



# Reducing Food Waste in Irish Healthcare Facilities

Results, guidance and tips from a 3-year programme.





The Green Healthcare Programme (GHCP) aims to help healthcare facilities become more resource efficient, prevent/reduce waste and cut costs. The Green Healthcare Programme is an initiative of the Environmental Protection Agency under the National Waste Prevention Programme and the BeGreen umbrella.

The programme was run on a pilot basis in the Southern region in 2009 and rolled-out across the country in 2010. To date the GHCP has provided more than 100 individual surveys to over 30 healthcare facilities, including acute hospitals and primary community continuing care (PCCC) facilities, both public and private. The acute hospitals involved in the programme represent 50% of the total acute beds in Ireland.

Detailed surveys that assess waste management, food provision and utility provision were undertaken in the participating facilities. Through these surveys, and the follow-up work directly with the hospitals, the GHCP has developed an in-depth knowledge of how best to reduce waste and save money in healthcare facilities and has achieved impressive results.

The GHCP continues to support participating facilities and has developed a number of guidance documents, which are combined in this booklet, including:

**Benchmarks** - providing hospitals with valuable information upon which they can rate themselves and act

**Case Studies** - based on actual work done in Irish hospitals, to reduce costs and waste

**Best Practice Guides** - providing hospitals with valuable assistance in achieving best practice in waste reduction

**How-To Guides** - giving step by step instruction to hospitals to reduce costs and become more resource efficient

**Factsheets** - offering valuable information on an range of waste-related topics in Irish hospitals

Staff can use this guidance on a day-to-day basis in their work, to prevent waste and reduce costs. Two separate booklets have been developed for the subject areas of food waste and all other waste (healthcare risk waste, recycling, mixed general landfill waste). This is intended to allow distribution of the information to the most appropriate staff members e.g. food waste booklet to the catering department, and other waste booklet to facility managers, waste management or environmental personnel.

GHCP also facilitates the Green Healthcare Network, an online forum whereby healthcare professionals can share best practice and support each other (see website for details on how to join.)

All the guidance documents contained herein and more information about the programme can be found at [www.greenhealthcare.ie](http://www.greenhealthcare.ie)



Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive

## REDUCING FOOD WASTE IN IRISH HEALTHCARE FACILITIES

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# FACT SHEETS





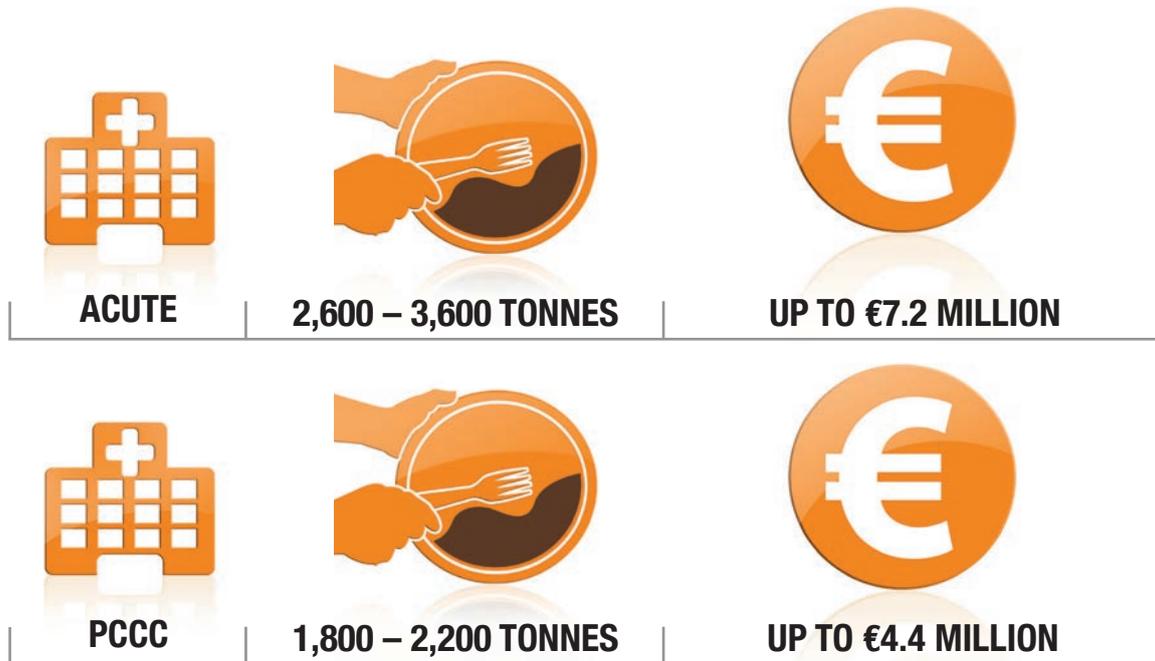
# FACT SHEET

## Food Waste in Irish Hospitals

This fact sheet shows the quantities and types of food waste generated in Irish hospitals. This information is based on a series of surveys carried out under the EPA's Green Healthcare Programme. The nature of a hospital setting is such that a certain amount of food waste is inevitable. However, the EPA's Green Healthcare Programme (GHCP) has found that there is always scope for some reduction in food waste amounts in hospitals, generating associated savings.

### What is the cost of food waste in all Irish healthcare facilities?

Scaling the results of the programme for the number of beds available nationally, an estimate of the quantity, and associated cost, of valuable food waste generated per annum in Irish acute hospitals and PCCC facilities is as follows:



A certain amount of food waste is inevitable in a hospital setting; the challenge for hospitals lies in identifying and implementing changes to try and realise some of these costs as savings.

### The cost of food waste!

The price to buy a kilogramme of food varies from high values for meat and fish down to cheaper prices for the likes of porridge and bread. On average, the purchase cost of food is a minimum of €2 per kilogramme. In addition, there are costs associated with the storage, cooking and management of food, as well as the disposal cost. So valuable food waste costs your facility a minimum of €2 per kg.

## Types of food waste

Certain types of food waste have no monetary value, for example meat bones, onion skins, etc. However, much of it does have value, and this is the type of food waste which should be focussed on. It is referred to as Valuable Food Waste in this fact sheet. Valuable food waste is generated in both the service of patients and canteens. During surveys carried out under the GHCP valuable food waste was divided into three categories: unserved food, untouched food, and uneaten plate waste.



### Unserved food waste -

food provided in bulk, that is not provided to patients, and left in containers at the end of service. This food waste is usually disposed of straight from the container. Where bulk food systems are used the unserved food waste is generated in the wards. For centrally plated systems it is generated in the main kitchen.



### Untouched food waste -

this is plated food that was never touched or consumed in any part. For example, a patient is absent from the ward for a procedure, a patient is discharged, or a patient refuses a tray as feeling unwell, etc.



### Uneaten plate waste -

this is the food remaining on plates after a meal is finished. This type of food waste may be generated because the patient is not hungry or the portion size is too big (most often the case).

## Patient food delivery systems in Irish hospitals:

### Bulk food supply -

food is prepared in the main kitchen and sent in bulk containers to the wards, where it is plated. This system can be operated with or without menus.

### Plated centrally -

food is prepared in the main kitchen and plated in a central area. These plated meals are then delivered to the ward.

The food provided to the wards (in bulk or plated) can be hot or cook-chilled. Cook-chilled food is prepared one or more days in advance in the main kitchen and then chilled. The chilled food is then heated or regenerated in special ovens or trolleys in the wards.

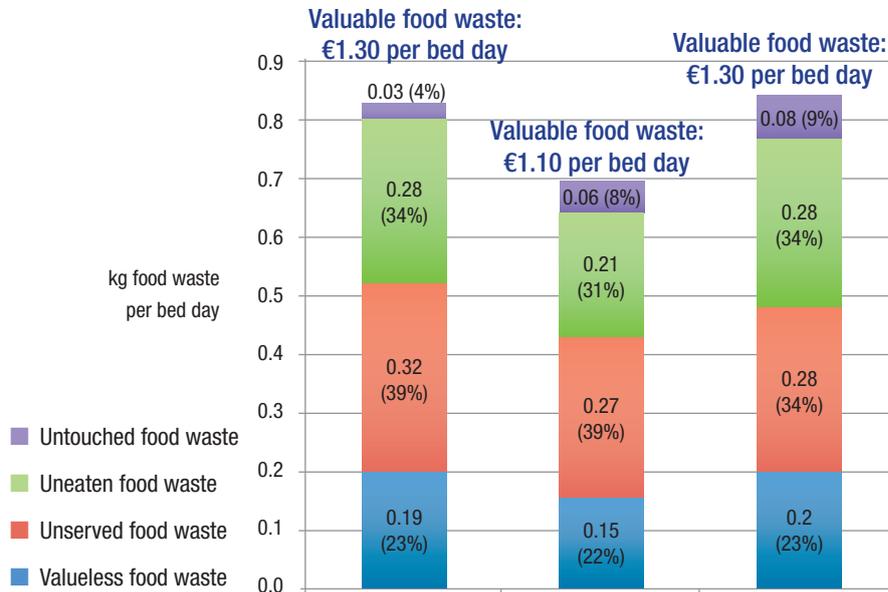


Looking at the results of detailed food waste surveys undertaken in a number of the GHCP facilities (15 acute, 4 PCCO), it is possible to determine the quantity of each type of food waste generated. The average quantity of each type of food waste generated per bed day for each type of food delivery system is outlined in the graph on the next page, along with the estimated cost of the valuable food waste.





## How much food waste is generated in acute hospitals and Primary Community and Continuing Care (PCCC) facilities?



Looking at all of the facilities involved in the GHCP, the average Irish acute hospital generates approximately **0.73 kg food waste** per in-patient bed day, while the average PCCC facility generates approximately **0.77 kg food waste** per in-patient bed day. As surveyed in 50% of all acute facilities.

### How to read the graph above:

On average, bulk food systems in acute facilities generated 0.32kg of unserved food waste, representing 39% of the total food waste generated. Uneaten food was generated in the next largest quantity with 0.28 kg of uneaten food waste generated per bed day, followed by valueless food waste representing 23% of total food waste. As expected, untouched food waste represented the smallest proportion of food waste, with 0.03 kg of untouched food waste generated per bed day.

### Some key points to note from the graph:

- The bulk and plated systems generate a similar level of food waste, with the quantity of each type of food waste differing slightly between the two systems. The plated system generates a higher level of untouched food waste with the bulk system generating a higher level of unserved food.

This variation is expected and explained with the example of a patient being absent for a procedure, with the kitchen not informed and adjusting accordingly. With the plated system food will not be eaten and be classified as untouched, while for the bulk system the food would not be plated and would be classified as unserved.

- PCCC facilities generated less food waste per bed day than acute facilities. Possible reasons for this include:
  - Smaller size of PCCC facilities - tighter stock control and ordering possible.
  - Longer term occupancy of patients/residents - staff develop a knowledge of what patients can and will eat.
  - Type of treatment offered – at meal times patients/residents are less likely to be absent at a procedure or fasting.

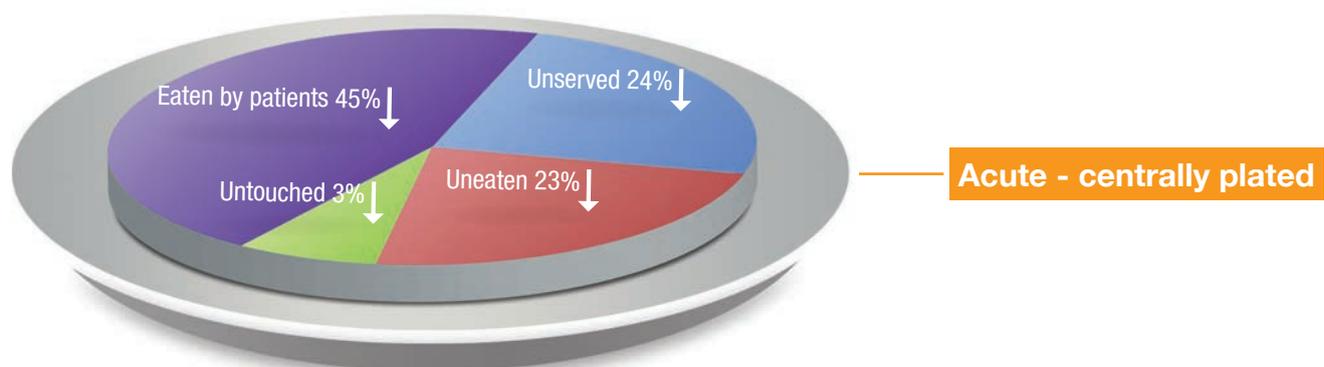
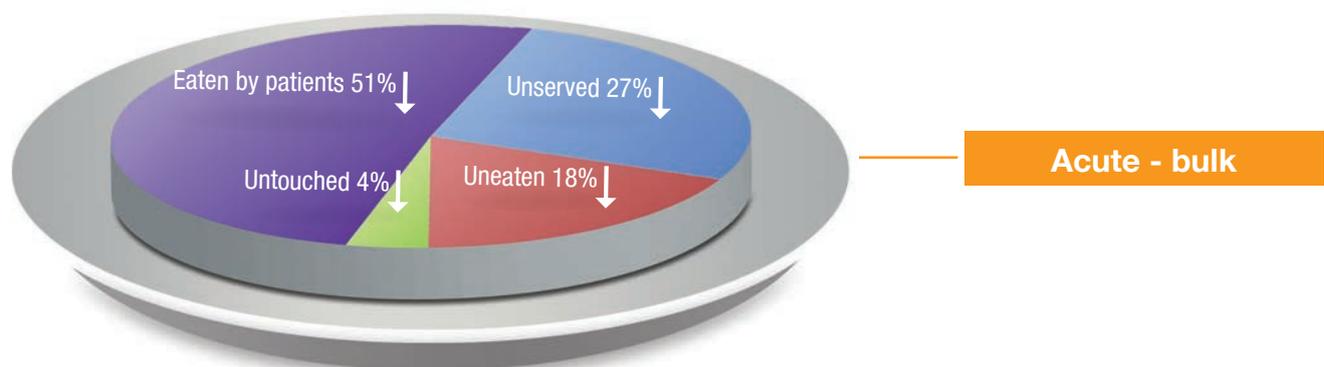
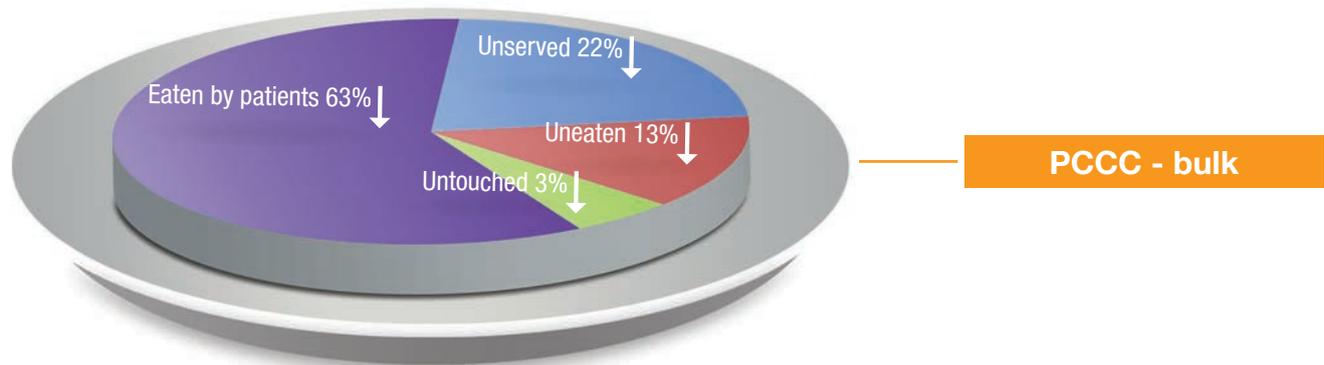


**Note:** while the vast majority of hospitals now segregate their food waste in line with the Food Waste Regulations, a portion of food waste can still be found in the general waste. The GHCP has found in acute hospitals, on average, 15% of the general landfill waste was comprised of food waste, with the value increasing to 17% for PCCCs. The values quoted in this fact sheet are for segregated food waste only. If you considered the quantity of food waste disposed of in the general waste, then the potential savings are even higher!

### How much of the food that is provided to wards is eaten by patients?

By measuring the quantity of food provided and the quantity of each type of food waste generated, it is possible to determine what proportion of the food provided is eaten by the patients. The average proportions for each of the food delivery systems are outlined below.

The figures below show that between 37% and 49% of the food prepared for and provided to patients is not eaten. By ensuring that the right amount of food is prepared and provided to patients, it is possible to reduce the quantity of food waste generated.







# BEST PRACTICE





# BEST PRACTICE GUIDE

## Food Waste Reduction



This guide outlines actions to reduce the quantity of food waste generated in healthcare facilities. The information has been gathered through work with a number of Green Healthcare Programme (GHCP) facilities, who were observed to operate best practice measures.

The nature of a hospital setting is such that some food waste is inevitable. For example, a patient feeling poorly who does not touch the meal they had ordered, or a patient is discharged early so that a meal already prepared is now surplus to requirements.

However, the EPA's Green Healthcare Programme has found that there is always scope for reducing food waste, regardless of the type of patient food system in operation (bulk or centrally plated), and in many instances before the food even reaches the patient.



### Nutrition and food waste – two sides of the same coin

Nutrition, as well as presence of malnutrition among patients, are very important considerations in the overall treatment and care of a patient. If something is not being eaten, i.e. if it is being wasted, it is not contributing to nutrition.

*“Serving larger portions is not a valid strategy to improve energy intake”* – (Plate waste in Hospitals and Strategies for Change, P.G. Williams et al., University of Wollongong, Australia, 2011)

**All food waste reduction measures, that affect portion size, should be undertaken in consultation with hospital nutritionists.**

### The cost of food waste



Until relatively recently food waste was essentially unseen, as it was disposed of in the general waste or using macerators. With the advent of the Food Waste Regulations, managers began to see the volume of food waste generated and the cost to take brown bins away. The true cost of food waste dwarves waste management costs and lies in the purchasing of the food itself, and the fuel and staff costs needed to prepare it.

The price to buy a kilogramme of food varies from high values for meat and fish to lower prices for foods like porridge and bread. On average, the cost to purchase food is €2 per kilogramme, so valuable food waste (see later), costs a minimum of €2 per kg.

## Measure and monitor

Monitoring the quantity of food waste generated in your facility and comparing this with other facilities, will allow you to assess how good or bad your food provision system is in terms of waste generation.

### Quantity of waste generated:

Ensure you monitor the quantity of food waste generated in your facility on a monthly basis. Obtain this information from your facility's waste manager/accounts or waste contractor. Monitoring this information will allow you to see any trends in waste generation.

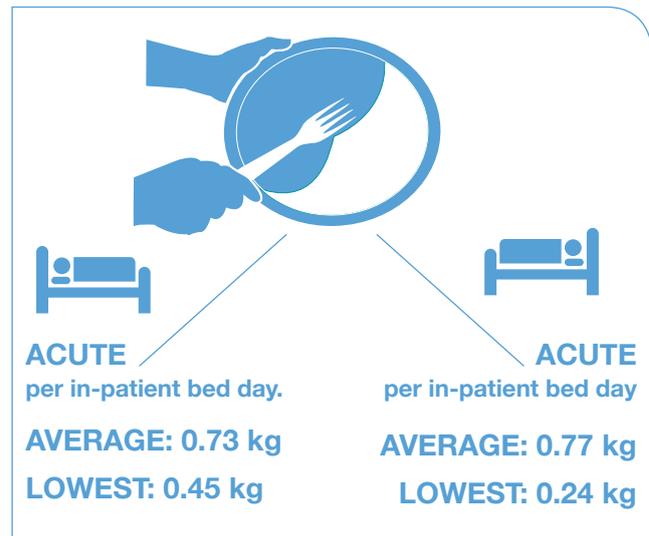
If the level of food waste generated has decreased it shows that your waste reduction measures have been successful. If the level of food waste generated has increased, and the hospital activity has remained the same, you should assess the reasons for the increase.

### Waste benchmark – waste generated per patient or inpatient bed day:

Obtain the total number of in-patient bed days per month in your facility (available from your facility's bed manager). Dividing the total food waste generated in your facility per month (or per annum) by the number of in-patient bed days for that month (or year), you will generate a waste benchmark for your facility.

Compare your benchmark with the GHCP benchmark, shown below, which indicates the average level of waste generated in those facilities involved in the programme.

If you produce more waste than the benchmark you should consider why. Can you reduce the level of food waste generated in your facility by implementing some of the measures outlined in this Best Practice guide?



## Types of food waste

Certain types of food waste have no value, for example meat bones, onion skins, etc. However, much of it does have value, and this is the type of food waste which should be focussed on for reduction. It is referred to as **Valuable Food Waste** in this guide. Valuable food waste is generated in both the service of patients and canteens. The types of valuable food waste that can arise include:

**Unserviced food waste** - food provided in bulk, that is not served to patients, and left in containers at the end of service. This food waste is usually disposed of straight from

the container. Where bulk food systems are used the unserved food waste is generated in the wards. For centrally plated systems it is generated in the main kitchen.

**Plate waste** - this is the food remaining on plates after a meal is finished.

**Untouched food waste** – this is plated food that was never touched or consumed in any part. For example, a patient is absent from the ward for a procedure, a patient is discharged, or a patient refuses a tray as feeling unwell, etc.

## How to reduce food waste in wards



### Timing of meals

If you operate a mid morning soup round, consider its effect on the amounts of food that will be consumed at lunch and size accordingly. Patients can fill up on soup, which often has a low nutritional content, and eat less of their lunch. This can result in overall reduced nutritional intake.

### Focus your efforts on lunch

The programme has found that generally, the highest quantity of food waste is generated at lunch. Is this the case in your facility? Try to determine the reasons for this and focus your waste reduction measures on this meal.

### Protected meal-time policy

Consider implementing a protected meal policy in your facility. This requires that visiting hours, treatment and other activities, where possible, do not take place during mealtimes. Patients can concentrate on eating without disturbance.

Some GHCP facilities involved in the programme operate a protected meal policy, and commented that when the policy was introduced, the level of food consumed increased, and the level of food waste generated reduced.





## How to reduce food waste in wards

### Ordering system - check it in practice

Every hospital knows in theory how their patient meal ordering system should work. But it is important to check how it ACTUALLY works. **Important aspects to look at include:**

- How are numbers of each meal required actually determined at the ward?
- In the kitchen, how:
  - is the amount of food to be cooked forecast (i.e. how do staff determine how much food is cooked)?
  - are the numbers of portions ordered by each ward translated into the quantity of food sent to each ward (bulk system)?

 **Extra portions of food can often be added “to be safe” - sometimes by the ward and/or the kitchen. Try to prevent this happening.**

**If you have a menu system (verbal or paper), it is important to assess how it is being used. Important aspects to look at include:**

- Are the menus actually used to generate the number of meals required? Surprisingly, the programme has observed facilities where filled out menus are ignored.
- Is there enough assistance for patients, particularly elderly patients to correctly fill in paper menus?
- For centrally plated systems, do staff check that paper menus are properly filled in, before being sent to the main kitchen?
- If there are options for portion size on the menu, do staff adhere to these when plating?

### Think about the portion size!

**Meat portion** – look specifically at this expensive, nutrient rich food. Suppliers can provide specified pre-sized portions. For carved meat, the weight and size can be examined.

**Potatoes and vegetables** – consider using a scoop (e.g. ice cream scoop) to provide your potatoes and vegetables. These scoops provide a set portion, are less open to over-filling and can be easier to use than regular spoons. Where a spoon is used try to demonstrate to staff what a typical portion size is.

**Elderly patients or those with poor appetite** – consider providing a smaller portion with fortification, rather than a large portion. During survey work these patients commented that when presented with large portions of food they quickly lose their appetite.

**Special meal options (e.g. vegetarian)** – these were often observed to be oversized, especially when side vegetables are provided, as often is the case. Try to anticipate **environmental factors** that can reduce the food eaten by patients. Hot foods (e.g. soup, curry, etc.) are unpopular in hot weather while salads are more popular.

**Size option on menu** - if you operate a paper menu do you include an option for portion size? Is it visible and regularly filled in? If you operate a verbal menu system do staff ask patients if they require a small portion? Also does the menu sheet have space to record the required portion size?

Ensure staff are aware of what is the correct portion size and ensure regular training of staff is undertaken.

### Talk to serving staff - they see it all

Talk to staff who serve patient meals and collect trays about popular and unpopular items. For example, in one hospital, a ward kitchen staff member quipped “hardly anyone ever eats turnip when its on”. Consider if it is possible to remove these items from the menu cycle and replace with more appealing, nutritionally equivalent foods.



## How to reduce food waste in wards continued

### Bulk food systems

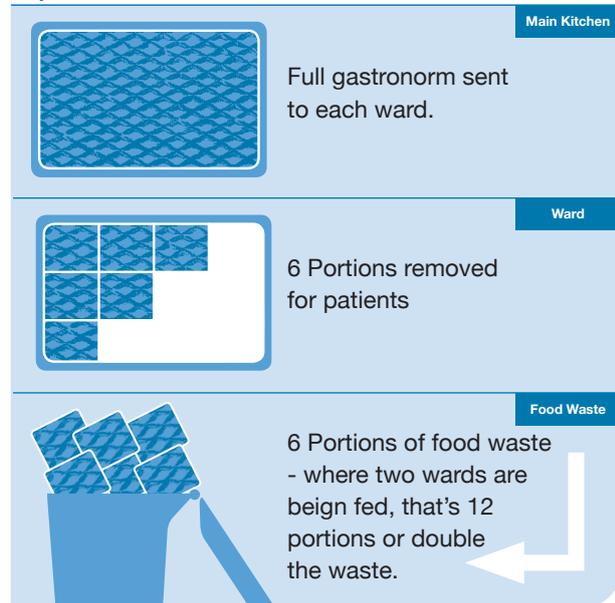
For bulk food systems, unserved food (food remaining in the bulk containers after serving) is the first thing to focus upon. It is important to **pre-portion** meal components. This not only ensures that just the required food is provided, but that the correct portion size is given, assisting serving staff. Even a cheap item like porridge should be portioned.

For **solid food** like lasagne and cottage pie, the contents of the tray (gastronorms) should be pre-portioned (cut into a set number of portions) in the main kitchen.

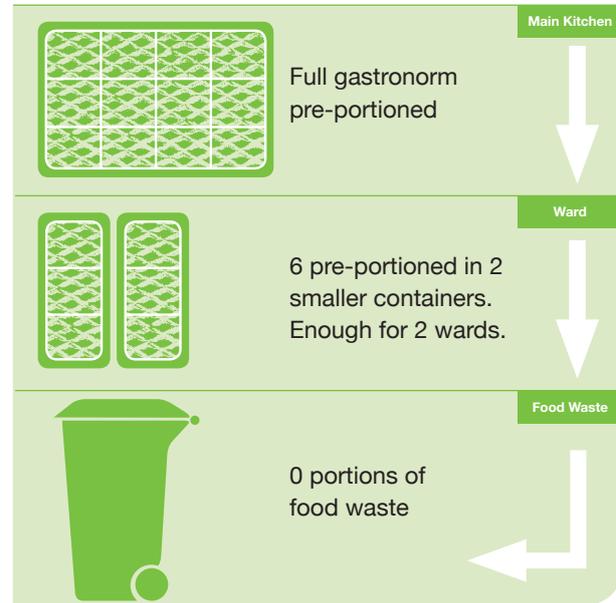
For less popular food, a small number of portions may be ordered by a ward. Food is usually prepared in large trays (gastronorms) that fit ovens, and often a whole tray is provided to each ward. Instead **provide the required number of portions in a smaller container**. Overall, the time and cost saved in producing less food, will more than make up for the time needed to portion the food.

### 6 PORTIONS REQUIRED PER WARD

#### Unportioned



#### Pre-Portioned



### How do you fill bulk containers with only the number of portions needed?

A high level of wastage is often observed for food, such as porridge and soup, that is provided in bulk containers. These foods are usually provided in bulk, even if a menu system is used in the ward.

These foods are often seen as being low cost, so a high wastage is acceptable, but consider how much you spend each year on these foods, and you will soon see the savings that can be achieved.

Surveys have shown that generally all bulk containers are filled to the same level, with random sized containers sent to each ward, even though the number of patients in the wards can vary significantly. Try to determine the number of portions (X) of these foods generally used in each ward and assign a specific sized container to it (by labelling). Then apply one of the following options to help staff accurately provide the correct number of portions:

- Note the volume of the container that X number of portions should occupy, and mark on the container.
- Note the weight that X portions of the food would represent. Place the container on a small scales and fill the container to the appropriate weight.

### Food with a high sauce content

For food with a high sauce content (e.g. stew, porridge, etc) the number of portions per container size should be determined e.g. full large container is 12 portions, half container (depth) is 6 portions, etc. Make sure to communicate the number of portions provided in the container to staff, so they don't provide extra large portions and run out of food.





## How to reduce food waste in canteens - both public and staff

**For some hospitals, canteens can be a significant source of food waste. Important things to concentrate on include:**

**Food that is prepared but not served:** For a period, ideally a full menu cycle, measure the quantity of each type of food that is unserved at each meal, to determine trends. Looking at these trends a more accurate estimate of the quantity of each food that should be prepared can be made.

**Cold counter food - salad bar & desserts:** These can be a significant source of waste. Look at the amounts of such food that is prepared and provided. Consider putting out less food at the start and replenishing more often. Where food is not used, some facilities dispose of such foods on the same day as it is prepared; others have a number of days shelf life.

### **Preparing food close to the end of service:**

Don't prepare food too close to the end of service - encourage people to purchase what is already prepared. In particular consider cooking smaller batches of sides such as rice, chips, etc., towards the end of service. One hospital stopped preparing food an hour before they stopped serving lunch and observed a large reduction in food waste.

### **Where high levels of plate waste are generated:**

- Use smaller plate sizes
- Use smaller scoop sizes
- Offer a small portion size, with a lower price
- In smaller canteens consider providing a smaller portion size and encourage staff to ask for free seconds if they are still hungry

### **Food waste remaining after service:**

If you do end up with unserved food after service, consider the following:

- Donations to charitable organisations (e.g. Meals on Wheels, St. Vincent De Paul, Crosscare food banks, Bia Food Bank)
- Chilled vending machines, with reheating capacity, for selling meals to night staff

### **“Using up” unserved food from a central plating system:**

Unserved food after plating patient meals can be sent to the canteen to be “used up”. As the quantity of this type of food generated each day will be unknown, since the number of patients eating may change, the amount of food prepared for the canteen should accommodate this. Otherwise, the food from the plating process may still end up getting disposed of later. In other words, by keeping a track of the typical quantities and types of food not served to the patients, the amounts cooked for the canteen can be adjusted.



## Ward provisions - condiments, bread, and milk.

### Condiments

Condiments can be perishable (butter) or non-perishable (sugar, salt, pepper, jam, ketchup, etc.). In many GHCP facilities multiples of each condiment are automatically placed on trays. In general, for infection control reasons, any unused condiments cannot be reused and are automatically disposed of when the trays are returned for cleaning. Though each individual condiment may be inexpensive, when the number of condiments disposed of over an entire year is determined, the disposal of unused condiments can be an expensive practice. To reduce the number of unused condiments disposed of, consider the following:

- Issue condiments on request from the food trolley, where possible
- Use individual containers for non-perishable condiments (as shown in picture to right). These containers can be left on trays and re-stocked as required. Ideal for facilities with long-term patients or residents. System passed by infection control in a number of facilities.
- Consider reducing the number of condiments automatically issued with each tray.



Example of an individual condiment container holding sugar sachets and jam.

**In one GHCP facility surveyed five sugar sachets were automatically included on each tray when tea is provided. On average, three sachets were returned unused on each tray, indicating the number provided could be reduced without impacting on patient requirements.**

### Bread

Plates of bread are often provided to patients at breakfast and/or tea, sometimes automatically. Surveys have observed this practice to generate significant quantities of uneaten bread. Consider providing bread on request, from a bread trolley or by menu request. At least review the number of slices provided.



### Perishable Stock

Over provision of perishable stock e.g. bread, milk, yoghurts, etc., can be a significant source of food waste, particularly in wards. The excess food which cannot be used in time is disposed of as out-of-date food waste. The following points may help to prevent the generation of this type of food waste:

- In most facilities the stock is generally provided on a daily basis. So ensure staff only order enough stock for one day.
- Make sure staff rotate stock to ensure the oldest food is used first. Excess quantities of food in cupboards and fridges impedes the rotation of stock, as it makes it difficult to place new food behind existing foods. Another reason to keep stock to a minimum.
- Monitor and track the stock provisions to the different wards in your facility. Compare wards with similar bed numbers to highlight those wards that are over-ordering food.
- In one GHCP facility, any bread approaching its use-by-date is sent to the main kitchen for re-use (e.g. bread crumbs). This re-use will be dependent on your hospital's infection control policy regarding movement of food around the hospital.



### Milk

Milk is often provided in individual jugs to patients for tea/coffee, but significant volumes can be wasted. The picture to the right shows the amount of milk left over after tea in one ward. The disposal of quantities of milk to drain, can also have an effect on waste water discharge limits. Consider the following:

- Are jugs of different sizes used?
- Do staff have a habit of automatically filling jugs, particularly large jugs?
- Could smaller jugs be used?





# HOW-TO GUIDES





# HOW-TO GUIDE

## Assessing Overall Food Waste

### What do I need for a food waste survey?

Note pad and pen \_\_\_\_\_

A weighing scales (to weigh the waste) \_\_\_\_\_

Camera (to take pictures, to help remember/document your findings) \_\_\_\_\_



This 'How-To' guide outlines important basic information on food waste and how to undertake a total food waste survey. It is recommended to use this guide first to get a picture of where and how much food waste is being generated in the hospital. A more detailed survey can then be carried out using one of the two How-To guides developed for bulk food or centrally plated systems, depending on what system you use.

### Relationship between food waste surveys



### Why carry out a food waste survey?

Food waste can be a significant issue in any healthcare facility providing food to patients, residents or the public. Until relatively recently food waste was essentially unseen, as it was disposed of in the general waste bin or using macerators. With the advent of the Food Waste Regulations, managers began to see the volume of food waste generated and the cost to take brown bins away.

In many healthcare facilities food waste is managed and disposed of by staff at the ward level. As a result catering staff, who are in charge of the efficient provision of food, do not get to see the quantity and type of food waste generated.

By carrying out a food waste survey, you can get a better picture of the food waste generated in your facility - the quantity generated in different areas, why it is generated and how it can be reduced. This can result in identifying significant savings for your facility.

### Work out how much food waste is costing you!

The true cost of food waste dwarves waste management costs - this cost lies in the purchasing of the food itself and the energy and staff costs to prepare it.

The purchase price of a kilogramme of food varies from high cost for meat and fish down to lower prices for foods like porridge and bread. On average, the cost to purchase food is €2 per kilogramme, so valuable food waste costs a minimum of €2 per kg.



## How to undertake a total food waste survey

This survey identifies the quantity of food waste generated in each area of the hospital where food is provided and food waste is generated. The survey will help you to identify the areas producing the largest quantity of food waste. You can then focus your food waste reduction measures on these areas.

The food waste survey should be undertaken on a **typical day** (usually mid week) for a full day. Where resources allow repeat the survey for a full week or over a number of days. The steps outlined below should be repeated for each of the meals.



### Day before the survey:

<b>1.</b>	<p>Inform staff in the ward kitchens or areas where food waste is stored, that a survey will be taking place the next day, and that they should:</p> <ul style="list-style-type: none"> <li>- carry on as normal and not change any of their practices</li> <li>- not dispose of food waste before the survey team has weighed it</li> </ul> <p>It will also allow you to reassure staff that you only wish to determine the quantity of waste generated in each area and that they are not being audited or checked.</p>
<b>2.</b>	<p>Compile a list of all of the areas with food waste bins and prepare a sheet, where you can record your weights data for each meal. Group the areas by floor or building to make it easier to identify the areas to visit.</p>

### On the day of the survey:

<b>1.</b>	<p><b>Ensure that all food waste bins are empty at the start of the survey.</b></p> <p>You can request staff to ensure all bins are empty before breakfast preparation commences. It is still best to check all the bins at the start of the survey. If you come across food waste in a bin make sure to weigh it.</p>
<b>2.</b>	<p>Weigh the food waste bin in each area after each of the meals (breakfast, soup - if provided, lunch and tea), and record the value in your worksheet.</p> <p>Make sure to note if the food bin is missing a lid or is a different variety from the one used elsewhere in the hospital (e.g. mayo bucket or food tray)</p>
<b>3.</b>	<p>Ask staff the number of patients actually eating at each meal. This will allow you to assess the waste generated per patient in each area.</p>
<b>4.</b>	<p>Make sure to check with staff if and when the bin has been emptied during the day e.g. after each meal or once at the end of the day. This is to ensure that you aren't double counting any food waste.</p>
<b>5.</b>	<p>Weigh a typical empty food waste bin. If other types of bins are used to store waste make sure to weigh these as well.</p>

**Don't forget to measure the food waste from the staff and public canteens and kitchen. Naturally these are significant sources of food waste and should not be forgotten about when looking at measures to reduce food waste.**





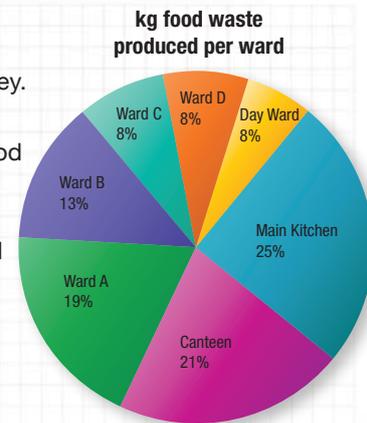
## How to undertake a total food waste survey continued



### After the survey - analyse your data:

You will need to analyse the information you have gathered during the survey. Some important things to remember when analysing your information:

- Subtract the weight of the empty food bin to get the actual quantity of food waste generated.
- If the food waste bin is only emptied once a day, make sure to subtract the weight recorded at the earlier meal, to get the actual waste generated at each meal. Likewise, if there was food waste in the bin at the start of the day subtract this from the breakfast value.
- The number of patients in each ward can vary. So make sure to express the food waste quantity per patient for each meal in each area, to allow you to compare like with like.
- Expressing the results in easy-to-read graphs may help you to convey the results to others. For example, the graph above makes it clear which wards produce the highest quantity of waste.
- Is there a consistent level of waste generated per patient eating? What is the reason for a ward or area having a very high level of food waste generation compared to others?



### What to do next?

Using the information gathered in the detailed survey, you could consider undertaking a detailed food waste survey in your facility. This will help to determine the type of food waste generated and why food waste is generated.

Use one of the two How-To undertake a detailed food waste survey' guides, depending on whether your food supply system is bulk or centrally plated.

Ideally the survey should be carried out in a number of wards or, where resources are limited, in a selected ward. The selected ward could be representative of normal activity, or could have the highest level of food waste generated per patient, as identified in the overall survey. It is always best to focus resources on those areas generating the largest quantity of waste first.

### Types of food waste

Certain types of food waste have no value, for example meat bones, onion skins, etc. However, much of it does have value, and this is the type of food waste which should be focussed on for reduction. It is referred to as Valuable Food Waste in this guide.

Valuable food waste is generated in both the service of patients and canteens. The types of valuable food waste that can arise include:

**Unserved food waste** - food provided in bulk, that is not served to patients, and left in containers at the end of service. This food waste is usually disposed of straight from the container. Where bulk food systems are used the unserved food waste is generated in the wards. For centrally plated systems it is generated in the main kitchen.

**Untouched food waste** - this is plated food that was never touched or consumed in any part. For example, a patient is absent from the ward for a procedure, a patient is discharged, or a patient refuses a tray as feeling unwell, etc.



**Plate waste** - this is the food remaining on plates after a meal is finished.



The GHCP has developed a calculation sheet which may help you to analyse your data. It can be found in the Food Waste or How-To Guides sections of the GHCP website.

[www.greenhealthcare.ie/topics/food-waste](http://www.greenhealthcare.ie/topics/food-waste)



# HOW-TO GUIDE

## Undertaking a Detailed Food Waste Survey - Centrally Plated System

### What do I need for a food waste survey?



Buckets/containers (to hold the waste/separate the waste streams)

Camera (to take pictures, to help remember/document your findings)

A weighing scales (to weigh the waste)

Note pad and pen

This 'How-To' guide outlines how to undertake a detailed food waste survey in facilities operating centrally plated systems. This How-To guide should be read in conjunction with the How-To assess overall food waste guide.

### Relationship between food waste surveys



### How to perform a detailed food survey for a centrally plated system

The food waste survey should be undertaken on a **typical day** (usually mid week) for a full day. Where resources allow repeat the survey for a full week or over a number of days. The steps outlined below should be repeated for each of the meals.

#### Before the survey:

- **Pick a ward in which to undertake the survey**

Though the meals are plated in the main kitchen, it is still necessary to look at the provision of food in a sample ward. The ward can be a typical representative ward or a ward that generates a high level of food waste, either in total or per patient, as highlighted in the total food waste survey.

Part of the survey will need to be undertaken in the main kitchen where the meals are plated.

- **Determine if any of the meal components are provided in bulk to the wards e.g. porridge at breakfast or soup**

In many facilities using centrally plated systems, breakfast is provided in bulk containers to the ward, where it is plated. Other food such as cereal and bread may also be provided by the ward kitchen. In such cases, the main work required will need to be undertaken in the ward kitchen.

## How to perform a detailed food survey for a centrally plated system



### On the day of the survey - in ward kitchen:

1. Ensure the food waste bin in the ward is empty. If the bin contains food waste from the night before, weigh the bin to ensure that you only record one day's worth of waste.

#### **Meals provided in bulk or provided from the ward kitchen (breakfast or soup round):**

2. Weigh each bulk container of food provided to the ward. Record the quantity of each type of food as **prepared food** in your worksheet.
3. After all of the meals are plated, re-weigh each bulk container of food. Record this quantity as **unserved food**.
4. For meal components supplied in bulk from the ward kitchen e.g. cereals, measure the weight of the container before the start of service and at the end of service, to determine the quantity of these foods provided.
5. Undertake survey as from **step 7** below.

#### **Meals centrally plated and provided to the wards:**

6. After the plated meals have been provided to the patients, record if any meals have not been provided to patients. Try to determine the reasons for these meals not being provided to a patient e.g. patient discharged, absent due to procedure. Record the weight of these meals as **untouched food**.
7. Ensure that all plates are collected from the patients and returned to the ward kitchen without being cleared. Check each plate and put aside any meals that are still sealed (plastic wrap) or have not been touched in any part. Record the quantity of these meals as **untouched food**.
8. Collect and weigh the food on the remaining patient plates. The easiest way to do this is to scrape the food into a container, which is then weighed. Record this quantity as **uneaten food or plate waste**.  
If you have time, as the plates are being cleared, separate the food into the different types of food i.e. put meat into one container, potato in another, mixed vegetables in another, etc.  
This can help you to identify foods which are not being consumed - too large a portion may be provided or the food type may be unpopular.
9. As a check, weigh the food waste bin at the end of service. This will help to verify your results.
10. Remember to weigh any plates, bowls, etc., used in providing food. This will allow you to determine the net weight of food provided.
11. Try to take pictures throughout the different steps of the survey. The photos will help you in determining the type of container used for each type of food.

**The hospital may have a policy of trays being returned to the main kitchen for clearing. In this case make sure to undertake the above steps in a designated area of the main kitchen.**





## How to do a detailed food survey for a centrally plated system continued



### On the day of the survey - in main catering kitchen:

1. Weigh a number of examples of the different plated meals. If different sized meals are available to order then make sure to weigh each of these options. Record the number of each type of meal that was ordered for the ward.

Where possible zero or tare the scales with an empty plate, to give the weight of food only. If you do not have an empty plate to hand, later weigh an empty plate and subtract this from the meal weight value when analysing your data.

2. Weigh any unserved food left over after the plating process. Another staff member may need to remain in the main kitchen after the plating process to capture and weigh this food. Alternatively you may request the kitchen staff to weigh this food.



### Condiments

Condiments can be perishable (butter) or non-perishable (sugar, salt, pepper, jam, ketchup, etc.). In many GHCP facilities multiples of each condiment are automatically placed on trays. In general, for infection control reasons, any unused/unopened condiments cannot be reused and are automatically disposed of when the trays are returned for cleaning. Though each individual condiment may be inexpensive, when the number of condiments disposed of over an entire year is determined, the disposal of unused condiments can be an expensive practice.



**Record the number of each type of condiment that is unopened after each meal. Where possible also record the number of condiments provided (if a set amount is provided on each tray).**

### Tissues and liquids

Some healthcare facilities have a policy of placing tissue paper napkins and/or liquids (e.g. milk, tea) in the food waste bin.

While undertaking the food waste survey, ask staff not to place these items in the food waste bin and place in a separate container. This will allow you to measure food waste only.



**Where possible try to collect all unused milk separately. Weigh or record the volume in a jug. You could be surprised how much milk is thrown away unnecessarily each day!**



### After the survey:

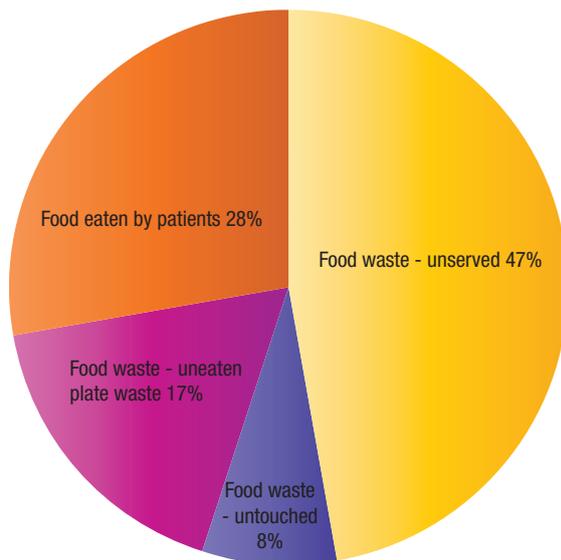
You will need to analyse the information you have gathered during the survey. Some important things to remember:

- Multiply the net weight of the different meals by the number of each option ordered, to get the quantity of food served or provided to the ward.
- Total the quantity of each type of food waste generated and subtract this from the quantity of food provided. This will give you an estimate of the quantity of food actually eaten by the patients. This information can be of real benefit in assessing the actual calorie intake of patients.
- Any problems or issues with the food ordering system can be observed by the level of untouched food portions generated. A high level of untouched food waste may indicate the need to review the communication system between ward staff ordering food and medical staff.
- Expressing the results in easy to read graphs may help you to convey the results to others. Some example graphs are shown below.



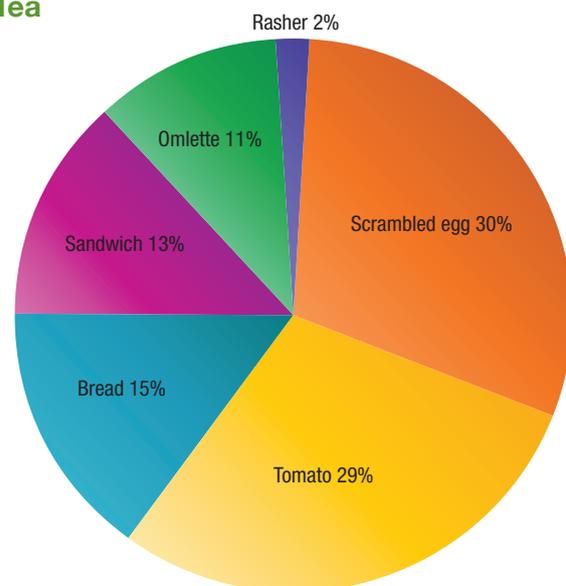
The GHCP has developed a calculation sheet which may help you to analyse your data. It can be found in the food waste section of the GHCP website. [www.greenhealthcare.ie](http://www.greenhealthcare.ie)

#### Breakfast



This graph shows how the food provided at breakfast is managed - how much is eaten and how much is wasted. (By recording the quantity of food that is provided at breakfast and the quantity of food waste it is possible to determine the quantity or proportion of the food that was eaten by patients.)

#### Tea



This graph shows the quantity of each type of food that was left on patients' plates after tea. The majority of the food waste was scrambled egg and tomatoes. This could suggest that the provided portion of these foods is too high or that the food is unpopular, as in the case of tomato. Can tomato be replaced with another more popular type of food with the same nutritive value?

### “Using up” unserved food from a central plating system:

Unserved food after plating patient meals can be sent to the canteen to be “used up”. As the quantity of this type of food generated each day will be unknown, since the number of patients eating may change, the amount of food prepared for the canteen should accommodate this. Otherwise, the food from the plating process may still end up getting disposed of later. In other words, by keeping a track of the typical quantities and types of food not served to the patients, the amounts cooked for the canteen can be adjusted.

**The best scenario is where minimal food is left over from the plating process and does not have to be used up.**





# HOW-TO GUIDE

## Undertaking a Detailed Food Waste Survey - Bulk Food System



This How-To guide outlines how to undertake a detailed food waste survey in facilities operating a bulk food system. This How-To guide should be read in conjunction with the How-To assess overall food waste guide.

### Relationship between food waste surveys



Buckets/containers (to hold the waste/separate the waste streams)



Camera (to take pictures, to help remember/document your findings)



A weighing scales (to weigh the waste)



Note pad and pen



## How to do a detailed food survey for a bulk food system

The food waste survey should be undertaken on a **typical day** (usually mid week) for a full day. Where resources allow repeat the survey for a full week or over a number of days. The steps outlined below should be repeated for each of the meals.



### Before the survey

**Pick a ward in which to undertake the survey:** The ward can be a typical representative ward or a ward that generates a high level of food waste, either in total or per patient, as highlighted in the total food waste survey.

### On the day of the survey

<b>1.</b>	Ensure the food waste bin in the ward is empty. If the bin contains food waste from the night before, weigh the bin to ensure that you only record one day's worth of waste.
<b>2.</b>	Before the plating of meals, weigh each bulk container of food provided by the main kitchen. Record the quantity of each type of food separately as food provided in your notes.
<b>3.</b>	If possible weigh example portions of each type of meal. This information can be very beneficial to a number of staff, including catering and dietitians.
<b>4.</b>	After all of the meals are plated re-weigh each bulk container of food. Record this quantity as unserved food.
<b>5.</b>	Ensure that all plates are collected from the patients and returned to the ward kitchen without being cleared. Check each plate and put aside any meals that are still sealed (plastic wrap) or have not been touched in any part. Record the quantity of these meals as untouched food.
<b>6.</b>	<p>Collect and weigh the food remaining on the patient plates. Record this quantity as uneaten food or plate waste.</p> <p>If you have time, as the plates are being cleared, separate the food into the different types of food i.e. put meat into one container, potato in another, mixed vegetables in another, etc.</p> <p>This can help you to identify foods which are not being consumed - too large a portion may be provided or the type of food may be unpopular.</p>
<b>7.</b>	As a check, weigh the food waste bin at the end of service. This will help to verify your results.
<b>8.</b>	Remember to weigh all clean empty containers used for the bulk storage of food and any plates, bowls, etc., used in providing food. This will allow you to determine the net weight of food provided. Try to take pictures throughout the different steps of the survey. The photos will help you in determining the type of container used for each type of food.





## How to do a detailed food survey for a bulk food system continued

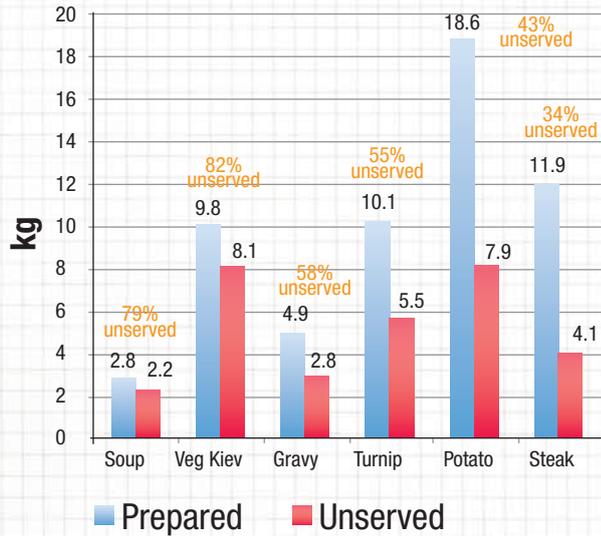


### After the survey

You will need to analyse the information you have gathered during the survey. Some important things to remember:

- Subtract the weight of the containers used to store the food to get the net weight of each type of food.
- Compare the quantity of food that is unserved with the quantity of the food that was provided.

This will help you to determine the level of excess food that is being provided to the wards. The quantity of food ordered and/or provided can then be reviewed accordingly. The easiest way to communicate this is to express the proportion of the food provided that was unserved.



For example if 2 kg of potatoes is provided and 1.5 kg is unserved, then 75% of the food provided is unserved. This high level indicates that the quantity of potatoes provided could be reduced.

- Total the quantity of each type of food waste generated and subtract from the quantity of food provided. This will give you an estimate of the quantity of food actually eaten by the patients. This information can be of real benefit in assessing the actual calorie intake of patients.
- Expressing the results in easy to read graphs may help you to convey the results to others.

For example the graph above outlines the quantity of food that was provided (prepared), and was unserved following service, as well as the proportion of the food that was unserved. It can be clearly seen that the quantity of veg kiev and soup that was provided was far in excess of what was required (Kiev: 82% unserved, soup: 79% unserved).



The GHCP has developed a calculation sheet which may help you to analyse your data. It can be found in the food waste section of the GHCP website. [www.greenhealthcare.ie/topics/food-waste](http://www.greenhealthcare.ie/topics/food-waste)



### Bulk food system: quick survey

If you do not have time to undertake a full detailed survey, then consider undertaking a quick survey, that only looks at the issue of unserved food waste in the wards.

In the main catering kitchen weigh the containers of each type of food provided to each ward. As the food is being placed in the heated trolley/bain-marie pop it on a scales- it will only take an extra couple of seconds.

Following the meal, request that ward staff do not dispose of any unserved food in the ward food bin. Instead ask them to place the containers back into the heated trolley or bain-maire and return them to the main catering kitchen. This will mean less work for staff, so they should be happy to comply.

When the trolleys are returned to the main kitchen look at each ward separately. Re-weigh each of the containers and record the food as unserved food waste.

If you are tight on time, you can just look at one ward at a time. However when equipment is set up and staff are available and familiar with the process, it is as easy to look at all the wards at once. You can also directly compare the different wards (same food provided, same day, etc.).

### Condiments

Condiments can be perishable (butter) or non-perishable (sugar, salt, pepper, jam, ketchup, etc.). In many GHCP facilities multiples of each condiment are automatically placed on trays. In general, for infection control reasons, any unused/unopened condiments cannot be reused and are automatically disposed of when the trays are returned for cleaning. Though each individual condiment may be inexpensive, when the number of condiments disposed of over an entire year is determined, the disposal of unused condiments can be an expensive practice.



**Record the number of each type of condiment that is unopened after each meal. Where possible also record the number of condiments provided (if a set amount is provided on each tray).**

### Tissues and liquids

Some healthcare facilities have a policy of placing tissue paper napkins and/or liquids (e.g.milk, tea) in the food waste bin.

While undertaking the food waste survey, ask staff not to place these items in the food waste bin and place in a separate container. This will allow you to measure food waste only.



**Where possible try to collect all unused milk separately. Weigh or record the volume in a jug. You'll be surprised how much milk is thrown away unnecessarily each day!**







# CASE STUDIES





# CASE STUDY University Hospital Galway

## Food Waste Reduction Programme



University Hospital Galway (UHG) is a large acute hospital providing a comprehensive range of services to emergency and elective patients on an inpatient, outpatient and day care basis. The hospital has 558 inpatient and 106 day case beds. UHG is part of Galway University Hospitals.

The hospital joined the Green Healthcare Programme (GHCP) in 2010. The GHCP undertook detailed survey work in the hospital, which generated a number of waste reduction recommendations. A food waste survey was repeated in 2013 to identify savings achieved.

This case study outlines the waste reduction measures implemented by University Hospital Galway and the associated savings achieved.





**Reduced food waste:**  
 Comparing the first 7 months of 2013 with the same period in 2012:  
**2.8 Tonnes Decrease**  
 When scaled for the year this indicates savings of  
**5 TONNES PER ANNUM DECREASE**






**Reduced condiment provision:**  
**70% REDUCTION IN THE WASTAGE OF UNOPENED CONDIMENTS**

**UHG has implemented a number of measures to reduce the quantity of food waste generated onsite, with the main measures including:**

- Use of new food containers or scan boxes
- Ordering of meals the night before to better predict the required quantity of each meal option
- Recording of the number of unserved meal portions, to identify unpopular meal options
- Greater interaction with medical staff, to identify those patients not present at meal time (absent for procedure, fasting, etc.) or those patients with special dietary requirements that require higher assistance
- Reduction in the number of condiments automatically provided on trays



**Use of new food containers or scan boxes:**

In the original survey the hospital outlined that the type of scan boxes in use had to be filled to near full, regardless of the amount of food required, to ensure even heating of the food contained within. The hospital invested in new scan boxes that allowed them to send smaller quantities of food to the wards, in line with the quantity of food actually required, reducing the quantity of excess food.

**Ordering of meals the night before to better predict the required quantity of each meal option:**

Previously the patients ordered in the morning, the meals they required that day. Food preparation starts early in the morning and as the catering team was not aware of the number of portions of each meal option required, they generally prepared high quantities of each option to ensure that each patient was provided with what they ordered.

By ordering the food the night before, the catering department can prepare the quantity of each option that is actually required, reducing the quantity of excess food.

**Recording of the number of unserved meal portions to identify unpopular meal options:**

As policy, the hospital now records the number of portions of each meal option that is unserved at lunch and tea. This information is used to determine the unpopular meal options. For unpopular meal options



the catering department will review and improve the recipe, or replace the meal option with one of a similar or greater nutritional content.

For example, the original GHCP survey observed a significantly high level of wastage at the soup round. In addition this meal had a relatively low calorific content. The catering contractor's dietician reviewed the average nutritional content of a full days standard menu, and found that by replacing the soup round with milk and a snack that the average energy, protein and fat content increased by 10%, 9% and 16% respectively. Thus by removing the soup the hospital reduced wastage and increased the nutritional intake of patients.



Condiments recorded to be automatically placed on a tray before the commencement of the waste reduction programme

**Reduction in the number of condiments automatically provided on trays:**

The hospital reduced the number of condiments automatically placed on trays. Patients still have enough condiments and the number of unused condiments, which must be disposed of, was reduced by 70%.

**Review of the provision of perishable ward provisions to the wards:**

The hospital has reviewed the quantity of perishable foods (e.g. bread, milk, etc.) that is provided to and stored in the ward kitchens, to ensure proper stock rotation and reduce the quantity of 'out-of-date' food waste generated.

**RESULTS OF THE WASTE REDUCTION PROGRAMME**

Comparing the quantity of food waste recorded by the waste contractor in the first 7 months of 2013 with that generated in 2012, the hospital generated **2.8 tonnes less food waste. Scaled for a year that is 4.9 tonnes less food waste, a reduction of 6%.** These food waste reduction measures have achieved savings in the cost of purchasing and preparing the food.

**These waste reduction measures have resulted in notable cost savings for the hospital. The hospital continues to work on measures to reduce the quantity of waste it produces even further.**





# CASE STUDY

## St. Michael's Hospital - Dun Laoghaire

### Food Waste Reduction Programme Case Study



St. Michael's Hospital is an acute general hospital providing a range of services to the people of South Dublin and Wicklow. St. Michael's is part of the St. Vincent's Healthcare Group. The hospital has a significant elderly patient profile.

In 2011, the hospital's Catering Manager and Senior Dietician started a Food Waste Reduction Programme. This programme aimed to reduce the quantity of food waste generated by the hospital, but more importantly increase the nutritional intake of patients through increased food consumption by patients. As part of this work the Green Healthcare Programme undertook a detailed food waste survey and a general & healthcare non-risk waste survey, which provided a number of waste reduction recommendations. The food waste survey was repeated in 2013 to identify savings achieved.

This case study outlines the key measures implemented by the hospital to achieve these results. The hospital continues to monitor and review its food provision system, hoping to reduce food waste even further.

#### Food provision system in St. Michael's Hospital:

The hospital provides full in-house catering services to all patients, and a limited canteen service for staff and the public. A centrally plated system is in use at lunch. At breakfast porridge is provided in bulk to the wards, with bread and toast provided from the ward kitchen. A verbal menu system is in place, with ward catering staff asking patients in the morning what option they would like for lunch and tea that day. The hospital provides full meals for around 70 patients per day.



## FOOD WASTE REDUCTION MEASURES IMPLEMENTED

### Reduced the quantity of porridge provided to the wards at breakfast:

Enough porridge is still provided to ensure all patients who requested porridge receive a sufficient portion. Instead the quantity of excess or unserved porridge left over and disposed of after breakfast has been greatly reduced.

### Provide different sized portions for elderly male and female patients:

The hospital identified that the portion size of food provided to elderly patients had an affect on the quantity of food they ate. Providing a large portion of food had the opposite effect to what would be expected; the patient ate less. The patient often felt bad that they couldn't eat the food and lost their appetite. Consequently elderly patients are provided with smaller portions of food with a higher nutrient and calorie content or fortified food. Male patients are provided with a larger portion to take into account their higher calorie requirement.



All patient dietary requirements are outlined on white boards in the ward kitchen.

### Regular training of staff regarding the need to order the correct meal (size, consistency, etc.) for each patient:

All patient dietary requirements are outlined on white boards in the ward kitchen. Staff are regularly trained on, and reminded of the need to order the right type and size of meal for each patient. Where ward staff request additional food from that originally ordered (e.g. a diabetic dessert for a patient where a regular dessert option had been ordered), it is noted and staff are later reminded of the need to order the correct meal.

### Operate a protected meals policy:

The hospital has operated a protected meals policy for a number of years and this is actively enforced by management. Under the policy staff are required to assist in the feeding of patients, with the mealtime not seen as a chance by staff to catch up on other work.

### Reuse food from patient provision in chilled vending machine for out-of-hours meal provision:

The hospital provides a canteen service at breakfast and lunch, seven days a week. The hospital identified there was a demand for food from the evening and night staff. Rather than preparing additional food, the hospital re-uses any food remaining after the provision of patient meals. The food is placed into disposable containers, which are stored in a refrigerated vending machine. A microwave oven is provided for the re-heating of the meals. Not only is a food service provided to evening and night staff, but excess unserved food that would otherwise be thrown away is sold – making money from waste.

### Reduced quantity of milk provided in individual jugs:

At breakfast and tea individual jugs of milk are provided for hot drinks (tea coffee). The food survey observed that a large proportion of the milk provided in the jugs was not used and was simply poured down the sink. By simply filling the existing jugs less, the hospital reduced the volume of wasted milk substantially.

### Continual review of the nutritional content of food provided to patients and removal of foods where necessary:

*"Good nutrition is needed to ensure that the treatment the patient receives in hospital is as effective as possible. It must be recognised that providing nutritious and appetising food is a key part of high-quality, effective hospital treatment"* -

Food and Nutritional Care in Hospitals Guidelines for Preventing Under-Nutrition in Acute Hospitals, Department of Health and Children, 2009.

The hospital continually reviews the food used in meals to patients to ensure that the best nutritional content is being provided.

The hospital recently reviewed the provision of soup, of which an average portion contains 60 kcal. The hospital trialled the removal of the soup and observed that the patients ate more of their lunch, increasing their calorie intake by up to 30%. Some patients who only previously ate the low calorie soup were now eating a small lunch, greatly increasing their calorie intake.





### Increased recycling:

The waste survey undertaken by the GHCP identified the potential to improve the segregation of recycling in the different areas of the hospital. The hospital has implemented a number of measures to increase recycling including:

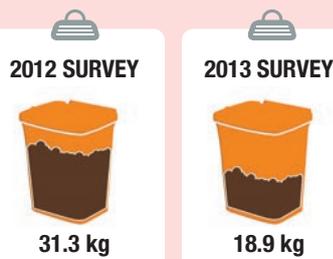
- Improved educational signage in ward kitchens where large volumes of recyclables are generated
- Training and awareness session with staff
- Introduction of additional recycling bins in the theatre

These small measures increased the number of recycling bins collected by 7%.



## RESULTS OF THE FOOD WASTE REDUCTION PROGRAMME

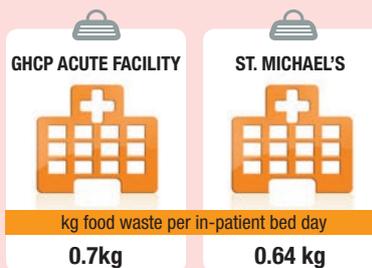
### TOTAL FOOD WASTE FROM WARDS



The quantity of food waste generated in the wards reduced by 12kg or 40%.

Scaling this for the year, it equates to savings of approximately 3.9 tonnes of valuable food waste or cost savings of €7,800 per annum.

### LEVEL OF FOOD WASTE COMPARED TO OTHER HOSPITALS



The hospital produces 9% less food waste than the average GHCP facility.

This 9% is likely an under-estimate as a significant amount of food is prepared onsite (e.g. vegetables, meat, etc.) compared to the average GHCP facility.

### LEFT OVER MILK WASTE IN INDIVIDUAL JUGS



The volume of left over milk in individual jugs, that was disposed of to drain, was reduced by 44% in one example ward survey.

Scaled up for the year this equates to savings in the region of 250 litres per annum.

The quantity of food waste generated in the hospital is very favourable.



# CASE STUDIES





# CASE STUDY Mayo General Hospital

## Food Waste Prevention in Mayo General Hospital



Mayo General Hospital is a 265 inpatient bed acute hospital providing a wide range of inpatient and outpatient services including medical, surgical, A&E, maternity, dialysis, and oncology.

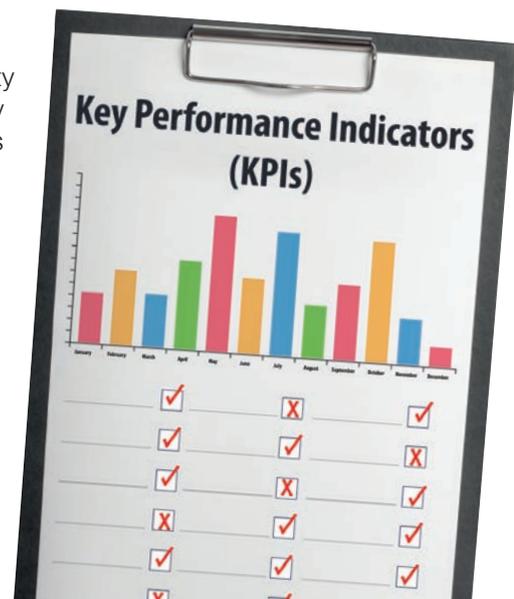
The Green Healthcare Programme (GHCP) undertook a detailed survey of the food provision system in Mayo General Hospital in 2010, with the hospital observed to have one of the lowest levels of food wastage of all the 22 facilities in which a food waste survey was undertaken.

This case study outlines the steps taken by the hospital to prevent and reduce the quantity of food waste generated in the provision of patient meals and staff and visitor meals in the public canteen.

### Food provision system in Mayo General Hospital (MGH)

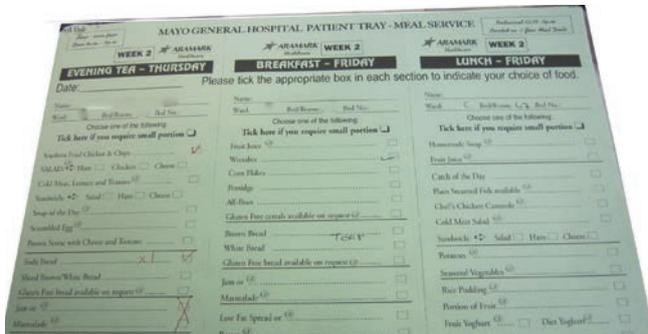
Food services in Mayo General Hospital (MGH) are provided by an external food contractor - Aramark Healthcare. When deciding to use an external private company to provide food services, the hospital wanted to ensure that nutrition and quality were not compromised for the sake of profit - a view shared by Aramark Healthcare. Thus, the food provision contract requires a number of key performance indicators (KPIs) to be met by the contractor. These include budget, nutrition requirement, waste generation levels and patient satisfaction. The continual monitoring, attainment, and reporting to management of these KPIs by Aramark Healthcare, ensures that the patients, visitors and staff of MGH are provided with an efficient, low food waste catering service.

MGH operates a cook chill system where food is prepared in the main catering kitchen, chilled and then provided in bulk containers to individual ward kitchens. The chilled food is heated to serving temperature in Burlodge trolleys and then plated to patient's requirements.



## Key measures implemented by hospital

The system in MGH considers the minimisation of food waste throughout the different steps of food provision; from ordering of the food right through to the disposal of food waste following service.



### Ordering of food - clear menus with meal size option

Surveys of patients in a number of healthcare facilities found that patients can quickly lose their appetite when presented with a large portion of food. This is particularly the case for older patients. The first choice to be filled in on the hospital's menu is the option of ordering a small portion. This option is highlighted in bold text to make it more obvious to patients. This ensures the patient gets the meal size they would like and that excess food is not provided.

### Ordering of food - prevent miscommunication between the wards and main kitchen

Ward staff collect the menus from patients and compile the number of portions of each meal option that are required. A single staff member collects this information from all of the wards. This same member of staff communicates the orders to the chef and relevant staff in the main kitchen, and fills the ward trolleys with the required orders at each meal.

### Provision of food - portioning of the main meal components

Hospital staff (catering and nutritionists) have undertaken considerable work to ensure that the correct meal size is provided to patients to meet their nutritional requirements, in line with national guidelines. Food provided in pieces e.g. chicken, fish, etc. can be bought in pre-prepared or prepared onsite to the correct size, but it can be difficult to ensure that the right sized portion of foods made in bulk e.g. casserole, cottage pie, etc. is provided. To overcome this the staff in the main kitchen, who are aware of the required portion size, pre-portion this type of food. Consequently there is no confusion for staff plating food in the ward kitchens.

### Provision of food - providing only the number of portions required

In many of the facilities surveyed in the GHCP it was common to observe full trays of certain food, such as casserole, cottage pie, etc., being provided to wards, even when only a small number of portions had been ordered.

Many facilities outlined that this is unavoidable due to the limited size of containers available to fit ovens (only larger trays will fit the oven) and the excessive time that would be required to portion the food. MGH actively portions these types of meals and provides only the required number of portions to the wards in a smaller container. The hospital commented that the staff costs for the time required to portion the food is more than compensated for by the savings made in reducing the quantity of excess food prepared and consequently wasted.

### Provision of food - ensure the right quantity of meal 'side' components is provided

The GHCP survey work has found that a large proportion of the meal side components provided e.g. potatoes, vegetables, chips, etc., is not served to patients and ends up as food waste.

MGH recognised this as a potential issue and has undertaken detailed work to determine the correct quantity of these foods that should be provided for each patient. Different sized containers were filled or half filled with the foods and weighed to determine how many portions were contained within. Based on the number of normal and small portions that are required, the staff member filling the food trolleys determines the number of portions of sides that is required, and provides the right sized container to the ward.

### Condiment options on menu

The automatic provision of condiments (e.g. butter, marmalade) to patients can result in a significant number of condiments being unused. In general these condiments must be disposed of for infection control reasons, resulting in surprisingly large costs for facilities. To overcome this, MGH provides space in their menus for patients to outline what condiments they require.

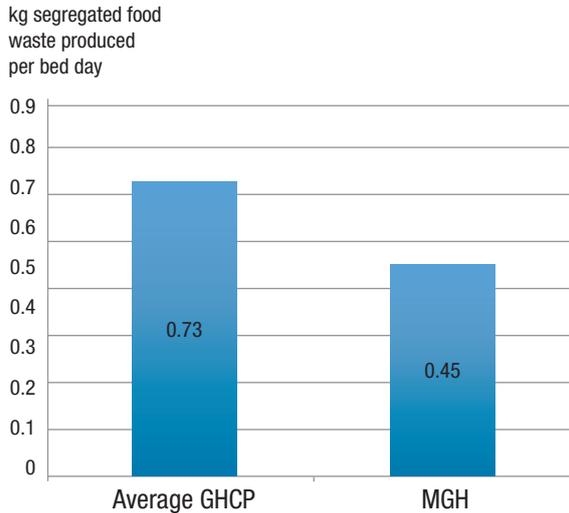




## Results of the programme and comparison with the average acute facility

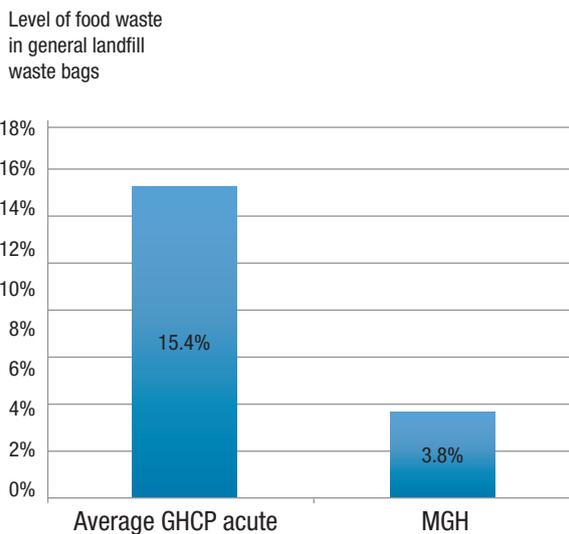
Information gathered through waste surveys carried out under the Green Healthcare programme

### kg of segregated food waste produced per bed day



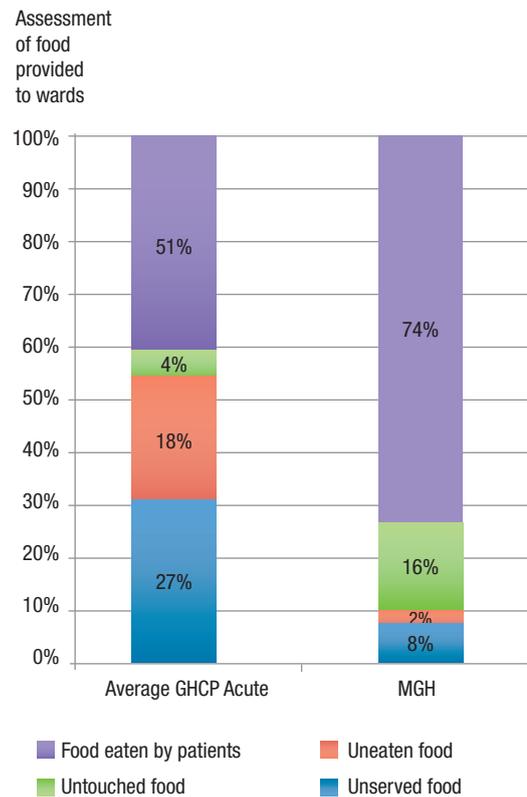
The good practices implemented by MGH results in the hospital generating a low level of segregated food waste. MGH produced 0.28 kg less segregated food waste per bed day than the average GHCP acute facility. **This equates to estimated savings of 24 tonnes of food waste or cost savings of €48,000 per annum compared to the average acute facility.**

### Level of food waste in general landfill waste bags



The contents of general landfill waste bags from across the hospital were reviewed to determine the level of food waste in the bags. Landfill waste bags from MGH contained 75% less food waste than the average GHCP acute facility. This indicates a high level of compliance with food segregation measures, as required under the Food Waste Regulations (2009).

### Assessment of food provided to wards



An idea of how efficiently the food provision system is working, can be determined by looking at the quantity of food that is provided and the quantity of food that is disposed of as waste. Thus, the quantity or proportion of the food that is eaten by the patients can be determined.

26% of the food provided to MGH was disposed of as food waste, with 74% of the food eaten by the patients. In contrast 49% of the food provided in the average GHCP acute facility was disposed of as food waste, with only 51% of the food eaten by the patients.



# CASE STUDIES





# CASE STUDY Temple St. Children's University Hospital

## Waste Prevention and Diversion of Recyclables 2010-2012

Temple St. Children's University Hospital (CUH) was established in 1872 as a hospital for the poor children of Dublin. Today the hospital is one of the major paediatric hospitals catering for children from all over the country.

CUH initiated a Sustainable Waste Management Programme in 2004 and has been actively implementing waste, water and energy use reduction measures since. The commitment and support of the hospital's executive has been an important factor in the success of the programme and the move to more sustainable waste management.



As a reflection of CUH's continual work on sustainability and environmental issues they won the Green Awards Green Healthcare Award in 2011 and 2012.

The hospital joined the Green Healthcare Programme (GHCP) in 2010. The hospital has actively considered and implemented the recommendations of the GHCP, and is one of the most active participants of the programme.

This case study outlines the improvements made by CUH during their involvement in the Green Healthcare Programme. These improvements are in addition to those made by the hospital before joining the programme. These improvements have not only impacted on the hospital's sustainability but also resulted in significant cost savings for the hospital.

**OVERALL RESULTS: - Estimated reduction in quantity of waste produced per annum and associated cost savings per annum - comparison between 2010 and 2012 surveys**

<b>Healthcare Risk Waste</b>			
	<b>0.23</b> kg per bed day Reduction in waste per in-patient bed day	<b>7</b> tonnes Waste reduction per annum	<b>€5,700</b> Associated cost savings (2012 costs <sup>1</sup> )
<b>Landfill</b>			
	<b>0.4</b> kg per bed day Reduction in waste per in-patient bed day	<b>12</b> tonnes Waste reduction per annum	<b>€1,300</b> Associated cost savings (2012 costs <sup>1</sup> )
<b>Food Waste</b>			
	<b>0.1</b> kg per bed day Reduction in waste per in-patient bed day	<b>11</b> tonnes Waste reduction per annum	<b>€18,500</b> Associated cost savings (2012 costs <sup>1</sup> )
<b>Healthcare Risk Waste Special</b>			
	<b>0.03</b> kg per bed day Increase	<b>0.9</b> tonnes Increase	<b>€1,700</b> Cost increase
<b>Total annual savings achieved through continual review of waste management systems and staff awareness -</b>			<b>€23,800</b>

<sup>1</sup>Excluding VAT

Previous measures implemented by the hospital have resulted in additional savings of €21,000 per annum.

## Food Waste



Waste reduction per annum:

**11 Tonnes**

Estimated cost savings:

**€4,800 to €18,500\***

### BENCHMARK:

Pre GHCP: 1.41 kg per in-patient bed day

Post GHCP: 1.03 kg per in-patient bed day (not taking into account the reduction in service) **24% reduction**

\*The provision of canteen services in the hospital has changed since the hospital joined the GHCP. Some of the reduction in the quantity of food waste generated will be as a result of this reduced service. In the main the reductions are associated with the improvements to the provision of food, particularly in the canteen.

## Wards & Medical Areas:

Over ordering of food by the ward kitchens can be an issue in every hospital. The catering department needs to ensure that enough food is provided to feed the patients actually eating, but not so much food that it ends up as unserved food waste. Following the initial food survey the catering department now requests all ward catering staff to record the number of unserved food portions after each meal. This information is then used to determine the **'general number of portions'** of food required for each ward for each meal.

Each day when the ward kitchens send their orders in, they are checked against the **'general number of portions'** required. If more portions are ordered than required the main kitchen reduces the number of portions of food sent to the ward accordingly. Ward kitchens very rarely ring the catering department to ask for more food, indicating enough food is being provided.

The main kitchen tries to ensure that ward kitchen staff only order the food required, through regular training and awareness programmes – including highlighting the cost of food waste to the hospital.



**In one example ward, the waste reduction measures reduced the quantity of food waste generated by 12.5%.**





### Canteen:

Like many of the facilities that participated in the GHCP, the hospital's canteen was observed to be a significant source of food waste. Both staff and the families of patients use the canteen. The hospital managed to reduce the quantity of food waste generated, particularly unserved food waste, by implementing a number of measures, as outlined below.

#### Unserved food:

- **Timing of the preparation of hot food:**

Previously the canteen prepared hot food right up until the end of lunch service (14:30), to ensure that all options were available to customers. It was believed that any unserved food could be reused at tea - when in reality it wasn't. Now the canteen finishes cooking an hour before the end of service, with customers encouraged to purchase the remaining food and sandwiches. This has significantly reduced the quantity of unserved food waste generated.

- **Reuse of unserved food in vending machines:**

Any suitable unserved food from lunch is plated into disposable containers and placed in a refrigerated vending machine. Microwave ovens are provided in the area to heat up meals. Even though the canteen is closed at tea the parents and staff can still have a hot meal or cold salad, with the added benefit of using up the unserved food.



#### Uneaten plate waste:

- **Training of staff to offer the correct portion size to customers to reduce uneaten plate waste:** Staff were trained to recognise those customers that may require smaller or larger portion sizes. Instead of automatically adding extra food to the plates staff now ask customers if they would like more.

### Changes that make a difference to families not just patients



Mealtime is an important break for staff, but even more so for the families of patients, as it may be their only chance to recharge their batteries. With this in mind the hospital re-decorated the canteen with brighter colours, improved the seating and reviewed the layout of the vending machines. There was an unexpected benefit from the improvement in the facilities – a visible reduction in uneaten food left over on plates. It seems customers are happy to spend more time in the canteen eating their meal.



#### Liquid Waste

Liquid waste (tea, milk, etc.) was previously placed into the food waste bin due to the positioning of the tray clearing area. The catering staff now place the liquid into a small container which is regularly emptied into the kitchen sink. This change of practice has reduced the number of food waste bins to be managed by porters and to be emptied by the contractor. As bins are charged per lift it has resulted in significant savings.

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