A Review of UK Patient Food Safety Information Resources

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Introduction

Increased incidence and the elevated risk of foodborne illness are associated with people receiving chemotherapy treatment for cancer. Chemotherapy patients have an increased risk of foodborne illnesses due to immunosuppression[1]. Cancer patients are reported to have a five-fold increased risk for development of listeriosis[2].

To minimise the risk of foodborne illness it is important that people receiving chemotherapy treatment consume foods prepared and cooked at home according to food safety recommendations and avoid risk associated food products[3].

It is suggested that limited food safety information is available to people receiving chemotherapy treatment in the UK and data on their food safety knowledge, practices and perceptions are lacking[4].

To date, there has been no review, or evaluation of the availability and adequacy of UK food safety information accessible for chemotherapy patients and family caregivers.

Purpose

To evaluate the provision of food safety information available to UK chemotherapy patients to assess whether appropriate and informative and explore the food-related experiences perceived importance of food safety among chemotherapy patient and family caregivers.

Methods

A mixed methods research approach was utilised to facilitate this study:

- Online food-related patiemnt information resources were obtained from National Health Service (NHS) chemotherapy providers in England, Scotland and Wales, the Department of Health (DoH) and identified UK cancer charities. Resources were reviewed for the inclusion of food safety information using a content analysis approach.
- In-depth interviews (n=15) were conducted with patients and family caregivers to establish the food related experiences of patients during treatment.
- Self-complete questionnaires (paper-based and online) were completed (n=172) by chemotherapy patients (70%) and family-caregivers (30%) to determine attitudes towards food safety during chemotherapy treatment and recall of receiving health related information.

Ethical approval was granted by the Cardiff School of Health Sciences Research and Ethics Committee. Project reference number: 0001-SREC-2014(01).

Acknowledgments

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Results

The availability and adequacy of food safety information for chemotherapy patients

Overall, 45 food-related information resources were obtained from 42 of 141 NHS chemotherapy providers' online patient information resource collections and from three UK cancer charities. All resources were different, no duplicates were identified, thus suggesting that a standardized NHS food safety information resources is not available.

Less than a third (29%) were specifically food safety focused, the majority (71%) were food-related information sources that included elements of food safety. Although 64% of sources explained why patients are at an increased risk of developing infection during treatment, few (20%) highlighted the importance of food safety to prevent infection.

Overall, 67% included one or more reference to a food safety practice, ranging from one (e.g. *"Ensure eggs are thoroughly cooked"*) up to 43 practices, the majority (70%) included only ten food safety practices or less. A total of 57 different food safety practices were included in the reviewed resources. The areas of which are discussed below:

Hand hygiene practices

Hand hygiene was the most frequently recommended practice. Washing hands before preparing food was cited in 49% of reviewed food-related information resources.

Details regarding critical hand washing occasions such as after handling raw meat/poultry were lacking (Figure 1).

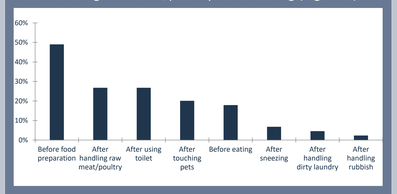


Figure 1 Inclusion of information on hand washing occasion (n=45).

Hand hygiene recommendations were insufficient:

- 20% recommended use of soap and warm/hot water
- 16% recommended a clean hand towel should be used

Cleaning practices

The most frequently included cleaning practice (included in 29% of reviewed resources) was 'wash fruits and vegetables before eating'.

Information regarding cleaning kitchen surfaces was lacking in (18% resources). Only 9% recommended allowing kitchen equipment, crockery or cutlery to air dry instead of using a towel.

Cross-contamination prevention

Recommendations to reduce the risks associated with microbial cross-contamination in the domestic kitchen were included in 38% of the resources.

As shown in Figure 2, the most frequently stated practices were to store RTE foods above raw meat/poultry in the refrigerator (29%) and to use separate chopping boards for preparing raw meat/poultry and RTE foods (27%).

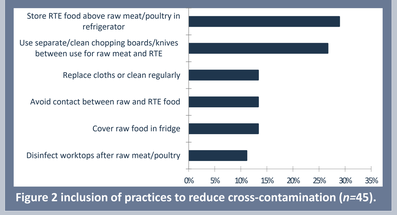


Figure 2 inclusion of practices to reduce cross-contamination (n=45).

Refrigeration practices

The inclusion of information regarding safe refrigeration practices was lacking in reviewed resources. Recommended refrigeration temperature (<5.0 ˚C) was included in 22%.

Practices to prevent unsafe temperatures were less frequently included (11% stated 'do not refrigerate hot food').

Few of the reviewed resources referred to safe freezing and thawing practices:

- 18% stated the recommended temperature (–18˚C).
- 18% recommended thawing food in the refrigerator
- 11% stated food thawed in the microwave should be cooked immediately.

Cooking practices

Recommendations to ensure thorough cooking were frequently included in reviewed resources, as illustrated in Figure 3.

Although 42% recommended the avoidance of raw meat, poultry and/or fish and 33% stated to cook all food until piping hot, only 9% recommended the use of a thermometer to achieve a core temperature of 75˚C.

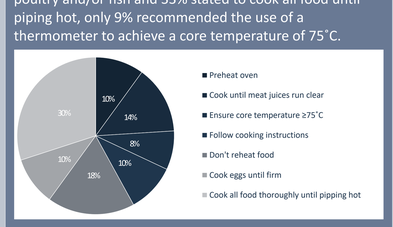


Figure 3 inclusion of information on thorough cooking (n=45).

Food prepared by others

Although 13% suggested that patients should allow 'others' to prepare food for them during chemotherapy treatment if energy is low.

However only 4% incorporated the importance of food safety for 'others' when preparing food.

Listeriosis risk reducing behaviours

Inclusion of listeriosis risk reducing food safety practices were lacking in the reviewed resources:

- 33% referred to adhering to 'use by' dates
- 22% included the recommended refrigeration temperature (0 - 5˚C)
- 7% recommended that ready-to-eat foods should be consumed within two days of opening

Eating out

Information regarding ensuring food safety when eating out was included in 27% of the resources.

The majority of which (22%) recommended avoiding open foods such as buffets and salad bars. Fewer resources recommended checking that food products were at appropriate temperatures to indicate freshness or select food establishments according to the UK Food Standards Agency food hygiene rating scores scheme (Figure 4).

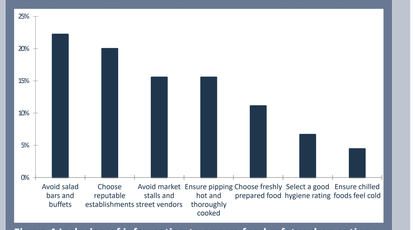


Figure 4 Inclusion of information to ensure food safety when eating out (n=45).

Risk associated foods

Recommendations regarding risk-associated food products to be avoided were included in 44% of resources.

The most frequently food products were:

- raw/undercooked eggs (42%)
- raw/undercooked meat or poultry (42%)
- unpasteurised dairy products (38%)

However, only half of those that included risk-associated food products listed safer alternative food products (22%).

Potentially unsafe recommendations

Information deemed to be potentially 'unsafe' was included in 11% of resources, including:

"Eat room temperature foods." (Resource 31), ***"Food at room temperature may be more enjoyable than hot food, and can be as nutritious."*** (Resource 35).

Foods should not be subjected to potentially unsafe temperatures. Foods out of refrigeration for two hours or longer should be disposed of.

Although some information attempted to ensure food safety, messages were inadequate:

"Shellfish and steamed fish must be cooked for at least seven minutes. Meat should be too hot to touch." (Resource 29). Providing a cooking time without portion size/cooking temperature is inadequate, and surface temperature will not indicate core temperature, using a thermometer is the best way ensure cooking efficacy.

Food safety awareness during chemotherapy treatment

Interviews with patients and family caregivers determined that many were aware of the increased risk of infection due to immunosuppression during treatment but may underestimate foodborne infection risk:

> ***"I can remember it being made clear to us that we should avoid contact with anybody with any contagious or infectious illness."*** (Participant 05).

Precautions to reduce the risk of communicable diseases (avoid crowded spaces or public transport) were reported by many, however food safety was not considered a priority:

> ***"I knew there was increased risk of picking up infections so I was especially careful about hand washing after being in public space, I didn't think about a risk of food poisoning."*** (Participant 01).

> ***"That would have just given you something else to worry about! Knowing fully well that the food we were cooking was good healthy food, we didn't think about safety at that time."*** (Participant 04).

Many could not recall receiving food safety information prior to/during chemotherapy treatment. Some suggested if advice had been provided, they might not have paid attention to it due to other concerns:

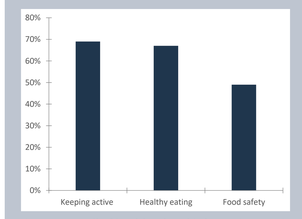
> ***"I had much bigger things to worry about. But I do equally from talking to you, now understand the need for people to prepare food safely, but I had much bigger things to worry about."*** (Participant 10).

Food safety was of minimal concern compared to being able to cook or eat. Problems associated with chemotherapy side effects were reported including appetite loss, dry/sore mouth, nausea, dusgeusia and cachexia:

> ***"I felt nauseous all the time, I felt really ill and I couldn't even bare the smell of cooking."*** (Participant 09).

> ***"I found it very difficult to sit down and eat meals, I think that was psychological as much as anything else."*** (Participant 02).

The questionnaires determined that the majority of patients (61%) reported being more concerned about diet and nutrition than food safety during treatment.



Less than half reported receiving food safety information during chemotherapy treatment.

Significantly greater proportions (p<0.05) reported receiving information regarding healthy eating and keeping active (67 – 69%) than on food safety (49%) during chemotherapy treatment (Figure 5).

Neutropenic, blood-related cancer and transplant patients were significantly more likely (p<0.05) of receiving food safety information.

Figure 5. Recall of health related information received during chemotherapy (n=130).

Overall, weak positive attitudes were expressed towards the importance of food safety during chemotherapy treatment. Attitudinal scores were determined to be significantly (p<0.05) more positive among carers than patients, and among females than males.

Those that reported they/the person they care for received a transplant, were neutropenic or treated for a blood-related cancer, also had significantly (p<0.05) more positive attitudes towards food safety, as were those that had reported receiving food safety information.

Table 1 Significant differences (p<0.05) in attitudes towards food safety determined according to respondent demographic characteristics/treatment details.

Demographic	Mean scores Min: 12 (-ve), Max: 55 (+ve)	Attitudinal finding (Determined using a Mann-Whitney *U* Test)
Patient/Carer (n=160)	Carers = 50 Patients = 47	Significantly (p<0.05) more positive among carers than patients
Gender (n=159)	Female = 49 Male = 46	Significantly (p<0.05) more positive among female patients/carers
Neutropenic (n=119)	Neutropenic = 50 Non-neutropenic = 46	Significantly (p<0.05) more positive among neutropenic patients/carers
Received a transplant (n=158)	Transplant = 53 Non-transplant = 48	Significantly (p<0.05) more positive among transplant patient/carers
Blood related cancer (n=157)	Blood related = 53 Non-blood = 47	Significantly (p<0.001) more positive among blood-related cancer patient/carers
Food safety information (n=160)	Received = 52 Did not receive = 45	Significantly (p<0.001) more positive among those that received information

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Significance of study

Although some information detailing food safety recommendations is available to people in the UK receiving chemotherapy treatment, access to information is limited.

This study has determined considerable gaps exist in resources and information varies greatly between the reviewed resources. In some cases, the information promoted potentially unsafe practices.

Advice relating to hand hygiene was most frequently included. Practices to reduce the risk of listeriosis were particularly lacking. The most comprehensive sources of information were tailored for neutropenic patients. However, these resources are unlikely to be provided to or accessed by all people receiving chemotherapy treatment.

Completion of this study has identified a need to design and develop a standardized and specifically targeted food safety intervention, using a patient-orientated approach for patients and family caregivers to reduce the risk of foodborne infection during chemotherapy treatment and safeguard patient wellbeing. Failure to implement adequate food safety behaviours may not only increase the risk of foodborne infection, but also result in additional health complications delays in treatment and potentially increase patient mortality.

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