



DGE Quality Standard for Meals in Clinics



DGE Quality Standard for Meals in Clinics

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Table of contents

Message from the Federal Ministry of Food and Agriculture	6
Preface	7
1 Background, Goal and Design	8
1.1 Clinic meals: An opportunity for more health and sustainability	9
1.2 Who is the DGE Quality Standard addressed to?	10
1.3 What is the goal of the DGE Quality Standard?	11
1.4 How is the DGE Quality Standard structured?	11
1.5 What to keep in mind when reading?	13
2 Development of quality clinic catering	14
2.1 Quality of clinic catering	15
2.2 Interface management	18
2.3 Staff qualification	20
2.4 Feedback management	22
2.5 External quality control	23
2.6 Specification for tenders	23
3 Principles of health-promoting and sustainable meals	24
3.1 Importance of health-promoting and sustainable meals	25
3.2 Food groups – foundation for optimal choice	28
3.3 Deriving criteria for a health-promoting and sustainable catering	32
4 Designing health-promoting and sustainable meals	34
4.1 Planning	35
4.1.1 Food qualities and frequencies and other aspects of menu planning	36
4.1.2 The use of <i>convenience food</i> in mass catering	42
4.1.3 Menu	44

4.2	Purchase	45
4.3	Preparation	47
4.4	Service	50
4.5	Disposal and cleaning	51
4.6	Together and yet individual	54
4.6.1	Offering different diets	55
4.6.2	Diet catalogue	57
4.6.3	Individual choice of food	57
4.6.4	Standardised meals	57
5	Beyond the plate	58
5.1	Identify special catering requirements	60
5.2	Assigning diets	61
5.3	Assisting in the selection and order of food and beverages	62
5.4	Design of dining and drinking environment	63
5.4.1	Establish and observe mealtimes	63
5.4.2	Design of dining atmosphere	64
5.4.3	Encourage and assist eating and drinking	65
5.5	Nutritional therapy intervention	66
5.6	Discharge and transition	67
6	Legal requirements for catering	68
6.1	Food law key regulations	69
6.2	Hygiene and infection control	72
6.3	Labelling and public information	74
	Checklist	76
	References	83
	Glossary	87
	Imprint	90

Message from the Federal Ministry of Food and Agriculture

Dear catering commissioners,

a health-promoting and sustainable diet contributes to well-being and plays a key role in the patient's recovery, especially in clinics. A variety of meals that cover the nutritional requirements and meet the needs of the patients significantly promote the healing process.

Additionally, many diseases are caused by unfavourable diets and lifestyles. It is particularly important to take preventive steps with meals in clinics. Furthermore, patients should be motivated to eat healthily and sustainably at home as well.

Therefore, the Federal Ministry of Food and Agriculture has commissioned the German Nutrition Society (DGE) to revise the "DGE Quality Standard for Meals in Clinics". Within the scope of our National Action Plan "IN FORM – German national initiative to promote healthy diets and physical activity", the standard was updated in accordance with the latest scientific findings. It provides you, as those responsible for catering in hospitals and rehabilitation clinics, with information and practical advice on how to implement a health-promoting menu. With

meals that are both tasty and sustainably prepared and thus help to avoid waste even better. Because that is a contribution to a more sustainable diet.

The Federal Ministry of Food and Agriculture would like to invite you as those responsible for catering in clinics to apply the Quality Standard to design a balanced and diverse meal offer. With every improvement in catering, you stimulate the healing and rehabilitation of your patients.

Thank you for your commitment!

Sincerely yours

Federal Ministry of Food and Agriculture

Preface

Dear readers,

what we eat and how we eat, it has an impact on our health. That is why catering plays a particularly important role in clinics. Many diseases are also caused by unhealthy diets. A good nutritional status and appropriate catering may help patients to get faster well.

Increasingly, it becomes clear that what we eat also has consequences for our environment, our climate, our society and animal welfare. Every year, over 21 million people receive meals during their stay in hospitals and rehabilitation clinics. This shows the great potential of clinic catering for sustainable action.

The urgency to act sustainably, new scientific findings and ten years of practical experience with the DGE Quality Standards, led us to revise them in a participatory process with experts from science and practice.

In the “DGE Quality Standard for Meals in Clinics”, the previously separate DGE Quality Standards for Hospitals and Rehabilitation Clinics are now combined due to many parallels in catering. Criteria for health promotion and sustainability are presented in a structured way along the catering processes in kitchens. The scientifically based recommendations of the German Nutrition Society for a wholesome diet form the basis for the criteria. Those interested can learn for the first time how the criteria are derived. “Beyond the Plate” describes aspects that contribute to proper catering beyond the kitchen. A new chapter describes the factors that contribute to the development of quality in catering.



You can use the DGE Quality Standard as a guideline to optimise your clinic’s catering offer. Serve your patients enjoyable, health-promoting and at the same time sustainable food and beverages. Show them that you care about their well-being and health. In the clinic cafeteria, your own staff will also benefit from such an offer. Satisfied patients and employees as well as your sustainable commitment to the well-being of the present and future generations are a flagship for your clinic.

The team of “Station Ernährung” provides support and information at www.station-ernaehrung.de and will gladly offer advice and assistance with any individual questions you may have.

Sincerely yours,

Dr. Kiran Virmani

Managing Director of the German Nutrition Society



1

Background, Goal and Design

-
- | | | |
|-----|---|----|
| 1.1 | Clinic meals: An opportunity for more health and sustainability | 9 |
| 1.2 | Who is the DGE Quality Standard addressed to? | 10 |
| 1.3 | What is the goal of the DGE Quality Standard? | 11 |
| 1.4 | How is the DGE Quality Standard structured? | 11 |
| 1.5 | What to keep in mind when reading? | 13 |

1.1 Clinic meals: An opportunity for more health and sustainability

During a clinic stay, catering serves to provide patients with food and beverages. What patients wish for is an enjoyable and varied offer with a choice of fresh components, as well as friendly service. Satisfaction with the meals contributes significantly to well-being and, together with the medical treatment, also influences the assessment of the clinic stay.

In clinics, the patients' health is the focus of all activities and the most important therapy goal. Nutrition and human health are directly related. Certain diets may contribute to the development of diseases. Likewise, diseases may require certain diets. In addition, a good nutritional status contributes significantly to a faster recovery from various diseases. However, when patients are admitted to a clinic, they are often malnourished or overnourished. Both *malnutrition* and *overweight*, especially *obesity*, have negative effects on the health status. The consequences of *malnutrition* range from impaired wound healing, higher complication rates, longer clinic stays to an increased risk of *morbidity* and *mortality*. *Obesity* is associated with an increased risk of developing several diet-related diseases, including type 2 diabetes mellitus, lipid metabolic disorders and cardiovascular diseases.

Promoting health is not only a medical but also a catering aspiration in clinics. In the context of **health promotion**, the entire range of clinic meals should be based on a whole foods diet (Vollkost) described in the "Manual of Nutritional Therapy in Patient Care" (LEKuP) and thus reflect a wholesome diet [1]. A health-promoting catering offer should contribute to an improved nutritional status and thus to the recovery process. Moreover, for some patients, the meals serve as specific **remedies** in the course of a nutritional therapy.

Meals in clinics are supposed to serve as **example** and guide patients in their diet after their stay. Recovery from an illness often results in a high level of motivation and willingness to reflect on and change previous dietary behaviour.

The fact that more than 21 million patients per year are treated in hospitals for an average of one week and in rehabilitation clinics for three weeks [2, 3] also shows the great potential of clinic catering to contribute to more **sustainability**. The responsible use of our planet's limited resources is related to the appreciation of food and the dishes prepared from it.

If health-promoting and sustainable catering is also offered to the clinic's employees, e.g., in a cafeteria or canteen, then catering also contributes to **workplace health promotion**.

1.2 Who is the DGE Quality Standard



addressed to?

The tasks of catering, such as planning, purchase and preparation, are primarily carried out by the kitchen staff. Other divisions of the clinic, like nursing, medicine, service and other therapy fields, as well as general management, also contribute to the success of good catering (see figure 1). In addition to the provision of food and beverages by the kitchen, aspects beyond the kitchen also influence the catering quality (see chapter 5).

The DGE Quality Standard addresses everyone who is in charge for catering in their respective areas. In the following, these persons are referred to as **persons responsible for catering**. These include managers of the kitchen/

caterer, *nutritionists*, as well as employees of the clinic operator, clinic directors, employees in quality management, physicians, medical directors as well as directors of nursing, service and therapy.

The persons responsible for catering select and interpret contents and criteria of the DGE Quality Standard for the staff in their area and consider the structural, personnel and financial conditions on site of their clinic. For this purpose, they transfer them into instructions for their employees and coordinate them with other divisions. Numerous additional information and implementation tools are available at the website www.station-ernaehrung.de.

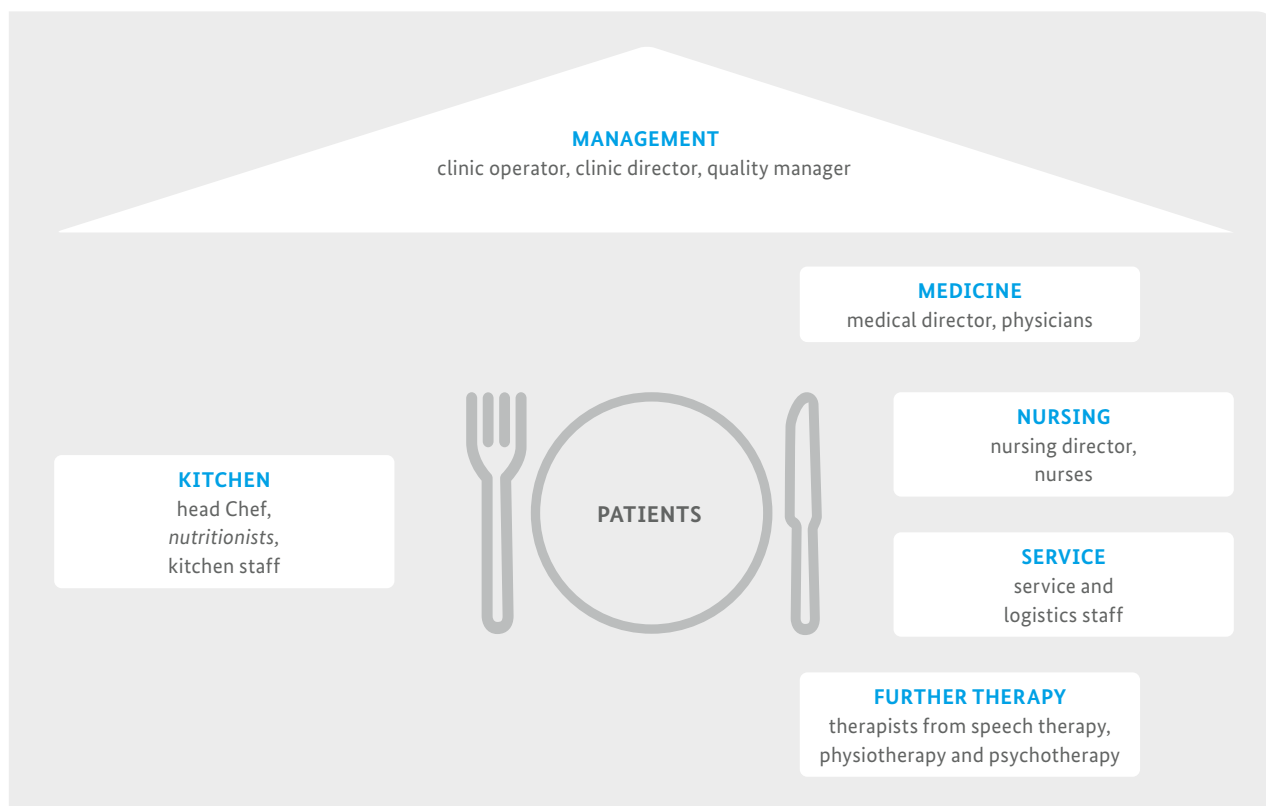


Figure 1: Divisions and staff involved in clinic catering

1.3 What is the goal of the DGE Quality Standard?

The DGE Quality Standard supports persons responsible for catering in designing a health-promoting and sustainable meal offer in clinics so that patients may choose from a corresponding offer at mealtime.

Based on current scientific data, the DGE Quality Standard describes the **criteria** for optimal, health-promoting and sustainable catering. Each clinic may implement this Quality Standard step by step at its own pace. Every quality improvement of the catering results in healthier and more sustainable diets for the patients.

The majority of the criteria relates to the catering design (see chapter 4). Criteria are presented along the process chain with the five steps of **planning, purchase, preparation, serving** as well as **disposal** and **cleaning**. These kitchen process steps offer the potential to significantly influence the nutritional quality of food and beverages as well as to set the course for a sustainable diet.

However, good clinic catering is more than just offering health-promoting and sustainable dishes. Therefore, the DGE Quality Standard also focuses on aspects beyond the kitchen. These aspects describe how patients may receive meals that are tailored to their special needs and requirements, and how the environment for eating and drinking may be designed to be comfortable and supportive. In addition, links to nutritional therapy and the transition at discharge are outlined (see chapter 5).

Additionally, to the catering aspects, persons responsible for catering are shown how to develop quality in clinic catering and which legal requirements must be observed.

Figure 2 shows different aspects that are considered in health-promoting and sustainable clinic catering and therefore addressed in the DGE Quality Standard. The process chain plays a central role as a “pivotal point”.

1.4 How is the DGE Quality Standard structured?

The DGE Quality Standard includes six chapters with criteria and background information. Persons responsible for catering find answers to the following questions:

- › How does the DGE Quality Standard support persons responsible for catering on their efforts to improve the catering quality?

The role of the DGE Quality Standard as an instrument of quality development and aspects that contribute significantly to more quality in clinic meals are explained in

↳ [chapter 2](#).



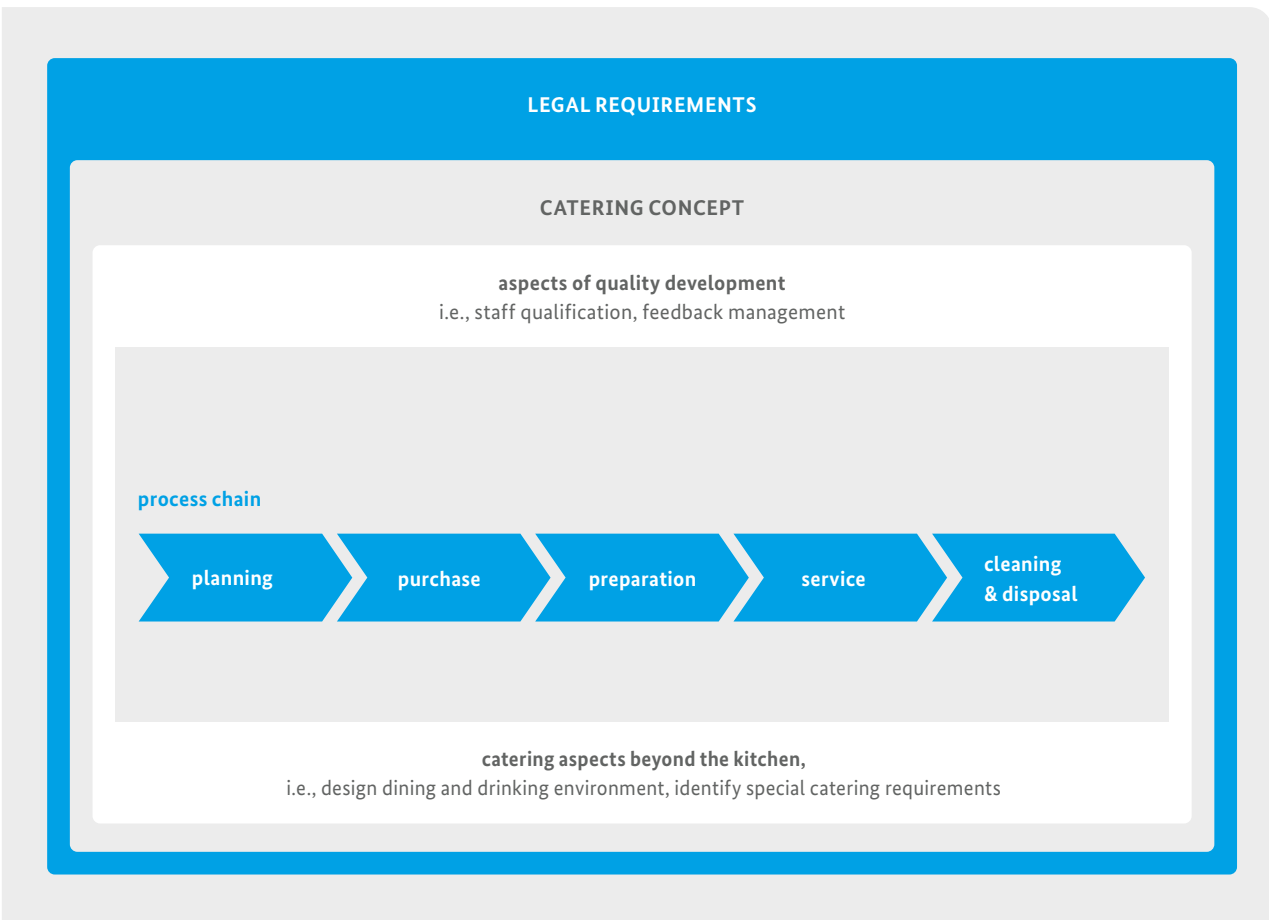






Figure 2: Aspects of health-promoting and sustainable clinic catering

- › Which are the basic principles of the criteria for “designing health-promoting and sustainable meals”?
When talking about nutrition or catering, health and sustainability must be considered together. Underlying reasons and how the criteria described in chapter 4 are developed are discussed in [chapter 3](#).
- › How should a health-promoting and sustainable catering offer be designed?
Criteria for the catering design are described accordingly to the process chain in [chapter 4](#).
- › What additional aspects need to be addressed?
Aspects beyond the kitchen influencing the offer of sustainable and health-promoting food and beverages as well as the catering quality are described “beyond the plate” in [chapter 5](#).
- › What is legally required?
Anyone who produces and serves meals must observe legal regulations. An overview of the laws and legal requirements that apply to mass catering can be found in [chapter 6](#).

1.5 What to keep in mind when reading?

- 
 - › **Criteria**, describing an optimal catering situation are listed and explained in text boxes with this symbol. The **checklist** starting on page 76 provides a criteria summary.
- 
 - › Background information and advice on **sustainability** are marked with this symbol..
- 
 - › This symbol additionally indicates **interesting facts**.
- 
 - › This symbol highlights topics for which **further information** is available on website www.station-ernaehrung.de in the category DGE Quality Standard.
- › Italic words or terms are technical terms that are defined in more detail in the **glossary**.
- › The term **patient** is used synonymously for persons to be cared for in hospitals as well as in rehabilitation clinics.
- › The term **clinic** includes both hospitals and rehabilitation clinics.
- › When the text addresses **kitchens**, this term refers to kitchens in clinics as well as external kitchens, both in-house and externally operated. This applies synonymously to the employees in kitchens.
- › Catering in the DGE Quality Standard includes **oral nutrition** but not oral nutritional supplements like balanced powder supplements and ready-to-eat meals as well as enteral nutrition via tubes and parenteral nutrition. Corresponding information and recommendations are provided by the guidelines of the European Society for Clinical Nutrition and Metabolism (ESPEN) and the German Society for Nutritional Medicine (DGEM).



Further information:
www.station-ernaehrung.de
 Keyword: **Ernährungstherapie**





2

Development of quality clinic catering

This chapter explains what is defined as catering quality in the DGE Quality Standard. It shows how those responsible may continuously develop the catering quality in clinics and thus improve their offer. In addition, aspects that contribute and support this process are described. For all clinics and caterer that already realise the DGE Quality Standard, it is also recommended to take a regular look at the current meals in order to identify possible deficiencies and initiate improvement strategies.

2.1 Quality of clinic catering	15
2.2 Interface management	18
2.3 Staff qualification	20
2.4 Feedback management	22
2.5 External quality control	23
2.6 Specification for tenders	23

2.1 Quality of clinic catering

Clinic catering according to the DGE Quality Standard promotes the patients' health and is sustainable. Patients should be able to participate in clinic meals and their needs and wishes should be taken into account.

Thus, the criteria of the DGE Quality Standard describe an ideal catering situation. Clinics may use them as orientation and benchmark for improving their catering service. Importantly, the persons responsible for catering should set priorities for criteria to be implemented first at their clinic.

DGE Quality Standard as part of the clinic's individual catering concept

The development of a catering concept is an important first step. Each clinic should develop its own concept. It defines clinic-specific demands on the catering, describes the meals and diets offered as well as the service and reflects the structures on site. As part of such a catering concept, the DGE Quality Standard defines the criteria for a health-promoting and sustainable diet and thus ensures that an appropriate offer is available for every meal. The question "Who is served where, when and how?" is therefore answered.

If the cafeteria is part of the catering concept for clinic employees, it may be based on the "DGE Quality Standard for Meals in Companies". Enjoyable and health-promoting meals for employees are a way of corporate health promotion to maintain performance and prevent illnesses. This way, the clinic directors express their appreciation for their employees and this may strengthen their loyalty to the clinic.

DGE Quality Standard – a quality development instrument

Through quality development, the catering might become the clinic's flagship. The persons responsible for catering should initiate a joint development process towards health-promoting and sustainable clinic catering. **With the help of the criteria defined in the DGE Quality Standard, all stakeholders are able to improve the quality of clinic meals gradually together.**

Clinic catering always involves employees from several divisions (see figure 1). In order to coordinate catering tasks, regular exchange through collaborative meetings and regular consultation is essential. This enables employees of different divisions to get to know the different perspectives and catering tasks, to ask questions and to address problems. This way, wishes, suggestions, specific expertise and creativity can be expressed; the patients' feedback from the feedback management may also be included. A future-oriented *catering concept* may be developed and implemented together.



Information on [company catering](http://www.jobundfit.de)
at: www.jobundfit.de

The collaborative, process-oriented quality development involves five steps that enable a continuous development towards health-promoting and sustainable meals. These are shown in figure 3. The DGE Quality Standard supports each of these steps.

ANALYSIS

In this step, the current catering situation – the **ACTUAL situation** – is examined. The catering, beginning with the presentation in the menu and ending with the dining atmosphere in the dining hall or the patient's room, as well as individual steps from planning to disposal and cleaning, are examined thoroughly. The checklist starting on page 76 helps to verify which criteria are already met by the clinic's catering and which are not.

Based on the analysis and description of the current catering situation, all stakeholders have the opportunity to discover which points are already implemented and what should and might be changed in the future. It is important that all stakeholders (see chapter 5) assess the situation and reflect on the conditions and structures prevalent at the clinic.

Checklist criteria on page 76 that have not been implemented in clinic catering so far may serve as **targets** for further quality development. It is recommended to prioritise and select those that could be implemented first. This way, it is possible to implement targets and the DGE Quality Standard gradually. The partial implementation of a criterion is also an important positive progress. For instance: if the

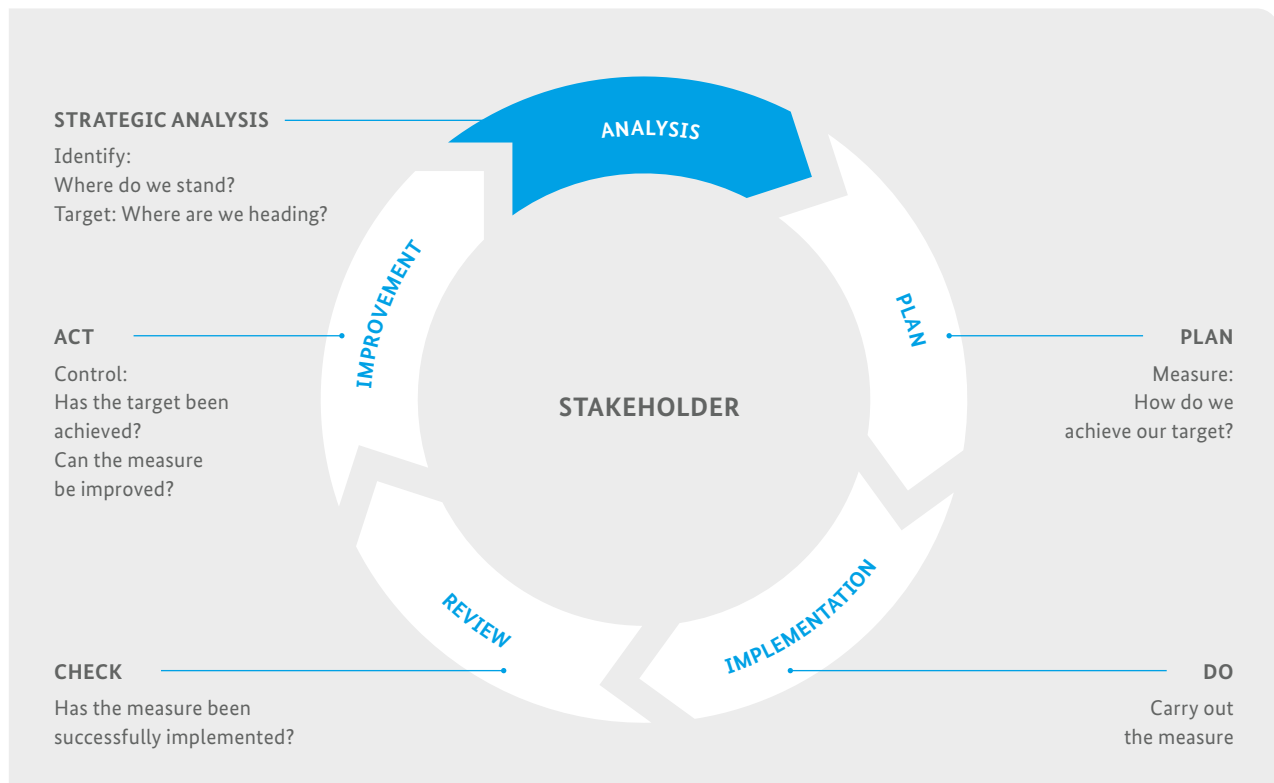


Figure 3: The five steps of collaborative, process-oriented quality development (modified according to Deming's life [PDCA model])

objective is to offer a meat dish at lunch only **three times a week**, while currently it is offered **daily**, initially reducing meat to **5 times a week** counts as an important quality improvement.

PLAN

Once the targets are defined, specific measures to achieve them might be planned together. **Which** measures should be **prioritised**, **who** should implement them and **when**, and **with whom** should she/he work together? Therefore, it is helpful to prepare a plan describing the measures as precisely as possible. For example, measures may include changes in the food offer and the preparation of dishes, or the remodelling of the dining room. Beforehand, all those involved should be thoroughly informed about the planned steps and the targets they are pursuing.

DO

Afterwards, the planned measures can be implemented. At the beginning of the new work process, structures, recipes or products are often unfamiliar for those involved. Therefore, the measures should be guided, and a contact person should be appointed for queries.

CHECK

Once the measures have been implemented, they are systematically reviewed and evaluated with the stakeholders. Could the measures be implemented as planned?

ACT

Has the chosen target been achieved? Are there possible improvements for the future implementation of the measures? Should other measures and targets be adapted?

These experiences form the foundation for a joint strategic analysis of the entire catering situation. The collaborative, process-oriented quality development is thereby repeated. Hence, it is possible to implement targets step by step and to continuously improve meals in agreement with all stakeholders.



The following criteria apply:

- A cross-divisional catering concept is in place.**
The catering concept clarifies the understanding of catering and contains criteria for the implementation of a health-promoting and sustainable catering offer. A cross-divisional catering concept should be part of quality management.
- All divisions are involved in quality development.**
Networking and continuous exchange between all those involved in catering, such as the catering commissioner, persons responsible for catering in each division, aim to jointly improve the catering quality. Involving employees from all divisions right from the beginning ensures transparency in the quality development process and expresses appreciation towards the employees. This can significantly increase the motivation to cooperate as well as the understanding and acceptance of changes.

2.2 Interface management

Health-promoting and sustainable clinic meals are a joint task in which several professions and groups of people participate (see figure 1). Interfaces are points at which one person or group of people complete their work process and passes the outcome to another.

To ensure that the joint goal is achieved, it is advisable to:

- › describe individual activities and work processes as precisely as possible (what, how, when, with what goal),
- › define competences and responsibilities as well as rules for substitutes for the work processes (who),
- › identify and regulate interfaces in work processes (who is responsible, who participates, to whom is information passed on).

Proper interface management improves the transfer of tasks, promotes communication and cooperation and ultimately saves time.

Examples for interfaces in clinic catering:

- › Nurses or service staff record the patients' food and beverage wishes according to their diet. Kitchen staff prepare the food and beverages in accordance with these requests. Serving staff hands out the food and beverages to the patients.
- › If necessary, nurses assist patients with their meals. If patients express praise or criticism, it is passed on to the kitchen. Nurses report possible irregularities in eating and drinking to physicians and *nutritionists* (see chapter 5.4.3).





Each clinic should have a catering commissioner for internal quality assurance and central coordination of the catering quality.

The catering commissioner

- › is the main contact person for catering,
- › coordinates catering by encouraging communication and exchange between the respective responsible persons for catering in the different divisions,
- › is responsible for the coordination and implementation of a joint cross-divisional catering concept,
- › represents the interests of patients through the feedback management system,
- › documents joint decisions on catering processes as operating procedures within the scope of quality management, thus making them transparent and ensuring smooth processes at the interfaces and
- › continuously stimulates quality development.



The following criterion applies:



A catering commissioner exists.

The large number of people responsible for catering in different divisions require central coordination. Catering commissioners are supported by the DGE Quality Standard and via information at www.station-ernaehrung.de.

2.3 Staff qualification

In order to provide health-promoting and sustainable meals, employees with different professional qualifications, each with their own input, are required. Since the DGE Quality Standard focuses on the “design of the meals”, recommendations for the professional qualifications of the catering management as well as kitchen, serving and customer service staff and the *nutritionists* are given below. The job profiles differ depending on the field of responsibility:

Catering Management

The catering management requires a specific professional qualification. This includes qualifications like:

- › (operations) manager of home economics,
- › home economist,
- › head chef,
- › cook,
- › *nutritionist* or dietician, if necessary, with additional business qualification
- › food service business economist.

Preparation and serving of meals

Staff skills and knowledge help to ensure consistent catering quality. Kitchen and service/distribution staff should therefore preferably have adequate vocational training. However, kitchen and service staff may also be employed without such qualifications, as long as they are instructed by qualified staff.

Employees who serve food contribute significantly to the meal’s acceptance through their appearance and their communication. They should be able to provide information about the offered meals, their composition and allergens, name individual components and point out the health-promoting and sustainable choice to patients. A friendly manner, communicative skills, a good comprehension as well as flexibility, empathy and willingness to help are therefore crucial.

Nutritionists are in charge of **meals according to diets with medical indications (therapeutic diets)**. Different persons may prepare them: chefs with the additional qualification “dietetically trained chef/DGE”, “dietetically trained specialist/DGE” or “certified dietary chef” (IHK), if the preparation follows standardised recipes with instructions and is planned and instructed by a *nutritionist*.

Further education and professional advanced training promote the staffs’ competence, update the knowledge and give confidence in the daily work. The catering manager should regularly attend training courses focused on nutrition and sustainability in order to put new insights into practice. Topics that are suitable for all catering staff are, e.g.:



- › basics of a health-promoting and sustainable diet,
- › preparation of “Cook & Chill” or “Cook & Freeze” offers (if used),
- › offering diets,
- › basic knowledge of allergen management,
- › ways to increase the percentage of *organically* grown food in mass catering,
- › feedback management along with
- › communication and interaction with the catered people and a respectful attitude towards them.



Further information:

www.station-ernaehrung.de

Keyword: [Fortbildungsangebote](#)

Mass catering staff carries a high responsibility regarding food hygiene. Regular instruction, e.g., on the Infection Protection Act, is obligatory for all employees who work with food (see chapter 6).



The following criteria apply for staff:

- A nutritionist is available for special questions about nutrition and nutritional therapy.**
A *nutritionist* should be available to discuss meals with patients and answer questions, especially in the case of diets that severely restrict the choice of food due to medical indications or where nutrition-specific expertise is required in the composition of the meal (e.g., diet for oncological diseases). In this way, even within the limits of the diet, the patients' individual wishes may be incorporated into the selection of meals.
- Employees know the meal requirements of the individual patients.**
Employees who receive meal requests and serve meals at the buffet, on the buffet trolley or on trays should be informed about the patients' diets and know the respective catering principles.
- Catering staff receive continuous training.**
Staff skills and knowledge help to ensure consistent catering quality.
- Ergonomic workplaces and workflows are in place.**
This includes, for example, back-friendly working heights, heat and noise protection as well as variety in tasks. Ergonomic workplaces and work processes maintain health, performance and satisfaction of employees.
- Employees are valued.**
Appreciation promotes satisfaction and motivation. Valuing employees is expressed through fair payment, open and objective communication and constructive interaction with each other.

2.4 Feedback management

Dealing professionally with praise and criticism – feedback management – contributes to the evaluation of measures and to set targets in a joint quality development. It is important that praise and recognition as well as wishes, complaints and suggestions may be voiced by all involved. Nevertheless, in mass catering it is certainly not possible to satisfy every wish of the patients, and all involved. Therefore, it is even more important to listen to all involved and to discuss wishes and possibilities in a constructive way, as well as to develop realistic solutions. This increases mutual understanding and the willingness to reach a consensus. Feedback management means also a continuous process that includes the following steps:

Step 1:

Receive praise and criticism

Feedback on meals is often unrequested and always an opportunity to improve the offer. Moreover, feedback should also be actively asked for at regular intervals. It is important to have the opportunity both to report appreciation and praise as well as to criticise and give suggestions for improvement in order to optimise processes. Often no negative feedback is equated with praise. Thereby, an opportunity to motivate employees is missed. Appreciation and praise may mean a lot, lack of praise can be frustrating. Possible ways are the personal dialogue in the patient's room, in the dining room or by telephone, as well as written or digital feedback, for example as questionnaires and/or post boxes. In addition to praise and criticism, the reasons behind them and specific suggestions for improvement should also be asked for. Patients appreciate the opportunity to personally influence the offered meals.

Step 2:

Document and evaluate feedback

All feedback should be systematically documented and evaluated. If necessary, interventions for improvement are planned together with those involved. Praise is passed on to the addressed catering staff members.

Step 3:

Implement interventions and inform about them

Adopted measures in response to the feedback and achieved results should be subsequently made visible to all. The employees are proud of their efforts and feel that their work is valued.



The following criteria apply for the feedback management:

- Suggestions regarding the meals and dishes on offer are received and passed on.**
Patients should be given the opportunity to express their wishes and criticism about the meals. These provide helpful suggestions for designing the catering to meet needs as far as possible and thus ensure good acceptance.
- Satisfaction with the meals on offer is regularly assessed.**
This may be done, for example, by distributing questionnaires or by setting up a mailbox for feedback.

2.5 External quality control

Whether the offered meals meet the set goals may be verified in an independent quality control. Usually, this is carried out by an external institution on the basis of different audit systems and audit criteria. In this way, persons responsible for catering ensure the quality of the offer and are able to demonstrate the performance publicly with an external seal of approval.



Further information:
www.station-ernaehrung.de
Keyword: **Externe Qualitätsüberprüfung**

2.6 Specification for tenders

When the clinic's catering is not organised and prepared by its own staff and the catering is outsourced, a specification must be established within the context of public tenders. This serves as the foundation for the tender process and defines the type and scope of the catering service. For the compilation of a specification, the DGE Quality Standard may serve as a reference. The more detailed the requirements like preparation methods, serving system or the use of qualified staff, the easier it is to compare different offers. It is not recommended to demand the implementation of the DGE Quality Standard in general, but to describe in detail which of the individual criteria have to be fulfilled. The specification is fundamental for the contract between the contracting authority (e.g., clinic/sponsor) and the contractor (e.g., caterer). It is recommended to write the specification supported by external professionals who might also assist in the tender process.



Further information:
www.station-ernaehrung.de
Keywords: **Ausschreibung und Vergabe**
and **Beratung und Coaching**





3

Principles of health-promoting and sustainable meals

One of the characteristics of a health-promoting and sustainable catering offer is which foods are used in the menu and how often. Corresponding criteria to support the planning of the offered food and beverages are listed in chapter 4.1. The basis for these criteria and how they are derived are described below.

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- | | |
|---|----|
| 3.1 Importance of health-promoting and sustainable meals | 25 |
| 3.2 Food groups – foundation for optimal choice | 28 |
| 3.3 Deriving criteria for a health-promoting and sustainable catering | 32 |

3.1 Importance of health-promoting and sustainable meals

We affect our health, quality of life, and well-being through what we eat and drink. A wholesome diet according to the recommendations of the German Nutrition Society (Deutsche Gesellschaft für Ernährung e.V. [DGE]) provides an adequate amount of energy and sufficient fluids. This diet ensures a balanced supply of the energy-supplying nutrients fat, carbohydrates and protein. Ingredients like vitamins, minerals, dietary fibre and phytochemicals are also contained in sufficient quantities. As a result, both *malnutrition* and overeating might be prevented. The wholesome diet is diverse and highlights the consumption of plant-based foods [4].

However, eating and drinking is more than just the intake of energy and nutrients. How we eat affects not only our own well-being, but also the well-being of present and future generations. The so-called Brundtland Report already characterised “sustainability” in 1987 as a devel-

opment “that meets the needs of the present without compromising the ability of future generations to meet their own needs” [5], p. 43. In 2015, the United Nations adopted the UN 2030 Agenda, containing 17 Sustainable Development Goals (SDGs) as key element. Based on different definitions of sustainable nutrition [6–9] the Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection [10] has formulated four central goals – health, environment, social aspects, animal welfare – for a more sustainable diet, which are explained in figure 4. This DGE Quality Standard follows these objectives.

Many foods we consume carry a significant footprint in terms of environment, climate, social aspects and animal welfare [10]. Increasingly, our food is produced in complex and global *value chains*. The food **value chain** covers the input factors for agriculture, the agricultural production itself, up to processing and consumption. Aspects of sustainability, like environmental impact, can be tracked along these chains (see figure 5). Therefore, the **entire life cycle** of a product must be considered in the environmental impact evaluation of food.

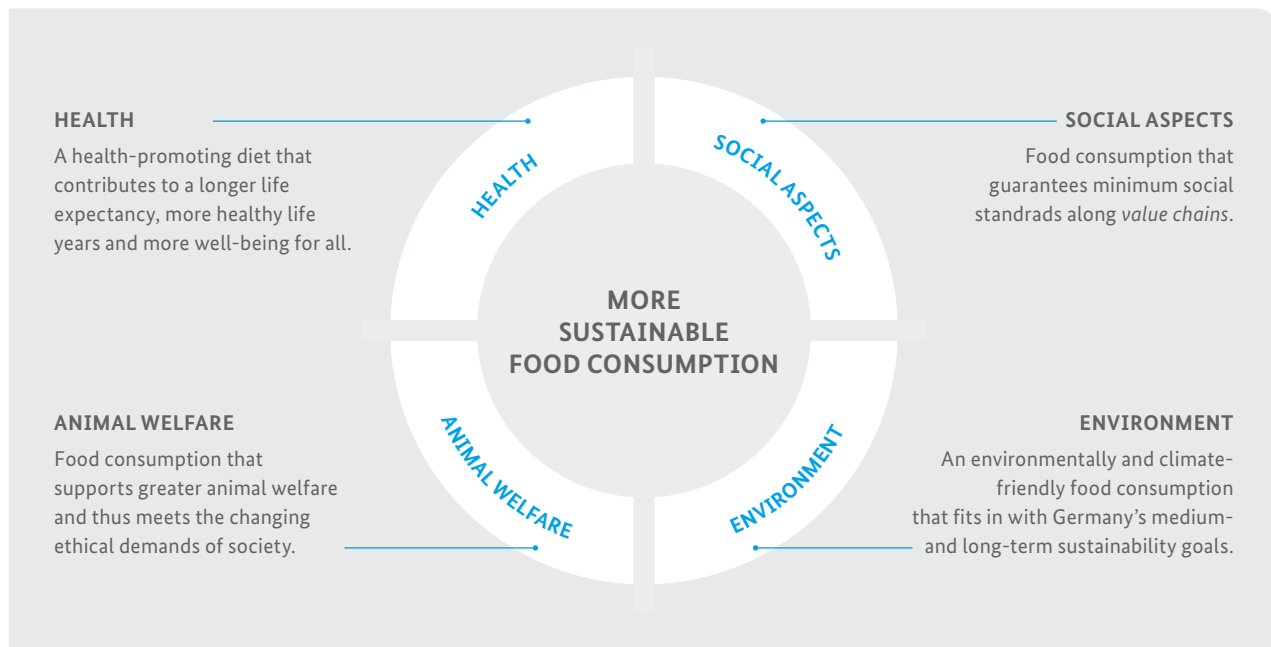


Figure 4: Goals of a more sustainable food consumption [10]

The contribution of food to *greenhouse gas emissions* is 25–30% worldwide [11–13]. The production of food generates emissions of greenhouse gases like carbon dioxide (CO₂), methane (CH₄) or nitrous oxide (N₂O), e. g., through tractors or harvesting machines, fertiliser for the fields, heated greenhouses and animal stables, food industry, through cooling or freezing food, its transport and ultimately the preparation of meals. In addition to *greenhouse gas emissions*, the increasing intensification of agriculture has numerous other impacts on the environment and, as an open system, affects soil, water, animals and plants. For example, intensive tillage can increase the risk of *erosion*, leads to soil compactness and may cause the loss of soil fertility in the long term [14]. Intensive animal husbandry partly carries the risk of resistances due to the excessive use of antibiotics [15]. The application of fertilisers and pesticides significantly affects the biodiversity of plants and animals [16], and intensive nitrogen fertilisation is responsible for groundwater contamination with nitrate [17].

Therefore, it is not sufficient to adjust nutrition and clinic meals to aspects of health promotion only. It is rather essential to design the diet in such a way that resources are not wasted.

Potential savings in *greenhouse gas emissions* in the field of school kitchens are around 40%, as calculations of the German project “KEEKS – Climate-friendly School Kitchens” show [18]. According to the data, about three quarters of the *greenhouse gas emissions* in school catering are caused by food selection. Around a quarter of the greenhouse gases are caused by kitchen technology, preparation and food waste. Comparable dimensions for clinics were confirmed in the NAHGAST project [19].

The production of animal-based foods like meat, eggs, milk and dairy products (especially those derived from ruminants like cattle, sheep and goats) cause particularly high *greenhouse gas emissions*. In contrast, the share of

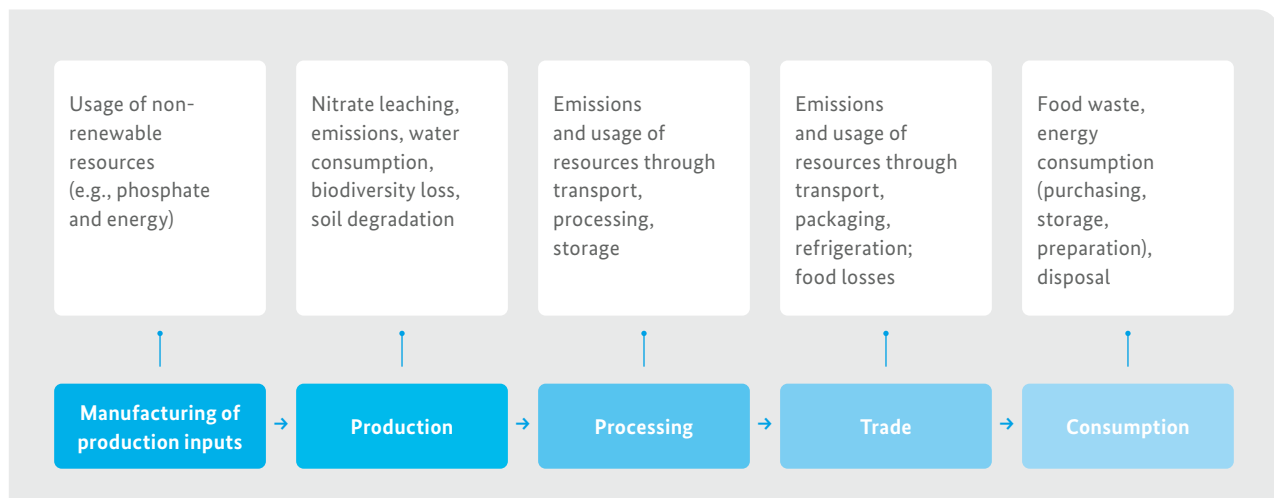


Figure 5: Key environmental impact along the *value chain* [10]

Table 1: Estimated *greenhouse gas emissions* from the production of selected foods [25]

plant-based foods		kg CO ₂ equivalent
grains, grain products, potatoes	1 kg rice, dry	3.0
	1 kg bulgur, dry	0.5
	1 kg whole-grain pasta, dry	0.4
	1 kg potatoes	0.4
vegetables and salad	1 kg lentils, dry	0.6
	1 kg carrots	0.3
	1 kg iceberg lettuce	0.2
fruits	1 kg mango	1.7
	1 kg apples	0.3
	1 kg walnuts	1.0
oils and fats	1 kg margarine	1.8
	1 kg rapeseed oil	2.7

animal-based foods		kg CO ₂ equivalent
meat, sausage, fish and eggs	1 kg beef	12.3
	1 kg turkey	4.2
	1 kg pork	4.2
	1 kg herring	2.9
	1 kg egg	2.0
milk and dairy products	1 kg cheese	5.8
	1 kg yoghurt	2.4
	1 kg milk	1.4
oils and fats	1 kg butter	9.2

plant products like grains, vegetables and fruits in *greenhouse gas emissions* is usually much lower. Generally, there are also differences within a food group. For example, vegetables grown in a greenhouse heated with fossil energy cause *greenhouse gas emissions* that are between 5 and 20 times higher than *seasonal* vegetables grown in unheated greenhouses or open fields [10].

Overall, in many cases the choice between different food groups makes the biggest impact on the environment, as differences between food groups are usually significantly higher than differences within a food or product group. For example, one kilogram of beef causes on average about twelve kilograms of CO₂ equivalents – whereas the same amount of lentils causes less than one kilogram of CO₂ equivalents [20].

Even the production of nutritionally significant foods like milk and dairy products, fish or nuts may have negative impacts on the environment. Nevertheless, these foods should be integrated into the diet in accordance with their recommended frequency and quantity due to their health-promoting impact.

Table 1 compares the estimated *greenhouse gas emissions* by example for the production of selected food, expressed in kilograms of CO₂ equivalent. The data shown provide orientation and may vary if conditions change.



The data shown illustrate that in clinic catering the composition of the menu with predominantly plant-based foods may make a major contribution to climate protection. Kitchen technology and food waste prevention also play a crucial role. Preparing, cooling and keeping ingredients and food warm may have a significant environmental impact. This is where infrastructure, production planning and staff behaviour are essential [18, 19, 21, 22]. Once food is discarded, all the steps from farm to fork – and thus the linked *greenhouse gas emissions* – were wasted. In addition, the disposal process itself produces small amounts of greenhouse gases.



Further information:

www.station-ernaehrung.de

Keywords: **Nachhaltigkeit** and **Lebensmittelabfälle vermeiden**

The “DGE Quality Standard for Meals in Clinics” combines aspects of health promotion and sustainability. In chapter 4, this DGE Quality Standard specifies minimum frequencies for foods and food groups that are particularly recommendable from a health promotion and sustainability perspective. These include plant-based products such as vegetables including legumes, *salad*, whole-grain products and fruits. Additionally, a maximum frequency is specified for foods and food groups like meat, as well as highly processed and deep-fried products. There is scientific evidence that limiting these products is beneficial in terms of nutritional physiology and sustainability [23]. Regarding food qualities, the DGE Quality Standard refers, as an example, to fish from sustainable fisheries or aquaculture and to meat that complies with certain animal welfare criteria (see chapter 4.2).

Furthermore, chapter 4 describes criteria for the design of a health-promoting and sustainable diet along the process chain – from planning and purchasing to disposal. In this context, the reduction of avoidable food waste plays an important role.

3.2 Food groups – foundation for optimal choice

The DGE recommendations for a wholesome diet – as presented in the “DGE Nutrition Circle”, the “German Three-Dimensional Food Pyramid” and the “10 Guidelines of the DGE for a wholesome diet” – are based on the “*D-A-CH reference values for nutrient intake*” and the DGE’s evidence-based guidelines regarding fat and carbohydrate intake [4, 24 – 26].

These recommendations serve as foundation for health-promoting and sustainable mass catering. The **food quality** – as **optimal choice** from each of the seven food groups of the DGE Nutrition Circle shown in table 2 – combines the recommendations from the models mentioned above. Thus, there are foods that should be consumed in different quantities and frequencies due to their nutritional composition, e.g., their *energy and nutrient density*, dietary fibre content and fat quality. For each food group, additional background information and aspects of sustainability are listed below, along with practical advice for the use in clinic meals.

Food group grains, grain products, potatoes



Grains and grain products like bread, *muesli*, pasta or rice are important sources of energy, carbohydrates and dietary fibre. *Pseudocereals* or products made from them also belong to this group. Whole-grain varieties offer a higher *nutrient density* and are more filling than products made from refined flours or polished rice. *Parboiled* rice and other processed grains also provide a higher nutrient content than the polished variety.

Potatoes are among the possible sources of carbohydrates with high *nutrient density*.

Rice is a side dish containing starch with a comparatively large climate impact, as its cultivation releases larger quantities of climate-damaging greenhouse gases than potatoes or grains. Therefore, rice should only occasionally be integrated into the diet or replaced by local alternatives like spelt or green spelt.



Practical advice: Food from this group should be offered in different ways, whether as oatmeal in *muesli* or couscous with vegetables. Offering bread made from finely ground whole-grains is a good way to use whole-grain products and is also suitable for patients with chewing difficulties.

Combination of foods from this group with legumes or animal-based products increase the meal's *protein quality*. Examples include the combination of potatoes with legumes, milk, dairy products or egg, like split pea or bean stew with potatoes and bread, jacket potatoes with herb quark, mashed potatoes with scrambled eggs or whole-grain bread with hummus.

Food group vegetables and salad

Vegetables and *salad* are rich in vitamins, minerals, dietary fibre and phytochemicals. Thus, they provide many nutrients, little energy and contribute to a satiety feeling.

Vegetables and *salad* are climate-friendly too – they usually cause comparatively low *greenhouse gas emissions*. In particular, *seasonally-regionally* produced vegetables and *salad* grown in open fields or in unheated greenhouses are especially climate-friendly and might be positive for social sustainability.



Legumes like beans, lentils and peas also belong to this food group. They provide the most protein of all plant-based foods and also a lot of dietary fibre. Therefore, they are a versatile component of the diet and a good meat alternative.

In terms of sustainability, legumes also have a lot to offer: During growth, the crops fix the nitrogen they need from the air, which is why less fertiliser needs to be applied [27]. Meals with legumes should therefore be a regular part of the diet. If these are combined with grain products, as in a lentil stew with a whole-grain roll, the *protein quality* of the meal increases.



Practical advice: The possibilities for preparing vegetables and *salads* are as great as their variety. Whether as *raw vegetable* sticks with dip, classic side dish for lunch, stew, vegetable casserole or patty – there are no limits for creative preparation. Fresh or frozen vegetables are the optimal choice.



Further information:

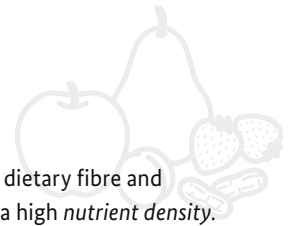
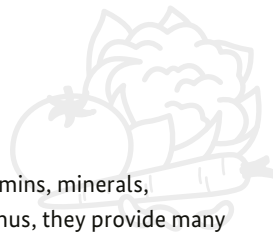
www.station-ernaehrung.de

Keyword: **Gemüse und Obst**

Food group fruits

Fruits are rich in vitamins, minerals, dietary fibre and phytochemicals and therefore have a high *nutrient density*.

Nuts are also part of the fruits group. Being important sources of nutrients, they are part of a health-promoting diet. 25 g nuts or oilseeds may replace one portion of fruit a day.



Practical advice: Fruits should be available fresh or as a frozen product, without added sugar or other sweeteners, offered in a variety of ways on the menu. Examples are fresh fruits for breakfast or snack, briefly steamed for a sweet entrée, as fruit puree in yoghurt or cut into small pieces in *muesli*. Nuts and oilseeds finely ground or as purred nuts, may be added to meals for patients with chewing and swallowing disorders. In the case of *malnutrition*, they are a good source to additionally fortify dishes with essential nutrients and energy.

Food group milk and dairy products

Milk and dairy products provide calcium, high-quality protein, iodine and vitamins A, B₂ and B₁₂. Regular consumption supports bone health and is also associated with a reduced risk of colon cancer. Cheese in particular contains a lot of calcium but compared to other dairy products often has a high fat content. Cheese should be offered regularly, and varieties with an *absolute fat content* of less than 30% should be preferred.

Practical advice: Dairy products may be combined in many ways with other foods, such as yoghurt with fresh fruit, milk in *muesli*, cheese as a bread topping or in casseroles.

Food group meat, sausage, fish and eggs

Meat provides high-quality protein as well as Vitamin B₁₂, selenium and zinc, among others. In addition, it is a source of well available iron. However, meat and especially sausage also contain unfavourable ingredients. They are rich in saturated fatty acids and can affect the concentration of certain blood fats. This is why lean meat is preferable. Sausage also contains a lot of salt. People who eat a lot of *red meat* and sausage also have a higher risk of colon cancer. For *white meat*, there is no relationship to cancer according to current knowledge.

Due to their ingredients as well as the high *greenhouse gas emissions* of animal-based foods – especially products derived from ruminants like cattle, sheep and goats – they should be moderately included in the diet.



Regarding meat, *white meat* from poultry should be the preferred choice, *red meat* and processed meat products should rarely – if at all – be on offer.

Practical advice: The meat component in dishes may be reduced in favour of the vegetable component. For example, the Neuland-Verein, the animal welfare initiative “Eine Frage der Haltung” and the “Kompetenznetzwerk Nutztierhaltung” of the Federal Ministry of Food and Agriculture (BMEL) advocate for meat from species-appropriate animal husbandry.



Fish provides high-quality protein. Fatty fish species, which include both freshwater and saltwater fish (see box), are rich in valuable long-chain omega-3 fatty acids. Sea fish is also a good source of iodine.

Good sources for Omega-3 fatty acids:
trout, herring, salmon, mackerel

Examples for iodine-rich fish:
cod, haddock, pollock



Practical advice: Today, many fish species are overfished. When buying fish, it is therefore important to look for fish from sustainable fisheries or aquacultures. The labels of the Marine Stewardship Council (MSC) and the Aquaculture Stewardship Council (ASC), for example, offer orientation.



**Further information:**

www.station-ernaehrung.de

Keyword: **Fisch**

Eggs are a good source of protein and fat soluble vitamins. At the same time, the yolk is high in fat and cholesterol. Based on current studies, no upper limit for egg consumption can be derived. In the context of a plant-based diet, however, an unlimited amount is not recommended (see table 2).

Food group oils and fats

Fat has twice as much energy as carbohydrates and protein, so oils and fats should be used consciously. In addition to the quantity of fat, the quality of the fat, e.g., the fatty acid composition, is of special importance for health. Oils and fats contain saturated, monounsaturated as well as essential polyunsaturated fatty acids and vitamin E.

Consuming less saturated fatty acids, which are mainly found in animal-based foods, has a positive effect. Instead, more foods with unsaturated fatty acids should be used. Good sources are, e.g., vegetable oils, margarine, nuts or fatty fish. This way, the risk of cardiovascular diseases may be reduced.

The preferred oil is rapeseed oil, a perfect all-rounder. It contains the lowest proportion of saturated fatty acids and at the same time a high content of monounsaturated and polyunsaturated fatty acids as well as vitamin E. The positive ratio of omega-3 to omega-6 fatty acids should also be highlighted.

Other recommendable oils with a notable content of omega-3 fatty acids are linseed, walnut and soybean oil. Olive oil with its high content of monounsaturated fatty acids is also a good choice. Margarine made from the above-mentioned oils has a higher content of unsaturated fatty acids compared to butter and thus a better fatty acid composition. Additionally, margarine has a significantly

lower impact on the environment [28, 29]. In contrast, coconut oil, palm (kernel) oil and palm (kernel) fat, as well as animal lard, contain large amounts of saturated fatty acids, which have a particularly unfavourable effect on blood lipids.

The cultivation of coconut oil, palm oil and palm fat is largely carried out in *monocultures* with significant effects on biodiversity and must therefore also be assessed as negative from an ecological perspective [30 – 32].

Practical advice: Rapeseed oil is multifunctional for cooking. It can be heated, offers neutral taste and is available everywhere. To promote flavour diversity, linseed-, walnut-, soy- or olive oil can be used for typical dishes or even *salads*.

Food group beverages

Fluids are important. The primary task of beverages is to supply the body with water. Water as well as unsweetened herbal and fruit teas contain no calories and are therefore highly recommended.

The *guiding value* for the drinking amount is approximately 1.25 litres per day for adults aged 51 to under 65 years. In some situations, the body needs more fluid, for example in very hot weather, or physical activity. Fever, diarrhoea, cardiac, or kidney diseases as well as medication like diuretics change fluid requirements, too.

Caffeinated beverages like unsweetened black or green tea and coffee are calorie-free beverages that add to the fluid balance. However, due to their caffeine content, they are not an optimal choice.

Avoiding bottled water contributes to climate protection. Tap water offers a climate-friendly and at the same time cost-saving alternative, as packaging materials and transport routes are no longer required.



Practical advice: Water should be available at all times in clinics. Fruit juice drinks, nectars, fruit juices and mixed milk drinks are not suitable thirst quenchers. They contain a lot of sugar and thus provide many calories. Likewise, milk and smoothies do not count as beverages because of their nutrient content.



Further information:

www.station-ernaehrung.de

Keyword: **Getränke**

3.3 Deriving criteria for a health-promoting and sustainable catering

The way recommendations for a wholesome diet translate into criteria for mass catering on a scientific basis is described below. Figure 6 illustrates this path in four steps, which are explained in more detail in the following text.

From the background ...

Basis for the derivation of criteria for health-promoting and sustainable catering, especially the food qualities and frequencies in chapter 4.1, are the scientifically based “D-A-CH reference values for nutrient intake” [26] and the evidence-based guidelines regarding fat and carbohydrate intake [24, 25]. The former specify amounts for the daily intake of energy and nutrients, including water and dietary fibre. These amounts are formulated for a total of

12 different age groups, each separately for both sexes. In addition, the food-related recommendations of the DGE form a basis, like the “DGE Nutrition Circle”, “The German Three-Dimensional Food Pyramid” and the “10 guidelines of the DGE for a wholesome diet”.

... to the theoretical derivation ...

Because of organisational and economic reasons, in mass catering it is not possible to provide meals whose energy and nutrient contents correspond to the respective age- and gender-specific reference values of the guests. Therefore, summarised values for the different living environments of mass catering were derived from the detailed “D-A-CH reference values for nutrient intake” [33].

The average age of patients in German hospitals is 55.3 years, in rehabilitation clinics 57.4 years [34]. Accordingly, the “D-A-CH reference values for nutrient intake” for the age group 51 to under 65 years were used for the catering of patients. To derive the *guiding value* for energy intake, the *physical activity levels (PAL)* 1.2 for hospitals and 1.4 for rehabilitation clinics were used in the age group mentioned. For each activity level, the *guiding values* of women and men were combined, and the average value (arithmetic mean) was calculated. A different approach was used for the derivation of the reference values for vitamin and mineral intake: If the values for men and women differed, the higher reference value was used in order to ensure a minimum intake for all.



If a patient group to be catered in the clinic deviates from the reference group mentioned, like geriatric patients, pregnant or breastfeeding women or children, the special D-A-CH reference values for the respective reference group should serve as a basis. If necessary, the activity level should be adjusted [33].

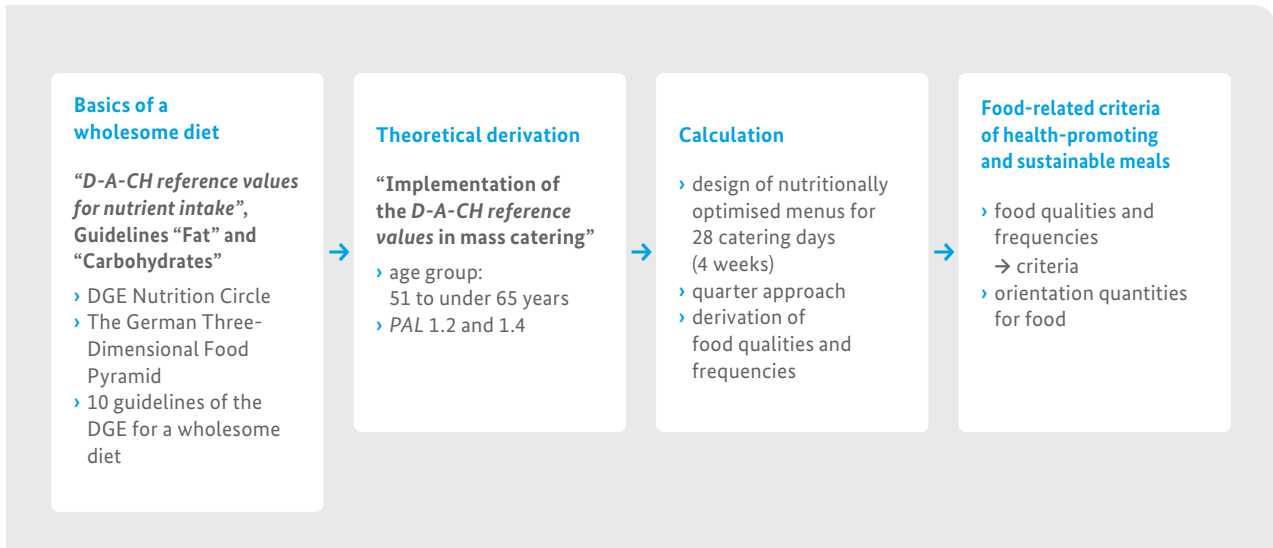


Figure 6: Path from the basics of a wholesome diet to food-related criteria for health-promoting and sustainable catering

... and calculation ...

Based on these principles, nutrient-optimised menus for both a mixed diet and *ovo-lacto-vegetarian* diet including breakfast, snacks, lunch and dinner for hospitals and rehabilitation clinics were composed. They are exemplary for four weekly menus respectively 28 catering days and considering the usual eating habits in Germany. The following aspects were taken into account:

- › reaching the derived *D-A-CH reference values* for mass catering for groups of people aged 51 to under 65 years,
- › *physical activity levels (PAL)* 1.2 and 1.4,
- › energy is distributed to the individual meals according to the so-called “quarter approach”: 25 % each to breakfast, lunch and dinner and 12.5 % of the *guiding value* for energy intake to each of the two snacks,
- › corresponding food qualities (see chapter 3.2),
- › “5 a day” campaign (at least three portions of vegetables and two portions of fruit),

- › with 90 % of the total energy, 100 % of the recommended reference values of nutrients (vitamins and minerals) are met, so that 10 % of the total energy may be allocated to foods with low *nutrient* and high *energy density*, like chocolate, jam, cake or ice cream.

... to food-related criteria for health-promoting and sustainable catering

Based on the nutrient-optimised menus for 28 catering days, corresponding quantities per day or per week were determined for each food group. These orientation quantities for foods create the basis for the derivation of corresponding food frequencies. Once these food quantities and frequencies are implemented in practice, and the defined food qualities are considered (see chapter 3.2), it can be expected that most likely all nutrients will cover the recommended values.

A photograph of two chefs in a kitchen. The chef in the foreground is smiling and looking down at something. The chef in the background is holding a clipboard and looking towards the camera. Both are wearing white chef hats and white jackets with black buttons.

4

Designing health-promoting and sustainable meals

This chapter provides assistance in the design and implementation of health-promoting and sustainable food and beverages. The process chain (see figure 2) is used to illustrate a menu for full catering that is tailored to the needs and requirements of patients. Optimally composed, this offers them the opportunity to make a healthy and sustainable choice for every meal. Enjoyment is important as the meals should be tasty and eaten with pleasure.

4.1 Planning	35
4.2 Purchase	45
4.3 Preparation	47
4.4 Service	50
4.5 Disposal and cleaning	51
4.6 Together and yet individual	54

The criteria in this chapter serve as a basis for all catering services of a clinic, correspondingly for all diets. Depending on certain catering principles of some diets, deviations from and additions to the criteria are necessary.

4.1 Planning



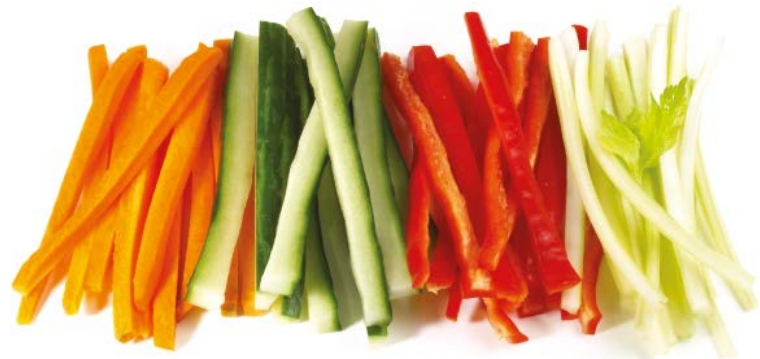
Creating health-promoting and sustainable meals begins with planning. In this process step, among other things, the range of food and beverages is compiled, new recipes are developed, or existing ones are adapted, and the length of the *menu cycle* is determined. Proper planning not only affects the nutritional quality of the meals but may also contribute to reducing stocks and food waste and therefore to sustainability and economic efficiency.

Avoiding overproduction and large amounts of food waste requires the most accurate determination of meal participant numbers and the amount of food needed. Particularly in clinics with a short-term stay, the quantities produced should be compared with the quantities currently needed, if possible, shortly before serving.

Furthermore, through a targeted choice of food the menu planning influences the sustainability of the offered meals. The *greenhouse gas emissions* of dishes may vary greatly. Meals with a high proportion of plant components (e.g. vegetables, grains) generally generate fewer greenhouse gases than those with a high proportion of animal-based products (e.g. meat, cheese, butter) [20].



Further information:
www.station-ernaehrung.de
 Keyword: **Nachhaltigkeit in der Gemeinschaftsverpflegung**



4.1.1 Food qualities and frequencies and other aspects of menu planning

Table 2 in this chapter supports the planning of a health-promoting and sustainable catering offer. Based on the seven food groups (see chapter 3.2), the second column of the table shows the **food qualities – the optimal food choice**. Included are foods that are highly recommended because of their nutritional composition.

Additionally, columns 3 and 4 of the table show **how often** certain foods or food groups must be used. Details for a mixed diet as well as for an *ovo-lacto-vegetarian* diet for seven catering days are presented here. For the food groups that should be offered several times a day, like vegetables or grain products, the daily frequency is also shown in brackets. If the recommended frequencies are observed, the food may be served flexibly between the meals.

Moreover, **minimum and maximum requirements** are formulated to show particularly recommendable or less recommendable foods from a nutritional and sustainable perspective. The criteria on the foods' qualities and frequencies allow a balanced and varied menu. If the criteria are consistently observed in menu planning, all nutrients are assumed to likely meet the recommended values in the sense of the "Implementation of the *D-A-CH reference values* in mass catering" [33].



By the way:

Foods not listed in the tables, like jam, honey or butter, are not included as optimal choices because of their composition. Nevertheless, it is possible to use them.

One important parameter in the context of menu planning, purchasing and serving is the portion size of individual components. They provide orientation on how much of the food should be offered from a nutritional point of view. In table 2, **food quantities** are shown as planning orientation. The quantities are already intake quantities, e.g., peeling and cooking losses are factored in. They provide an orientation but are not a fixed parameter and must be calculated individually by each clinic. The wishes of the patients should be particularly reflected. After all, a needs-based calculation is the precondition for responsible economic and ecological action.

The fourth column of table 2 shows the criteria for the *ovo-lacto-vegetarian* diet. In addition, the following aspects should be considered if meat and fish are not offered.

In the *ovo-lacto-vegetarian* diet, **iron** is one of the critical nutrients as the human body is able to absorb it better from animal-based than plant-based foods. Eating iron-rich plant-based foods like lentils, millet or oatmeal together

with foods rich in vitamin C, citric acid (e.g., from vegetables and fruits) or lactic acid (e.g., from sauerkraut) can improve the absorption of iron. Therefore, accordingly composed dishes, like peppers filled with lentils, a millet casserole with fruits, and rye rolls or sourdough bread with soups or *salads*, should be part of the *ovo-lacto-vegetarian* menu.

Fatty fish is the main source of **long-chain omega-3 fatty acids** and therefore an important component of the mixed diet. If no fish is consumed, e.g., in an *ovo-lacto-vegetarian*








diet, the human body is only able to produce these from the essential fatty acid alpha-linolenic acid to a limited extent itself. Therefore, foods with a high content of alpha-linolenic acid, like linseed oil, nuts or oilseeds, should be used more frequently. However, the consumption of fatty fish cannot be completely replaced. Nevertheless, criteria for the *ovo-lacto-vegetarian* diet are established in this DGE Quality Standard due to the increased demand to ensure the best possible offer.



Food qualities and frequencies for lunch on seven catering days: www.station-ernaehrung.de
category Gestaltung der Verpflegung



Table 2: Food qualities and frequencies for a health-promoting and sustainable catering on seven catering days

food group		food qualities – optimal choice
grain, grain products, potatoes		<ul style="list-style-type: none"> › whole-grain products › <i>pseudocereals</i> › <i>muesli</i> without sugar or sweeteners › potatoes, raw or precooked › <i>parboiled</i> rice or brown rice
vegetables and <i>salad</i>		<ul style="list-style-type: none"> › vegetables, fresh or frozen › legumes › <i>salad</i>
fruits		<ul style="list-style-type: none"> › fruits, fresh or frozen, without sugar or sweeteners › nuts (unsalted) and oilseeds
milk and dairy products		<ul style="list-style-type: none"> › milk, plain yoghurt, buttermilk, sour milk, kefir: max. <i>fat content</i> 3,8% › quark: max. <i>fat content</i> 5% → each without sugar or sweeteners › cheese: max. <i>fat content</i> 30%
meat, sausage, fish and eggs ¹		<ul style="list-style-type: none"> › lean muscle meat › meat and cold cuts: max. 20% fat
oils and fats		<ul style="list-style-type: none"> › rapeseed oil › linseed-, walnut-, soybean-, olive oil › margarine made from the oils mentioned
beverages		<ul style="list-style-type: none"> › water › fruit and herbal tea → each without sugar or sweeteners

1 There is no recommendation on the number of eggs to be consumed. In the nutrient-optimised meal plans, approx. 60 g for PAL 1,2 and 70 g for PAL 1,4 (mixed diet) or 110 g for PAL 1,2 and 130 g for PAL 1,4 (*ovo-lacto-vegetarian* diet) of eggs per week were calculated.

food frequencies for seven catering days

orientation values for food quantities on seven catering days per patient each for PAL 1.2 and 1.4

mixed diet**min. 21 x (min. 3 x daily)**

PAL 1.2: ca. 2,100 g, PAL 1.4 ca. 2,500 g

thereof:

- › min. 14 x whole-grain products
- › max. 2 x potato products

21 x (3 x daily)

PAL 1.2: ca. 2,800 g, PAL 1.4 ca. 3,100 g

thereof:

- › min. 7 x as raw vegetables
- › min. 1-2 x legumes

PAL 1.2: ca. 150 g, PAL 1.4 ca. 160 g

One portion may be offered daily as vegetable juice or smoothie

14 x (2 x daily)

PAL 1.2: ca. 1,700 g, PAL 1.4 ca. 1,900 g

thereof:

- › min. 7 x fresh or frozen, without sugar or sweeteners
- › min. 3 x nuts or oilseeds

PAL 1.2: ca. 70 g, PAL 1.4 ca. 90 g

One portion may be offered daily as fruit juice or smoothie

min. 14 x (min. 2 x daily)

PAL 1.2: ca. 1,900 g, PAL 1.4 ca. 2,200 g

max. 3 x meat/sausage for lunch

- › thereof: min. half of the offer lean muscle meat

Total in all meals in seven catering days:

PAL 1.2: ca. 320 g, PAL 1.4 ca. 380 g

1-2 x fish

PAL 1.2: ca. 150 g, PAL 1.4 ca. 170 g

- › thereof: min. 1 x fatty fish

rapeseed oil as standard oil

PAL 1.2: ca. 170 g, PAL 1.4 ca. 210 g

beverages are available at any time

min. ca. 9l

ovo-lacto-vegetarian diet**min. 21 x (min. 3 x daily)**

PAL 1.2: ca. 2,100 g, PAL 1.4 ca. 2,500 g

thereof:

- › min. 14 x whole-grain products
- › max. 2 x potato products

21 x (3 x daily)

PAL 1.2: ca. 3,300 g, PAL 1.4 ca. 3,700 g

thereof:

- › min. 7 x as raw vegetables
- › min. 2 x legumes

PAL 1.2: ca. 210 g, PAL 1.4 ca. 220 g

One portion may be offered daily as vegetable juice or smoothie

14 x (2 x daily)

PAL 1.2: ca. 1,700 g, PAL 1.4 ca. 1,800 g

thereof:

- › min. 7 x fresh or frozen, without sugar or sweeteners
- › min. 3-4 x nuts or oilseeds

PAL 1.2: ca. 80 g, PAL 1.4 ca. 100 g

One portion may be offered daily as fruit juice or smoothie

min. 14 x (min. 2 x daily)

PAL 1.2: ca. 2,200 g, PAL 1.4 ca. 2,400 g

omitted in an ovo-lacto-vegetarian diet¹**rapeseed oil as standard oil**

PAL 1.2: ca. 180 g, PAL 1.4 ca. 220 g

beverages are available at any time

min. ca. 9l



The selection of foods and their frequency of use listed in table 2 provides a framework based on scientific principles. Within this framework, it is possible to design the catering offer in a varied and creative way or to optimise popular dishes. The use of whole-grain products, legumes or the offer of a popular vegetarian dish like pasta casserole instead of a meat dish helps to improve the meals.

Optimising means: Changing a dish by substituting foods in such way that the original character still persists while the *nutrient density* increases. Optimisation can also be achieved by supplementing individual components (e.g. *salad*).



In addition to the criteria for using food qualities and frequencies in table 2, the following additional criteria should be considered when planning a varied, health-promoting and sustainable meal offer:

Ovo-lacto-vegetarian options are available every day for every meal.

The patients' wishes can be met, for example by offering an *ovo-lacto-vegetarian* diet or an *ovo-lacto-vegetarian* dish at lunchtime. Popular dishes without meat and fish are always enriching the menu, even for patients who do not follow a vegetarian diet. In case of an *ovo-lacto-vegetarian* diet, it must be ensured that the same variety of choices is available at all meals as with the mixed diet. Simply reducing the meat or fish components of the latter is not sufficient enough for a health-promoting and sustainable offer.

Local foods are preferred in the menu.

Vegetables and fruits from Germany and other EU countries generally have fewer pesticide residues than products from non-EU countries [35]. By using *seasonal* and *regional* food, long transport routes might be avoided, energy consumption and costs reduced, and at the same time the local economy may be supported.

Seasonal and regional vegetables and fruits are included.

Apart from having a positive effect on the environment, this also avoids or shortens storage times and longer transport distances. *Seasonal* products also give patients a feeling of *seasonal* orientation. Out-of-season products are transported long distances to Germany and/or produced in heated greenhouses. This costs energy and releases greenhouse gases.



Further information:

www.station-ernaehrung.de

Keyword: *Saisonale Lebensmittel*

Grains, grain products and potatoes are offered in varied ways.

When planning the menu, this food group allows for variety. In addition to potatoes, pasta and rice, spelt, green spelt, bulgur and millet may also be prepared in different ways.



... furthermore:

- Deep-fried and/or breaded products are used at most twice in seven catering days.**
 Deep-fried and/or breaded components like croquettes, battered vegetables, breaded schnitzels, chicken nuggets or fish fingers absorb larger amounts of fat during preparation. This category also includes dishes that are fried while floating in fat, like potato waffles or pancakes.
- Industrially produced meat substitutes are offered for lunch no more than once in seven catering days.**
 This includes highly processed, ready-to-cook products like “sausages”, “schnitzel” or fried patties based on soy, tofu, lupine, mushrooms or milk as well as seitan. Tofu as well as pickled tofu that is not further processed does not count as an industrially produced meat substitute in this context.
- Beverages are available at any time.**
 Drinking water should be available and offered at all times. Tap water offers an easily available and ecologically recommendable option, e.g., provided in patients’ rooms or through self-service water dispensers in hallways or common rooms.
- The lunch menu cycle is repeated after four weeks at the earliest.**
 The *menu cycle* should be as long as possible to ensure variety in the menu. Within a week the same components, like potatoes or carrots, are possible, but should be prepared differently and combined with other components in a varied way.
- The dishes are colourful, and the composition varies.**
 As early as the planning stage, a colourful, appetising composition of the dishes or components should be kept in mind.
- The patients’ wishes and suggestions are considered in the menu planning as far as possible.**
 The patients’ feedback should be reflected in the planning of the menu and the recipes (see chapter 2.4). Offering popular dishes and menu components contributes to the acceptance of the catering offer.
- Culture-specific, regional and religious eating habits are taken into account in the planning.**
 If these aspects are respected, the patients may identify themselves to a certain extent through the food. Themed weeks addressing traditional food from different countries or regions, special offers on holidays or major events (European and World Championships, cultural events) are particularly suitable for this purpose.
- Snacks are available at any time.**
 Patients should receive a snack outside of mealtimes if they wish, because meal rhythms vary from person to person and may differ, especially during illness. In addition, snacks may be indicated for nutritional therapy purposes.



... furthermore:

- Certain animal-based and plant-based foods are not used for especially vulnerable groups due to possible contamination with pathogens.**

Persons with a compromised immune system or pregnant women for example should not consume raw milk products, soft cheeses with a surface smear, raw eggs, fresh ground pork, steak tartare or spreadable rapidly matured uncooked sausages (e.g., fresh Mettwurst). Sprouts and frozen berries must be heated before consumption [36].



Further information:

www.station-ernaehrung.de

Keyword: **Lebensmittelsicherheit**

- Alcohol is not on offer.**

In this way, possible interactions with medication are ruled out.

Additional criteria for the planning process are listed in chapter 4.6.

4.1.2 The use of *convenience food* in mass catering

The use of *convenience food* is common practice in mass catering. *Convenience food* is classified according to the degree of processing. The range of industrial *convenience food* extends from low to high processed: low-processed products are, e.g., pasta as dry products or pre-cut *salads*, frozen vegetables and fruits, as well as dried fruits.

Those foods that have undergone several processing steps are referred to as high processed products. They include ready-made menu components like breaded schnitzels, spring rolls, meat substitutes, classic sauces and dressings (dry or wet products) or ready-made entrées like frozen lasagna or pizzas as well as ready-made soups. Depending on the product group, they may have a high content of sugar, fat, especially unfavourable saturated fatty acids, and salt. Numerous processing steps require additional resources like energy and water. The packaging of *convenience food* also increases the amount of packaging waste.

The German Federal Ministry of Food and Agriculture initiated “The National Reduction and Innovation Strategy: Less sugar, fats and salt in processed foods” in 2018 with the goal of reducing the content of sugar, unfavourable fats and salt as well as the energy content in processed foods. As part of the strategy, the food industry committed to reduce the sugar, fat, salt and/or calorie content in products by 2025 with the help of concrete targets [37].



Further information:

www.station-ernaehrung.de


Keyword: **Zucker, Fett, Salz**



When using *convenience food*, the following criteria apply:

- Products without palm (kernel) fat, palm (kernel) oil or coconut fat are preferred.**

The mentioned fats contain large amounts of unfavourable fatty acids and are therefore not recommended from a nutritional perspective. If products with palm oil are used, be sure to use only those made from sustainably certified palm oil. Products with rapeseed-, walnut-, linseed-, soybean- or olive oil should be preferred.

-  **Further information:**
www.station-ernaehrung.de
Keyword: **Palmöl**

- Unprocessed or low-processed products like fresh or frozen vegetables and fruits, meat or fish, are preferred to be processed further on site.**

Due to the higher nutrient content, for vegetables and fruits, fresh or frozen products are preferred to canned products. From an environmental perspective, unprocessed or low-processed products are also favourable. A product consumes more resources the more processed it is.

- High processed products are always combined or supplemented with low processed products/ components.**

Ready-to-cook vegetable patties for example may be combined with boiled potatoes and *salad* made from *raw vegetables* with home-made dressing.

- Products with a low content of sugar, fat, saturated fatty acids and/or salt and a low energy density are selected.**

There are significant differences in the sugar, fat, saturated fatty acid, salt and energy content of *convenience food* within the product groups. Therefore, products should be carefully chosen and those of them that are considered to be more favourable from a nutritional perspective should be preferred. Due to the differences between the various product groups, it is not possible to give generally valid recommendations for maximum contents of sugar, fat and salt. This requires an individual look at the product groups. The document “Evaluation of selected *convenience foods* in mass catering and recommendations for optimisation” provides assistance for evaluation of selected *convenience foods* [38].



4.1.3 Menu

Similar to the way a business card contains all important information about a person, the menu should also transparently present all relevant information about the meals. It is source of information for patients and employees and represents the kitchen's flagship. Legal aspects must be considered when designing the menu. Chapter 6 provides background information.



When designing and providing the menu, the following criteria apply:

- The current menu is accessible in advance on a regular and barrier-free basis.**

To allow patients and employees to inform themselves regularly about the catering offer, the menu is available in advance (e.g., digitally or on display). It is handed out in case of immobility or communicated in case of visual impairment.

- Allergens are labelled or information is provided verbally.**

Allergens must be labelled in accordance with the national Food Information Implementing Regulation (Lebensmittelinformations-Durchführungsverordnung, [LMIDV]) (see chapter 6). Allergen labelling requires preparation according to a fixed recipe with regularly updated product specifications.

- Information is provided on additives that require labelling.**

Which additives have to be labelled is defined EU-wide by Regulation (EC) No 1333/2008 and nationally for loose food in the Regulation on food additives (Lebensmittelzusatzstoff-Durchführungsverordnung [LMZDV]) (see chapter 6).



Further information:
www.station-ernaehrung.de
 Keyword: **Kennzeichnung**

- Food is named clearly.**

When using non-standard or ambiguous names, e.g., fantasy names like “Autumn Pan Feast”, non-German language indications like “Ratatouille” as well as general names like “vegetable stew” patients can only assume which dishes or components are meant. Therefore, it is important that the main ingredients of the dish are indicated on the menu. This also applies to classic garnishes like “Gardener’s style” or “Hunter’s style”.

- For meat, sausages and fish, the animal species is named.**

It is easier to choose when the animal species is known. This may also be important for religious reasons.

- If nutritional values are declared, the legal requirements are observed.**

The declaration of nutritional values on the menu is voluntary. If the nutritional values are declared, the requirements of the Regulation on the provision of food information to consumers (Lebensmittelinformationsverordnung, [LMIV]) must be observed (see chapter 6).

- Several menu lines are clearly presented.**

The choice of components within a menu line or a meal should be obvious.

4.2 Purchase

Planning

Purchase

Preparation

Service

Disposal & cleaning

In addition to the planning of food and beverages, purchasing also has a significant influence on nutritional and sustainable aspects.

For purchases the following criteria apply:

- Organic food is used.**
Organic food contains few pollutants and residues. In addition, in terms of environmental protection and *resource conservation*, *organic farming* has a number of advantages compared to conventional farming. Examples include soil and water protection through avoiding synthetic chemical fertilisers, reduced use of antibiotics in animal husbandry, less pollution of the environment with pesticides and therefore positive effects on biodiversity [20, 39]. The Federal Government's "Strategy for the Future of *Organic Farming*" formulates the goal of increasing the share of organic products in catering services to at least 20% [40].
- Fair trade products are used.**
Purchasing fair trade food like nuts or bananas contributes to securing a fair income for people in producing countries as well as providing better working and living conditions. This applies as well to direct purchasing agreements with producers.
- Fish is purchased from sustainable fisheries.**
The Marine Stewardship Council and Aquaculture Stewardship Council labels, as well as organic labels like Bioland or Naturland, provide orientation when purchasing fish.

The guideline "On the way to more sustainability in company catering" a publication of the project "NACHHALTIG B|UND GESUND" shows ways to increase the organic share in mass catering even with a fixed and limited budget [41].



Further information:
www.station-ernaehrung.de
Keyword: **Ökologisch erzeugte Lebensmittel**



Further information:
www.station-ernaehrung.de
Keywords: **Fisch** and **Nachhaltigkeit**



... furthermore:

Meat from species-appropriate animal husbandry is offered.

Species-appropriate animal husbandry is promoted, for example, by the Neuland-Verein or the animal welfare initiative “Eine Frage der Haltung” of the Federal Ministry of Food and Agriculture. If it is not possible to purchase only meat from species-appropriate animal husbandry for economic reasons, e.g. the offer may be limited to individual dishes.



Further information:

www.station-ernaehrung.de

Keyword: **Nachhaltigkeit**

Environmentally friendly packaging is preferred for all foods.

In order to contribute to the reduction of packaging waste, food in disposable packaging should be avoided and instead reusable packaging in bulk containers preferred. When purchasing it is recommended to look for recyclable, mono-material packaging.

The first-in-first-out principle applies.

Food that has a shorter shelf life or was stored first should be consumed first. This helps to use food before it spoils and contributes to wasting less food.



4.3 Preparation

Planning

Service

Preparation

Service


Disposal & cleaning

Apart from the food choice, the way meals are prepared and the time they are kept warm have an impact on the nutritional and sensory quality. Selecting and using kitchen equipment in a thoughtful way might also contribute to a higher level of sustainability.

 The following criteria to the preparation of food apply:

- Recipes, if required with preparation instructions, are used.**

With recipes, consistent food quality is ensured, even with staff turnover. They simplify the preparation process and provide a reliable basis for calculating products as well as for a functioning allergen management. Proven and optimised recipes additionally help avoiding food waste.


-  **Recipes and menus are available at:**
www.station-ernaehrung.de category **Rezepte**

- Sugar is used sparingly.**

Sugar-sweetened foods and beverages increase the risk of caries, overweight and *obesity* as well as secondary diseases like type 2 diabetes mellitus. The addition of sugar and alternative sweeteners like honey or fruit syrups should therefore be kept to a minimum. To get used to a less sweet taste, a gradual reduction in recipes is recommended. Instead of sugar, the sweetness from fresh or frozen fruits is often sufficient enough.

- Fat is used consciously.**

Due to its high energy content and differences in composition, fat and high-fat foods should be used consciously, e.g., in moderate amounts and preferably in the form of high-quality vegetable oils. Dairy products with a high fat content, like high-fat cheeses, crème fraîche, sour cream or sweet cream, should only be used in low quantities when preparing dishes like casseroles, dressings, sauces or desserts.

-  **Further information:**
www.station-ernaehrung.de
Keywords: Zucker, Fett, Salz

- Iodised salt is used, it is salted sparingly.**

Too much salt in food increases the risk of high blood pressure and thus cardiovascular diseases. The guidance level for table salt intake for adults is 6 g per day [42]. Foods like bread, sausage and cheese already contain larger amounts of salt, so there is only a small amount left to add. In order to promote the acceptance of low salt foods, the addition of salt may be reduced slowly and gradually, and more herbs and spices may be used instead.



... furthermore:

- Herbs (fresh, frozen, dried) and spices are used in a variety of ways.**
Herbs and spices don't simply help to save salt, they may also create a greater variety of flavours.

- Nutrient-preserving and low-fat cooking methods are used.**
In addition to appearance, taste and texture, the cooking method also influences the nutritional quality of the food. To keep losses of vitamins and minerals to a minimum, vegetables and potatoes should be cooked without or with little fat and water by sautéing, steaming, or grilling.

When preparing meat, sautéing, roasting, stewing, grilling and low-temperature cooking in little fat are among the low-fat cooking methods. For fish, these are steaming, sautéing, grilling and short frying in low fat.

- Cooking periods are kept as long as necessary and as short as possible.**
Extended cooking results in unnecessary vitamin losses and additional energy consumption, while appearance, taste and texture of the food also suffer. If vegetables and fruits are pureed afterwards, a short cooking period is also sufficient.
- Keeping heated food warm for a maximum of three hours.**
The longer the food is kept warm, the more heat-sensitive vitamins are lost, and the food appearance, taste and texture suffer. Keeping food warm for a longer period of time also consumes additional energy. According to

DIN 10508:2019-03 [43] and the “Hygiene rules in the catering sector” of the Federal Institute for Agriculture and Food and the Federal Institute for Risk Assessment [44] the warm-keeping period, e.g. the time between the end of the cooking process and serving of the meal to the last guest, should be maximum three hours long. If a three hour warm-keeping period is not feasible, the food must be cooled down immediately after preparation and regenerated in batches before serving, according to DIN 10536:2016-03 [45].

- The warm-keeping temperature of heated food is at least 65 °C.**

To protect food from spoiling and minimise the risk of foodborne infection or poisoning, the minimum temperature for keeping food warm is 65 °C according to DIN 10508:2019-03. This applies to storage as well as to transport and serving [43].



Further information:

www.station-ernaehrung.de

Keyword: Warmhalten und Regenerieren

- Chilled food is stored at a maximum of 7 °C.**

Chilled foods like *salads* or desserts can also spoil easily. Therefore the Federal Institute for Agriculture and Food and the Federal Institute for Risk Assessment [44] recommend a maximum storage, transport and serving temperature of 7 °C, similar to the DIN standard [43]. Until serving, chilled food should be cooled accordingly and consumed immediately after serving.



✓
... furthermore:

Resource-efficient kitchen appliances are used.
Kitchen appliances differ widely in their energy and water consumption. Gas and induction appliances are usually very efficient. The size of the appliances should be chosen according to the amount of food to be prepared. Too large appliances consume unnecessary energy and water. In addition, for energy-intensive processes like (deep) cooling or dishwashing, the use of energy-efficient appliances is advisable. Replacing old models with new ones can amortise in a relatively short time [18].

Appliances are only turned on during operating times.
Appliances should not be operated longer than necessary in order to save energy. For this purpose, the power-on times of all kitchen appliances can be compared with the actual needed times of use and adjusted accordingly [46]. In addition, in energy-intensive processes like (deep) freezing or dishwashing, it is important to ensure efficient utilisation of the appliances. The efficient loading of dishwashers is for example a way to save energy [18].



4.4 Service

Planning

Purchase

Preparation

Service

Disposal & cleaning

Catering does not end at the kitchen door – only when the meal is handed over to the patients, it reaches the guest. Thereby, the presentation of the food components, no matter whether it takes place in the kitchen or later by the serving staff, as well as the sensory quality of the meal are of great importance for the meal to be accepted. The service is an important interface between the kitchen and the patients. Here, patients receive information, have the opportunity to give feedback and express wishes about what is being offered or about portion sizes. Feedback that serving staff receive from the patients and pass on to the

kitchen is again helpful and an important information for planning.

This chapter provides criteria on how to design the serving situation, e.g., by presenting the food in an appealing way on the plate or at the buffet. The warm-keeping periods and temperatures mentioned above also play an important role in serving. In addition, friendly and competent communication with the patients in the sense of health-promoting and sustainable meals can contribute significantly to an appropriate choice.

The following criteria are to be considered for service:

Proper timing between kitchen and serving is realised.

Good organisation or regeneration of food in batches, for example, allow for short warm-keeping periods. This also helps to avoid food waste. For longer transport routes, good coordination with logistics is crucial.

Serving staff is informed in detail about the current menu.

This includes portioning during serving as well as pre-portioning in the kitchen. Employees who portion or serve food know the meal components, the calculated portion size or number of pieces and which components may be exchanged. Practically speaking, a short consultation between the kitchen and the serving staff is beneficial. This way, the

serving staff keeps track, is able to advise patients at the buffet or buffet trolley, respond to their wishes and, if necessary, reorder components. Ladle plans and portioning aids support the serving of calculated quantities.

Patients are given opportunities to influence portion sizes.

If patients are able to express their wishes regarding portion sizes or independently measure out portions, this affects their satisfaction as well as the quantities of returned food positively. Regularly comparing the served with the calculated quantities helps to plan them accurately. By regularly recording the reasons for the patients' food returns, the kitchen is able to avoid food waste.



... furthermore:

- **Components of the health-promoting and sustainable meal along with the calculated individual quantities are communicated to the patients.**
- **Questions about a wholesome diet and food intolerances are answered.**

Particularly in the case of self-service, sample plates and the allocation of corresponding ladles or portion trays provide orientation for the patients. Staff members who ask for menu requests in patients' rooms or at the serving counters may verbally inform about the offer.

At least one responsible person is appointed for answering detailed questions about the dishes. Basically, the offer of health-promoting and sustainable meals should be known and supported throughout the team. This implies a positive attitude of the staff towards the food served to the patients. All serving staff should be trained and able to provide information. Further aspects on this topic are explained in chapter 4.6.1 and chapter 6.

4.5 Disposal and cleaning

Planning

Purchase

Preparation

Service


Disposal & cleaning

After serving food and beverages, it is worth looking at the non-regenerated components, the returned food from the food counter and the food waste generated in the dishwashing room. As far as possible, the returns per component should be measured over a period of time. The results help to reflect on and, if necessary, adjust the menu planning, the procedure and organisation of ordering, purchasing, production, the presentation of the meals as well as their calculated quantities. All these are starting points to avoid overproduction and food waste. While non-regenerated components can be re-integrated into the menu the following day as long as maintaining the cold chain, returned food from the food counter or dishwashing room have to be discarded. The resource-saving handling of food and the avoidance of food waste is an important

aspect of calculation, menu planning and final disposal and should also be included in the catering concept.



In order to raise patients' awareness on this topic, waste prevention strategies are important. This may result in activities like the introduction of a waste barometer or a patient survey on portion sizes. In addition, for interpreting the returned food, good communication between service and patient as well as between service and kitchen is of great importance. In the kitchen, there is often a lack of information about the causes of the leftovers. Was the portion size not appropriate? Did individual components not taste good? Was the mealtime too short? By systematically collecting this information and passing it on to the kitchen, they are able to react accordingly to the food returns [47].



Measuring food waste is a simple method to identify potential savings. It is worth making the (alleged) effort, as measuring offers the possibility of saving costs for purchase, disposal and unnecessary labour!



Further information:

www.station-ernaehrung.de

Keyword: [Lebensmittelabfälle vermeiden](#)



The following criteria apply to the disposal of waste:

- Returned dishes are recorded separately by meal and component and the outcomes are used for future menu planning.**

Are the portion sizes calculated correctly? Which dishes are less popular and cause larger quantities of returns? Controlling the returned food provides a basis for optimising menu planning, preparation, and presentation.

- Unavoidable waste is made available for energy utilization.**

Organic waste and leftovers may be used to produce heat and electricity in biogas facilities and used fat to produce biodiesel. Today, a number of companies have specialised in the collection and sustainable utilisation of such residues.

When cleaning the food counter and kitchen area as well as the storage rooms, there must be a defined cleaning plan and, if applicable, a corresponding disinfection plan. The plans contain information on the cleaning agents and disinfectants to be used, as well as their usage and dosage.

The following criteria for cleaning and disinfection apply:

- Attention is paid to the use of environmentally friendly cleaning agents.**

Large quantities of cleaning agents are used in kitchens every day to clean surfaces, dishes and laundry. After use, they are discarded as wastewater. Depending on the ingredients, they can be hazardous to the environment and health. Therefore, environmentally compatible cleaning agents are preferable, for example those labelled with the EU Ecolabel and/or "Blue Angel". If the cleaning agents contain palm (kernel) oil-based tensides, sustainably certified palm oil should be used.

- Dosing aids are used.**

Besides the cleaning agents' ingredients, it is also important to know how much detergent to use. Dosing aids help to ensure that not more cleaning agent than necessary is used. This protects the environment and reduces costs at the same time.

- Hygiene requirements are observed.**

The principles of good hygiene practice and the „*Hazard Analysis and Critical Control Points*“ concept (HACCP concept) must be strictly observed. Excellent hygiene practices and compliance with relevant laws and standards ensure the health of staff and guests (see chapter 6).



Further information:
www.station-ernaehrung.de
 Keyword: **Hygiene**

4.6 Together and yet individual

In addition to the processes for providing health-promoting and sustainable meals described above, the patients' own expectations also affect the offered catering. In clinics, there is often the question of how much individuality mass catering can provide. The group of patients is very heterogeneous, and it is not possible to determine all requirements for catering and to incorporate them into the meals.

However, even in the community catering, some of the patients' special requirements, such as personal needs, allergies and intolerances, illnesses or poor nutritional status, must be accommodated.

During the clinic stay, catering intends to provide patients with food and beverages. If necessary, it must fulfil medical requirements that fall within the scope of nutritional therapy. In this case, meals are used as a remedy.

This chapter describes how individual requirements may be met in the context of mass catering. Chapter 5 provides additional information on this topic



4.6.1 Offering different diets

In order to meet the various special requirements of patients in clinics, diets are offered. Their application is determined by the patients' needs (e.g. *ovo-lacto-vegetarian* diet, religious requirements) and/or medical indications (e.g. lactose intolerance, kidney diseases). For each diet, catering principles define the basic framework.

Diets differ in their catering principles with regard to:

- › the choice and quantity of foods and thus often also their energy and nutrient content,
- › the preparation method as well as texture, and/or
- › the frequency and size of meals.

Catering requirements vary depending on the medical units and specific treatment or therapeutic programmes of the clinic. The provision of diets and how these are defined are coordinated together by physicians, *nutritionists* and kitchen managers for their clinic in accordance with the catering requirements. In this regard, the “Manual of Nutritional Therapy in Patient Care” (LEKuP) [1] provides orientation.

If possible, a diet should only serve one need or indication. Only if patients have several catering requirements these should be reflected in the diet. For example, a diet does not have to cover several food allergies. Through incorporating numerous requirements the catering effort can be reduced. However, excluding several foods or types of preparation unnecessarily restricts the range of meals for patients who are not affected.



In the context of health promotion, the entire range of diets should be based on a whole foods diet, described in the “Manual of Nutritional Therapy in Patient Care” (LEKuP) and thus reflect a wholesome diet [1]. Some diets may require deviation from these criteria due to their catering principles.


Regular reviews must be carried out to ensure that diets continue to meet the current needs of the clinic and that the underlying scientific data is still up to date.



Further information:
www.station-ernaehrung.de
 Keyword: [Ernährungstherapie](#)

The following criteria apply:


- In the case of food intolerances like allergies, an appropriate choice of food is possible.**
If certain foods or ingredients are not tolerated, alternative meal components or appropriate diets should be available, e.g., a gluten-free diet.


 **Further information:**
www.station-ernaehrung.de
Keywords: [Lebensmittelunverträglichkeiten](#) and [Kennzeichnung](#)

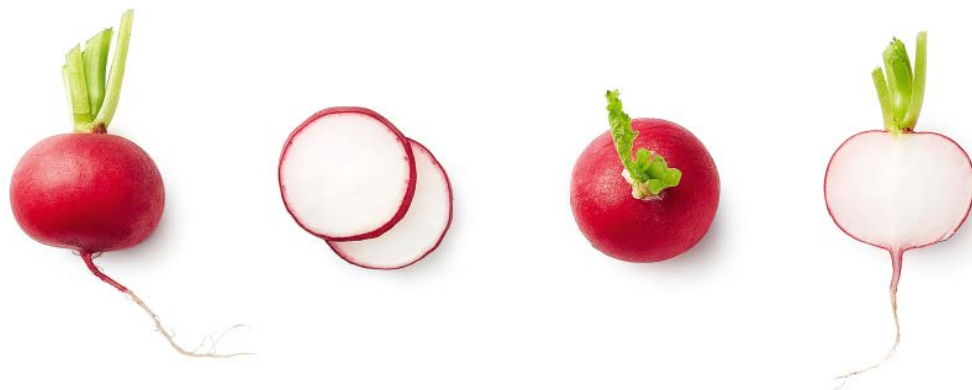
- Diets are available for different nutritional situations and diseases.**
By offering corresponding diets, medically indicated catering requirements, for example in the case of overweight, *malnutrition* or diet-related diseases, are met.

- Food and beverages with adapted textures are available for patients with corresponding indications.**

Meals in different textures, such as pureed or soft foods, are provided especially for patients with chewing and swallowing disorders or poor dental status. In the case of swallowing disorders, thickened beverages may also be indicated. If possible, meals and beverages of different textures are prepared variedly out of the daily menu and served in such a way that the individual components are easily recognisable and look delicious.

-  **Further information:**
www.station-ernaehrung.de
Keyword: [Kau- und Schluckstörungen](#)

 In clinics, *nutritionists* are in charge of and responsible for the implementation of diets that are medically indicated. Further information is available in chapter 2.3 and 5.



4.6.2 Diet catalogue

A clinic's own diet catalogue is recommended. This catalogue presents all diets offered by the clinic with their respective areas of application/indications and catering principles. It provides a standardised presentation and communication of the range of diets both internal for the employees of all departments as well as external for patients, funding agencies and external service providers. Thus, it is an important instrument for standardising the catering offer. A diet catalogue should be compiled by *nutritionists* in consultation with physicians and the kitchen management. The "Manual of Nutritional Therapy in Patient Care" (LEKuP) [1] may serve as a template for deriving a diet catalogue.

If catering services are tendered to external providers, the diet catalogue is an indispensable part of the specifications. It also supports quality assurance as part of a clinic's own catering concept (see also chapter 2).

4.6.3 Individual choice of food

Patients who lack appetite over a longer period of time, who are seriously ill or in the deceasing phase should be able to eat and drink according to their individual wishes. The selection of food and beverages as well as the arrangement of meals irrespective of the diet should be coordinated by a *nutritionist* together with the patients or persons from their household or friends and family. The goal is to motivate patients to eat and drink and to make meals as pleasant as possible.

4.6.4 Standardised meals

Due to organisational reasons, food and beverages often have to be ordered and quantities calculated before patients are admitted to the clinic and before they can be given an individual diet resp. specify their food preferences. In this case, patients receive standardised meals or the quantities for a buffet are calculated in a standardised way. This regular diet should be health-promoting, sustainable and designed in a way that it covers the catering requirements of the majority of patients in the clinic or medical unit. Diets should be assigned, and food requests recorded as soon as possible after admission. Further information on the assignment of the diet provides chapter 5.2.



5

Beyond the plate

The planning and provision of health-promoting and sustainable meals and beverages for patients is the focus of the DGE Quality Standard. These processes primarily take place in the kitchen and are carried out by kitchen staff. In addition, other aspects beyond the kitchen may influence the success of an overall good catering service. Some of these aspects also represent important interfaces to the catering processes in the kitchen.

5.1 Identify special catering requirements	60
5.2 Assigning diets	61
5.3 Assisting in the selection and order of food and beverages	62
5.4 Design of dining and drinking environment	63
5.5 Nutritional therapy intervention	66
5.6 Discharge and transition	67



This chapter is dedicated to catering aspects beyond the kitchen and addresses the employees in the respective divisions (see also fig. 1):

- › employees of the clinic operator and the clinic management who plan and are responsible for the overall catering concept and catering structures.
- › catering commissioners and quality managers who have an overview of the various catering areas, coordinate them and connect those involved.
- › physicians who consider nutrition as an important factor influencing health in medical diagnostics and therapy. If necessary, they coordinate nutritional therapy with other therapy fields, like physiotherapy or psychotherapy.
- › *nutritionists* who support physicians with their expertise in diagnosing nutritional risks and nutritional problems. In addition of being in charge for planning and preparation of diets with medical indications in the kitchen, they carry out further nutritional therapy measures. Nutritional therapy requires regular exchange among *nutritionists* and with staff from other divisions. To ensure this, it is recommended to work together in a multi-disciplinary nutrition team.

- › Nurses and service staff who work with patients directly, are involved in determining special catering requirements, support patients at mealtimes and therefore monitor the catering. The DGE Quality Standard does not describe the tasks of nurses related to catering in detail. The “Expert standard on nutrition management for Ensuring and Promoting Oral Nutrition” [48] provides orientation for nurses.

Through their cooperation and constant exchange, those involved in the various divisions offer patients not only meals that meet their needs and requirements but also support their recovery with nutritional therapy measures and contribute to a health-promoting diet after the clinic stay. Through their work, together with the kitchen, they influence the quality of clinic catering decisively.

In hospitals and rehabilitation clinics, the responsibilities and tasks mentioned above may be assigned to varying divisions.

The following section aims to raise awareness of selected aspects beyond the kitchen as important success factors for health-promoting and sustainable catering.



5.1 Identify special catering requirements

Special requirements for catering may result from the patients' **personal needs**. Examples are the request for an *ovo-lacto-vegetarian* diet, for support in case of physical or mental impairments, for certain diets due to religious or cultural eating habits as well as the need for soft food because of poor dental status.

Furthermore, special catering requirements may occur because of medical diagnoses. **Medical indications** for special meals can be, for example, certain illnesses that are related to nutrition, a poor nutritional status such as *malnutrition* or *obesity*, cognitive and motor impairments, food allergies and certain surgical procedures or forms of therapy.

On admission to the clinic, some health- and nutrition-related information about the patients is already available from reports by referring physicians. Further information is requested when documenting the medical and nutritional history and collected through examinations. Some of the information may represent special catering requirements.

According to the guidelines of the German Society for Nutritional Medicine (DGEM), the assessment of the nutritional status should always be part of the medical examination upon admission to the clinic. The German Network for Quality Development in Nursing recommends the *malnutrition screening* of each patient by the nurses [48]. If a nutritional risk is identified, further measures have to be initiated.



Further information:
www.station-ernaehrung.de
 Keyword: *Mangelernährung*

In general, staff need to be mindful of such special requirements. They may notice signs of loss of appetite, chewing problems, aversions, swallowing disorders and symptoms of intolerances, or the need for previously unknown support. These indications of nutritional risks or nutritional problems need to be passed on to physicians and *nutritionists* so that necessary measures are initiated. Especially for patients with *malnutrition*, information about drinking and eating amounts is crucial for nutritional therapy.

Individualised special catering requirements serve as basis for assigning the diet for this person. If necessary, they also provide indications of assistance at mealtimes or build the basis for the required nutritional therapy.

The following criterion applies:

- Individual food intolerances of the patients are identified by specialists.**
Accordingly, foods that are not tolerated should not be offered to the patient.

5.2 Assigning diets

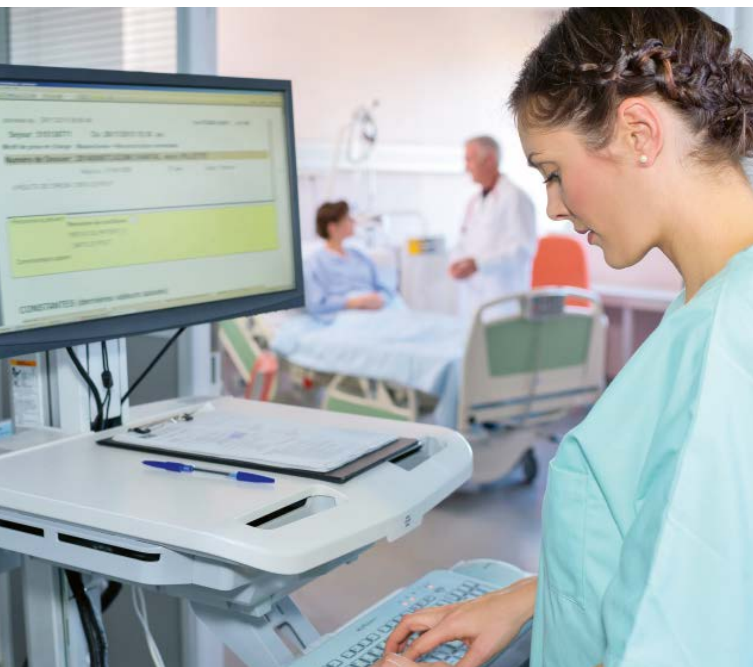
During their clinic stay, patients are assigned to a diet that determines the principles of their catering. If there are special dietary requirements (see above), these are reflected in the assignment of the diet. Needs-oriented diets, for example an *ovo-lacto-vegetarian* or religious diet, may be chosen by the patients themselves. Staff members of the clinic or the caterer introduce the dietary options on offer and are available for questions and advice.

A medically indicated diet is a measure of nutritional therapy and is prescribed by a physician in consultation with the patient. For standardised medical interventions, such as gastrointestinal surgeries, it is recommended to standardise the assignment of diets accordingly. The physician or *nutritionist* informs the patient about the principles of the diet and about the health-promoting goals in connection with his/her indication. This allows the patient to understand any necessary food selection or special preparation methods better, which may encourage acceptance and participation.

Should the special requirements change during the clinic stay, the diet is adapted accordingly.

The diet is documented in the patient's file as well as in the catering management software for transparent communication to all involved in the catering process.

Physicians who prescribe diets and staff who advise patients on the choice of a diet should be very familiar with the indications and catering principles of the clinic's own diets.



5.3 Assisting in the selection and order of food and beverages

The patients' well-being and satisfaction during their clinic stay may also contribute to the improvement of their health status and quality of life. If patients are given the opportunity and support to choose their own meals and beverages, they can express their personal preferences.

The following criteria apply:

Requests for meals, beverages and portion sizes are collected.

Patients are offered the opportunity to choose the meal components and portion sizes according to their personal needs within the limits of their diet. They either choose independently in advance using selection lists or are asked by trained staff.

Patients receive advice and assistance with the selection and order of beverages and meals.

Guidance for the food and beverage offer and the selection options within the limits of the diet simplify the choice. The individual components are highlighted on the buffet or buffet trolley, or staff at the serving counter inform the patients. If expertise is required for the selection of food for medically indicated diets, a *nutritionist* discusses this with the patient as part of the nutritional therapy.

At the buffet, food and beverages are chosen and served at the same time.

In addition to the selection at the buffet, chapter 4.4 describes criteria for serving.



5.4 Design of dining and drinking environment

Consuming health-promoting food and beverages should also be possible for patients with physical or mental impairments and at the same time be pleasant and safe. When eating and drinking, the focus is not only on the absorption of nutrients, but also on enjoyment and pleasure. Mealtime criteria are described in the following chapters, which apply equally to eating and drinking in the patient's room as well as in the dining room.

5.4.1. Establish and observe mealtimes

In clinics, meals structure the day for both patients and staff. Silence and sufficient time allow for mindful eating and enjoyment. Beverages and snacks are also available outside of mealtimes.



The following criteria apply for mealtimes:

- Mealtimes are fixed and adhered to.**
Mealtimes are communicated to patients and staff so that they may consider them in their schedules. If in individual cases the serving of meals is delayed, patients and staff are informed in time.
- Mealtimes are kept free of any interruptions.**
No ward rounds, examinations or treatments are scheduled during mealtimes. This is also required by the “Expert Standard on Nutrition Management for Ensuring and Promoting Oral Nutrition” [48].
- A substitute meal is provided if a patient skips a meal.**
In individual cases, e.g. when an examination or treatment takes place during mealtime, the patient should get the opportunity to eat afterwards. If the prepared meal is kept until then, this should be done in a hygienic and nutrient-preserving way (see criteria in chapter 4.3 and 6). Periods during which patients need to remain fasting, e.g. before examinations or surgery, should be kept as short as possible. Especially for patients with *malnutrition*, longer fasting periods should be avoided.
- Reasonable mealtimes are observed.**
Sufficient time is planned for meals so that patients may enjoy food and beverages comfortably. People with impairments that affect eating and drinking, such as motor or cognitive impairments, often need more time for meals.



5.4.2 Design of dining atmosphere

Enjoyment and well-being while eating and drinking are also significantly affected by the environment. The design of a pleasant dining atmosphere is based on the needs of the patients.



The following criteria apply for the design of the dining atmosphere:

- Rooms where eating and drinking take place offer a bright and friendly ambience.**
Appropriate lighting, good ventilation and a pleasant room temperature create a sense of well-being at mealtimes.
- The eating place is attractively designed.**
Feeling welcome and valued at mealtimes supports enjoyable eating and drinking. Friendly and helpful service contributes to the feeling of well-being. Even in patient rooms, eating and drinking at a table should be possible.
- Rooms where meals are eaten offer sufficient space for patients with impairments.**
Patients who depend on a wheelchair, walker or wheeled walker are able to reach their table safely and there is sufficient space for their walking aids. There should also be space for another person to assist with eating and drinking.
- Eating and drinking in peace and quiet is possible.**
Patients should be distracted or disturbed as little as possible during meals. In dining halls, for example, room dividers are beneficial.



5.4.3 Encourage and assist eating and drinking

The patients' independence should be encouraged when eating meals. Daily practice helps those with disease- or age-related impairments to maintain or regain their own skills and to remain both independent and flexible. If patients rely on help with eating and drinking due to physical or mental impairments, they receive assistance.

Especially older people with a reduced sense of thirst should be reminded to drink several times a day.



Further information:

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Keyword: **Ernährungsbezogene Aspekte für Pflegende**



The following criteria apply:

- Eating and drinking aids are available and used as needed according to individual abilities.**

Eating and drinking aids include, for example, special cutlery with extra-large handles, plates with higher rims, drinking tubes non-slip pads or plates with a warm-keeping function.

- Individual and tailored assistance with eating and drinking is provided as needed.**

If necessary, food can be cut into bite-sized pieces and served. Particularly in the case of patients with swallowing disorders, attention should be paid to prevent choking. For example, patients in need of assistance should be placed in a suitable position when eating and drinking. If necessary, assistance should also be provided beyond mealtimes.



5.5 Nutritional therapy intervention

“Scientific studies show that targeted nutritional intervention in daily medical practice is of comparable importance to the prescription of disease-specific medication for many diseases” [49]. Providing patients with an appropriate diet on the basis of a medical indication is such a nutritional therapy intervention. For some diseases and in certain nutritional situations, this intervention promotes recovery (e.g., *malnutrition*). For other diseases, e.g., those that are not curable, the diet serves to prevent the disease progression or to avoid the occurrence of symptoms resp. to alleviate them (e.g., in phenylketonuria). Some medical interventions or therapies (e.g., chemotherapy) require therapeutic diets for both preparation and aftercare. The provision of a medically indicated diet is preceded by the identification

of special requirements (chapter 5.1) and the assignment of the therapeutic diet (chapter 5.2). If necessary, physicians also prescribe measures affecting the patients’ nutritional behaviour, like instruction, training and counselling by *nutritionists*.



Part 2 of the “Manual of Nutritional Therapy in Patient Care (LEKuP)” provides information on nutritional therapy according to indications [1].

A *nutritionist* coordinates and carries out the measures.

The aim of nutritional therapy is to improve the nutritional situation and thus the patient’s state of health and to promote recovery. Ideally, nutritional therapy is coordinated with the use of medication and, if necessary, other therapeutic fields such as speech therapy, psychotherapy or exercise therapy.

The average **hospital** stay is about seven days [2]. Primarily, the focus is on acute disease treatment and improving the state of health. In this context, catering for patients according to the medical indication is one of the most important measures of nutritional therapy. If necessary, patients receive nutritional recommendations for the time after discharge, e.g., through nutritional counselling or training. These recommendations reflect the principles of the diet and thus the catering.

The average stay in **rehabilitation clinics** is 25 days [3]. In addition to the above-mentioned measures in hospitals, the longer stay allows to influence the patients’ nutritional behaviour in the long term through group training, nutrition talks, buffet and shopping classes as well as training and



instructions in the teaching kitchen. This also reflects the demands of funding agencies. Patients should be given the opportunity to reflect on their previous eating habits and, if necessary, to change them with the professional support of a *nutritionist* or a nutrition team. By strengthening their personal responsibility, they are enabled to transfer the principles of a health-promoting diet to their everyday life at home after discharge.



Further information:

www.station-ernaehrung.de

Keyword: **Ernährungstherapie**

5.6 Discharge and transition

Frequently, the nutritional therapy started in the clinic needs to be continued after the stay. It may be necessary to follow nutritional principles or to participate in nutritional therapy services like nutritional counselling or training. Patients should always be informed about their nutritional situation, the principles of catering at the clinic and necessary nutritional measures, also after discharge (see chapter 5.5). Primary care physicians at home, *nutritionists*, as well as relatives and caregivers/facilities need this information for the subsequent care or treatment of the patients. Physicians, *nutritionists*, nurses and therapists at the clinic collect this information and recommendations in the patient's file during the stay. Physicians pass this on with the discharge letter as part of the transfer and discharge management.



6

Legal requirements for catering

Clinics offering catering services must observe a wide range of legal requirements. Food and hygiene law is of central significance, with the primary goals of food safety, protection against misleading and fraud, as well as the provision of information to consumers and guests. More than 200 European and national legal norms regulate how these goals are to be achieved. Not every food business operator needs to know about all of them in detail. However, in terms of the duty of care under food law, he/she must know and comply with all responsibilities relevant to his/her food business activity. He/she is also obliged to keep up to date with any changes in the law.

6.1 Food law key regulations	69
6.2 Hygiene and infection control	72
6.3 Labelling and public information	74



6.1 Food law key regulations

Key regulation of the food law is the Regulation (EC) No 178/2002 laying down the general principles and requirements of food law (Lebensmittel-Basisverordnung, [LM-BasisVO]). Like all EU regulations, it applies directly in all EU member states and fundamentally regulates how the protection of health and the prevention of fraudulent or deceptive practices is to be guaranteed at all stages of the process (“from farm to fork”). It includes a number of general principles, like food safety, transparency or the principle of public information, risk management and traceability. Another general principle is the responsibility of the food business duty of care, which includes the principle of staged responsibility: Each food business operator is responsible for what happens in his/her own, controllable field. His/her primary responsibility ends when other business operators influence the food, e.g., at the beginning of the next *value chain* level. If, for example, frozen vegetables are delivered to a mass catering facility for further processing, the kitchen management can generally assume that the goods are safe. However, they must always fulfil their own duties of care under food law by, for example, checking the temperature and packaging when receiving the goods, complying with the temperature specifications during storage and further processing, and defining and implementing criteria for selecting suppliers.

In addition to Regulation (EC) No 178/2002 in Germany, the Food and Feed Act (Lebensmittel- und Futtermittelgesetzbuch, [LFBG]) applies as well, containing detailed regulations. These are, for example, requirements for monitoring, penalties and fines as well as regulations for public information.

Another key regulation is Regulation (EU) No 1169/2011 on the provision of food information to consumers (Lebensmittelinformationsverordnung, [LMIV]). It contains basic requirements for mass catering, e.g., for nutrition and allergen declaration. This is specified and complemented by the national Food Information Implementing Regulation (Lebensmittelinformations-Durchführungsverordnung, [LMIDV]). This regulation stipulates, for example, that foodstuffs marketed in Germany must generally be labelled in German and how allergen labelling must be carried out for not pre-packaged goods. Table 3 provides an overview of selected legal regulations and interpretation aids for mass catering.



Table 3: Selected legal regulations and interpretation aids for mass catering

topic	law and regulations	
	EU-level	national level
basic regulations	<ul style="list-style-type: none"> › Regulation (EC) No 178/2002 laying down the general principles and requirements of food law (Lebensmittel-Basisverordnung [LM-BasisVO]) 	<ul style="list-style-type: none"> › Food and Feed Act (Lebensmittel- und Futtermittelgesetzbuch [LFGB])
hygiene and infection control	<ul style="list-style-type: none"> › Regulation (EC) No 852/2004 on the hygiene of foodstuffs › Regulation (EC) No 853/2004 laying down specific rules on the hygiene of food of animal origin 	<ul style="list-style-type: none"> › Food Hygiene Ordinance (Lebensmittelhygiene-Verordnung [LMHV]) › Animal Food Hygiene Ordinance (Tierische Lebensmittelhygiene-Verordnung [Tier-LMHV]) › Regulation on the monitoring of zoonoses and zoonotic agents (Zoonose-Überwachungsverordnung [ZoonLMÜV])
		<ul style="list-style-type: none"> › Infection Protection Act (Infektionsschutzgesetz [IfSG])
official monitoring	<ul style="list-style-type: none"> › Commission Delegated Regulation (EC) No 2019/624 concerning specific rules for the performance of official controls on the production of meat and for production and relaying areas of live bivalve molluscs › Regulation (EC) No 2019/627 laying down uniform practical arrangements for the performance of official controls on products of animal origin intended for human consumption › Regulation (EU) No 2017/625 on official controls and other official activities 	
labelling and consumer information	<ul style="list-style-type: none"> › Regulation (EU) No 1169/2011 – on the provision of food information to consumers (Lebensmittel-informationsverordnung [LMIV]) › Regulation (EU) No 1924/2006 on nutrition and health claims made in foods (Health-Claims-Verordnung [HCVO]) › Regulation (EU) 2018/848 on organic production and labelling of organic products › Regulation (EC) No 1333/2008 on food additives 	<ul style="list-style-type: none"> › Food Information Implementing Regulation [LMIDV] › Regulation on food additives (Lebensmittelzusatzstoff-Durchführungsverordnung [LMZDV]) › In the case of organic claims: e.g. Organic Farming Act (Ökolandbaugesetz [ÖLG])

legally non-binding aids for practical implementation

- › EU-Commission guidelines on the application of Art. 11, 12, 16, 17, 18, 19 and 20 Regulation (EC) No 178/2002 (Dec. 2004)
 - › “Good Hygiene Practice Guidelines”
 - » Guideline on good food hygiene practice in social facilities, 2nd edition (expected 7/2022)
 - » Guideline on good food hygiene practice in daycare facilities (2014)
 - › DIN-Standards on Food Hygiene
 - » 10506: Food hygiene – Mass catering
 - » 10508: Food hygiene – Temperature requirements for foodstuffs
 - » 10514: Food hygiene – Hygiene training
 - » 10516: Food hygiene – Cleaning and disinfection
 - » 10524: Food hygiene – Work wear in food business
 - » 10526: Food hygiene – Retained samples in mass catering
 - » 10536: Food hygiene – Cook & chill method – hygiene requirements
 - › Publication of the Federal Institute for Risk Assessment
 - » Safe food: Especially Vulnerable Groups in communal facilities, 2017
 - › Publication of the Federal Institute for Risk Assessment in cooperation with the Federal Office of Agriculture and Food
 - » Hygiene rules in the Catering Sector, 2020
 - › Announcement of the EU-Commission regarding HACCP (ABl. EU Nr. 278/1, July, 30th 2016)
-
- › EU-Commission Communication: Questions and Answers on the LMIV (ABl. EU C 196 v. 8.6.2018, p. 1 ff.)
 - › Designations:
 - » German Food Code

From legal obligation to practical implementation

Laws and regulations regulate a large number of legally binding matters for an undefined group of people. For example, food law applies to all food business operators – regardless of whether they only offer sandwiches or a comprehensive hot lunch, whether the food is served with the intention of making a profit or not, whether the facility is privately or publicly run or whether it is a small daycare centre for children or a large catering company. Therefore, it is sometimes difficult for food business operators to know how to implement the generally applicable legal obligations in relation to their individual field. Guidance is provided by various legally non-binding publications, like the technical standards of the German Institute for Standardisation (Deutsches Institut für Normung e. V., [DIN]) that accompany the law, statements and recommendations by authorities like the Federal Institute for Risk Assessment or the sector-specific “Guidelines for Good Hygiene Practice”, some of which have been reviewed by competent authorities. In addition, the EU Commission sometimes publishes legally non-binding guidelines to contribute to the EU-wide harmonised application of EU law.

6.2 Hygiene and infection control

A comprehensive hygiene management is obligatory in every food business. The requirements that food business operators must fulfil are essentially derived from two European regulations and the national regulations that supplement them:

› **Regulation (EC) No 852/2004 on the hygiene on foodstuffs:**

The hygiene in food businesses must meet a high standard in order to fulfil the principle of ensuring optimal product safety. For this purpose, the business hygiene management must put a so-called basic hygiene concept in place, which is supplemented by a mandatory “*Hazard Analysis and Critical Control Points*” concept (HACCP concept). Annex II of the regulation specifies this requirement. A company-specific approach is necessary. In other words, in order to comply with its hygienic duty of care, each company must implement all those specifications or requirements that are necessary for

the individual conditions on site, e.g., those concerning the receipt of goods, the floors or windows within the business facilities, as well as those for the storage rooms. Interpretation aids for the practical implementation of Annex II are provided by sector-specific “Guides for good hygiene practice” and the relevant DIN standards, like DIN 10506:2018-07: Food hygiene – mass Catering, DIN 10508:2019-03: Food hygiene – temperature requirements for foodstuffs.

- › **Regulation (EC) No. 853/2004 laying down specific hygiene rules for food of animal origin:** The regulation complements Regulation (EC) No 852/2004 with regard to the processing of food of animal origin. Excluded from its scope are foods that contain both ingredients of plant origin and processed products of animal origin, for example salami pizza or breaded schnitzel. Of particular practical importance for mass catering establishments are the storage temperatures for certain foods regulated in the annexes to Regulation (EC) No 853/2004 (see DIN 10508:2019-03), as well as the mandatory EU approval stipulated in Article 4 (§ 2d), as long as the conditions specified are met by the respective company.

The EU Regulation is supplemented by the national Animal Food Hygiene Ordinance [Tier-LMHV], which, among other things, addresses the special requirements for the provision of raw egg-containing food in mass catering in § 20a.

In addition to these two key regulations, there are other European and national hygiene regulations that contain obligations for food business operators (see table 3).

Good hygiene practice

According to EU law, food business operators must establish their hygiene management with regard to the basic principles of good hygiene practice. Compliance with these principles ensures basic hygiene in the company.



Elements of good hygiene practice are in particular

- › guarantee of adequate constructional facilities,
- › equipment and transport hygiene,
- › hygienic handling of foodstuffs,
- › personal hygiene,
- › cleaning and disinfection,
- › storage and pest management, and
- › waste management.



Guidance on how these aspects should be implemented into practice is provided in particular by the sector-specific “Guidelines for good hygiene practice”, e.g., by the German Hotel and Restaurant Association [DEHOGA].

Obligatory self-monitoring according to “Hazard Analysis and Critical Control Points” principles

In addition to good hygiene practice, food business operators must introduce, apply and maintain a documented self-checking system in their business in accordance with the “Hazard Analysis and Critical Control Points” principles (see Regulation [EC] No 852/2004 Article 5). This is based on the general hygiene policy of the business. The aim of such a self-checking system is to identify and evaluate possible health hazards already during food production and to minimise or eliminate them by taking appropriate precautions. If, for example, cooling temperatures are set for certain foods and checked as scheduled, health risks can already be prevented when deviations occur during the production process, thereby increasing the safety of the end product. The official food control checks the “Hazard Analysis and Critical Control Point” system, including associated documentation, as part of their control activities [50].

Training obligation

All employees who produce, handle or distribute food or dishes to patients must be regularly trained in food hygiene matters (see Regulation [EC] No 852/2004, annex II, chapter XII in combination with the Food Hygiene Ordinance [LMHV]) § 4). This regulation also applies to persons who, for example, only serve food to patients like the staff at service and distribution. Annex 1 of the Food Hygiene Ordinance [LMHV] and DIN 10514:2009-05: Food hygiene – hygiene training provides good orientation on essential requirements for this training. The latter also contains special content requirements for the instruction of persons who are responsible for the development and application of the “Hazard Analysis and Critical Control Points” concept. In terms of good hygiene practice, employees should be trained at least once a year. The standard also recommends a success assessment and documentation.

Instruction obligation

According to § 43 of the Infection Protection Act [IfSG], there is also an obligation to instruct all persons who produce, handle or place food on the market or hand it out to guests. This regulation also applies – similarly to the obligation to train – to all persons who come into contact in any way with the food to be served. The aim is to teach staff about specific rights and obligations in connection with infection protection, including existing prohibitions on work and employment in accordance with § 42 of the Infection Protection Act. The reason for this is that it strengthens the employee’s personal responsibility. The local health department is usually responsible for the initial instruction and the corresponding certificate. At the time of starting work, the employee’s certificate must not be older than three months. Subsequent instruction is required when the employee starts to work and every two years thereafter. This can be done by the employer.



Further information:
www.station-ernaehrung.de
 Keyword: **Hygiene**

6.3 Labelling and public information

In mass catering, meals are usually offered unpackaged. Mandatory information for patients is therefore only provided regarding allergen and additive labelling.

Otherwise, the following applies: information and names must be accurate and may not mislead consumers. Names on the menu, for example, must correspond to the legitimate consumer expectation. In some cases, there are legally prescribed designations, like what may or may not be named as “cheese”. In other cases, the general public perception must be determined. The “German Food Code”, as a kind of anticipated expert opinion describes what is generally to be expected from a product e.g., named as “rye bread” or “milk ice cream”.

In some cases, special regulations apply. For example, anyone who wants to label their food as “organic” or “eco” must comply with the relevant European and national regulations on food from *organic farming* [51].



The 14 foods or food groups (main allergens) are:

- › cereals containing gluten
- › crustaceans
- › eggs
- › fish
- › peanuts
- › soybeans
- › milk
- › nuts
- › celery
- › mustard
- › sesame seeds
- › sulphur dioxide and sulphites
- › lupin
- › molluscs

Obligatory allergen information

The entire menu must indicate whether one or more of the 14 most important substances or products causing allergies or intolerances in the European population are contained in a meal component. This obligation results from the Regulation on the provision of food information to consumers ([LMIV], see Article 9, Paragraph 1c) or the Food Information Implementing Regulation [LMIDV], which provides concrete specifications for the practical realisation of allergen information. Annex II of the Regulation on the provision of food information to consumers determines which ingredients must be labelled.

In mass catering – similar to the entire gastronomy sector – information on allergens may be provided on menus and beverage menus or in price lists. Footnotes may be used as well – similar to the labelling of additives – as long as they are clearly referred to in the name of the food or dish. Caution must be taken to ensure that this



designation does not cause confusion with the additives. Another – equally important – possibility is verbal information. For this purpose, it must be indicated on the menu, on the corresponding displays or other notices clearly visible to the patients that they may ask the service or kitchen staff for information on the allergens. The precondition for the verbal information is a written documentation of all dishes with the respective allergens contained, which the patients may examine if requested, as well as a training of the staff [51].

Exact specifications for these trainings are currently not available. In this context, it is recommended to develop and implement an allergen management as part of the hygiene management. It not only provides safety for the staff, but also trust for the patients.

Labelling of additives

According to § 5 of the Regulation on food additives [LMZDV], additives of certain categories must be labelled when offering loose goods. In contrast to pre-packaged goods, the additive itself does not have to be named, but its functional category is sufficient, e.g., “with preservative” or “with colouring”. Brief information via footnotes in the menu, price list or via a notice is permitted [51].

Nutrition declaration

Nutrition declaration is not obligatory for loose goods – in contrast to pre-packaged goods. Those who voluntarily wish to provide information on nutritional values, need to comply with the requirements of Art. 30 (5) of the Regulation on the provision of food information to consumers.



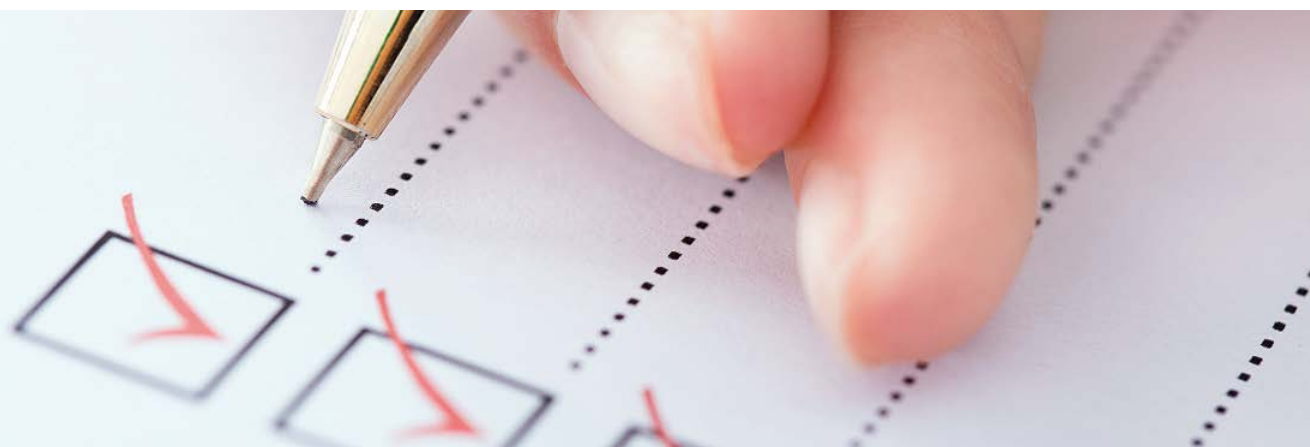
According to this, either

- › only the energy value (in kcal and kJ) or
- › the energy value and the amounts of fat, saturated fatty acids, sugar and salt, each per 100 grams or 100 millilitres are listed. Moreover, it is permitted to refer the information to a portion, as long as it is clearly quantified [51].

Nutrition claims like “low-fat” or “rich in vitamin C” are regulated separately. They are only permitted if the requirements of Regulation (EC) No 1924/2006 on nutrition and health claims in foods [HCVO] are met [51].



Further information:
www.station-ernaehrung.de
 Keyword: **Kennzeichnung**



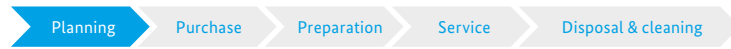
Checklist

The following checklist provides an overview of all criteria of this DGE Quality Standard. It enables clinics and caterers to independently review their current catering situation and, if necessary, identify potential for improvement. Thus, it might be the starting point for planning appropriate steps and supporting them on the way to more catering quality (see chapter 2). The criteria are listed along the individual chapters of the DGE Quality Standard. For explanations of the criteria, see the respective chapter.

Development of quality clinic catering	not fulfilled	partially fulfilled	fulfilled
A cross-divisional catering concept is in place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All divisions are involved in quality development.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A catering commissioner exists.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A <i>nutritionist</i> is available for special questions about nutrition and nutritional therapy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees know the meal requirements of the individual patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Catering staff receive continuous training.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ergonomic workplaces and workflows are in place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees are valued.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Suggestions regarding the meals and dishes on offer are received and passed on.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Satisfaction with the meals on offer is regularly assessed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Designing health-promoting and sustainable meals

not fulfilled partially fulfilled fulfilled



Food qualities and frequencies for seven catering days MIXED DIET

grain, grain products, potatoes min. 21 x (min. 3 x daily) whole-grain products, <i>pseudocereals</i> , <i>muesli</i> without sugar or sweeteners, potatoes (raw or precooked), <i>parboiled</i> rice or brown rice thereof: min. 14 x whole-grain products <i>max. 2 x potatoe products</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vegetables and salad 21 x (3 x daily) vegetables (fresh or frozen), legumes, <i>salad</i> thereof: min. 7 x <i>raw vegetables</i> <i>min. 1–2 x legumes</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fruits 14 x (2 x daily) fruits (fresh or frozen); without sugar or sweeteners, nuts (unsalted) or oilseeds thereof: min. 7 x fresh or frozen; without sugar or sweeteners <i>min. 3 x nuts (unsalted) or oilseeds</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
milk and dairy products min. 14 x (min. 2 x daily), based on the following specifications: milk, plain yoghurt, buttermilk, sour milk, kefir: <i>max. fat content 3,8%</i> , quark: <i>max. fat content 5%</i> → each without sugar or sweeteners cheese: <i>max. fat content 30%</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meat, sausage, fish, and eggs max. 3 x meat and sausage for lunch meat and cold cuts as bread topping: <i>max. fat content 20%</i> thereof: min. half of the offer lean muscle meat 1–2 x fish thereof: min. 1 x fatty fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
oils and fats rapeseed oil is standard oil rapeseed oil, walnut-, linseed-, soybean-, olive oil, margarine made from the oils mentioned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
beverages beverages are available at any time water, fruit and herbal tea → each without sgar or sweeteners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not fulfilled	partially fulfilled	fulfilled
Food qualities and frequencies for seven catering days OVO-LACTO-VEGETARIAN DIET			
grain, grain products, potatoes min. 21 x (min. 3 x daily) whole-grain products, <i>pseudocereals</i> , <i>muesli</i> without sugar or sweeteners, potatoes (raw or precooked), <i>parboiled</i> rice or brown rice thereof: min. 14 x whole-grain products max. 2 x <i>potatoe products</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vegetables and salad 21 x (3 x daily) vegetables (fresh or frozen), legumes, <i>salad</i> thereof: min. 7 x <i>raw vegetables</i> min. 2 x legumes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fruits 14 x (2 x daily) fruits (fresh or frozen); without sugar or sweeteners, nuts (unsalted) or oilseeds thereof: min. 7 x fresh or frozen; without sugar or sweeteners min. 3 – 4 x nuts (unsalted) or oilseeds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
milk and dairy products min. 14 x (min. 2 x daily), based on the following specifications: milk, plain yoghurt, buttermilk, sour milk, kefir: max. <i>fat content</i> 3,8%, quark: max. <i>fat content</i> 5% → each without sugar or sweeteners cheese: max. <i>fat content</i> 30%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
oils and fats rapeseed oil is standard oil rapeseed oil, walnut-, linseed-, soybean-, olive oil, margarine made from the oils mentioned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
beverages beverages are available at any time water, fruit and herbal tea → each without sgar or sweeteners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not fulfilled	partially fulfilled	fulfilled
Additional criteria for menu planning:			
<i>Ovo-lacto-vegetarian</i> options are available every day for every meal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Seasonal</i> and <i>regional</i> vegetables and fruits are included.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local foods are preferred in the menu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains, grain products and potatoes are offered in varied ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deep-fried and/or breaded products are used at most twice in 7 catering days.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrially produced meat substitutes are offered for lunch no more than once in 7 catering days.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beverages are available at any time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The lunch <i>menu cycle</i> is repeated after four weeks at the earliest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The dishes are colourful, and the composition varies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The patients' wishes and suggestions are considered in the menu planning as far as possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culture-specific, <i>regional</i> and religious eating habits are taken into account in planning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Snacks are available at any time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Certain animal-based and plant-based foods are not used for especially vulnerable groups due to possible contamination with pathogens.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alcohol is not on offer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria for the use of convenience food in mass catering			
Products without palm (kernel) fat, palm (kernel) oil or coconut fat are preferred.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unprocessed or low processed products, like fresh or frozen vegetables and fruits, meat or fish, are preferred for further processing on site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High processed products are always combined or complemented with low processed products/components.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Products with a low content of sugar, fat, saturated fat and/or salt and a low <i>energy density</i> are selected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not fulfilled	partially fulfilled	fulfilled
Menu criteria			
The current menu is accessible in advance on a regular and barrier-free basis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allergens are labelled or information is provided verbally.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information is provided on additives that require labelling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food is named clearly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For meat, sausages and fish, the animal species is named.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the nutritional values are declared, the legal requirements are observed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Several menu lines are clearly presented.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Organic food is used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fair Trade products are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish is purchased from sustainable fisheries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat from species-appropriate animal husbandry is offered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmentally friendly packaging is preferred for all foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The first-in-first-out principle applies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Recipes, if required with preparation instructions, are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fat is used consciously.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sugar is used sparingly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Iodised salt is used, it is salted sparingly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Herbs (fresh, frozen, dried) and spices are used in a variety of ways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not fulfilled	partially fulfilled	fulfilled
Nutrient-preserving and low-fat cooking methods are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooking periods are kept as long as necessary and as short as possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Keeping heated food warm for a maximum of three hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The warm-keeping temperature of heated food is at least 65 °C.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chilled food is stored at a maximum of 7 °C.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resource-efficient kitchen appliances are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appliances are only turned on during operating times.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Planning

Purchase

Preparation

Service

Disposal & cleaning

Proper timing between kitchen and serving is realised.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Serving staff is informed in detail about the current menu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patients are given opportunities to influence portion sizes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Components of the health-promoting and sustainable meal along with the calculated individual quantities are communicated to the patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions about a wholesome diet and food intolerances are answered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Planning

Purchase

Preparation

Service

Disposal & cleaning

Returned dishes are recorded separately by meal and component and the outcomes are used for future menu planning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unavoidable waste is recycled for energy utilization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attention is paid to the use of environmentally friendly cleaning agents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dosing aids are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hygiene requirements are observed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not fulfilled	partially fulfilled	fulfilled
Together and yet individual			
In the case of food intolerances like allergies, an appropriate choice of food is possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food and beverages with adapted textures are available for patients with corresponding indications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diets are available for different nutritional situations and diseases.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beyond the plate			
Individual food intolerances of the patients are identified by specialists.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Requests for meals, beverages and portion sizes are collected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patients receive advice and assistance with the selection and order of beverages and meals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mealtimes are fixed and are adhered to.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mealtimes are kept free of any interruptions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A substitute meal is provided if a patient skips a meal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reasonable mealtimes are observed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rooms where eating and drinking take place offer a bright and friendly ambience.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eating and drinking in peace and quiet is possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The eating place is attractively designed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rooms where meals are eaten offer sufficient space for patients with impairments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eating and drinking aids are available and used as needed according to individual abilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individual and tailored assistance with eating and drinking is provided as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Glossary

Body Mass Index (BMI): BMI (kg/m^2) is a parameter used to classify body weight into underweight, normal body weight and overweight. It is calculated by dividing the body weight [kg] by the squared body height [m^2] [52].

Convenience food: The meaning of “convenience” is comfort or ease. In the context of food, this describes a product that is industrially pre-processed to save kitchen time. Consequently, convenience foods have a higher degree of processing than raw foods.

CO₂ equivalents: In addition to CO₂ other greenhouse gases (e.g., methane or nitrous oxide) have an impact on global warming. Their climate impact can be converted into the equivalent amount of CO₂ and thus offers the advantage of a standardised indicator of *greenhouse gas emissions*.

D-A-CH reference values for nutrient intake:

The D-A-CH reference values specify amounts for the daily intake of energy and nutrients, including water and dietary fibre. They are published by the German Nutrition Society (Deutsche Gesellschaft für Ernährung e.V., DGE) together with the nutrition societies of Austria and Switzerland.

Energy density: The energy density of food is defined as the amount of energy (in kcal or kJ) per unit mass (g or 100 g). The energy density is affected, among other things, by water and fat content (9 kcal/g), and to a lesser extent by the carbohydrate (4 kcal/g) or protein content (4 kcal/g). Thus, foods with low energy density are often characterised by a high water and dietary fibre content compared to those with high energy density.

Erosion: The natural process whereby fertile soil on the earth’s surface is eroded by wind and water. The process can also be triggered or intensified by agricultural use of soil [53].

Fat content (absolute; cheese): This declaration refers to the actual fat content of the ripened cheese, whereas the usual commercial information refers to the fat content in the dry matter. The absolute fat content is expressed in g/100 g of food. This information is part of the nutrition declaration.

Greenhouse gas emissions: The most relevant greenhouse gases are water vapour (H₂O), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and ozone (O₃). Greenhouse gas emissions are the emissions of these gases into the earth’s atmosphere. Greenhouse gas emissions can be used, for example, as a measure of the climate impact of a product and are usually expressed in *CO₂ equivalents*.

Guiding values: Guiding values are stated in terms of aids for orientation and are given for nutrients that are not essential for the organism. In addition, guiding values are given if there is a need, but it varies widely depending on numerous influences (e.g., energy requirements depending on lifestyle, occupation, etc.). Preventive effects of these nutrients are factored in when deriving guiding values.

Hazard Analysis and Critical Control Points (HACCP):

This concept aims to carry out a hazard analysis and control of critical control points in food handling.

Malnutrition: Malnutrition is a condition of deficiency of energy, protein or other nutrients that leads to altered measurable changes in physiological functions, results in an unfavourable course of disease and is reversible through nutritional therapy.

Menu cycle: The menu cycle refers to the period of time after which the lunch meals sequence is repeated.

Monocultures: Monocultures are a form of agricultural land use where only one type of crop is grown on the same area for several years. In the long run, this can reduce the nutrient content of the soil and require the frequent use of pesticides or artificial fertilisers [55].

Morbidity: Morbidity refers to the frequency of diseases within a population group [56].

Mortality: Mortality describes the ratio of the number of deaths to the number of persons in the considered sample [57].

Muesli: Muesli consists of one or more cereals without added sugar or other sweeteners. These cereals might be processed in different ways, like crushed, ground or extruded. Other ingredients may include milk, natural yoghurt, quark, fruits (fresh or frozen), nuts or oilseeds.

Nutrient density: Nutrient density describes the amount of a nutrient in a food per unit of energy (e.g., mg/kcal); “nutrient-dense” foods are foods that are both low in energy and high in nutrients.

Nutritionist: In this DGE Quality Standard, nutritionists are understood to be dieticians or, in the case of equivalent qualifications for nutritional therapy, also ecotrophologists or nutritional scientists.

Obesity: Obesity refers to the accumulation of body fat that exceeds the normal level. It is diagnosed using the *body mass index (BMI)*. Obesity is classified as *BMI* above 30 kg/m² [52]

Organic farming: Organic farming is a particularly sustainable form of farming. Therefore, the use of food from organic production is recommended. The promotion of an organic offer in mass catering requires participation in the control programme according to the EU-Regulation on Organic Production (EG-Öko-Verordnung).

Ovo-lacto-vegetarian: The ovo-lacto-vegetarian diet combines plant foods with only those products of animal origin that come from living animals, e.g., milk, eggs or honey. The vegetarian diet basically excludes foods from slaughtered animals, e.g., meat and meat products, fish as well as slaughter fats.

Parboiled: Parboiling is a technical process for treatment of rice or other grains. During this process, vitamins and minerals are pressed out of the outer layers into the grain. Parboiled varieties are therefore nutritionally more valuable than polished varieties.

Physical Activity Level (PAL): The average daily energy need for the physical activity as a multiple of the basal metabolic rate. It is therefore a parameter that is included in the calculation of the guiding value for energy intake. PAL levels are derived for different occupational and leisure activities. Depending on the physical activity, the guiding value for energy intake can vary accordingly. In hospitals, a PAL of 1.2 was used as a basis for the preparation of nutrient-optimised menus due to reduced physical activity and being bedridden. In rehabilitation clinics, a PAL of 1.4 is used as a basis due to the offer of exercise therapies.

Potato Products: These are processed products made from potatoes. Included are french fries, instant potato, mashed potato, potato dumpling, pre-shaped potato dough, fried potato and potato snack products [54].

Protein quality: The protein quality or biological value captures how dietary protein can be incorporated into the proteins of the body’s organism. The protein’s amino acid pattern and its digestibility are crucial factors. The protein quality is often indicated relatively by comparison with a reference protein (egg’s protein or cow’s milk casein) [58].

Pseudocereals: These are grains that do not belong to the botanical group of sweet grasses like wheat and rye, but visually resemble them. They include quinoa, amaranth and buckwheat. Due to their nutrient composition, pseudocereals are good supplements to the food group grains and make an important contribution to the nutrient requirement.

Raw vegetables: Raw vegetables refer to raw, unheated vegetables or lettuce, with or without dressing.

Red meat: Refers to meat from pigs, cattle, sheep and goats.

Regional: A region is an area that forms a geographical, political, economic and/or administrative unit. The food producer is free to choose the region's label, but it must be clearly comprehensible for consumers. This can be done by political-administrative borders (counties, administrative districts, federal states), by a kilometre radius around a place to be defined, by indicating metropolitan regions (e.g. southern Germany) or defined regions (e.g. Altes Land, Rhineland, Hessische Bergstraße) [59].

Resource conservation: Natural resources, like soil, air or water, should be considered as components of nature. In this context, resource conservation is the totality of all actions to preserve or restore natural resources [60].

Salad: Salad includes all leafy salads or preparations containing vegetables and/or lettuce as the main ingredient.

Screening: *Malnutrition* screening is a simple and quick process to determine whether a person is likely to be or at risk of *malnutrition*. If the screening results are positive, a detailed assessment must follow. Screening should be carried out systematically and routinely on all patients on admission to acute hospital using validated screening instruments [61].

Seasonal: If open-field vegetables and fruits growing in classical agriculture are harvested and sold during the harvest period, e.g., the most profitable time, they are referred to as seasonal foods.

Value chain: This is an accumulation of activities through which a product is designed, manufactured, distributed, delivered and supported.

White meat: The term refers to poultry meat.

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