

Food waste in European healthcare settings

*Case studies from around Europe
and recommendations for
preventing and reducing food
waste in healthcare.*



Introduction



In Europe there is no common, standardised definition of food waste, which makes monitoring and quantifying food waste difficult, particularly at the primary production level. The European FUSIONS project has proposed a new definitional framework of food waste:

“Food waste is any food and inedible parts of food removed from the food supply chain to be recovered or disposed (including composted, crops ploughed in/not harvested, anaerobic digestion, bioenergy production, co-generation, incineration, disposal to sewer, landfill, or discarded to sea).” [1]

It is estimated that approximately 100 million tonnes of food are wasted annually in the EU across all stages of the food chain from production to consumption; 14% of this food waste is attributed to food services alone. [2] Food waste is an expensive problem, with an estimated cost of €143 billion for disposing food to landfills. Food waste does not only have an impact on the economy, however, but also on society and the environment. [3]

In fact, reducing food waste is key to ensuring both food and water security and reducing the gap between rich and poor on a global scale. Food waste increases the price of products; nothing that creates more interdependencies between nations than food. Therefore, if food resources were managed better at the production and consumption level, access and availability to appropriate meals would improve. [4]

Food waste also has environmental impacts: it contributes to land and soil degradation, water pollution (including eutrophication), resource depletion, and more. [3] One of the main environmental impacts of food waste occurs during disposal in landfills, where methane and carbon dioxide (greenhouse gases), are produced as part of the natural decomposition processes, subsequently contributing to climate change. [5]

In hospitals and other healthcare facilities, where plate waste is higher than other foodservice sectors, food waste can range from 6% to 65%. [6] These higher food waste rates occur because of inefficient ordering systems and food delivery, inadequate portion sizes, or because the aesthetic of dishes' presentation can be unappetising. These factors can lead to malnutrition-related complications and undermine prompt patient recovery. [6-9] Food should be seen as an integral and important part of patients' treatment.

In order to achieve sustainability objectives, hospitals and healthcare systems in Europe are already implementing important strategies for integrating environmental sustainability into their daily food service operations, without compromising on the nutritional requirements of their patients. [6, 10]

Furthermore, several European hospitals are already working to prevent and reduce food waste at their facilities through best practices. These include: sustainable procurement, planning and optimising ordering systems, improved inventory management, and enhanced communication between food service providers, health professionals, and patients. Work is also being done to provide portion flexibility and explore creative ways to reuse un-served food. [11]

During the first six months of 2016, Health Care Without Harm (HCWH) Europe carried out interviews with European hospitals and healthcare systems about their strategies to prevent and reduce food waste. The case studies described here are the result of these interviews with seven hospitals from four European countries (Denmark, France, Spain, and the UK), two national initiatives from Ireland and The Netherlands, and two regional programmes from Denmark and Sweden. Examples from these institutions, whose experiences can serve as a role model and inspire others, as well as some recommendations for the future, are described in detail in this document. We hope this document serves as a basis for reflection, and finally gives the problem of food waste the recognition it deserves in the healthcare sector.

Best Practices



Hvidovre Hospital, Hvidovre

Hvidovre Hospital provides an excellent example of the prevention and reduction of food waste. With more than **5.8 million patient meals**, and **5.1 million staff meals per year**, patients can choose from an à la carte menu, with different menu options for patients in the paediatric department. Using this ordering system, patients receive small portions (but have the possibility to order a double portion if they want more) and thanks to this system, food waste has been reduced. The system requires dialogue between the kitchen and the departments within the hospital, as well as with the patients, and this dialogue contributes greatly to both patient and employee satisfaction.



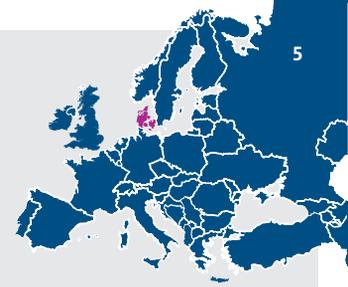
In addition to delivering high-quality, seasonal, and local produce, the hospital has introduced a strict inventory management system, particularly for dairy products, constantly monitoring any remaining produce in the fridge. The hospital also pays particular attention to the aesthetics of their dishes, making the food served

more attractive. In terms of re-use, uneaten sandwiches from the staff canteen are served in the cafeteria.

“When meals are presented attractively, it can help the patient’s appetite and desire to eat”

Palle Erbs, Chef at Hvidovre Hospital

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Gentofte and Herlev Hospital

Gentofte Hospital, which recently merged with the Herlev Hospital, sets a very progressive example in dealing with food waste.

Gentofte Hospital serves **284,000 meals per year**, and is working towards achieving a potential saving of more than 800 tonnes of food waste annually (saving approximately €108,000). This is possible thanks to the introduction of professional kitchen meal hosts, who deliver food according to the needs of the patients, and take the leftovers directly back to the kitchen. Noting the amount of surplus food has made hospital staff more aware of food waste and has encouraged them to strive to minimise wastage.

Other positive developments are the improved presentation of dishes, with food served on small ceramic plates and the endorsement of the hospital’s food waste policy by the Executive Board.

Serving up to **819,000 meals per year**, **Herlev Hospital** has recently begun to analyse the different kinds of leftovers returned to the kitchen, so menus can therefore be adapted to patients’ preferences in the future. The menu and portion sizes offered by the hospital mean patients have a good choice.

The merger between the two hospitals means there are challenges ahead in terms of staff education and raising awareness, but they are confident they will succeed with time.



The Hospital Centre of Macon

The food service providers at the Hospital Centre of Macon have already started to classify and separate their waste (e.g. paper, carton, wood, metal, glass, etc.). According to the Grenelle Regional Law, organic waste has to be separated and collected because of its value and potential other uses.

For the Centre, which serves **290,000 meals per year**, it has proven difficult to separate and store food waste because the hospital has a central kitchen and lacks infrastructure. However, the hospital is now investigating which method of disposal of food waste is most suitable and best meets their needs, such as anaerobic digestion or composting.

The hospital serves patients' leftovers (from the preparation stage in the kitchen) in the staff cafeteria when the date of consumption has not expired and the food has not been heated. In the future, the hospital would like to adjust their menus by serving only three or four items in the evening instead of the current five, and providing different portion sizes depending on the needs of the individual patients.

The Hospital Centre, Le Mans

The Hospital Centre of Le Mans has 1,710 beds and serves around **1.3 million meals per year to patients and 400,000 meals in three staff cafeteria** using the cook-chill food preparation system. The annual plate waste is 200 tonnes from 80 wards.

The hospital annually generates:

- 15 tonnes of bio-waste in the central kitchen
- 14 tonnes of bio-waste in the cafeterias



- 7 tonnes of food surplus after menu preparation - of this surplus, 10,000 meals per year are donated to two charity organisations: Association Tarmac (which identifies the clients) and Ordre de Malte délégation de la Sarthe (which takes care of logistics and serves the meals in a city social centre). Some leftovers are also donated to the association Ligue de Défense des Animaux to be used as animal feed.

The hospital has carried out a study to quantify the food wasted in their wards after breakfast, lunch, snacks, and dinner. It has been recorded that, due to changes to patient diets for medical reasons, food waste rates can vary from breakfast to dinner. This study, based on weekly cycles, differentiates between food products (meat, vegetables, cheese, bread, fruit, etc.) and other disposable waste (plastic, paper, or glass) throughout the week.

Other successful initiatives that the Hospital Centre of Le Mans is carrying out are:

- Adapting meals to each pathology and age by serving 27 different menus
- Carrying out patient satisfaction surveys, where it has been reported that around 92% of patients are satisfied or very satisfied with the hospital's food service
- Organising working groups with different professionals to test different meals in terms of presentation, quantity, thermal quality, and taste – this helps to refine meals and respond to patient and staff preferences and needs.

The electronic ordering system at the hospital follows the equation: 1 bed-1 meal-1 patient; this system is managed by kitchen assistants in collaboration with dieticians. Health professionals from the surgery unit (who might want to have their breakfast in their unit instead of the staff canteen), can request a free meal once per week.

Effective management and good governance, coordinated by the Head of Unit, Mr. Gerard Didier, have been key elements for both improving the quality of the service and maintaining a global perspective of the problem.

The University Hospital Complex, Santiago de Compostela

“Patients are, and must be, at the centre of attention”

Javier Vidal Iglesias,
Hospital Food Service Director

With one central kitchen and four satellite kitchens, in 2015 the University Hospital Complex in Santiago de Compostela served **2.6 million meals** to patients, and wasted only 2.5% of that food. Any wasted food is sent to a grinder/compactor.

Thanks to their cook-chill and diet management system, the hospital has the flexibility to accommodate patients’ requests for food from 8am to 10pm.

Improved communication with patients via TV or mobile phones and adjusting portion sizes are some of the developments the hospital hopes to make in the future. Patients’ food consumption is spread throughout the day as a way to increase variety and reduce portion size (e.g. a reduced serving of some fruits and the amount of bread served). The hospital complex is also exploring a partnership with dairy companies. Currently, they serve 125g portions of yogurt per patient, but this partnership will allow them to serve appropriate portions to each patient according to their needs (i.e. some patients might just need 50g). In this way, a partnership would consequently generate less food and plastic waste (one of the hospital’s targets for the next two years is to reach zero plastic waste).



The University Hospital La Paz, Madrid

The University Hospital La Paz serves over **440,000 meals per year** to both patients and staff, generating between 40 and 59 tonnes of food waste per year. This food waste is either sent to landfill sites, or treated for composting (thanks to their collaboration with the municipality). This collaboration also ensures that other types of waste, such as paper, carton, plastics, and oil (which is converted to biodiesel), are recycled.



Above: The University Hospital Complex

Above: The University Hospital La Paz

Patients’ diets are decided with the help of clinicians, according to their medical condition. A total of 55 different types of diet are catered for, and patients without any therapeutic restrictions can choose between two different menus. The hospital has a computerised ordering system that allows control over allergens and the amount of food that needs to be prepared. The sizes of meals served can also be adjusted to minimise food waste. The hospital’s food surpluses are minimal but, due to concerns over hygiene, they do not donate leftover food, even if still in good condition.



Freeman Hospital, Newcastle

“One of the biggest problems we have with food waste is that people do not see the risk of throwing it away”

Geoff Moyle,
Freeman Hospital Catering Service Manager

With 4,000 employees, the **Freeman Hospital** in Newcastle provides approximately **270,000 meals per year** and on average wastes 6% of the food it serves. This low wastage (compared to other hospital facilities) can be attributed to:

- The installation of bio-digesters – these save the hospital approximately £14,000 (nearly €17,000) on energy, water, and landfill costs, and allow the recycling of water generated by the local water authority and used by the hospital.
- The control of the ordering system - patients' meals are ordered 12 hours in advance, which means the staff can more accurately predict how many meals need to be prepared. Thanks to the good communication between the kitchen and the wards, few meals are wasted.

Two different portion sizes are offered - one for elderly patients and one for all other patients. These smaller portions still provide patients with the necessary energy and nutrients.



The Hospital Complex in the Lillebaelt Region

Composed of four hospitals (Vejle, Kolding, Middelfart, and Fredericia), the Hospital Complex in the Lillebaelt Region prepares and serves around **912,500 meals per year**. The Region aims to prevent food waste rather than to treat it, so that they can care for the environment and promote sustainable development. Following this mission, each year a new focus area for food waste is adopted. Some of the steps they have taken so far include:

- In the kitchen, surplus fruits, bread, cakes, and vegetables are used to create new products such as porridge, smoothies, new bread, cakes, or pesto. This ensures that all food products purchased are used, even as ingredients for other dishes.
- In the wards, “buffet supervisors”, who move food from one ward to another, keep track of which foods are left, and collect patients' assessments of their meals. This information allows the kitchen staff to adjust the amount of food sent to each ward the next day and remove dishes from the menu if needed.
- In the cafeteria, customers pay for food by weight, and “Retro Days” have been introduced, during which surplus food from the rest of week is sold. This concept is called “Eat today – the rest is the best”, and hospital staff are given the opportunity to buy any surplus food when the buffets on the wards close in the evening.

Currently, the hospital is measuring returned food from individual wards, as well as the food discarded directly during the production process. This provides them with a full picture of which food types are wasted and in what quantity, in order to gain inspiration for how to reduce the total amount of food waste.





Food waste reduction programme in the Västra Götaland Region

Reducing food waste is one of the priorities of the Västra Götaland Region's environmental programme. Since 2013, the Region has been working with hospital administrations, nutritionists, other health workers, and environmental coordinators to improve menus. As a result, food waste in kitchens and wards has been reduced, patient satisfaction has been increased, and nutrition improved.

At the beginning of 2016, the Region started a pilot project at **Kungälv Hospital** with the goal of reducing the number of meal orders by 25%, since ward staff would usually ask for more meals than needed. Therefore, two changes to the system were implemented:

1. Patients were allowed to choose the desired dish the day before and the same day in order to investigate how many changes occur and why
2. Ward hostesses were introduced in each ward to gather patients' preferences

These qualitative results are complementary to the quantitative data recorded by the kitchen staff over the past number of years. This data has since been categorised by each individual department, and there is also a distinction made between lunch and dinner. Qualitative results show that patients do not usually receive the appropriate portion size. Consequently, some meals are not finished and are wasted.

This project will eventually be replicated in the other 11 hospitals in the region over the coming years, in order to achieve a reduction of food waste across the region. In particular, the region is committed to halving food waste by 2016. This is an ambitious goal, but in three years they have already reduced food waste by 20% in the hospitals in the region, which indicates that the goal is achievable.



The Irish Green Healthcare Programme on food waste

In 2009, the **Irish Environmental Protection Agency (EPA)**, in collaboration with the Clean Technology Centre and around 40 Irish hospitals, started a programme on food waste prevention, resource efficiency, and sustainability. In recent years, this programme has been co-supported by the **National Health Sustainability Office of Ireland's Health Service Executive**. They have developed guidelines to help hospitals to reduce food waste in Irish healthcare facilities. [12]

In Ireland, as in many European countries, there is no law for food waste prevention nor any food waste reduction targets, but the Irish Green Healthcare Programme (GCHP), has set up a system to measure food waste in hospitals by food weight and purchase cost (€2/kg), within both a centrally plated system and a bulk food system. The GCHP provides recommendations on how to prevent and reduce food waste in wards, canteens, and hospital kitchens, and offers some useful case studies to illustrate how much food is wasted in Irish hospitals and the strategies implemented to reduce waste.

It is recognised that a certain amount of food waste at hospitals is inevitable, but that some challenges remain to be addressed. Nevertheless, they have proven that the situation can quickly improve by measuring food waste, raising awareness, and improving communication and coordination between the staff (which also generates savings). [12]



Research on food wastage in the healthcare sector by Wageningen University & Research

In the Netherlands, more than 25% of food in hospitals and healthcare institutions is thrown away, representing a loss of €50,000 - €150,000 per hospital annually (depending on the type and size), according to the research carried out by the Wageningen University & Research.

One Dutch research institute, **Food & Biobased Research**, has developed and applied a practical method for measuring food waste, which has been implemented in 15 Dutch hospitals. The method is not only about measuring discarded food, but also gives a detailed insight into food wastage by examining factors such as:

- The quantity of food wasted during different steps in the production process
- Which products are thrown away the most
- What improvements are possible in terms of reducing food waste
- How food waste can be reduced, whilst simultaneously improving patient, staff, and visitor satisfaction.

The results are interesting:

- The average annual amount of food waste in healthcare institutions is higher than the conservative estimate of 25% made before the start of the project.
- Vegetables from hot meals are usually the most often discarded item.
- Thursday and Friday are the days when most meals are returned, because many patients are discharged before the weekend.
- Attention to portion sizes nearly halves the waste, and improving ordering systems leads to significant reductions in food waste.



For Wageningen University & Research, reducing food waste starts with awareness; processing, analysing, and presenting food waste data both internally and externally is important in order to promote change. In conclusion, acting on the results from the Wageningen University & Research data collection method leads to significant improvements in the reduction of food waste and yields important results in healthcare facilities. It also allows for an anonymous comparison of results between facilities and makes benchmarking possible.



Gentofte + Herlev Hospital



Hvidovre Hospital





Health Care Without Harm (HCWH) Europe's recommendations

In hospitals and healthcare systems, food waste reduction has become an obligation because of its environmental and economic cost. As a result of the findings from these interviews, and considering the examples of strategies already being implemented in many European hospitals, HCWH Europe proposes the following recommendations to hospitals and healthcare facilities for reducing their food waste:

1

Establish a dialogue with local food suppliers and **incorporate environmentally sustainable criteria in the procurement process** (e.g. fresh, local, seasonal, and organic products) to generate less environmental impact, and prevent food waste at the source.

2

Improve communication between the kitchen and the wards so that there is accurate information about the number of patients requiring meals and about patients' preferences.

3

Establish a simplified and flexible food-ordering procedure, including protected mealtimes (during which patients who can eat independently are not interrupted, but patients who need assistance are helped), and opportunities for meal cancellations.

4

Ensure that patients are offered **different portion sizes**: (large, standard, or small portions) on menus and assist patients to make informed decisions about the appropriate portion size to choose, nutritional content, and any alternative meals available.

5

Raise awareness among staff, visitors, and patients about how much food is wasted and what types of food are most discarded by using transparent waste bins.

6

Carry out satisfaction surveys to meet patients' preferences and dietary habits and, if needed, change menus to remove the most unpopular items or dishes.

7

Train and inform kitchen and ward staff about the different stages of food waste management, such as efficient storage, the use of standard-sized serving utensils, and alternatives to discarding, along with providing help for patients with limited manual dexterity or strength to open containers, cut meat, or peel fruit.

8

Organise working groups (involving patients, administrative staff, healthcare professionals, and kitchen staff), to discuss and test different culinary innovations, such as adjusting the meals to suit certain patients' specific requirements, the presentation of dishes, and for sharing information about the hospital's food waste strategy.

9

Monitor and measure food waste (both in terms of weight and cost); evaluate which foods are wasted most in order to optimise the production of meals, taking into account patient preferences, choices, and needs. To this end, a measurement methodology should be adopted.

10

Explore alternatives to **redistribute surplus food** such as donating it to food banks (or other charitable schemes) or converting it into energy.

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Health Care Without Harm (HCWH) Europe is the European arm of a global not for profit NGO whose mission is to transform healthcare worldwide so that it reduces its environmental footprint, becomes a community anchor for sustainability, and a leader in the global movement for environmental health and justice. HCWH's vision is that healthcare mobilises its ethical, economic, and political influence to create an ecologically sustainable, equitable, and healthy world.

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