Written documentation of HACCP supports the facilities management goals of safety, cleanliness, and maintenance.

4.3 Corrective Maintenance Versus Preventative Maintenance

Image by Konstantin Mishchenko, Pexels License.

Corrective maintenance are tasks performed to fix equipment after the equipment has broken down. Equipment that is no longer in working condition can cause safety issues in the workplace and interruptions to business operations.

Preventative maintenance is the regular and systematic inspection, cleaning, lubrication, and replacement of worn parts in an effort to prevent costly breakdowns and prolong the life of the equipment.

To support the facilities management goals of strategic planning (business continuity), safety, cleanliness and maintenance, the Nutrition and Food Service Manager should have an active preventative maintenance plan in place.

4.4 Developing and Maintaining a Preventative Maintenance Program

Step 1: Identify Assets
Step 2: Document Standard Operational Procedures for each piece of equipment
Step 3: Establish Maintenance Routines and Schedules
Step 4: Identify contact information for outside contractors
Step 5: Audit and Corrective Actions

Step 1: Identify Assets

Identify assets to be included in the preventative maintenance program by taking a physical inventory of the equipment in the facility. Include the following information in the physical inventory: Equipment Name, Serial No., Description and Location.

Table 4.4.1 Example of physical inventory of equipment

Equipment	Serial No	Description	Location
Sierra Range	SR-60-10	Commercial gas range with 10 burners, 2 x 32000 BTU ovens, stainless steel interior and exterior, porcelain oven decks and door liners, adjustable stainless steel legs	Main kitchen, first floor
Nor-Lake Kold Locker	KLB771014-C	10 x 14 x 7.7 indoor walk-in cooler, 860 cubic feet of storage space, deadbolt locking handle with inside safety release, self-closing door, and digital thermometer	Main kitchen, first floor

Step 2: Document Standard Operational Procedures

Sierra Range Standard Operating Procedures

For the oven:

1. Set the desired temperature using a knob.
2. Give the oven adequate time to achieve the desired set point.
3. Using oven mitts, insert a sample (tray) to be heated into the oven and close the door. Ensure the door is completely shut.
4. Once the sample has been heated for the prescribed duration (time), turn off the oven.
5. Using oven mitts, remove the sample and place it on the counter.

For the stovetop:

1. Depress and turn the gas burner to ignite.
2. Select the desired temperature.
3. Follow the recommendations for cooking temperatures and times.
4. Remain in the room while operating the stovetop.
5. Ensure ventilation openings are open and not covered.
6. Switch the gas burners off immediately after use.

Step 3: Establish Maintenance Routines and Schedules

Routine cleaning by staff

The stovetop will be cleaned at the end of each day.

Table 4.4.2 Stovetop Cleaning Routine

Task	Date Complete	Date	Date	Date	Date	Date
Remove burner grates. Soak in hot, soapy water, scrub clean and air dry.						
Wipe down exterior surfaces with a hot, soapy cloth.						
Remove dip trays. Soak in hot, soapy water, scrub clean and air dry.						

Monthly visual inspection by staff

Complete the following inspection list on the first day of each month

Table 4.4.3 Monthly Inspection Routine

Task	Date	Date	Date	Date	Date	Date
Check oven temperature gauges using the digital oven thermometer.						
Check gas flow. Even blue flames indicate good gas flow. Uneven orange flames indicate poor gas flow.						
Check the function of the pilot lights. Do all the burners light?						
Check the door hinges for a good seal. Does the door close completely?						
Check the oven heating element.						

Annual gas testing inspection by a certified outside contractor: SERV-QUIP Equipment Service Contractor

Step 4: Identify contact information for outside contractors

Ensure that any outside contractors that you bring into work inside your facility are fully licensed and carry insurance for their work. For most skilled trades, this means having written and passed a certification of qualification examination for the trade. Keep contact information for local contractors in the preventative maintenance plan. Unless the contractor is coming directly from the manufacturer, then the local contractor should be located within a 50 km radius of the facility.

Step 5: Audit and Corrective Actions

An **audit** is an inspection process. The auditing process involves a list of standards that you expect to happen, observation of the process (inspecting oven function), comparison of standards to actual performance, identifying corrective actions and implementing change.

" The Auditing Process" by Tracy Rieger, CC BY-NC-SA 4.0

4.5 Staff Training on the Use of Equipment

Training staff on how to correctly use the commercial equipment in the facility will contribute to a decrease in accidents, increase efficiency, increase the quality of products, and ensure that the employer is in compliance with health and safety legislation. There should be a plan in place to train staff on the standard operation of each piece of equipment, routine cleaning and maintenance, emergency procedures, and what personal protective equipment is required to use the equipment. The staff training plan can be as simple as ensuring that a senior staff member demonstrates the use of the equipment prior to a new staff member using that piece of equipment.

As part of staff training, staff should be aware of what **lock-out / tag-out procedures** are and why they are used in the workplace.

Watch: Lockout Tagout | An Introduction to the Control of Hazardous Energy

Watch the video Lockout Tagout | An Introduction to the Control of Hazardous Energy at https://www.youtube.com/watch?v=o5CWnUFsevo

4.6 Chapter Summary

Key Takeaways

- *Commercial Kitchen Equipment* consists of various specialized appliances, such as ranges, convection ovens, steamers, and mixers, which are essential for efficient food service production.
- *Standard Operating Procedures (SOPs)* are clear, step-by-step instructions that help staff operate equipment safely and effectively, reducing workplace injuries and ensuring consistency.
- *Hazard Analysis Critical Control Point (HACCP)* is a food safety system that identifies and controls physical, chemical, and biological hazards at critical points in food production.
- *Developing a Preventative Maintenance Program* should include identifying assets, documenting SOPs, scheduling maintenance, contracting certified professionals, and conducting audits.
- *Employees must be trained* on equipment operation, safety procedures, and lockout/tagout protocols to ensure compliance with health and safety standards.
- *Proper maintenance and safety protocols* support operational efficiency, minimize disruptions, and ensure regulatory compliance in food service establishments.

OpenAI. (2025, February 27). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summerize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Audit: A systematic review or inspection of processes and equipment to ensure compliance with safety, quality, and maintenance standards.

Biological Hazard: Microorganisms, including bacteria, viruses, and parasites, that can grow in food and cause foodborne illnesses.

Chemical Hazard: Harmful substances such as cleaning agents, pesticides, or food additives that may contaminate food and cause health risks.

Commercial Kitchen Equipment: Specialized appliances and tools designed for use in professional food service operations to facilitate large-scale food preparation, cooking, and storage.

Corrective Maintenance: The process of repairing equipment after it has broken down. This type of maintenance is reactive and is performed to restore functionality.

Critical Control Points (CCPs): Specific stages in food production where hazards can be prevented, eliminated, or reduced to safe levels.

Hazard Analysis Critical Control Point (HACCP): A systematic approach to food safety that identifies and controls potential hazards in food production. It involves monitoring critical control points to prevent contamination.

Lockout/Tagout (LOTO) Procedures: Safety protocols used to prevent the accidental operation of machinery during maintenance or repair by physically locking controls and tagging them with warning labels.

Physical Hazard: Any foreign object (e.g., broken glass, metal fragments) that can contaminate food and pose a danger to consumers.

Preventative Maintenance: Routine inspections, cleaning, lubrication, and part replacements aimed at preventing equipment breakdowns and extending its lifespan.

Standard Operating Procedures (SOPs): Step-by-step instructions that guide staff on how to safely and efficiently operate equipment. SOPs support training, safety, cleanliness, and maintenance within a facility.

Review Questions

1. What is the primary purpose of Standard Operating Procedures (SOPs) in a food service environment?

    a. To increase the speed of food production
    b. To provide step-by-step instructions for equipment use and safety
    c. To limit the number of staff operating equipment
    d. To reduce the cost of equipment maintenance

2. Which of the following is NOT an example of commercial kitchen equipment?

    a. Stand Mixer
    b. Conveyor Dishwasher
    c. Steam Table
    d. Microwave

3. What is the main difference between corrective and preventative maintenance?

    a. Corrective maintenance is scheduled, while preventative maintenance is done only when needed
    b. Corrective maintenance is performed before a breakdown, while preventative maintenance fixes broken equipment
    c. Corrective maintenance repairs broken equipment, while preventative maintenance prevents equipment failures
    d. Corrective maintenance is less expensive than preventative maintenance

4. According to HACCP principles, which of the following is an example of a biological hazard?

    a. A piece of broken glass in food
    b. Bacteria growing in improperly stored food
    c. A cleaning chemical contaminating food
    d. Metal shavings in a food mixture

5. What is the purpose of a walk-in cooler in a commercial kitchen?

    a. To store perishable food items at a controlled temperature
    b. To cook food using steam
    c. To sanitize kitchen utensils and equipment
    d. To rapidly thaw frozen ingredients

Answers:

1. b.

2. d.
3. c.
4. b.
5. a.

OpenAI. (2025, February 27). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Create five multiple-choice questions with four answer options from the following information. Reviewed by author.

CHAPTER 5: SUSTAINABLE PRACTICES

Chapter Outline

5.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Recognize types of energy conservation and waste management systems available for use in food service.
- Prepare a presentation that supports the implementation of an energy conservation or waste management program.

5.1 What is Sustainability?

"Sustainability and its 3 Dimensions" by B. Purvis, Y. Mao, & D. Robinson, CC BY-SA 4.0. Mods: Cropped & recoloured.

The definition of **sustainability** development by the **Brundtland Commission** (1987) states sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. The commission outlined three pillars of sustainability: social, economic and environmental.

Social sustainability identifies that universal human rights and necessities are attainable by all people who have enough resources to keep their families and communities healthy and secure.

Economic sustainability means that human communities across the globe are able to maintain their independence and have access to the resources that they require, financial and other to meet their needs.

Environmental states that ecological integrity is maintained, all of the earth's environmental systems are kept in balance, while natural resources are consumed by humans at a rate where they are able to replenish themselves (Brundtland Commission, 1987).

As a Nutrition and Food Service manager, it is important to consider the impact of work on the pillars of sustainability, which are social, economic and environmental.

How does the work that is happening now affect the people, costs, and the environment? Can any of the pillars of sustainability be improved by using new processes? When implementing or maintaining a sustainability program, think about how the program impacts the people in your community the finances, which could be additional cost or cost savings of the program and the environment.

5.2 Sustainability in Food Service

In food services, there are many opportunities to engage in sustainable practices, such as energy conservation, managing and reducing food waste, composting, water conservation, recycling, reducing packaging, organic chemicals, and purchasing locally to reduce the **carbon footprint** of transportation of goods.

Energy Conservation and Management

Food Services typically consume five times more energy per square foot than other commercial buildings. This provides the Nutrition and Food Service Manager an opportunity to review current energy consumption and seek out opportunities for energy savings and conservation. Engaging in energy conservation programs can improve profitability, reduce the organization's carbon footprint, and conserve natural resources for future generations. These goals align with the three pillars of sustainability.

Equipment

Energy Star Logo by Environmental Protection Agency, Public Domain

One of the quickest ways to conserve energy is to upgrade older kitchen equipment to **Energy Star**-rated equipment. Energy Star is an internationally recognized program. The label guarantees the consumer that the product has been certified to use less energy and reduce emissions that affect climate change.

Heating Ventilation & Air Conditioning (HVAC)

HVAC systems can be 28 to 35% of the total energy cost in commercial food service, making them a key area to evaluate for possible energy conservation. The following identifies ways to reduce HVAC costs:

1. Ensure that the HVAC system is part of the preventative maintenance program. The HVAC system should be inspected twice annually – in the preheating season and the precooling season – to ensure that the system is in good working order and that filters have been changed.
2. The Nutrition and Food Service Manager should complete a visual inspection to ensure that there is free airflow to and from the supply registers. Make sure that registers are not blocked by equipment or other materials.
3. Keep electronic and heat sources away from thermostats.

4. Educate staff to use window shades to block excess heat from direct sunlight.
5. Use a smart thermometer that can be programmed to precool or preheat spaces an hour prior to occupation. Avoid heating or cooling unoccupied spaces.
6. Consider a heat pump to decrease the cost of cooling and heating.
7. Consider **demand hoods**. Demand hoods only actively engage in ventilation when heat or air debris (smoke) levels are detected in the kitchen.

Did you know that reducing energy costs by 20% could lead to a 33% increase in profitability?

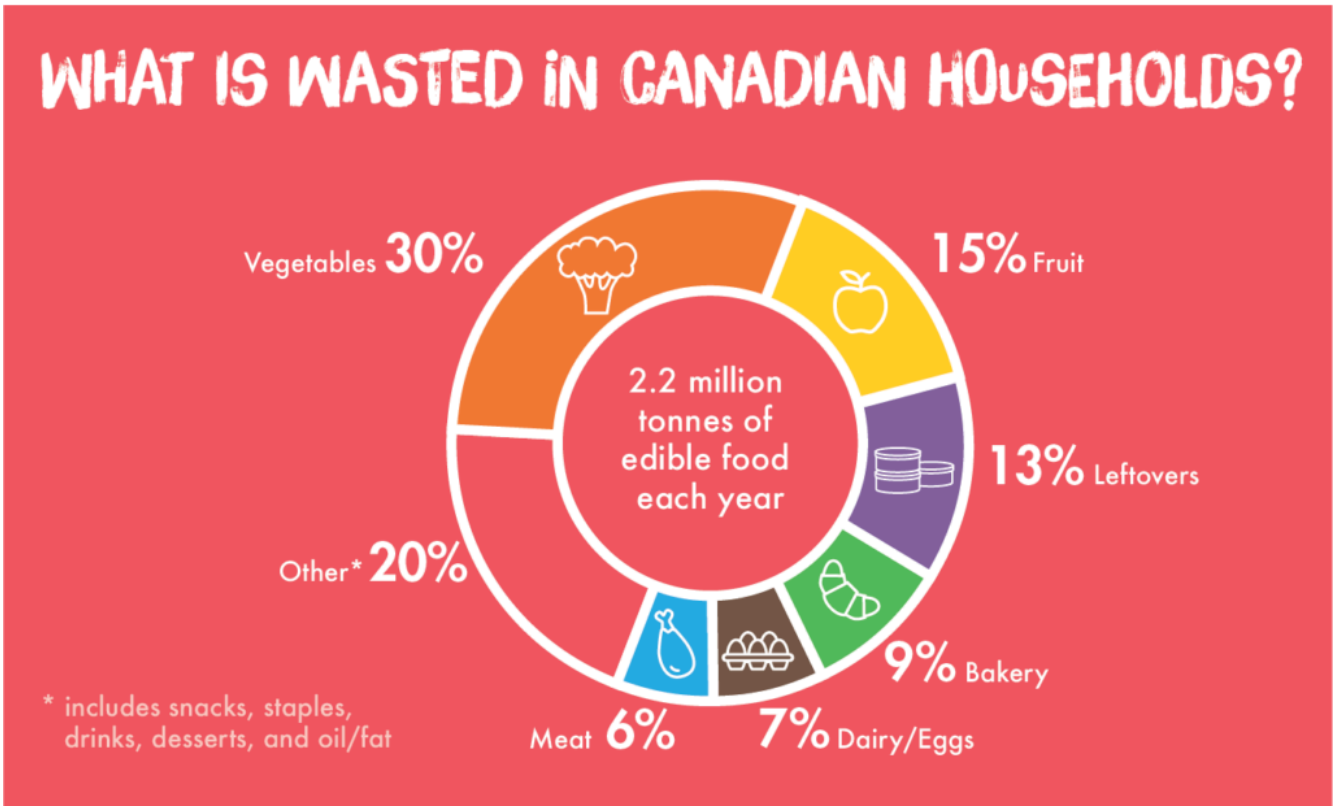
Lighting

Lighting makes up approximately 10 to 15% of overall energy costs in commercial food service. Switching from traditional incandescent light bulbs to **light-emitting diodes (LED)** can result in using up to 90% less energy, which equals lower energy costs (Government of Canada, 2025). Installing occupy sensors is another way to lower energy costs. Occupy sensors will automatically turn the lights out when no movement is detected in the room after a set period.

Managing and Reducing Food Waste

Food waste is food that is discarded instead of consumed even though the food meets the standard for human consumption. This includes food that is left on plates served to clients, food leftover from service that was not served to clients and food that spoils in storage before it can be used in production.

Recent research estimates that 20% (or 11 million tonnes) of all the food produced in Canada annually becomes avoidable food loss or waste – food that could have been eaten but was instead landfilled, incinerated or managed as organic waste (VCMI, 2019).



"What is Wasted in Canadian Households?" by Love Food Hate Waste Canada. Used under FDEd (CAN).

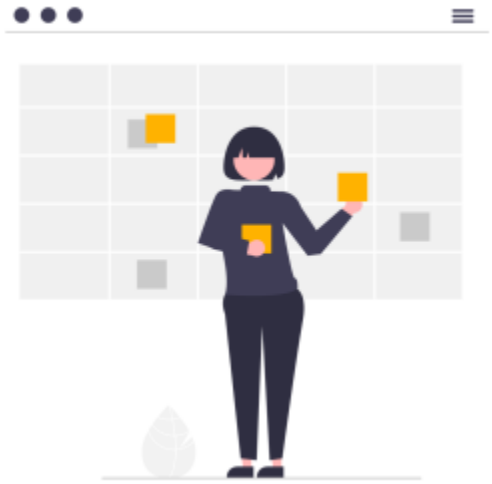
Image Description

Presents data on food waste in Canadian households, highlighting that 2.2 million tonnes of edible food are wasted yearly. It breaks down food waste by category and percentage:

Vegetables: 30% (largest category)
Fruit: 15%
Leftovers: 13%
Bakery items: 9%
Dairy & Eggs: 7%
Meat: 6%
Other (snacks, staples, drinks, desserts, oils/fats): 20%

Strategies for Decreasing Food Waste

Strategies include food waste prevention and food waste management. Food waste prevention includes preparing less food, using good storage practices, and purchasing in demand. Food waste management asks the question, what should we do with the leftovers?



"Schedule" by unDraw, unDraw License.

Forecasting is the most accurate way to determine the correct amount of food preparation and production. Forecasting is the use of past information to predict future demand. For example, if the organization uses a cyclic menu, at some point, usually after 3 to 5 weeks, the menu will repeat itself. The repetition of the menu allows for forecasting. The last time that ham, scalloped potatoes, and beef stir fry were served, how many people chose ham and beef? Knowing that 40% of the people chose ham and 60% of the clients picked the beef stir fry means that you can, with a margin of error, predict how many clients will choose ham and how many will choose beef. If you are serving 120 clients at each meal, you can now forecast that 120 × 40% = 48 people will request ham, and 120 × 60% = 72 clients will ask for the beef stir fry. There is a small margin of error in forecasting, which has been determined to be approximately 10%. This means that you should instruct your cooks to prepare (48 × 10% = 4.8 or 5 portions) 48 + 5 = 53 portions of ham and scalloped potatoes.

Good storage practices are equal to training your staff on **First In / First Out** procedures and to correctly label and date all food items in storage. First In / First Out practices are just as they sound. When a food order arrives, the new items should be placed at the back of the storage area, and older items should be pulled forward to be used in food production first. Labelling and dating items are equally essential as they allow you and your staff to accurately track the shelf life of the food products.

Demand purchasing means purchasing only what is necessary to meet production needs. Remember that if you are working in a government-funded food service, such as healthcare, there is legislation that requires you to keep enough food on hand to feed everyone in the facility for three days should a shelter-in-place emergency occur at the facility. This food is above and beyond the food requirements for the regular meal service.

Flexibility in your menus means more opportunities to use products before they expire, spoil, and are discarded. Ask yourself if it is possible to substitute green beans for broccoli.

Food waste management encourages Nutrition and Food Service Managers to ask the following questions: What should we do with leftovers? Leftovers are untouched food that has not been

served to a client and is left after the meal service has concluded. Rather than discard this food to the compost bin, can this food be offered to staff, perhaps for a discounted price? Or can this food be packaged and shipped to a local food bank or community program? Can any of the food be stored for use at a later date?

The key to a successful food waste reduction program, whether you choose to implement food waste prevention strategies, food waste management or both, is staff education and training. Training the staff on how to manage food waste and why sustainability is pertinent encourages collaboration and motivation to participate in food waste reduction practices.

Read more about food waste management in this article by EHL Hospitality Business School: Food Waste Management: Innovative Solutions for Hospitality

Purchasing Local to Reduce Carbon Footprint

Carbon footprint is the total amount of greenhouse gases (GHGs) you emit into the atmosphere (BDC, n.d., para. 1).

Some of the **GHGs** measured are carbon dioxide (CO2), methane, and nitrous oxide. GHGs have been identified as contributing to a rise in the earth's temperature. The rise in temperature, estimated to be between 1.5 and 2 degrees Celsius since 1970, has increased erratic weather patterns and the occurrence of natural disasters and provided numerous challenges for agricultural food producers (Government of Canada, 2020). The World Health Organization has set a net zero goal for carbon emissions. It is currently estimated that humans need to reduce or remove 20 billion tons of carbon from the atmosphere each year to reach the net zero goal (Climate Portal, 2023).

One of the ways to support this goal is to purchase local food products, as this decreases the distance the food needs to travel to get to your facility. Most food is moved around the world by average medium-duty trucks. The average truck, like the one that arrives at your workplace twice a week to deliver raw food products to you, is estimated to contribute 223 tons of CO_2 per year (Kilgore, 2024).

Reducing the company's carbon footprint begins with examining current purchasing practices and becoming knowledgeable about where the raw food products used in production are coming from. It means knowing the answer to the question: how far is the food travelling?

5.3 Implementing a Sustainability Program

Step 1 – Identify the Current Baseline

Let's say you are thinking about water conservation and possibly adding infrastructure to support a greywater system. Do you know how much water the facility currently uses in a month? What is the cost of water supplied into the building and sewage costs for water removal from the building in a month? The answer to these questions is your current baseline. A **baseline** will provide a comparison between the current situation and the changes or results after the sustainability program has been implemented in the workplace.

Step 2 – Research Best Practices and Engage Stakeholders

Best practices are sustainability programs implemented by other organizations that have consistently demonstrated positive results. Ask the questions: Have any of my competitors installed a greywater system? Which one did they choose to install in their facility? Do consumer reviews suggest that this greywater system will meet the goals of my project?

Stakeholders are people who have a vested interest in your company. In food services, stakeholders include staff, clients, management, company owners, and residents of the greater community. Ask the questions: How do the staff, clients, and others feel about adopting new processes? How does the change impact them?

Step 3 – Define the Goals of the Project

This is a sustainability project. The goals should align with the three pillars of sustainability: social, economic, and environmental. Answer the questions: How will this program impact the people who work here, the people we serve, and the larger community? How will this program affect the environment? How will this program change the budget?

Ensure that any goals set are **SMART**. Specific, Measurable, Attainable, Relevant, and Time Bound.

Step 4 – Develop the Plan

The implementation and operation plan should answer the following questions:
What needs to change? Does the project require new infrastructure? Are permits required? How much will this cost? Will a new or revised policy be required to support new processes? Will staff require training? Who will be responsible for managing the implementation and ongoing operation of the program?

Step 5 – Create a Road Map

A road map will identify the intent to accomplish specific stages of the project by a specific time.

For example:

Image Description

Stage 1: Get permits approved by the City for Grey Water Infrastructure. Time: 2 months

Stage 2: Grey Water Infrastructure complete. Time: 6 months

Stage 3: Staff training on new Grey Water policy and procedures. Time: 7 months

Step 6 – Communicate and Gain Approval to Launch Program

Take your plan and the road map to management to get approval to implement the sustainability project.

Step 7 – Monitor and Evaluate the New Sustainability Program

Compare new data, such as the cost of water for the month, with the baseline to confirm that the program is saving the company money. Ask the staff how the program is affecting the work. Learn from the experience. Look for ways to improve the program.

5.4 Chapter Summary

Key Takeaways

- *Pillars of Sustainability*: Sustainability is defined by the Brundtland Commission as meeting present needs without compromising future generations. It is built on three pillars: Social Sustainability, Economic Sustainability, and Environmental Sustainability.
- *Sustainability in Food Services:* Food service operations can contribute to sustainability by conserving energy, reducing waste, composting, recycling, minimizing packaging, using organic products, and purchasing locally.
- *Energy Conservation and Management:* Food services consume five times more energy per square foot than other commercial buildings and strategies for conservation include upgrading to ENERGY STAR equipment, improving HVAC efficiency, using LED lighting, and implementing smart thermostats and demand hoods.
- *Food Waste Reduction Strategies:* Food waste prevention methods include accurate forecasting, proper storage, demand purchasing, and menu flexibility.
- *Reducing Carbon Footprint through Local Purchasing:* Transporting food contributes significantly to greenhouse gas emissions, so buying local food reduces transportation emissions and supports sustainability goals.

OpenAI. (2025, March 18). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summerize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Baseline: The initial measurement or starting point used for comparison when evaluating changes or improvements over time in a sustainability program.

Brundtland Commission: A United Nations commission established in 1983 to address global environmental and development issues. It introduced the widely accepted definition of sustainability in its 1987 report Our Common Future.

Carbon Footprint: The total amount of greenhouse gases, particularly carbon dioxide (CO_2), emitted directly or indirectly by an individual, organization, or product over a specific period.

Demand Hoods: A ventilation system used in commercial kitchens that operates only when heat or smoke is detected, reducing unnecessary energy consumption.

Demand Purchasing: A purchasing strategy where only the necessary amount of supplies or food is bought to meet production needs, reducing excess inventory and waste.

Economic Sustainability: The ability of communities and businesses to maintain financial independence and access resources necessary for long-term economic stability and growth.

ENERGY STAR: An internationally recognized certification program that identifies energy-efficient appliances and equipment, helping consumers and businesses reduce energy consumption and environmental impact.

Environmental Sustainability: The practice of using natural resources in a way that maintains ecological balance, ensuring they can replenish themselves over time without causing long-term harm to the environment.

First In / First Out (FIFO): A food storage and inventory management practice where older stock is used before newer stock to prevent waste and ensure freshness.

Forecasting: The process of using past data and trends to predict future demand, such as estimating the amount of food needed for meal preparation in a food service setting.

Greenhouse Gases (GHGs): Gases such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) that trap heat in the Earth's atmosphere, contributing to climate change.

HVAC (Heating, Ventilation, and Air Conditioning): A system used in buildings to regulate indoor temperature, air quality, and humidity for comfort and efficiency.

LED (Light-Emitting Diode): A highly energy-efficient lighting technology that consumes significantly less power than traditional incandescent bulbs while producing the same or better light output.

SMART Goals: A goal-setting framework that ensures objectives are Specific, Measurable, Attainable, Relevant, and Time-bound to improve effectiveness and success.

Social Sustainability: The aspect of sustainability that ensures all people have access to basic human rights, resources, and opportunities to maintain their well-being and security.

Sustainability: Meeting our own needs without compromising the ability of future generations to meet their own needs.

Review Questions

1. Which of the following is an effective energy conservation strategy for food service operations?
    a. Keeping kitchen equipment running continuously to avoid startup energy surges
    b. Using traditional incandescent bulbs for lighting

c. Placing heat-generating equipment near thermostats to maintain warmth
d. Upgrading to ENERGY STAR-rated kitchen equipment

2. How can a food service operation reduce waste through proper inventory management?

    a. Ordering extra food supplies to ensure there are no shortages
    b. Using the First In / First Out (FIFO) method for food storage
    c. Storing all new food deliveries at the front of the storage area
    d. Keeping inventory records without regularly reviewing them

3. Which of the following statements best describes an essential step in implementing an energy conservation program in the workplace?

    a. Establishing a baseline to measure current energy usage
    b. Installing additional lighting to increase workplace visibility
    c. Relying on staff to turn off equipment when they remember
    d. Increasing heating and cooling cycles to maintain a consistent temperature

4. What is one method to reduce food waste in a food service operation?

    a. Using menu forecasting to predict demand and prepare the correct amount of food
    b. Serving extra-large portions to ensure customer satisfaction
    c. Discarding all unused food at the end of each shift
    d. Keeping leftovers for an unlimited period without storage guidelines

5. When implementing a waste management program, what is an important factor to consider?

    a. Engaging stakeholders, including staff and community members, to gain support
    b. Replacing recyclable materials with single-use plastics for convenience
    c. Ignoring the financial impact of the program on the company
    d. Implementing a program without monitoring its effectiveness

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Answers:

1. d.
2. b.
3. a.
4. a.
5. a.

OpenAI. (2025, March 18). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: create 5 multiple choice questions with 4 answer options that test the learning outcomes. Reviewed by author.

CHAPTER 6: EMERGENCY PREPAREDNESS

Chapter Outline

6.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Summarize the standards for emergency preparedness for the following situations: power outage, boiled water advisory, shelter in place, and violence in the workplace.
- Prepare a plan of action for a workplace emergency.

6.1 Emergency Preparedness in the Workplace

A **workplace emergency** is a circumstance that exposes workers, clients, and other members of the community to a dangerous situation; it can disrupt operations and cause damage to the facility. Workplace emergencies can be unexpected and often unpredictable situations requiring immediate response from staff. **Emergency preparedness** involves planning and staff training to facilitate the most effective response possible to anticipated incidents. The goal of emergency preparedness and planning is employee safety, client and visitor safety, **business continuity**, which minimizes downtime in operations and property damage, and is legally compliant (CCOHS, 2022).

Watch: Emergency and Disaster Preparedness Tips

Watch the video Emergency and Disaster Preparedness Tips by the Canadian Red Cross at https://www.youtube.com/watch?v=8ZV4w5Ks55U

As a member of the management team that supervises and leads staff in the workplace, the Nutrition and Food Service manager will be involved in the review and creation of emergency preparedness plans.

6.2 Types of Emergencies

The following section provides an overview of some common workplace emergencies. Depending on where the facility is located, you may be at a lesser or greater risk of different types of emergencies. For example, you are more likely to experience a wildfire while working in northern Alberta or an incidence of severe weather in northern Ontario. It is wise to be prepared and have a plan to address many different types of emergencies that could possibly happen in the workplace.

Fire

Fires are spontaneous flames that can grow quickly, burning material in their path. Fires release heat, which can burn humans and smoke, which can be dangerous and even deadly when inhaled by humans. Fires can spread rapidly, filling the facility with deadly smoke. Fire prevention and safety are legislated by the government of Ontario in the Fire Protection and Prevention Act, 1997.

Medical Emergency

A medical emergency is an unexpected but serious injury or illness that requires swift medical care to prevent harm or death. Medical emergencies can include heart attacks, strokes, broken bones, etcetera.

Severe Weather

Severe weather can be snow storms causing shelter-in-place or floods or tornadoes requiring evacuation of the facility. Weather warnings are issued by the Government of Canada: Weather Information.

Bomb Threat

A bomb threat means that communication, whether verbal or written, has indicated the presence of an explosive device in your facility. Detonation of explosive devices can cause great harm, including death.

Security Threat

Security threats include an agitated or suspicious person, uncontrollable or disruptive behaviour, allegations of violence, a perceived weapon, a physical altercation, unlawful assembly, or hostage-taking.

Infrastructure Problem

Infrastructure problems include any issues with the physical structure of the building, such as a water pipe bursting, a roof collapsing, a gas line leaking, etc.

Hazardous Material Spill

A hazardous material spill occurs when a chemical identified as harmful to humans is accidentally released in an area where it should not be found. Hazardous materials can be identified using the Workplace Hazardous Materials Identification System (WHMIS).

6.3 Creating an Emergency Preparedness Plan

Gather the following information prior to writing up the plan.

Step 1 – Set Objectives

Objectives are goals that you and your staff intend to accomplish by following the directions provided by the emergency preparedness plan. For example, objectives for an infrastructure issue, such as a burst water pipe, would include staff and client safety, minimizing property damage, and business continuity. Business continuity is the part of the plan that identifies a way to keep operations moving forward while the emergency is being addressed. Ask how we will feed 160 people if a pipe bursts and floods the kitchen with water.

Step 2 – Identify Assumptions

Assumptions are things that are accepted as true. For example, in the case of the burst pipe, you would assume that there is a main water valve (tap) in the facility, which could be turned off to stop the flow of water into the building. Another assumption could be that your company has a licensed plumber on the payroll who could fix the pipe.

Step 3 – Identify Resources

Make a list of **resources** available on-site at the workplace that can be used to deal with the emergency. This could include building plans and schematics that show where the pipes and valves are in the building, first aid kits, evacuation chairs or wheelchairs. Remember to include contact information for outside resources, such as plumbers and clean-up companies.

Watch: WINMAR® Company Services

Watch WINMAR® Company Services at https://www.youtube.com/watch?v=c21OBisefPc

Step 4 – Communication and Delegation in an Emergency Response Situation

Think about what needs to be done to manage the emergency. Think about who will do what in an emergency situation. Who will lead and delegate to others? What task will need to be completed to manage the situation? How will tasks be delegated? Who will communicate with outside resources? Does joint training between staff and community partners need to take place?

After taking time to think about and record information on the objectives, assumptions, resources and who does what in response to the emergency, it is now time to prepare the *plan*.

Example: Plan for a Burst Water Pipe

Page 1 – Introduction

This plan provides staff with information and directives on what to do in the case of a water pipe burst at the Happy Hearts Care facility. The objectives of having this plan in place are to provide a safe environment for the staff and clients, which minimizes injury and encourages safe practices first, minimize physical damage to the property, and to facilitate business continuity whenever possible.

Page 2 – Table of Contents

Page 3 – Contact List

Names and contact information for those who need to be reached in an emergency.

All Call Emergency Response 911
Fire, Ambulance, Police

Plumber: John Ray
Cell: 257-869-2112
Email: jray@happyhearts.ca

Public Health Inspector – Potable Water
Southwestern Public Health
Phone: 519-631-9900

Administrator, Happy Hearts
Ty Wellsome
Cell: 565-999-5484
Email: twellsome@happyhearts.ca

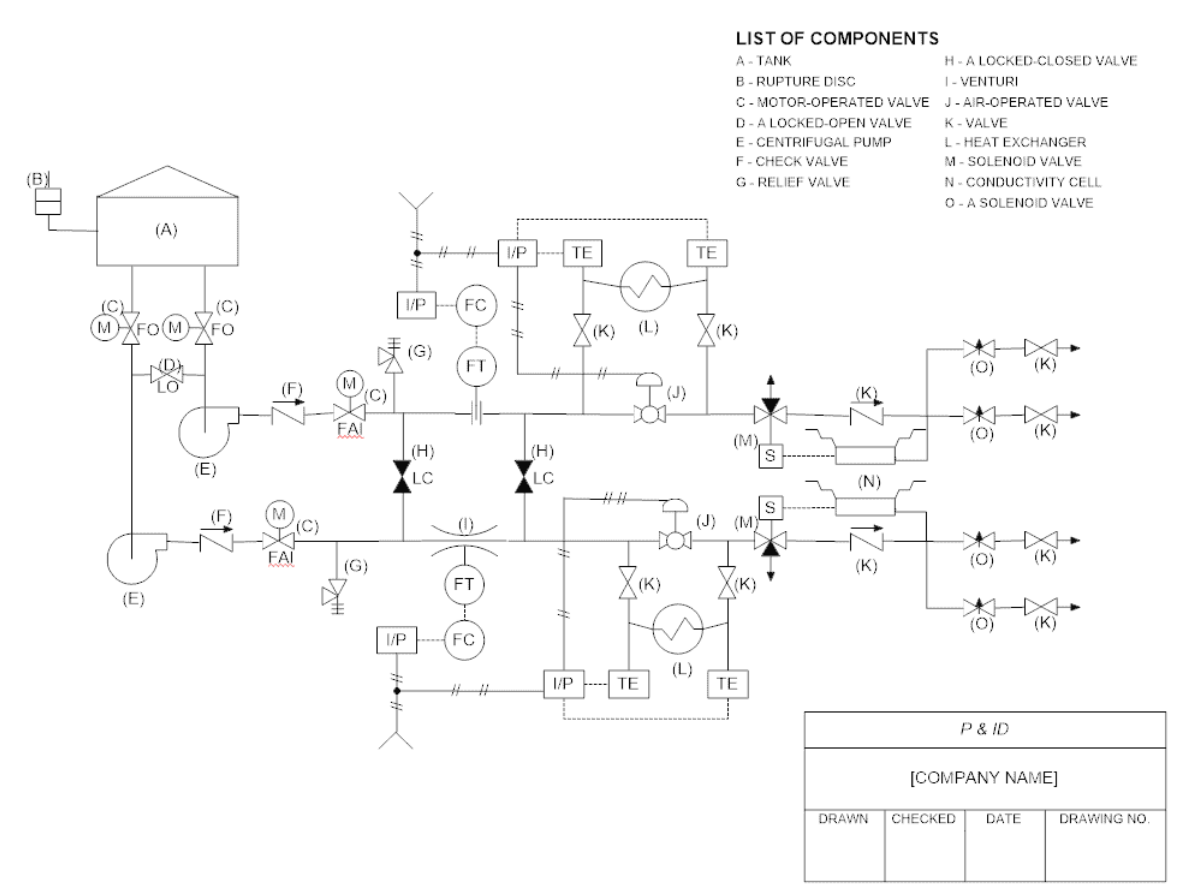
Maintenance Supervisor
Harshdeep Kaur
Cell: 565-999-4565
Email: hkaur@happyhearts.ca

Winmar Property Restoration Specialists
Phone: 519-451-0101
https://winmarlondon.com/

Public Relations Communications Officer
Sijing Xi
Cell: 565-999-9512
Email: sxi@happyhearts.ca

Page 4 – Schematics

Drawings that show the location of critical infrastructure.

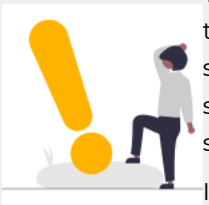


"Plumbing & Piping Design Examples" by George Packard, Gemini Valve. Used under FDEd (CAN).

Page 5 – Actions

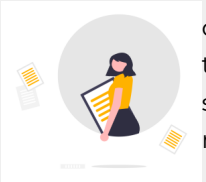
Step-by-step actions for dealing with the emergency, identifying specific persons' roles and responsibilities.

1 – Water is discovered. The cause is believed to be a burst pipe.

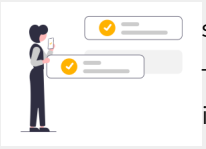


The person that discovers the water, should immediately ask staff and clients that are present in the area to remove themselves from the area if it is safe to do so. If it is not safe to do so, the staff person should ask the other staff or clients to stay put and then contact their immediate supervisor to advise them of the situation.

If the staff person knows how to turn off the water supply, they should do so if it is safe to do so. The person who discovered the water should report the emergency situation to their immediate supervisor.



2 – The supervisor now becomes the **designate in charge** of the scene. The designate in charge of the scene will confirm that the water supply is turned off, the area has been cleared – there are no staff or clients in the area. If you have staff or clients in a dangerous situation, call 911 for community emergency responder assistance.

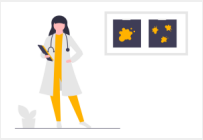


3 – The next step is to call the company plumber to request the pipe be fixed as soon as possible.

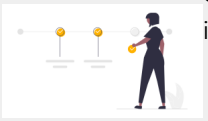
The designate will call the facilities administrator to make them aware of the issue.

4 – The designate will contact the maintenance supervisor to request clean up of the area.

The maintenance supervisor should attend the scene, assess the situation, and confirm whether or not the maintenance staff can clean up the area. If outside resources are required for the cleanup, the maintenance supervisor will contact a property restoration company.



5 – The designate will call public health to make them aware of the situation, and request a **potable water** quality test be booked as soon as the situation is rectified at the facility.



6 – The designate will document the steps that have been taken in dealing with the emergency.

7 – The designate will contact the communications officer to request a meeting. The designate and the communications officer will prepare a statement for the community.

Page 6 – Communication Strategy

Steps that must be taken to effectively issue a public notification to the affected community regarding the incident.

This may include a water quality advisory, boiled water advisory, do not consume or do not use notice. The designate will share the details of the emergency with the communications officer. The communications officer will create the communication and deliver the communication to the affected community.

The designate will communicate with the Nutrition and Food Service manager regarding an alternative water supply for food production and service.

Page 7 – Resources on Site

35 cases of bottled water
6 first aid kits
10 extra wheelchairs and evacuation stretchers
Mop basin floor level sink
Wet floor signs
Personal Protective Equipment that includes N95 masks, heavy-duty rubber gloves, and Neoprene Aprons
1 x 16-Gallon Wet/Dry Shop-Vac
3 Portable Till Drum Blower Fans

6.4 Implementing Action

Staff Training.

Photo by HM treasury, CC BY-NC-ND 2.0

Once the emergency preparedness plan has been completed, the next step is staff training. Share the plan with the staff and talk through the situation. Review the plan focusing on information the staff should be aware of, such as where to locate the shut-off valve in the building.

Test the plan by running a training exercise.

The **training exercise** is a mock or pretend disaster, allowing staff to assume roles and responsibilities that they would assume in an actual emergency situation.

Evaluate the Drill. Debrief.

Debrief is a process of carefully examining the events that unfolded during the training exercise and asking each other if we think the correct decision was made at the moment, as well as if there is room for improvement. This review of the training exercise should happen as soon as possible after the training exercise has taken place. A quiet area should be used to allow thoughtful reflection without interruptions from daily activities.

Make Improvements to the plan.

If the debrief provides information that would improve the chances of the plan meeting the objectives of the plan, then update the plan.

6.5 Chapter Summary

Key Takeaways

- *Emergency preparedness* is essential in maintaining a safe and functional workplace. It includes proactive planning, clear communication, and regular staff training to handle unexpected events.
- *A workplace emergency* can take many forms, such as fires, hazardous material spills, medical emergencies, severe weather, bomb threats, or infrastructure failures. Each requires a tailored response plan.
- *An Emergency Preparedness Plan* should include defined objectives, assumed conditions and available resources, communication strategies and clear delegation of roles, and a documented and easily accessible action plan.
- *Types of emergencies* must be identified based on geographic risk and organizational context (e.g., wildfires in Alberta vs. snowstorms in Ontario).
- *Training and drills* help staff prepare for emergencies by allowing them to rehearse roles and responsibilities.
- *Collaboration with external resources* (e.g., emergency responders, public health inspectors, property restoration companies) is key for effective response and recovery.
- *Communication* during emergencies must be timely and clear, both internally and with the public or clients affected by the event.

OpenAI. (2025, March 18). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summarize the passage into the key takeaways. *Edited & Reviewed by author.*

Key Terms

Assumptions: Statements or conditions accepted as true without proof for planning purposes. In emergency preparedness, they form the basis for decisions and planning actions (e.g., assuming a valve exists to shut off water).

Business Continuity: A strategy within emergency planning that ensures critical operations can continue or quickly resume during or after an emergency, minimizing downtime and disruption to services.

Communication Strategy: A plan that outlines how information about an emergency is shared with staff, the public, and external partners. It ensures accurate, timely, and consistent messaging during and after an incident.

Debrief: A structured discussion following a training exercise or real emergency, during which participants review actions taken, identify successes, and uncover areas for improvement.

Designate in Charge: The person who takes on leadership responsibility during an emergency to coordinate response efforts and ensure safety procedures are followed.

Emergency Preparedness: The process of planning and training staff to respond effectively and efficiently to anticipated emergency situations in the workplace. Its goal is to ensure safety, minimize property damage, maintain business continuity, and meet legal obligations.

Objectives: The goals that you and your staff intend to accomplish by following the directions provided by the emergency preparedness plan.

Potable Water: Water that is safe to drink or use for food preparation and free from harmful contaminants.

Resources: Tools, supplies, equipment, or personnel available on-site or externally that can be used to manage or respond to emergencies effectively. This includes items like first aid kits, building schematics, or contact lists for external help.

Training Exercise: A simulated emergency used to practice and evaluate the effectiveness of the emergency preparedness plan. Staff perform their roles as they would in a real event to test the plan's effectiveness.

Workplace emergency: A circumstance that exposes workers, clients, and other members of the community to a dangerous situation disrupting operations and causing damage to the facility.

Review Questions

1. Which of the following is a key goal of emergency preparedness in the workplace?

    a. Avoiding government inspections
    b. Ensuring staff and client safety during emergencies
    c. Reducing staff workloads
    d. Preventing insurance claims

2. What is the most appropriate response to a "shelter-in-place" emergency such as a snowstorm?

    a. Remain indoors in a safe area until it is safe to leave
    b. Evacuate the building immediately
    c. Call media outlets to report the situation
    d. Shut down all facility operations

3. What action should be included in a plan for a boiled water advisory in a food service facility?

    a. Use tap water as usual, but only for cleaning

b. Halt all food preparation until further notice
c. Notify the Nutrition and Food Service manager to arrange an alternative water supply
d. Mix tap water with bottled water to dilute contaminants

4. In the event of workplace violence, which of the following should be part of the emergency response plan?

    a. Ask the aggressor to leave and ignore the situation
    b. Remove people from danger and notify security or authorities immediately
    c. Wait for the situation to resolve on its own
    d. Let only managers respond to the incident

5. When creating a plan of action for a workplace emergency such as a power outage, which of the following is an essential step?

    a. Turning on emergency alarms immediately
    b. Posting the plan on social media
    c. Identifying objectives, resources, assumptions, and responsibilities
    d. Waiting until the next staff meeting to address it

Answers:

1. d.
2. a.
3. c.
4. b.
5. c.

OpenAI. (2025, March 18). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: create 5 multiple choice questions with 4 answer options that test the learning outcomes. Reviewed by author.

CHAPTER 7: LEGISLATION

Chapter Outline

7.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Identify legislation related to health and safety, and building codes related to food service.

7.1 Workplace Legislation

Legislation refers to laws passed by a government body that professionals in any industry are required to comply with while performing their work. In Canada, there are three layers of legislative law: Federal, Provincial, and Municipal.

"Federal, provincial, municipal" by Fanshawe College,
CC BY- NC- SA 4.0

Municipal legislation uses bylaws enforced by the city or township in which the business operates. Municipalities do not have independent legislative authority to create new legislation but are empowered by provincial legislation to uphold legislation using bylaws. Municipalities are largely responsible for rules regarding water and sewage systems use, public services such as fire departments and police, property use, fencing, waste collection, composting, and recycling programs. These laws are meant to reflect the opinions and needs of citizens residing in the local community.

Provincial legislation addresses the needs of people living in the province. Provinces are responsible for legislation regarding education, environment, agriculture, transportation infrastructure, civil rights, prisons, consumer protection, emergency preparedness, privacy, public health and safety, workplace safety, and healthcare.

Federal legislation governs all the people in the country. Federal legislation focuses on the Constitution, national interests, international relations, immigration, criminal law, national defence, and the postal service."

7.2 Legislation Impacting Facilities Management

The following chart provides an overview of legislation impacting facilities management at each level of government:

Municipal	Provincial	Federal
Building Codes for Construction Standards	Ministry of Health and Long-Term Care Act	National Building Code
Public Health Potable Water	Occupational Health and Safety Act	
Sewage	Building Codes	
Garbage collection		
Recycling and Composting		
Fire Safety Programs		

At the federal level, the **National Building Code** requires owners to work with licensed architects and tradespeople, such as electricians and plumbers, in the construction of a new building. As a Nutrition and Food Service Management professional, you may be part of rebuilding or moving from an older facility to a new facility, so it is valuable to be aware that there are federal requirements.

At the provincial level, the Ministry of Health and Long-Term Care Act requires the company to provide a physical environment that prioritizes the safety and security of the residents, and the Occupational Health and Safety Act requires the same for staff.

At the municipal level, there are specific requirements that a Nutrition and Food Service Manager needs to acknowledge and be responsible for in their day-to-day role. These include ensuring the water is safe to consume, managing waste collection, ensuring fire safety regulations, which include regular fire drills, and ensuring that building code items such as the requirements for floors, surfaces, lighting, plumbing, and ventilations meet the required standards.

7.3 Meeting Legislative Requirements via Inspections and Processes

This section provides an overview of a few of the basic processes required by legislation that influence food services.

Booking a Water Test

Ontario Drinking Water Quality Standards

Legislation requires drinking water systems providing potable water to the public to undergo inspection and take measures that lower the risk of hazards to human health. **Potable water** is water that meets a specific quality standard that is considered safe for human consumption. Any water that is used in food preparation and production must be potable water.

A water test will confirm that the facility has potable water for use in food preparation and production. Contact the local municipal public health unit to book a water test.

Booking a Fire Safety Inspection

Fire safety legislation and Ontario's Fire Code

Municipalities fund and operate fire departments. Fire departments are responsible for fire education and fire safety in the municipality. This includes **fire inspections** for residential buildings. Management should work in collaboration with the local fire department on fire prevention, education, and training drills at the facility. Contact the local municipal fire department to book a fire safety inspection.

Types of Fire Extinguishers

Image by *Ploegerson*, *Unsplash Licence*.

Class	Description for Use
A	Fires in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics
B	Fires in flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gases
C	Fires that involve energized electrical equipment
D	Fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium
K	Fires in cooking appliances that involve combustible cooking media (vegetable and or animal oils and fats)

Kitchens require class **K fire extinguishers**.

Booking a Gas Inspection

Gaseous Fuels

A **licensed gas fitter** is required to complete an inspection of gas appliances. A gas fitter is trained and regulated by the Technical Standards and Safety Authority (TSSA) to provide safe oversight of the use of natural gas, propane, and liquid fuels. Inspections must be scheduled via a licensed gas fitter.

Managing Waste Collection

Waste collection involves contracting a company to remove waste, garbage, compost, and recycling from the property on a weekly or bi-weekly basis. The first step in the process is to engage a company by way of a **Request for Proposal (RFP)**, which is used by companies to solicit quotes for service. The next step is collaboration between your company and the waste management company to determine sorting practices and pick-up dates. Often, the environmental services manager or maintenance department will procure the contract with the waste management company and the Nutrition and Food Service manager will only be responsible for educating and training staff on the sorting and binning of the wastes.

7.4 Construction Standards

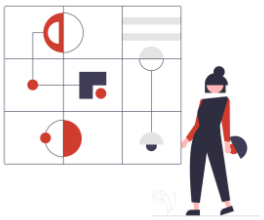
- All surfaces in the food preparation, storage, and ware-washing area must be constructed of materials that resist the growth of microorganisms and allow for continuous washing.
- Floors in the food preparation and processing /equipment areas must be of smooth, slip-resistant, non-absorptive, and non-flaking or peeling material. Floors that are subject to moisture must be constructed of non-porous materials.

- Floor construction must include adequate sloping to drains to prevent liquids from pooling. Floor drains must meet plumbing codes for food service.
- Cross-connections between potable water piping and wastewater drainage plumbing are not permitted. Upon discovery of cross-connection, food preparation must stop and cannot resume until a licensed plumber has fixed the situation.
- Carpeting should be laid firm, sealed under flooring, and only where permitted. Carpet should be cleaned, in good repair, and of a material that can be cleaned by proper cleaning methods.
- Stairways should be located to minimize the risk of food contamination. They should be constructed of materials that are slip-resistant and easily cleaned.

- Lighting fixtures must be designed to prevent the accumulation of dirt and be easily cleanable.
- Light bulbs must be shielded or shatterproof to protect food and food contact surfaces from broken glass.
- A **food premise** must provide sufficient artificial light to ensure the safe and sanitary production of food. Adequate light must be available for employee and client safety.

- **Ventilation systems** must conform to national building codes, public health, and fire regulations. They must be specifically designed to avoid **back drips** of contaminating material into food, food contact equipment or surfaces, utensils, linens, and /or single-service and single-use articles from hoods or vents.
- Mechanical ventilation systems must meet and be cleaned in accordance with frequencies stipulation in local regulations.

- All plumbing systems must be of size and material in accordance with local plumbing code regulations, installed and maintained in accordance with local plumbing code regulations, and approved by the local or provincial/territorial authorities.
- Potable water lines, food product lines or equipment must be separated from and installed in such a manner as to prevent any cross connection with or contamination from sewage, non-potable water or liquid waste lines.
- Potable water must be provided from public or private sources approved by the local or provincial agency.



- Hot and cold water, under pressure and in sufficient quantities, must be provided to meet peak demands throughout the food premises and be provided in all areas where food is prepared, and equipment and utensils washed and be provided in all areas where food is prepared, equipment and utensils washed, at hand washing station and in all sanitary facilities including the janitorial sink closet.
- Steam supplies, where used directly on food, food contact surfaces and as a food ingredient, must be clean (potable water), non-toxic and tested regularly.

- Sewage must be disposed of in an approved public sewage system or in a manner approved by public health authorities to prevent contamination of food and/ or water supplies.
- Food waste and garbage must be handled, maintained, stored, and removed from the premises in a way that will prevent food contamination or pest infection.
- Garbage storage rooms and containers must be emptied, cleaned, and sanitized as often as necessary. This should be done as part of routine maintenance and at least weekly.

- Restroom requirements are set by the National Building Code and are regulated by local agencies. Toilet facilities, in sufficient numbers, are required for all employees and must be equipped in accordance with the regulatory agency.
- Dressing areas should be provided if workers routinely change their clothes on the food premises.

- At least one hand-washing station, designed to comply with the provisions of the National Building Code enforced by the local regulatory authority, must be conveniently accessible to the staff in each preparation area.
- All food establishments must be equipped with sinks, cleaning equipment, and supplies for janitorial needs.

- Foodservice operations must have storage facilities for food, food ingredients, equipment, and non-food materials such as utensils, linens, single-service and single-use articles, packaging, and chemical agents. They need to be maintained in a manner that protects food and food contact services from contamination. All food items must be stored in a separate location away from non-food items, including packaging.

7.5 Chapter Summary

Key Takeaways

- *Three Levels of Legislation in Canada*: Federal legislation covers national concerns like criminal law, immigration, defence, and employment insurance; provincial legislation manages areas like healthcare, education, workplace safety, and public health; municipal legislation governs local matters such as water systems, waste collection, fire safety, and building codes.
- *Legislation Impacting Facilities Management*: At the federal level, the National Building Code requires licensed professionals for new construction, the provincial level enforces safety for residents and staff through health and safety acts, and the municipal level involves daily responsibilities like water safety, fire drills, waste management, and building maintenance.
- *Compliance Through Inspections and Processes*: Facilities must schedule and pass inspections for potable water, fire safety, and gas systems through appropriate local or licensed authorities.
- *Fire Safety Requirements*: Fire departments are responsible for inspections and education. Kitchens must have Class K fire extinguishers for grease fires, and staff must be trained in fire prevention.
- *Waste Management Practices*: Managers must train staff on proper sorting and handling of waste, compost, and recycling.
- *Construction and Facility Standards*: Materials must resist bacteria and be easy to clean; proper flooring, lighting, plumbing, ventilation, and storage are required to prevent contamination and ensure safety. Facilities must follow building and health codes and provide sufficient restrooms, sinks, and storage areas.

OpenAI. (2025, April 1). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summerize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Back Drips: Contamination that can occur when condensation or grease drips from ventilation systems back onto food or food contact surfaces.

Class K Fire Extinguisher: A type of fire extinguisher specifically designed to put out fires involving cooking oils and fats—essential for use in kitchens.

Cross-Connection: An improper plumbing setup where potable water lines are linked to wastewater

or contaminated lines, creating a risk of contamination. This is a serious health hazard and must be corrected immediately.

Federal: The national level of government in Canada that creates laws affecting all provinces and territories. Areas include national defence, immigration, criminal law, and the constitution.

Fire Inspection: A review conducted by the local fire department to ensure a building complies with fire codes and safety protocols, including emergency preparedness.

Food Premise: Any building or area where food is stored, prepared, processed, handled, or served to the public. These are subject to health and safety regulations.

Legislation: Rules and laws created by governments that individuals and businesses must follow. In the context of facilities management, these laws ensure the safety, health, and operational standards of services and buildings.

Licensed Gas Fitter: A trained and certified professional authorized by the Technical Standards and Safety Authority (TSSA) to inspect, install, and maintain gas appliances safely.

Municipal: The local government (city or township level) that manages services such as water, waste, policing, fire safety, and local by-laws.

National Building Code: A set of construction standards created at the federal level that ensures buildings across Canada are safe, accessible, and energy-efficient.

Potable Water: Water that is safe to drink and meets specific health standards for human consumption. It is also required for use in food preparation and production.

Provincial: The level of government that governs individual provinces. It is responsible for healthcare, education, civil rights, and other region-specific services.

Request for Proposal (RFP): A formal document used by organizations to solicit bids from service providers—like waste management companies—outlining the terms and needs of the service required.

Ventilation Systems: Mechanical systems that remove heat, smoke, odours, and airborne contaminants from kitchens and other facility areas to maintain air quality and prevent contamination.

Review Questions

1. Which combination of legislation ensures the safety of staff and residents and sets construction standards for food service facilities?

    a. Municipal Building by-laws and the Food Premises Regulation

b. National Building Code and the Ministry of Agriculture Act
c. Occupational Health and Safety Act and the National Building Code
d. Fire Code and the Consumer Protection Act

2. What is potable water?

a. Water used for cleaning only
b. Water that is stored in reusable containers
c. Water that is safe to drink and use in food preparation
d. Water used to extinguish kitchen fires

3. Which of the following is a construction requirement for flooring in food preparation areas?

a. Must be carpeted and match facility décor
b. Can be made of any material as long as it is waterproof
c. Should be porous and easy to repair
d. Must be smooth, non-absorbent, slip-resistant, and easy to clean

4. Why must lighting fixtures in food preparation areas be shielded or shatterproof?

a. To reduce electricity usage
b. To prevent broken glass from contaminating food and surfaces
c. To meet aesthetic design standards
d. To avoid glare on stainless steel equipment

5. What is the purpose of sloping floors toward drains in food preparation areas?

a. To make cleaning faster
b. To help staff identify low spots in the floor
c. To direct pests away from food areas
d. To prevent the pooling of liquids and support proper drainage

Answers:

1. c.
2. c.
3. d.
4. b.
5. d.

OpenAI. (2025, April 1). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: create 5 multiple choice questions with 4 answer options that test the learning outcomes. Reviewed by author.

CHAPTER 8: PROTECTED MEALTIMES AND PLEASURABLE DINING

Chapter Outline

8.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Explain the rationale behind the pleasurable dining initiative and protected mealtimes.
- Discuss Accessibilities for Ontarians with Disabilities Act (AODA).
- Outline the principles of universal design.

8.1 Pleasurable Dining

Image by Kristian Angelo, Unsplash License.

Pleasurable dining is an initiative introduced to food service by a working paper for the long-term care action group titled "Best Practices for Nutrition, Food Service and Dining in Long Term Care Homes [PDF]."

Pleasurable dining is a holistic approach to food service that acknowledges that the dining experience can influence client's psychological, mental well-being and social well-being as well as their physical nutrition status. Noted in the introduction to the paper, the authors realize that "the ability to eat independently is a basic component of self-worth" (Dietitians of Canada, 2019, p. 5).

The goal of pleasurable dining is to support clients' rights, safety, security, comfort, choice and autonomy. Pleasurable dining should promote a relaxed environment where clients feel comfortable, are encouraged to eat independently, engage in conversation and enjoy their meal.

8.2 Supporting Pleasurable Dining

The Physical Space

"Titan Series Adjustable Butterfly Table" by Rehabmart. Used under FDEd (CAN).

A healthcare food service dining room should account for additional physical space for adaptive devices, such as wheelchairs or walkers. There should be a minimum of fifty-two inches between tables to allow a person to sit in a wheelchair at the table. Conventional chairs should be removed from spots where a client in a wheelchair sits. There should be additional space, similar to a coat room at a restaurant, where walkers can be stored during mealtime so that they do not become trip hazards for other clients or staff.

Conventional tables may restrict movement and make clients feel uncomfortable, and an uncomfortable client will eat less. Adjustable tables will accommodate different mobility demands, providing comfort that encourages intake.

Soft, warm, or natural lighting is recommended, as the harsh glare from fluorescent lighting can cause confusion for clients with vision issues or dementia. Soft lighting creates a more home-like atmosphere in the dining room.

Studies have shown that colour affects human moods. Reds are stimulating. Exposure to red can physically raise your heart rate and initiate the fight-or-flight response. This is not an ideal choice for a dining room in which the intention is to provide a calm and relaxed environment. Yellows have been shown to energize emotions and motivate creativity. However, blues and greens have been shown to provide a sense of calmness that supports intellectual thought and conversation (Wei et al., 2023). As stated in the studies, "blue has a universal meaning and that people seldom feel negative emotions about this colour, blue conveys credibility, high quality, relaxation, tranquility, coolness and cheerfulness" (Wei, et al., 2023, para. 4). Blue seems to be a good choice for a dining room.

Image generated with Adobe Firefly "A close up of a table setting with blue plates on a white tablecloth" and further refined.

Many people find that a dining room with lots of loud background noise can negatively impact the dining experience. Music can be a tactic used to reduce the amount of noise from the clicking of plates, the sound of equipment moving, and staff chatter. Some people enjoy music while they eat; others do not. This is an area where individual perception and opinion should be taken into consideration before deciding on music or no music.

Setting the table with contrasting colours, for example, white tablecloths and blue plates, helps those with vision issues to eat independently. Setting the table with **adaptive cutlery and dishware** can allow others to eat independently. There are many types of adaptive cutlery, such as thicker, contoured, lighter, different shapes, and materials. These adaptations can help those having difficulties with mobility and dexterity maintain their independence when dining. For example, a palm grip is a strap which goes around the hand and holds the cutlery can help people who cannot grip an item of cutlery (Nightingale Hammerson, n.d.A). Dishware can also be adapted. For example, plate guards, lipped plates, and suction bowls help with scooping food (Nightingale Hammerson, n.d.B).

"Deluxe Easy-Hold Kitchen Utensils", "Scooper Bowl" & "Quad Care Utensil Holder" by Rehabmart. Used under FDEd (CAN).

The Clients

Image by Alesia Kozik, Pexels License.

Engage the clients by hosting a **residents' food committee**. This monthly meeting can be an opportunity to discuss menus that reflect current clients' social, ethnic, and religious practices and needs. Special occasion menus, such as Canada Day, can also be discussed at this meeting. Providing special occasion menus and themed meals can bring a sense of positivity and joy to the dining experience. By respecting choices and personalizing menus whenever possible, the food service team is demonstrating that they care about their clients' dining experience.

Staff Education

The level of cleanliness will affect the dining experience and resident food intake. Educate the staff on how important proper cleaning and sanitation are to the dining experience. How the staff interact and treat the clients will also have an impact on how much people eat and whether or not they enjoy mealtime. Customer service training is essential for staff. If you work in a facility with clients who have medical conditions, such as dementia, it is valuable to provide staff with knowledge of dementia care. The level of care demonstrated by staff correlates with positive health outcomes for clients.

> Quality nutrition, hydration, and pleasurable dining enhance the quality of life and quality of care that clients receive in the facility (Dietitians of Canada, 2019).

8.3 Protected Mealtimes

Did you know that 45% of patients admitted to a hospital in Canada have a clinical diagnosis of malnutrition? (Canadian Malnutrition Task Force, 2016)

Protected mealtimes are times over lunch and dinner when all non-urgent clinical activity stops, ensuring that the patient can consume their meal in peace. This includes the restriction of visitors during mealtimes.

"Protected Mealtimes Poster" Chelsea and Westminster Hospital, NHS. Used under FDEd (CAN).

Image Description

Protected Mealtimes

8-9am, 12:30-1:30pm, 6-7pm

- Dedicated mealtimes ensure a quiet and relaxed atmosphere for patients
- Non-urgent activities paused as our staff prioritise assisting patients with eating
- Visitors can stay during mealtimes to provide assistance or support
- Please hold any questions for staff until after the mealtime

Watch: Protected Meal Times – Part 1

Watch Protected Meal Times Part 1 at https://www.youtube.com/watch?v=OnwCiLs46nE

The results of protected mealtimes have been an increase in patient food intake and a decrease in **malnutrition**.

Did you know that a malnourished patient is three times more likely to suffer a complication from surgery and five times more likely to die than a nourished patient? (Wischmeyer, 2018)

8.4 Universal Design and Accessibility for Ontarians with Disabilities AODA

A large focus in this section has been devoted to food service in long-term care facilities and hospitals, but the physical environment or dining room where people eat should be considered no matter where you work. Accessibility legislation aims to remove barriers for people with disabilities and provide opportunities for everyday life. The principles of **universal design** encourage "the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Universal Design Network of Canada, n.d., para. 2).

Watch: The Seven Principles of Universal Design

Watch The Seven Principles of Universal Design at https://www.youtube.com/watch?v=kxSA48GqSoo

The Principles of Universal Design

Equitable Use

All users can use the design in a similar way, which avoids stigmatizing and segregating certain users. The design is safe and appealing to all users.

Flexibility in Use

Provides choice in use. Could use right-handed or left-handed. Adapts to the user's pace.

Simple and Intuitive Use

The design is easy to use and understand regardless of the user's experience, knowledge, language, or concentration skills.

Perceptible Information

The design communicates the required information to the user regardless of sensory abilities.

Tolerance for Error

The design minimizes the chance of unintentional accidents or consequences.

Low Physical Effort

The design can be used with minimal fatigue. Size and Space for Approach and Use

Reach, manipulation, and use are comfortable for any user.

Exercise: Universal Design

Look at the following images and identify which contain an element of universal design.

See image attributions below.

Top row, left image: Correct! This corridor is wide, with buffer bars and contrasting flooring.

Top row, right image: Incorrect. Although this mixes a ramp and stairs, there are no handrails, there are tripping hazards, and it is too steep for wheelchair users (Somerville, 2018).

Middle row, left image: Correct! This sign has high contrast, raised icons, text, and Braille.

Middle row, right image: Correct! There is a colour and texture change which serve as wayfinding cues to highlight where users need to make direction decisions (Ron Wickman Architect, 2023).

Bottom row, left image: Correct! The sound absorption panels offer noise control, which is enjoyable for everyone but also very important for those with hearing and/or visual impairment (Snaiderman & Alpert, n.d.)

Bottom row, right image: Incorrect. This type of doorknob requires a user to apply a tight grasp and cannot be used with a closed fist (Facilitiesnet, 2009).

Image Attributions (clockwise from top left)

“Corridor, Learning Centre, Portland College” by Jisc infoNet, CC BY-NC-ND 2.0
“Switchback” by Mike W., CC BY-SA 2.0
“Waiting Area” by Ron Wickman Architect. Used under FDEd (CAN).
Door handle image by Charlotte May, Unsplash License.
“Sound Absorption Panels” by Primacoustic. Used under FDEd (CAN).
“Toilet signage with Braille and good contrast” by Access Matters, CC BY-NC-SA 2.0

8.5 Chapter Summary

Key Takeaways

- *Pleasurable Dining Enhances Well-Being*: Pleasurable dining is a holistic approach that supports psychological, social, and nutritional health. It emphasizes client autonomy, dignity, and a relaxed, enjoyable mealtime experience to promote better food intake and quality of life.
- *Physical Environment Matters*: Dining spaces should be accessible and comfortable for clients using mobility devices. Features such as adequate spacing, adjustable tables, soft lighting, calming colour schemes, and reduced noise levels all contribute to a welcoming and home-like atmosphere.
- *Enhancing Independence through Adaptive Tools*: Using contrasting table settings, adaptive dishware, and cutlery supports clients with visual or motor impairments, encouraging self-feeding and independence.
- *Client-centred Engagement*: Resident food committees and culturally relevant, themed menus promote inclusivity and joy. Involving clients in menu planning fosters respect, satisfaction, and a personalized dining experience.
- *Protected Mealtimes Improve Outcomes*: Proper staff training in sanitation, customer service, and specialized care (like dementia support) significantly improves mealtime quality. Protected mealtimes—free from non-urgent interruptions—have been shown to increase food intake and reduce malnutrition.
- *Universal Design Promotes Inclusion and Accessibility*: Following the principles of Universal Design ensures that dining environments are usable by all people, regardless of ability. This includes equitable use, intuitive layout, perceptible information, and minimal physical effort—removing barriers and fostering independence.

OpenAI. (2025, April 7). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summerize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Adaptive Cutlery and Dishware: Specialized utensils and plates designed to help individuals with physical or motor limitations eat more easily and independently. These may include easy-grip handles, divided plates, or non-slip bases.

Malnutrition: A condition resulting from a diet lacking essential nutrients or not providing enough

food for proper health. In healthcare settings, malnutrition can increase the risks of complications and delay recovery.

Pleasurable Dining: A holistic approach to food service that acknowledges that the dining experience can influence client's psychological, mental, and social well-being as well as their physical nutrition status

Protected Mealtimes: Designated meal periods (usually lunch and dinner) during which non-urgent activities and interruptions are minimized in healthcare settings. The goal is to allow patients or residents to eat in peace, increasing food intake and reducing malnutrition.

Residents' Food Committee: A regular meeting of long-term care residents, typically facilitated by staff, where clients can voice their opinions, make menu suggestions, and contribute to decisions about their dining experience.

Universal Design: A design philosophy that ensures environments, products, and services are usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. It focuses on inclusion, safety, and ease of use for individuals of all abilities.

Review Questions

1. What is the primary goal of the pleasurable dining initiative in long-term care homes?
    a. To serve food faster and more efficiently
    b. To promote clients' psychological, social, and nutritional well-being
    c. To reduce the variety of food offered
    d. To limit staff interactions during mealtime
2. Why are protected mealtimes important in healthcare settings?
    a. They reduce the need for food service staff
    b. They allow for family visits during meals
    c. They create opportunities for medical assessments
    d. They minimize interruptions so patients can focus on eating and improve their nutritional intake
3. What is one key purpose of the Accessibility for Ontarians with Disabilities Act (AODA)?
    a. To enforce dietary restrictions in hospitals
    b. To remove barriers and provide equal opportunities for people with disabilities
    c. To limit facility spending on renovations
    d. To prioritize staff needs in healthcare design

4. Which of the following best describes the principle of “Equitable Use” in universal design?

    a. The design is created specifically for one type of user
    b. The design is usable by all people in the same way, avoiding segregation or stigma
    c. The design can only be used with adaptive equipment
    d. The design focuses on visual aesthetics over function

5. Which environmental factor can help create a more pleasurable and calming dining experience for clients?

    a. Bright fluorescent lights and red decor
    b. Loud music and fast-paced service
    c. Soft lighting and calming colours like blue or green
    d. Uniform table settings with no color contrast

Answers:

1. b.
2. d.
3. b.
4. b.
5. c.

OpenAI. (2025, April 7). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: create 5 multiple choice questions with 4 answer options that test the learning outcomes. Reviewed by author.

CHAPTER 9: INFECTION PREVENTION AND CONTROL

Chapter Outline

9.0 Introduction

Learning Objectives

At the end of this chapter, learners should be able to:

- Recognize the key elements required to manage a successful infection control program.

9.1 Infection Prevention and Control

Image by *Kelly Sikkema*, *Unsplash License*.

An **infectious disease** is "caused by the entrance into the body of pathogenic agents or microorganisms, such as bacteria, viruses, protozoans, or fungi, which grow or multiply there" (Merriam-Webster, n.d.). Common infectious diseases include the common cold, influenza, COVID, hepatitis, respiratory syncytial virus (RSV), norovirus, strep throat, and pneumonia.

Infections can be easily shared and spread in a shared physical environment, such as the facilities where we work and where our residents and patients live and receive care. That is why the Ministry of Health and Long-Term Care Act requires every facility to have an infection prevention and control (IPAC) program.

9.2 The Chain of Infection

The **chain of infection** explains how infections can spread. The chain has six links: the infectious agent (germs), reservoir, portal of exit, mode of transmission, portal of entry, and susceptible host. The chain can be broken at each link to prevent the spread of infection.

Infectious Agent

Infectious agents are germs, such as bacteria, viruses, and parasites.

Reservoir

Reservoirs are where germs live. Germs can live on people, animals, food, soil, and water.

Portal of Exit

The portal of exit is how germs get out of the current host where they have been living. Germs exit their human hosts via the mouth and nose (sneeze), breaks or cuts in the skin (blood), and through toileting activities, such as urination and defecation.

Mode of Transmission

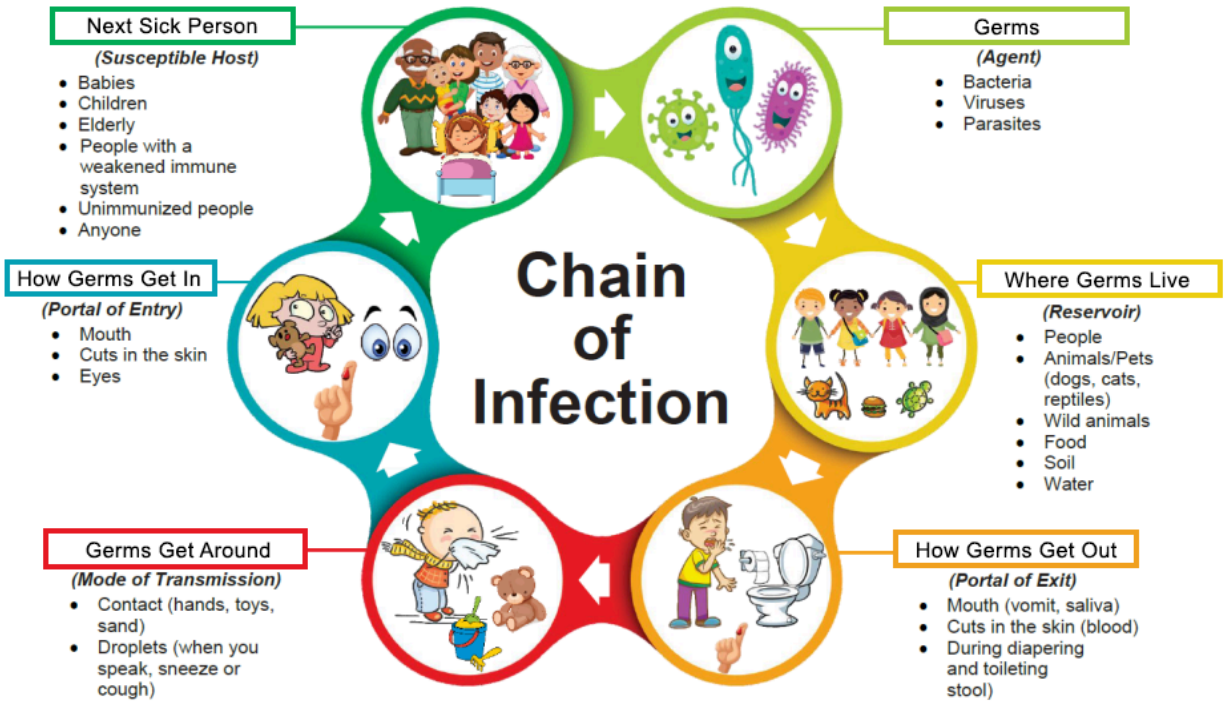
The mode of transmission is how germs travel around. Germs can live outside the reservoir for a few hours and up to a couple of months. For example, the common cold virus can live on hard surfaces for 24 to 48 hours. Clostridium Difficile (C. diff) can survive on surfaces for upwards of five months.

Portal of Entry

The portal of entry is how germs get into the new host. Germs sneak into humans by way of the mouth, eyes, and openings in the skin. The average human touches their face twenty-three times every hour. This action brings germs from the hands to the mouth and eyes 184 times in an eight-hour shift in the workplace (Kwok et al., 2015).

Susceptible Host

A susceptible host is the next person who gets sick. Germs have found their way into an environment that supports growth and reproduction. Sometimes, the human immune system will defend against germs and kill them before they can grow and reproduce.



"Chain of Infection" by Ottawa Public Health, Used under FDEd (CAN).

Image Description

The Chain of Infection

Germs (Agent) – Bacteria, Viruses, Parasites

Where Germs Live (Reservoir) – People, Animals/Pets (dogs, cats, reptiles), Wild animals, Food, Soil, Water

How Germs Get Out (Portal of Exit) – Mouth (vomit, saliva), Cuts in the skin (blood), During diapering and toileting (stool)

Germs Get Around (Mode of Transmission) – Contact (hands, toys, sand), Droplets (when you speak, sneeze, or cough)

How Germs Get In (Portal of Entry) – Mouth, Cuts in the Skin, Eyes

Next Sick Person (Susceptible Host) – Babies, Children, Elderly, People with a weakened immune system, Unimmunized people, Anyone

Watch: AHE: The Chain of Infection

Watch AHE: The Chain of Infection at https://www.youtube.com/watch?v=IBX3jj2uUjo

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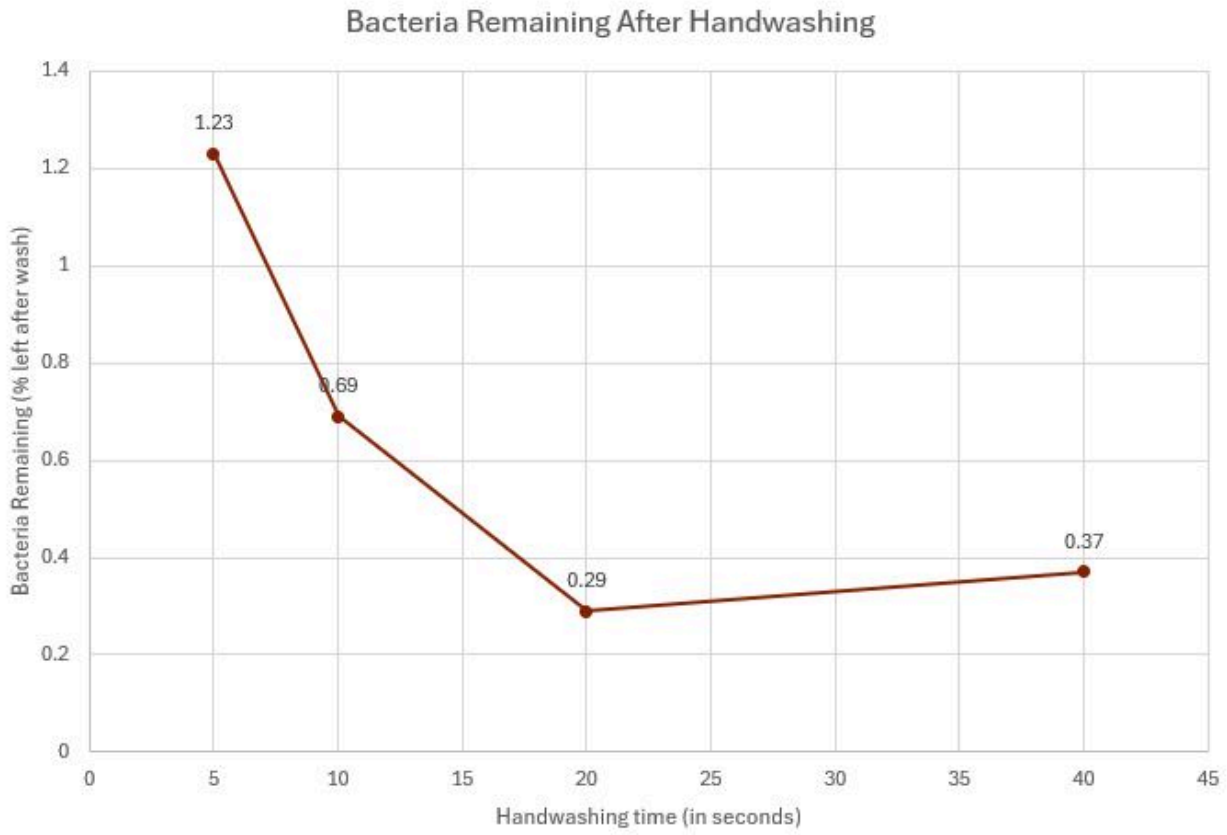
“Virus“, “Poultry“, “Cough“, “Hands“, “Clean“, “Infected” by Umeicon, Flaticon License.

9.3 Infection Prevention Processes

Hand Hygiene

Proper hand washing can reduce the spread of infection. Standards for handwashing have been developed by the World Health Organization. Studies have confirmed that twenty seconds of lather (soapy water contact) time is optimal.



Data: Israel & Li, 2020.

Image Description

After 5 seconds 1.23% bacteria left.

After 10 seconds 0.69% bacteria left.

After 20 seconds 0.29% bacteria left.

After 40 seconds 0.37% bacteria left.

The difference between 5 seconds and 20 seconds was statistically significant. The differences between 5 and 10 and 5 and 40 seconds were not.

Standards for Hand Hygiene

1. Wet hands with water and apply soap.
2. Rub hands palm to palm.
3. Rub left hand over right hand with interlaced fingers. Repeat with the right hand over the left hand.
4. Rub again palm to palm with fingers interlaced.
5. Rub the back of fingers opposing the palm with fingers interlocked. Repeat for each hand.
6. Rub holding right thumb and then left thumb.
7. Clean the tips of the fingers by rubbing them against the opposing palm.
8. Rinse with running water.

Watch: WHO: How to handwash? With soap and water

Watch WHO: How to handwash? With soap and water at https://www.youtube.com/watch?v=3PmVJQUCm4E

Masking

Studies have shown that masking can reduce the spread of transmission by up to 79% (Howard et al., 2021). This is a significant number when the goal is to protect people by breaking the chain of infection. There is a correct procedure for donning (putting on) and doffing (taking off) masks that ensure the most effective use of personal protective equipment.

Watch: Donning and Doffing Facial Protection – Mask Alone

Watch Donning and Doffing Facial Protection – Mask alone at https://www.youtube.com/watch?v=OABvzu9e-hw

Image by RDNE Stock Project, Unsplash License.

Gloves

Gloves provide a barrier between infectious pathogens and any openings that they might find on the skin. They block the portal of entry: openings in the skin.

Image by *Luke Jones*, *Unsplash License*.

Gowns

Gowns provide an additional layer of protection by keeping infectious pathogens from travelling on clothing. Disposal gowns can be changed between jobs or between rooms.

9.4 Infection Prevention and Control Program

The objectives of the **Infection Prevention and Control** (**IPAC) program** are to prevent the spread of infections in an effort to protect residents, patients, clients, and others in the facility from infections, resulting in reduced morbidity (sickness) and mortality (death). The program will include processes for surveillance, outbreak investigation and management, hand hygiene, critical incident reporting, staff training, facility maintenance standards, routine practices, and continuous quality improvement activities.

Surveillance

Audit tools are used to observe the surroundings to ensure that set standards are being followed to prevent and manage the spread of infectious diseases.

Table 9.4.1 Example Audit Tool for the Service Area

Servery Standards IPAC	Met	Unmet
Alcohol Based Hand Rub (ABHR) and handwashing sink accessible at the entrance inside the room		
Staff participate in hand hygiene before entering or exiting the room		
Cleaning and sanitation supplies are accessible to clean surfaces after use		
Room is cleaned and disinfected at least once daily		
No open food or drink is left in the room		
Medical masks are available with instructions for use posted		
Waste receptacles are positioned near the exits to support easy disposal of Personal Protective Equipment (PPE)		
Signature of Auditor:		

View the IPAC Self-Assessment Audit for Long-Term Care and Retirement Homes [PDF] from Public Health Ontario.

Outbreak Investigation and Management

Step 1

Conduct an investigation to confirm the existence of an outbreak and confirm the diagnosis (WHO, n.d.).

Step 2

Implement control measures. Control measures, as defined by public health, are put in play to prevent the spread of the disease and could include increased cleaning and sanitizing, personal protective equipment, and isolation (WHO, n.d).

Step 3

Track data. Keep records of cases (WHO, n.d.).

Step 4

Communicate key information to stakeholders and the public (WHO, n.d.).

The management team will establish a plan for dealing with outbreaks, including control measures. The Nutrition and Food Service Manager will develop policies and procedures for food service staff in regard to hand hygiene, the cleaning and sanitation of equipment, contaminated waste disposal, food service for clients in isolation, and staff calling in sick.

Critical Incident Reporting

A process will be established for reporting new cases and tracking data.

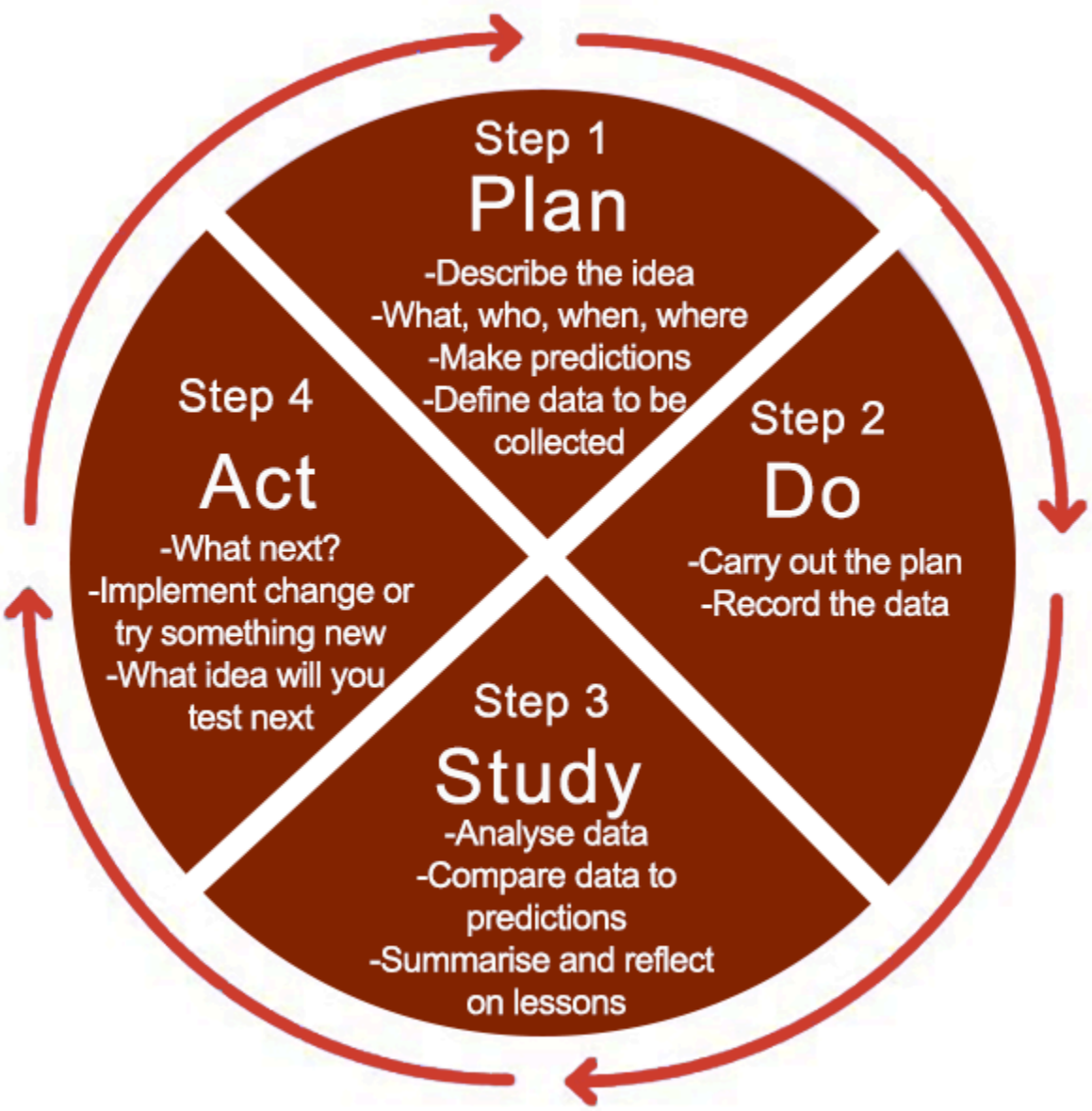
Staff Training

Each department manager will be responsible for education and training on outbreak procedures.

Routine Practices

“Routine practices are a set of infection control strategies designed to protect workers from exposure to potential sources of infectious diseases” (CCOHS, 2023, para. 1). The practices are meant to be used by all professionals with all clients.

Continuous Quality Improvement Practices



"Practice Incentives Program Quality Improvement (PIP QI)" by Sydney North Health Network. Used under FDEd (CAN). Mods: recoloured.

Image Description

A circular image with arrows indicating that the process is continuous.

Step 1: Plan

- Describe the idea
- What, who, when, where
- Make predictions
- Define data to be collected

Step 2: Do

- Carry out the plan
- Record the data

Step 3: Study

- Analyse data
- Compare data to predictions
- Summarise and reflect on lessons

Step 4: Act

- What next?
- Implement change or try something new
- What idea will you test next

Continuous quality improvement is a structured method for process review. It aims to refine and improve processes through continuous review and incremental improvements. When a change is made and then put into practice, we observe and analyze how the new process is working. And then make additional adjustments to make the process better.

9.5 Chapter Summary

Key Takeaways

- *Infections Spread Easily Without Control Measures:* Infectious diseases are caused by microorganisms like bacteria, viruses, and fungi. In shared environments like healthcare and long-term care facilities, infections can spread quickly, which is why facilities are required to have an Infection Prevention and Control (IPAC) program.
- *The Chain of Infection Explains How Germs Spread*: The chain includes six links: infectious agent, reservoir, portal of exit, mode of transmission, portal of entry, and susceptible host. Breaking any link in the chain can stop the spread of infection.
- *Personal Protective Practices Reduce Infection Risk*: Proper hand hygiene, masking, glove use, and gowns play a vital role in stopping transmission by blocking portals of entry or exit. For example, 20 seconds of hand lathering is key for effectiveness, and masking can reduce spread by up to 79%.
- *IPAC Programs are Required for Prevention and Safety*: An IPAC program aims to reduce illness and death by preventing infections. Key components include surveillance, outbreak response, hand hygiene, incident reporting, training, and maintaining facility cleanliness and standards.
- *Outbreak Management is Systematic and Coordinated*: Effective outbreak management includes confirming the outbreak, implementing control measures, tracking data, and communicating with stakeholders. Nutrition and food service policies must also support infection control during outbreaks.
- *Continuous Quality Improvement Keeps Practices Effective*: Routine practices protect workers and clients from infection, and quality improvement strategies ensure that infection control processes are constantly reviewed and improved over time for better outcomes.

OpenAI. (2025, April 8). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: Summerize the passage into 6 key points. *Edited & Reviewed by author.*

Key Terms

Chain of Infection: A model that outlines how infections are transmitted from one host to another.

Continuous Quality Improvement: An ongoing process that involves evaluating and refining infection prevention practices to improve their effectiveness.

Critical Incident Reporting: A structured process used to document and report serious events—such as new cases of infection—so they can be tracked and appropriately addressed.

Infectious Diseases: Illnesses caused by harmful microorganisms such as bacteria, viruses, fungi, or parasites that enter the body, grow, and multiply, leading to symptoms and health complications.

Infection Prevention and Control (IPAC) Program: A structured plan is required in healthcare and long-term care settings to reduce the risk of spreading infections.

Outbreak Management: A systematic approach to controlling the spread of disease during an outbreak. It involves confirming cases, applying control measures, tracking data, and communicating with affected individuals and teams.

Pathogenic Agents (Pathogens): Microorganisms such as bacteria, viruses, fungi, and parasites that can cause disease when they enter the body.

Routine Practices: Standard infection control measures used by healthcare workers with all clients, regardless of diagnosis. These practices help prevent exposure to infectious agents and include hand hygiene, use of PPE, and cleaning protocols.

Review Questions

1. What is the purpose of an Infection Prevention and Control (IPAC) program?

    a. To diagnose infectious diseases
    b. To limit the use of personal protective equipment (PPE)
    c. To reduce the spread of infection and protect residents, patients, and staff
    d. To monitor the nutritional habits of residents

2. Which of the following is a correct link in the chain of infection?

    a. Face mask
    b. Antibiotic treatment
    c. Portal of exit
    d. Medical equipment sterilization

3. What is the recommended minimum lathering time when washing hands to effectively reduce germs?

    a. 10 seconds
    b. 20 seconds
    c. 45 seconds

d. 5 seconds

4. What is the main role of gloves in infection prevention?

    a. To keep hands warm
    b. To clean surfaces
    c. To block pathogens from entering through openings in the skin
    d. To store medical waste

5. What is the first step in managing an outbreak in a healthcare facility?

    a. Track and report data to local news
    b. Conduct an investigation to confirm the outbreak and diagnosis
    c. Distribute antibiotics to all residents
    d. Lock down the entire facility immediately

Answers:

1. c.
2. c.
3. b.
4. c.
5. b.

OpenAI. (2025, April 8). ChatGPT. [Large language model]. https://www.chatgpt.com Prompt: create 5 multiple choice questions with 4 answer options that test the learning outcomes. Reviewed by author.

Video Transcripts

9.2 The Chain of Infection

AHE: The Chain of Infection

To prevent and control infection first, we need to understand how infection is spread through the Chain of Infection. The Chain of Infection is made up of six different links. Infection occurs when each link is present in this order, but the chain is easy to break. Each link can be broken, which prevents disease and keeps patients safe.

An infectious agent is an organism having the ability to cause disease. To break this link, seek prompt treatment if you are ill and use the right cleaning solution to disinfect the pathogens you have identified.

The second link is a reservoir. A reservoir is where pathogens can live and reproduce, like table tops and door knobs, and people. Break this link by washing your hands, keeping a clean environment, and disinfecting surfaces.

Next in the chain is the portal of exit, which is how the pathogen leaves the reservoir, such as sneezes or coughs. Break this link by wearing personal protective equipment, washing your hands properly, disposing of trash, and covering your cough or sneeze.

The fourth link is the mode of transmission. This is how pathogens are carried from one place to another, even on the hands of a healthcare worker to break this link, wash your hands, control airflow in negative pressure rooms, disinfect surfaces, handle food properly, and observe isolation precautions.

Next the chain includes the portal of entry. It's the way pathogens enter the host, like breaks in the skin. Healthcare workers break this link by practicing a septic technique during procedures, taking proper care of wounds, washing their hands, and properly caring for catheters.

The last link in the Chain of Infection is the susceptible host. The host is a person who cannot defend against pathogens, such as the elderly or burn patients. Healthcare workers break this link by treating the primary disease and identifying those at higher risk for infection.

As a Healthcare Environmental Services technician, you can see how your daily duties give you many chances to break the chain and keep everyone safe from illness

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Version History

This page provides a record of changes made to the open textbook since its initial publication. If the change is minor, the version number increases by 0.1. If the change involves substantial updates, the version number increases to the next full number.

Version	Date	Change	Affected Web Rage
1.0	April 24, 2025	Publication	N/A