PART 8

FOOD SERVICES AND FOOD SAFETY
CHAPTER 23

PROVIDING MEALS IN INSTITUTIONAL SETTINGS

Ronette Lategan, Pontsho Malibe, and Luzette van Niekerk

Outline

• How to plan a menu
• Food service processes
• Food production processes
• Hygiene and food safety
• Management principles in food services

Objectives

At the completion of this chapter you should be able to:

• Identify which community facilities typically require food services
• Understand what factors to consider when drawing up a menu
• Develop a menu for any community facility
• Describe the principle of cycle menus
• Explain the different food service processes
• Understand and implement the different food production processes
• Apply the basic hygiene principles of a food service unit
• Explain the basic principles of management
1. INTRODUCTION

As author Sheila Graham is reputed to have said, “Food is the most primitive form of comfort.” As her comment suggests, in order to be regarded as a success, a meal needs to be both psychologically and physiologically satisfying.

In institutions of various types the provisioning of meals is often a main event. Not only do meals provide nourishment and comfort, but they also offer an occasion for social interaction. Providing meals that satisfy these various needs poses a continuous challenge to food services staff, especially since meals must be delivered several times daily, 365 days a year. In this chapter we discuss the management of food provisioning at community-based facilities, also referred to as food service units.

Nutritional management can be defined as planning, organizing, leading, and controlling the use of resources to achieve specific objectives with respect to the diet (Hudson, 2005). In the case of health facilities, at the community level these objectives include the provision of meals and snacks that are affordable and culturally appropriate and that meet the nutritional requirements of a diverse array of clients. The focus of this chapter is to provide appropriate knowledge and tools required to manage community-based feeding in an effective and efficient way to the benefit of all stakeholders.

1.1 The Basic Goals of Food Management at the Community Level

Countries may follow a policy that is included in their constitution, stating that citizens have the right to have access to sufficient food as a basic human right. In the case of community health facilities, this responsibility falls on the facility providing the service. This makes good sense because nutrition forms an integral part of treatment and recuperation.

It is usually the national department of health that sets the minimum standards for food service units in a country, with the goal of providing the best possible food service to hospitals and other health institutions and facilities within the limitations of financial resources (DOH, 2001b). The management process in health facilities is often influenced by the following stakeholders:

- Community members making use of facilities, e.g., patients, learners, or residents, who expect meals that are nutritional and that respond to their emotional and social needs
- Staff working in a food service unit (preparation, cleaning, and management) or assisting in service delivery (ordering, storage, and procurement), who expect acceptable and safe working conditions, fair treatment, adequate skills development, and reasonable remuneration
- Staff using a food facility, who, like clients, also expect to receive good-quality meals
- Political structures and institutional/facilities management, which determine the policy on food provisions and budget allocations, not only for food, but also for physical facilities, equipment, and staffing
- Members of the public, who expect the availability of a reasonably good service in exchange for taxes paid
- Suppliers to the facility, who expect fair procurement procedures, a service according to specifications set, and payment of accounts within a reasonable timeframe

Management at the institutional/facility level thus has a responsibility that extends beyond simply providing meals. Management must not only ensure that a food service operation runs smoothly and is cost-effective, but also that the meals served promote good health and satisfy the expectations of those who consume them.

1.2 Facilities that Deliver Food Services

Any facility in which members of the community reside or work for longer than 8 to 12 hours at a time faces the challenge of providing meals. Numerous public facilities settings exist in which food services are required. Most commonly, meals must be arranged for the following situations:

- Children aged 6 years and younger at day care facilities or early childhood development centres
- Students attending schools, colleges, or universities, especially those who reside in dormitories
- Older adults living in retirement villages or old-age homes

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• Industrial workers at mines or factories
• Patients and staff at hospitals and after-care facilities
• Inmates and staff at correctional facilities

The nutritional requirements and psychosocial needs of these groups vary, and, as far as possible, food service delivery should be adapted accordingly.

2. THE MENU

The menu is the focal point of the functioning and production planning of any food service, and it directs all other food service actions. A menu can be defined as a detailed list of foods to be served at a meal or, in broader sense, a total list of food items offered by a food service unit (Shugart & Molt, 1993; Spears, 1995).

The objective of menu planning is to integrate different food items in a specific plan to satisfy the needs and requirements of clients to be served. The menu determines the ingredients to be purchased, the equipment needed for preparation, the work to be done, the skills of staff needed, the work schedule, and supervision required. It is also the basis for costing of food that will be served (Brown, 2014; Hudson, 2005; Spears, 1995).

2.1 Factors to Consider When Planning a Menu

As the menu forms the backbone in planning and managing a food service, spending time and effort in adequate menu planning is valuable. The following factors should receive attention.

2.1.1 The client

The most important factor to consider is the customer or client (Cronjé, 1993; Spears, 1995). The person planning the menu should consider the characteristics of the group to be served, their age, gender, nutritional needs, health status, and food habits, as well as their individual, religious, and cultural preferences. This becomes especially important if the food service offers a limited choice of foods. Menus should be planned to meet the needs of the majority of patrons, with enough flexibility to satisfy everyone (Brown, 2014; Shugart & Molt, 1993).

2.1.2 Nutritional adequacy

The aim of providing food is to ensure optimal health by meeting the nutritional needs of the client. It is therefore necessary to firstly determine these specific nutritional needs. Ideally, a dietitian or nutritionist should convert nutritional needs into quantities of specific foods that will be included in the menu. Specific guidelines and tools are available to guide menu planning and ensure nutritional adequacy. These include the following:

• Food-based dietary guidelines, developed for each country, to address specific health issues. Chapters 13 and 14 covered the subject of diet for disease prevention and food guides
• Different types of food groupings, whereby a dietitian or nutritionist will indicate specific portions per food group for clients with specific needs
• Food ration scales that are adapted according to the needs of specific groups

In South Africa the policy for institutional food supply, for example, specifies that a hospital diet should provide energy and macronutrients within the following ranges (DOH, 2001b):

- Energy: 1500–2000 kcal (6300–8400 kJ)
- Carbohydrates: 204–272 g
- Protein: 56–99 g
- Fat: 41–55 g
2.1.3 Cultural background, religion, and social status

A menu is compiled in order to provide a service to the client or customer. This means the needs of the clients should be carefully considered before a menu is compiled. Eating habits are the tendencies that determine what, when, why, and how a person will eat his meals. The customer’s eating habits can be influenced by factors such as age, race, culture, gender, and religion, as well as economic and social factors.

2.1.4 Regulations and standards; the meal plan

In order to standardize and ensure optimal service delivery, governmental policies often determine the minimum amounts, ration scales, and/or the meal plan to be followed by public facilities. In South Africa, the meal plan shown in Table 23.1 is recommended for clients on a normal diet (DOH, 2001b).

<table>
<thead>
<tr>
<th>Meal Time</th>
<th>Food Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early morning</td>
<td>- Tea/coffee with milk and sugar</td>
</tr>
</tbody>
</table>
| Breakfast | - Fruit* or fruit juice (150 ml)  
- Dry breakfast cereal / porridge with milk and sugar  
- Protein dish (optional)  
- Brown bread  
- Margarine  
- Jam / peanut butter / meat extract  
- Tea/coffee with milk and sugar |
| 10:00 | - Tea/coffee with milk and sugar |
| Lunch | - Soup (optional)  
- Main dish  
- Starch  
- 2 vegetables OR 1 vegetable and 1 salad  
- Tea/coffee with milk and sugar  
- Dessert (optional) |
| 14:00 | - Tea/coffee with milk and sugar |
| Supper | - Soup (optional)  
- Main dish  
- Starch  
- 1 vegetable or salad  
- Brown bread  
- Margarine  
- Jam / peanut butter / meat extract  
- Tea/coffee with milk and sugar |
| 20:00 | - Tea/coffee with milk and sugar |

*Fruit (1 fruit per day) may be served at another mealtime, rather than at breakfast

Meal plans, however, can and should differ according to the eating patterns of the community served. Policy makers have the important role of ensuring that nutrient needs are met within the restrictions of cultural eating habits and preferences. A food ration scale should be used with the recommended meal plan in order to provide food in appropriate portions while complying with nutrient needs of patients in a public service institution or facility.
2.1.5 **Type of service**
The type of service will determine the type of foods that are suitable for placing on a menu. A food service can function as a conventional food service, a cook-chill food service, or a cook-freeze service. Because community-based facilities generally cater to a relatively small number of clients, a conventional food service is usually used. All food items can be included in the menu provided they can be prepared conventionally on a large scale and retain quality and nutritional value during transport and serving.

2.1.6 **The number of clients to be served**
The number of clients in a facility determines the type of equipment that is needed to prepare food and, in turn, the type of food that can be served. The larger the number of clients in a facility, the more care that should be taken to ensure that the preparation of a menu item is standardized by making use of tested and standardized recipes that produce the same amount of portions and the same quality every time.

2.1.7 **Budget and financial resources**
One of the main goals of any food service unit is to provide the best possible food service within the restriction of a limited budget. The available budget is one of the most important factors influencing the type of menu that can be served. Financial planning and accountability within the food service unit are the major responsibilities of the manager; cost-effectiveness is essential for successful operation (DOH, 2001b). The food service manager needs to plan and budget for the four main activities within the food service unit, namely:

- Staff – salaries and training
- Equipment – maintenance and replacement
- Food items – perishables and non-perishables, including tube feeds and infant formula
- Cleaning material

2.1.8 **Availability of foods**
The food items included in a menu should be available locally or available to be delivered to the facility. Availability of foods may be influenced by the season. It is therefore essential to have different menus depending on the season, such as separate winter and summer menus.

2.1.9 **Equipment available**
The type of equipment available in a food service unit will determine the type of menu items and the cooking and preparation methods that can be used (DOH, 2001a; DOH, 2001b). Roasted chicken, for example, cannot be included on the menu if there is no oven in the unit.

2.1.10 **Skill level and number of staff**
The number and skills of staff must be considered when menus are planned. If skilled staff are available, then more complex dishes can be included on the menu (DOH, 2001b).

2.1.11 **Taste and appearance**
One of the most important factors to consider when compiling a menu is how to satisfy the customers’ need in terms of taste and appearance (Spears, 1995). The food in a meal should be combined according to colour, shape, texture, aroma, taste, consistency, and temperature (DOH, 2001b; Brown, 2014).

2.1.12 **Menu cycles**
A cycle menu is a carefully planned series of menus that offer different items each day for a few days, but more typically one to three weeks. The menus are repeated at the end of the cycle.

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A short cycle is usually used for food services having a frequent clientele turnover, while a longer cycle is necessary for facilities where the clients need to be fed for extended periods of time or where the clients are not able to eat elsewhere. If a cycle with less than 7 days is used, one advantage is that clients will not be able to link a specific menu item to a specific day, but one disadvantage is that a typical light Saturday meal and a traditional Sunday lunch might be scheduled during weekdays. A food service should also make provision for changing menu cycles according to seasonal availability, in order to allow for seasonal differences (Cronjé, 1993; Hudson, 2005; Shugart & Molt, 1993; Spears, 1995).

It is recommended that a facility have a menu cycle of 8 to 21 days in order to accommodate long-term patients and to ensure variety of menu items and preparation methods. The following are advantages of using a cycle menu:

- It saves time for the person planning the daily menus, and once the menu has been planned, only slight changes need to be made.
- It is an effective tool for food and labour cost control, forecasting, and purchasing.
- Repetition of the same menus is often more efficient through repeated use of a familiar recipe.
- Workloads can be distributed evenly.

However, it is important to plan menus carefully and analyze each day’s menus in order to alter and correct them before the menu cycle is repeated. In this way client satisfaction can be ensured and a monotonous menu avoided (Shugart & Molt, 1993).

### 2.2 Creating a Menu

The first step in creating a menu is to determine the needs of the facility and its customers. The manager has to determine which meals need to be served (breakfast, lunch, and supper, with or without in-between meals) and the constraints of the system for which the menu is written (Hudson, 2005). According to researchers such as Hudson (2005), possible constraints can include: government regulations and prescriptions; size of the facility; equipment available; skill level of staff; financial resources; number of clients to be served in a fixed period of time; customer demographics (age, religion, income, etc.); health of the clientele; preferences of the clientele; budget; and food availability.

Meal composition is usually directed by policy documents from the governmental department or governing body funding the facility. The composition of meals and the length of the menu cycle to be followed must be determined. This meal plan does, however, still leave room for the creative influence of the manager at the institutional level to apply his or her skills to adapting the menu to satisfy the specific requirements and special circumstances of the facility.

Creating the menu usually starts with the main dish (often, but not necessarily, the protein-rich dish) for the main meal of the day (typically lunch), followed by the main dish for the lighter meal, and then the main dish for breakfast (Hudson, 2005). After the main dishes have been planned, meals should be completed by adding starches, vegetables, fruits, or any other food items to complement the main dish, towards nutritional and sensory completeness. It is important to ensure that the items on the plate are balanced overall in terms of colour, shape, size, texture, and flavour (Hudson, 2005).

Meal plans should preferably be laid out on a spreadsheet; this allows any repetitions to be identified, for which substitutions can then be made. To simplify planning, it can help to use symbols for the planning of main dishes – it is easier to see two repeated symbols than to read and recognize two related types of dishes that are repeated (Cronjé, 1993).

In order to help add variety and to the menus and make them more appealing it is important to ensure the following:

- The same vegetables should not be served at consecutive meals or on adjacent days (e.g., cooked carrots for lunch and carrot salad for supper).
- The main dish should not be repeated in any form at consecutive meals or on adjacent days (e.g., savoury mince for breakfast and meatballs for lunch).
• The main dish should not recur on the same day of consecutive weeks (e.g., fish on a Wednesday).
• The menu should be viewed as a cycle, with the last week being evaluated in terms of the first week as well as the week that preceded it (Hudson, 2005).
• A specific recipe or dish should not reoccur for the duration of a cycle (i.e., it should only appear once within the cycle).

As soon as the menu is in a draft form, it should be shared with others involved in its implementation to ensure a practical working plan. The dietitian would consider nutritional adequacy, the cook would advise on production feasibility, and an administrative officer would review with respect to availability of products, costing, and the arrangement of contracts (Hudson, 2005).

The final step of creating a menu is its actual testing and refining so as to adapt it as closely as possible to the enjoyment, satisfaction, and needs of the clients before final implementation. Table 23.2 shows an example of a form that can be used to evaluate a menu before implementation.

Table 23.2: Form to evaluate the draft menu before implementation

<table>
<thead>
<tr>
<th>Colour:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combinations</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural colour</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of garnish</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Flavour:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptable combinations</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Balance</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not repeated too often</td>
<td></td>
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<table>
<thead>
<tr>
<th>Texture:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast – firm, crisp, soft, sticky</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptable</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Form, shape, and size:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation – round, long, flat, cubes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Serving method (e.g., cubed potatoes, round potatoes)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparation type:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
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</thead>
<tbody>
<tr>
<td>Variation</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Not too many fried foods, sauces, or same preparation types</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Repetition:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not repeat same type of food in the same meal or on the same day of the week</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include hot and cold foods</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>


3. FOOD SERVICE PROCESSES

Once a menu has been drawn up, various processes have to be put in place to ensure that the food service runs smoothly, effectively, and efficiently. Irrespective of the food system that is used, the following processes are usually followed (Cronjé, 1993):
The different functions that need to be performed in a food service are described below, as well as the tools available for each.

3.1 Purchasing

Food should be purchased according to the already-planned menu (Cronjé, 1993). About 5% to 7% of a health-care facility's supply budget is usually used for food service purchasing, and many facilities try to cut down on this budget as a means to implement cost control (McCann & Bloch, 1997). Effective and efficient utilization of the food service budget is therefore essential. As soon as the food service has determined, within the budgetary restrictions, what is needed to deliver a service, it is important to describe these items, whether they are food items, cleaning materials, or packaging materials.

3.2 Specifications

A specification is a description of an item to be purchased, and it needs to be clear so that the purchaser and the supplier know exactly what is required. A specification will typically include the item name, form, quantity, quality, pricing, and any other additional information that is needed. Table 23.3 provides an example of the information that can be included in a specification (Hudson, 2005).

Table 23.3: Components to be included in a specification

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item name</td>
<td>Name of the product that is needed</td>
<td>Eggs</td>
</tr>
<tr>
<td>Form</td>
<td>Description of item (weight, size, whether it is fresh, frozen, or canned) and its packaging</td>
<td>Fresh, large, whole eggs, packaged 30 dozen per case</td>
</tr>
<tr>
<td>Quantity</td>
<td>How many are needed</td>
<td>60 dozen</td>
</tr>
<tr>
<td>Quality</td>
<td>Description of the minimum acceptable characteristics for this product</td>
<td>Grade A</td>
</tr>
<tr>
<td>Pricing unit</td>
<td>Price per item, package, or other unit</td>
<td>Price per case</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Other information for the supplier from the purchaser</td>
<td>Delivery temperature</td>
</tr>
</tbody>
</table>

A national document with specifications for perishable foods should be compiled to standardize quality, and can be used as a valuable tool when setting up specifications for an institution or facility (DOH, 2001c).

When choosing a supplier, it is important to work in an ethical way. McCann & Bloch (1994) specify the following practices:

- Do not provide confidential information to a supplier’s competitor.
- Do not buy supplies without a legal bid system.

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• Do not allow quotes to be shared between bidders.
• Do not put pressure on suppliers to lower prices through veiled threats.
• Do not accept higher quotes without a good reason.
• Do not accept free stock or gifts from suppliers.
• Do not allow suppliers to sponsor parties or meetings.
• Do not allow suppliers to influence or change a decision after an award has been made.
• Do not create the impression that large orders can be expected by the supplier when you will only place a small order.
• Do not place the entire purchasing, receiving, and payment system in the hands of one individual or department.

There are various methods of procurement. Specific procedures are not described in this chapter. Nonetheless, it is important to make sure that suppliers meet basic performance criteria. It is relatively easy in a community setting to identify all possible suppliers and obtain a track record from other users. It is, however, important to provide suppliers with the specifications of the products in order to ensure compliance to the specified standards.

The following questions can be asked in order to collect information for determining the suitability of a possible supplier (McCann & Bloch, 1994):

• Does the supplier deliver on time?
• Does the supplier respond when an emergency order is placed, and how long do they take to fill the order?
• Does the supplier provide stock that does not comply with specifications and therefore has to be rejected?
• How often does the supplier deliver stock late?
• Does the supplier have appropriate delivery vehicles, such as refrigerated vehicles for meat or milk?
• What kind of infrastructure does the supplier have, in terms of telephones, availability, e-mail, faxes, etc., and how fast does the supplier react when messages are sent?
• How does the supplier handle late payments?
• How financially stable is the supplier?
• What is the company’s history and how long has it been in business?
• Where is the supplier’s warehouse or stores, and how accessible is the stock at short notice?
• How much stock does the supplier have available?
• Will the supplier allow inspections of the premises on a regular basis?

3.3 Ordering

Items to be purchased in a food service can broadly be categorized as follows (Hudson, 2005):

Supplies. Supplies include office supplies, paper goods, disposable service ware (e.g., disposable plates, utensils, place mats), cleaning supplies, and related items. Adequate quantities can be bought, balancing cash flow and available storage space with the savings for bulk purchasing.

Groceries/non-perishables. Groceries include any food products that are purchased in a form that is shelf-stable at room temperature, such as spices, cereals, and canned foods. Each of these products has a defined shelf-life. It is important to adapt ordering frequency and quantities in order to allow for groceries to be used before their expiry date.

Perishables. These are foods with a limited shelf-life that require refrigerated or freeze storage (e.g., meat, fish, eggs, and dairy products).

Equipment. This can be large, capital-intensive equipment that needs to be budgeted for in advance, or it may be small equipment such as dishes, pots, and pans.
The menu, with its accompanying standardized recipes, is used to calculate the amount of groceries that need to be ordered.

### 3.4 Delivery

When purchasing agreements with suppliers are arranged, delivery requirements are one of the important issues to agree upon. The frequency and timing of delivery impacts on the staff and security and should be well planned. In general, bigger clients are often given preferential delivery slots, but most suppliers try to accommodate even the smallest clients in order to ensure the supplier’s good reputation (Hudson, 2005).

It is important to make sure that standards are adhered to when food items are transported to food service units. It is therefore necessary to indicate to the supplier the specifications for transportation. For example, meat delivery may require that the vehicle keeps the food at an appropriate temperature.

#### 3.4.1 Frequency of deliveries

The location of the institution is an important factor affecting the frequency of deliveries. In rural areas, deliveries might only be possible on a weekly or biweekly basis, while in an urban area, daily deliveries may be possible. Table 23.4 illustrates the impact of delivery frequency on food service actions and planning.

<table>
<thead>
<tr>
<th></th>
<th>Daily delivery</th>
<th>Less frequent delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>- Goods are ordered so that they only arrive when they are needed.</td>
<td>- Delivery can be planned according to needs of institution and when back-up stock is available.</td>
</tr>
<tr>
<td></td>
<td>- Material goes directly to production.</td>
<td>- Facility has better control of stock received because frequency is limited.</td>
</tr>
<tr>
<td></td>
<td>- Less storage space is needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Less manpower is needed in storage area.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Cost for maintenance of storage areas is reduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Less theft occurs, because very little inventory available.</td>
<td></td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>- Production may be delayed if delivery is late.</td>
<td>- Facility must plan needs for a longer time span.</td>
</tr>
<tr>
<td></td>
<td>- If items are missing or do not comply with specifications at delivery, there is no back-up stock to support production.</td>
<td>- Facility must ensure adequate stock on hand to allow for contingencies.</td>
</tr>
<tr>
<td></td>
<td>- Deliveries taken directly to production area might interfere with rotation of stock into and out of inventory, and stock in storage might become unusable.</td>
<td>- Orders are large and storage needs to take place quickly to preserve quality, all of which affects staffing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Security needs to be tight because the monetary value of stock increases with decrease in delivery frequency.</td>
</tr>
</tbody>
</table>

*Source: Adapted from Hudson, 2005.*

As can be seen from Table 23.4, a fine balance in frequency of delivery needs to be found in order to make use of the advantages of frequent delivery, but with the safety net of enough stock available to be able to make contingency plans. Perishable products are usually purchased as close as possible to when they are served. Products such as milk and bread are usually delivered on a daily basis, whereas products with a longer shelf-life are delivered less frequently, depending on storage space available (Cronjé, 1993).

#### 3.4.2 Timing of deliveries

The frequency of delivery as well as the timing need to be carefully planned. Planning should be coordinated with production needs as well as the work schedules of staff.
Most community-based facilities operate 7 days per week. Deliveries at the weekend should in general be avoided or limited to essential perishable items, such as bread or milk. This may help reduce the number of staff required over a weekend and also help prevent financial losses due to theft or poor stock control.

3.4.3 Delivery area
When setting up an agreement with a supplier, you must specify the actual delivery area. Ideally, the delivery area is close to the storage area.

3.5 Receiving
Receiving of stock is an important control point for purchasing and should therefore be planned and carried out with care. In community-based facilities, the staff that receive stock are often also responsible for storage and distribution. The persons receiving stock should do all of the following:

- Know the expected delivery time.
- Ensure adequate sanitation at the receiving area.
- Know what was ordered as well as its specifications.
- Control the quantity and quality of stock received by means of weighing, counting, checking temperatures, and inspecting.
- Accept or reject the stock delivered.
- Record in the receiving book the type, amount, temperature, and any deviations that warranted rejection of stock.
- Compare the invoice received with the stock accepted.
- Indicate any differences in quantity, quality, or price on all the copies of the invoice(s) received.
- Sign the invoice(s), keep a copy of any invoice at the facility, and send a copy of all invoices back to the supplier.
- Store stock appropriately.
- Accept responsibility for the security of the stock received.

When stock is delivered, it should always be taken to the storeroom before usage. This helps prevent backup stock ageing in the storage areas.

3.6 Storage
Storage areas are planned according to the requirements of the institution for various products and may include dry storage areas, cold rooms, and freezer rooms. The location of storage areas should be determined in relation to receiving, preparation, and production areas.

To prevent wastage, it is necessary to monitor what is in storage and its age. Stock rotation should be implemented, especially for perishables; in other words, old stock should always be used before newer stock. To facilitate this, when new stock is delivered, it should not be stored in front of or on top of older stock.

3.6.1 General storage principles
Other useful rules to follow regarding food storage are (Hudson, 2005):

- Store frequently used stock near the entrance to the storage area, and store rarely used stock further back.
- Store heavy items near the floor, and lighter ones on top or higher up.
- As appropriate assign and label space for each item on the inventory and make sure that it is stored in its assigned space.
- Secure any shelving to the floor, the ceiling, or a wall.
- About 25 cm centimetres should be allowed between the floor and shelves. Therefore, lower shelves should not be mounted directly on the floor.
• Ensure that a safe exit exists for someone who is locked inside the storage area.
• Expensive or controlled substances should be secured at all times.

3.6.2 Dry storage areas
Separate storerooms or store areas should be planned for various products, such as the following kinds of items:
• Staple food supplies
• Non-food supplies and equipment
• Cleaning material and equipment
• Baked products
• Linen and protective clothing for staff
• Dry garbage and/or recyclable materials, such as empty boxes, cartons, and plastic containers

Hudson (2005) suggests the following requirements and design criteria for dry storage areas:
• Store food items separately from non-food items such as soap, bleach, and pesticides.
• Allow for easy movement of heavy supplies by carts or trolleys.
• Ensure adequate space to view all products directly without having to move other products.
• Ensure proper illumination, ventilation, and security.
• Maintain the temperature at 18 to 20°C. The temperature in dry storerooms should never be higher than 37°C.
• Adequate shelving should be provided to keep food away from floor and walls.
• All items should be kept at least 25 cm above the floor to allow for easy cleaning under lower shelves.
• Use easy-to-clean shelves that can be dismantled and washed in a tub or sink.
• If packaging is vulnerable to penetration by insects and rodents, bins or sealed containers must be used for storage.
• The storeroom should be well lit, well ventilated, and humidity controlled.
• Ensure adequate security to prevent theft.

3.6.3 Refrigeration and frozen storage
Ideally, food services will have walk-in type refrigerators and freezers. In the case of smaller institutions, one cold room and a chest-type or cabinet-type freezer might be sufficient, while larger institutions may need more than one type of cold room for various purposes and a freezer room that has either a separate entrance or else is situated at the back of a cold room. The advantage of having a freezer at the back of a cold room is that it conserves energy; a disadvantage is that it may cause loss of space as a result of requiring extra door space and a path to the freezer.

The requirements and design criteria for refrigerated- and freezer-storage areas are as follows, per Hudson, 2005:
• Install a thermometer that can be read from the outside without opening the door.
• Invest in an alarm to warn against dropping temperatures within the cold storage area.
• Maintain and check cold storage areas regularly.
• Prevent frost build-up inside cold storage units as this may lead to decreased efficiency.
• Keep shelving away from the floor and removable for easy cleaning.
• Separate different products within the same cold room and mark storage space for items clearly.
• Cover all products to prevent transfer of flavours, spills, and cross-infection.
• Mark open packages with the date they were opened and leftovers with the date of production.
• Let hot food cool before placing it in a cold-storage area.
• Ensure that stock is rotated and used on a first-in-first-out basis to prevent quality losses.

3.6.4 Stock control records
Stock control forms an important managerial function within a food service unit. A stock control system needs to be simple and easy to use in order to ensure that it is indeed used and provides benefits. Stock control should include a physical inventory and a perpetual inventory, as indicated below.

3.6.5 Physical inventory
A physical counting of stock on hand should be done at least once a year, but preferably once a month or once a week, depending on the size of the institution. Usually, two people complete the physical inventory together (Hudson, 2005).

3.6.6 Perpetual inventory
A perpetual inventory uses the data from an initial physical inventory, adds goods that have been purchased, and subtracts goods that have been used. By doing this, it is possible at any given time to know the exact amounts of stock available in the storerooms.

On a regular basis, the perpetual inventory should be compared to a physical inventory for an update and accuracy check. When control is very good, there is 90% to 95% agreement between the two inventories, in which case physical stocktaking can be performed less frequently (Hudson, 2005).

In a community-based facility, the information from stock cards from the stores and invoices from suppliers can be entered on a relatively simple spreadsheet and used as a perpetual inventory. Table 23.5 provides an example of information to be included on a stock control card.

<table>
<thead>
<tr>
<th>Group of items (e.g., breakfast cereals)</th>
<th>Item</th>
<th>Code</th>
<th>Packaging Unit</th>
<th>Max. level</th>
<th>Min. level</th>
<th>Current level</th>
<th>Qty issued</th>
<th>Issuing date</th>
<th>End units</th>
<th>Date of stock checking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oats</td>
<td>321</td>
<td>2 kg</td>
<td>25</td>
<td>5</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn meal</td>
<td>322</td>
<td>1 kg</td>
<td>24</td>
<td>4</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lentils</td>
<td>323</td>
<td>1 kg</td>
<td>24</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FOOD PRODUCTION PROCESSES
4.1 Pre-preparation
Pre-preparation includes all processing of food before it is cooked, such as washing, cleaning, carving, shredding, measuring, and peeling (Cronjé, 1993). These activities should be planned, controlled, and well timed to ensure smooth operation of the food service unit. Different types of food should be handled in different pre-preparation areas, using separate utensils to prevent cross-contamination.

4.2 Food Preparation
Food preparation usually takes place in the cooking area of a kitchen. Peak activity can be expected just before meal times (Cronjé, 1993). For optimal performance, production meetings with the cooks or other food production staff should be held before meal preparation, to discuss the menu of the day and any deviations.
from the menu. Staff involved with food preparation should be trained and provided with standardized recipes to ensure optimal service delivery and prevent losses due to failed recipes.

4.3 Enlarging Household-size Recipes

Although many large-scale recipes are widely available, in community-based facilities the recipes used are often small scale, more suitable to food preparation for a family. This is not an ideal situation, as cost-, portion-, and quality control are determined by the recipe that is used. Enlargement of a household recipe to one that reflects the number of clients in the facility is therefore necessary. But first, it is important to ensure that the recipe is suitable for large-quantity production without loss of quality.

Shugart and Molt (1993) and Spears (1995) recommended the following procedures to translate a household recipe for use in a facility setting, rather than simple increase by means of multiplication:

1. Prepare the original recipe, follow all instructions precisely, and note any problems that occur. Use weight measures to increase accuracy.
2. Evaluate the product and adjust the recipe until it is completely acceptable. This may necessitate repeating preparation of the original recipe several times.
3. The next step is to double the recipe and make notes on the changes that are made. Extra cooking time or a reduction in certain ingredients might be needed. The product must now be evaluated for yield, portion size, and acceptability.
4. Double the recipe again and make sure to adapt the quantities to fit the baking tins, containers, or pots that will be used. Evaluate the product and adapt the recipe if necessary.
5. If the product is satisfactory, continue to increase amounts used in the recipe in increments of 25 portions or per pan size. Recipes should be evaluated for acceptability each time a significant yield adjustment is made.
6. Evaluate the final product by using a taste panel before the recipe is included in the menu.

An example of a recipe sheet for documentation of standardized recipes is shown in Table 23.6.

**Table 23.6: Example of a standardized recipe format**

| Name of recipe: _____________________________ | Code: ______________________________________ |
| Yield: (how many portions) ____________________ | Portion size: ________ g / ________ ml |
| Oven: ______° C | Baking time: _____________ min |
| Equipment needed: ______________________________________________________________________ |

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variation notes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis per portion:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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4.4 General Principles for Food Preparation

Food should be prepared to meet the following criteria:

- Provides optimal nutritional value with minimum nutrient losses during preparation
- Be microbiologically safe
- Satisfies the psychological needs of the clients

In order to comply with these criteria, the following basic principles should be applied:

- Prepare and serve food that people enjoy.
- Use ingredients that are fresh and of good quality.
- Use a minimum of handling and processing.
- Prevent nutrient losses by using a minimum of cooking fluids, peeling, and heat, and do all preparation as quickly as possible.

4.5 Portioning, Distribution, and Serving of Food

Portion control is an essential aspect when preparing food on a large scale, so as to ensure that the needs of clients are met (Spears, 1995). The portion size is usually stipulated in the standardized recipe, making planning easier. Specific serving utensils can be indicated on the standardized recipe so that portions are the correct amount.

Most of the quality losses and temperature losses take place during portioning, distribution, and serving of food (Cronjé, 1993). For example, food may be distributed to an adjacent dining room or to rooms quite a distance from where it is prepared. To minimize losses in quality and temperature, these procedures must take place quickly and efficiently.

In the case of health institutions, such as hospitals, portioning should be done according to the order forms received from wards that indicate the number and types of diets required. With care facilities, portioning is done according to the number of clients to be served.

In order to improve planning, a form should be completed that records meal statistics on a daily basis. This will record the number of meals delivered to each ward for breakfast, lunch, and supper, as well as all rations and snacks. Special meals, staff meals, and therapeutic diets should also be included.

If self-service is allowed, portion control is not possible. Self-service may require extra provision for popular dishes. It makes sense to record surplus and shortages on the recipe page in order to refine planning and preparation for the next time the specific food item is served.

A survey should be carried out at least once each month to ask clients for their opinion on the food service. This can be done by means of a questionnaire or a direct interview. Client satisfaction can also be tested by means of a questionnaire at the end of residence (e.g., in the case of hospitals when the patient is discharged or in the case of hostels at the end of the term). Questions can then be tailored to request feedback on specific areas of concern.

4.6 Clearing of Dinnerware and Leftovers

Shortly after a meal, all cutlery, crockery, trays, and leftover food should be cleared, disposed of, or washed. This is not only for reasons of hygiene, but also to enable staff to get everything ready for the next meal or snack.
Plate waste measurements should be carried out regularly to determine the amount of food left on plates. This is done to measure and monitor acceptability of food items on the menu (Spears, 1995). Plate waste is usually measured per ward, where the total weight of each food item sent to the ward is recorded and the total weight of each food item left on the plate is totalled and also recorded. The figures for one cycle are then recorded and reported on.

The most efficient way to clear dinnerware and leftovers is to make use of a mobile trolley with separation of plates, cutlery, trays, and leftover food. Two containers can be used to separate leftover food and other items (such as serviettes and disposable cutlery) from one another. In this way, items can be quickly cleared and sorted, ready to be washed or discarded. To avoid costly losses, all items of cutlery and crockery that were issued should be accounted for.

4.7 Washing and Refuse Removal

Pots, pans, and other utensils are usually washed centrally in the main kitchen. Washing can be done by hand or with a dishwashing machine (if funds and physical facilities are available to install one), depending on the number of dishes to be washed, the size of the kitchen, and the availability of staff. Cups, glasses, and other crockery may be washed on the ward since there is a short time lapse between meals and tea times in many health facilities (Cronjé, 1993). Optimum washing practices should be followed to ensure the best possible hygiene in the food service.

Refuse removal refers to all food refuse from preparation and serving, as well as other refuse such as paper and tins. Food refuse can contaminate fresh produce and act as a breeding place for pests. It should therefore be placed in a closed container and kept away from food storage areas and the receiving area. It is advisable to store food refuse as needed in a cool area or even a cold room, especially if air temperature is high or daily removal is not possible (Cronjé, 1993). Food refuse can be used for composting. In some locations waste food is collected by pig farmers.

5. HYGIENE AND FOOD SAFETY

Safe food is important to ensure health. It is important that for optimal food safety, primary contamination at the food source should be strictly controlled.

5.1 Aims of Hygiene Standards

Cronjé (1993) lists the following principles with regard to hygiene standards in a food service unit:

- Keep the environment clean.
- Handle food in a clean and safe way and therefore protect it against contamination from harmful organisms.
- Prevent food from spoiling.
- Avoid food contamination.

5.2 Effects of Poor Hygiene and Food Safety

Poor hygiene and food safety can have serious and even lethal effects, especially in high-risk client groups, such as babies, aged persons, and sick patients. But the subject presents a serious challenge, as microorganisms are not visible to the naked eye and hygiene is not always well understood by illiterate workers. Training is therefore of utmost importance.

The following may result from poor hygiene and/or safety standards:

- An increased risk of food poisoning
- Customers refusing to use the food service
- Claims laid against the food service by customers
- Increased complaints about foreign objects in food
- Loss of reputation of the organization and a loss of income

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• An increase in food wastage and therefore financial loss
• Increases in the presence of pests and rodents with the risk that the food service might be shut down by health inspectors

5.3 Basic Hygiene Principles
Food safety is discussed in detail in Chapter 24. The following is a summary checklist of the most important factors that need to receive attention in order to achieve good hygiene, based on Cronjé (1993) and Spears (1995).

Physical facility:
• Walls and floors maintained; free of cracks and easy to clean
• Ceilings easily cleanable
• Windows designed to prevent accumulation of dirt on sills
• Doors, windows, and ventilation openings that do not allow access for birds, insects, or rodents
• Doors that are self-closing and have a smooth finish that is easily cleaned
• All structures and pipes easily reached and cleaned
• Separate areas for preparation of different types of food so as to prevent cross-contamination
• Sufficient drains
• Light fittings that are easy to clean
• Sufficient ventilation to prevent dampness and dust
• Hand basins, and soap, available in food handling areas
• Adequate toilet and washroom/restroom facilities
• Foot pedals provided for operating taps at handwashing basins
• Enough disposable towels available at hand-wash basins
• Clean water available for cleaning and food preparation

Equipment:
• All equipment installed in a such a way as to be easily cleaned
• Installed so that it does not provide a breeding place for insects/pests
• Table tops and working surfaces that are easy to clean
• Work surfaces on which food is handled and all equipment, utensils, basins, or other surfaces that comes into direct contact with food should be made of smooth, rust-proof, non-toxic, and non-absorbent material that does not have open joints or seams
• Cutlery and crockery easy to clean, and without chips or cracks

Personal hygiene:
• Staff should be trained regularly.
• Uniforms should be clean and laundered.
• Lockers should be clean and tidy and available for staff.
• Staff should be healthy and free of coughing, open wounds, or diseases (especially gastro-intestinal diseases).
• Cuts, pimples, or sores should be covered.
• Staff nails should be short and without nail polish, hair should be tied, and skin should be clean with minimum make-up allowed.
• Staff should wash hands after using the toilet, and frequently during food preparation.
• A head cover must be worn at all times by anyone that enters the production area.
• Jewellery may not be worn by food preparation staff.

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• No eating may be allowed in the kitchen and serving areas.

Supplies and receiving area:
• Reputable suppliers
• Clean delivery vehicles
• Area and supplies that are free from dirt and garbage
• Regular inspection of food for quality and freshness
• Perishables immediately stored
• Empty containers discarded immediately
• Perishable products marked for expiry and date stamped
• Canned foods inspected for defects
• Frozen products inspected for signs of defrosting and freezer burn
• Perishables received at the correct temperature, which are checked and recorded

Storage:
• Ventilated within set temperature ranges – no sign of dampness
• Lowest shelf at least 25 cm from the floor and highest item on shelf not touching the ceiling
• No food stored directly on floors
• All containers covered
• Food marked with a date to identify oldest stock
• No spills on shelves or floor – clean surfaces
• Non-food items stored separately
• Sufficient space for cold storage
• Separate storage space for cooked and raw foods (do not allow cross-contamination)
• Boxes should be unpacked immediately and empty boxes discarded to control pests
• Cold rooms and freezers clean and tidy
• Correct temperature set for cold rooms and freezers
• Freezers clean and free from ice build-up
• Door seals of cold rooms and freezers in good condition

Pre-preparation and preparation:
• Separate, colour-coded cutting boards used for different types of food
• Cutting boards washed and disinfected between uses
• All work surfaces and food-handling equipment clean and tidy
• Equipment washed and disinfected between uses
• Can openers clean
• Fruit and vegetables washed before use
• Utensils are used to handle food (hand contact is eliminated as much as possible)
• Clean colour-coded cloths available for cleaning or wiping up spillages, e.g., white for milk area, yellow for chicken area
• Food not kept out of fridge for longer than 2 hours
• Thorough cooking of food, especially protein-rich foods
• Hot food kept at more than 65°C
• Correct thawing procedures followed
• Utensils disinfected after washing and before use
• Control of insects and rodents
Portioning, distribution, and serving:
- Use of portioning spoons for ensuring standardization of portion sizes
- Food at the correct temperature prior to and during serving
- Staff wear masks during dishing up
- Cold foods kept below 10°C before serving
- Waiting time between preparation and serving kept as short as possible

Cleaning and washing:
- Enough cleaning agents available and used correctly
- Enough hot water available
- Disinfection of all items after washing
- Washed items allowed to drip dry
- Dishwasher cleaned daily
- Wash and rinse temperature of dishwasher correct
- Cleaning materials stored away from food
- Implementation of a routine cleaning programme
- Regular microbiology tests performed, with feedback given to staff

Refuse removal:
- Waterproof, easy-to-clean refuse bins with close-fitting lids, suitable for hygienic storage of refuse until their removal from the food-handling area
- Refuse bins lined with black plastic bags and kept covered with lid
- Enough drainage provided at refuse removal area
- Enough running water available
- Refuse storage area and drums easy to clean and disinfect
- Refuse removed frequently
- Refuse bins washed and disinfected daily

6. MANAGEMENT PRINCIPLES
6.1 Financial Planning
One of the most important managerial functions in a food service unit is financial administration. The manager should therefore be responsible for developing a business plan that reflects all the needs for the next financial year (Hudson, 2005).

6.2 Organizational Planning
Each task in a food service unit needs to be planned and organized carefully (Hudson, 2005). This requires effort and experience. It is the task of the manager(s) to plan diligently so that all other tasks are completed and that each person knows exactly what is expected from them. An organizational chart may be helpful for staff to see where they belong, linking it to their functions and duties.

The menu is the starting point in organizational planning. It is used to compile a programme of the various meals that must be prepared. This is then used to compile an employer work schedule which is then refined to a list of daily functions to be performed and tasks to be completed.

6.3 Staffing and Human Resource Management
One of the most valuable resources in any organization is the staff. Like any other resource, staff should therefore be treated as valuable. Although a human resources department usually handles most staffing issues,
the manager of a food service unit also needs to be involved in staff recruitment, training, retention, and the resolution of issues. The skills of all food service staff should be developed through continuous training in order to improve service delivery (DOH, 2010).

6.4 Leadership
Leading is the part of management that involves giving direction and co-ordinating activities of workers. Leading means motivating others, managing activities, communicating, and resolving problems and conflicts. An organization or unit is as successful as its leader and therefore the manager of a food service unit should take on a strong leadership role to ensure guidance and successful operations.

6.5 Communication
Good communication within an organization is crucial to the success of all parties concerned. Miscommunication leads to mistakes, misunderstandings, and poor functioning. Maintaining and improving communication within an organization is therefore one of the most important investments a manager can do.

Managers communicate in order to gather information, disseminate information, share information, coordinate activities, and negotiate. Written communication is preferred within a food service unit in order to enable the manager to file information for later referral.

DISCUSSION QUESTIONS AND EXERCISES
1. Compile a 2-week cycle menu for a 50-bed community hospital by using the current policy guidelines from your country.
2. Design standardized recipes for all the menu items to be served on day 1 of cycle/week 1.
3. Draw up a master ordering schedule for all of the main ingredients needed on day 1 of cycle/week 1.
4. For two food items, compile food specifications that can be used for procurement purposes.
5. Prepare a motivation statement for kitchen staff that explains why good hygiene is essential in a food service unit.
6. Write a job specification for a cook that you can be included in a job advertisement at the food service where you are working.

REFERENCES

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ADDITIONAL RESOURCES
The South African National Department of Health has compiled various policy documents and draft policy documents that have an impact on management of food service units. More information can be obtained from the national office in Pretoria, South Africa, phone: +27 21 395000, or by visiting www.doh.gov.za.

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