

# THE TRUTH BEHIND FOOD & CANCER

SIMPLE EXPLANATIONS BASED ON  
SCIENTIFIC EVIDENCE

WRITTEN BY REGISTERED DIETITIANS  
SPECIALISING IN ONCOLOGY & A  
CONSULTANT MEDICAL ONCOLOGIST



**UCC**

Coláiste na hOllscoile Corcaigh, Éire  
University College Cork, Ireland

**breakthrough**  
CANCER RESEARCH



**Disclaimer**

The advice and recommendations included in this booklet are specifically adapted for people who have been diagnosed with cancer and those undergoing cancer treatment. This booklet has been created by registered dietitians and a consultant medical oncologist to provide you with the most up to date information available at the time of printing. If you have any questions about complementary or alternative therapies, it is important to discuss this with your oncology team or a dietitian.

The advice in this booklet should not be used to replace advice from your medical team.

The contents of this book have been endorsed by the Irish Nutrition & Dietetic Institute (INDI), The National Cancer Control Programme (NCCP) and the Irish Society of Medical Oncology (ISMO).



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# INTRODUCTION

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A recent survey of over 1000 Irish cancer survivors reported that the majority (56%) felt confused by nutrition information available in the media and offered by people around them<sup>1</sup>. Almost 4 in 10 (37%) were following, or had tried alternative diets (e.g. restrictive diets, herbal remedies, juicing or detoxes) and 3 in 10 (32%) reported avoiding specific foods (e.g. processed meat or dairy)<sup>1</sup>.

People choose to follow complementary or alternative diets for a variety of reasons. They may hope to improve their symptoms or reduce treatment side-effects. They may seek to boost their immune system. They may even hope to cure their disease or reduce the risk of recurrence. Some people follow specific diets to gain some control over their cancer journey<sup>1</sup>.

Alternative dietary approaches to cancer treatment usually become popular due to exposure in the media, social media or a small element of scientific fact. But the extent to which this scientific fact can be applied to the general population varies greatly. Before a recommendation can be made, there needs to be significant scientific evidence to back the claim. Research is constantly evolving, and new information emerges all the time. This means that advice and recommendations change from time to time.

This booklet was written by oncology dietitians and an oncologist, alongside a charity partner, Breakthrough Cancer Research.

It discusses some of the most popular alternative diets which are often tried by patients with cancer. It explains what these diets are and any available scientific evidence relating to them.



It also outlines the potential harm of these diets that people may not be aware of. The advice in this booklet comes from evidence-based sources including the World Cancer Research Fund and the American Institute for Cancer Research. Recommendations made by these organisations are endorsed by the World Health Organisation and many other international reputable organisations.

Perhaps you're currently undergoing some form of cancer treatment or you're just looking for some evidence-based links between cancer and diet for yourself or a loved-one. This booklet aims to provide accurate information on alternative diets that have not yet been proven to be safe or effective in the prevention or treatment of cancer.

# COMMONLY ASKED QUESTIONS ABOUT NUTRITION DURING CANCER TREATMENT

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## SPECIAL DIETS

### Should I follow a 'special' diet during cancer treatment?

No, there is no scientific evidence that following any type of diet can cure cancer or replace cancer treatment<sup>2</sup>. In recent years there has been a lot of interest in diet and cancer. Complementary or alternative fad diets are often restrictive and make false claims about curing or treating cancer.

It is *not* advised to exclude whole food groups, such as dairy or carbohydrates from your diet during cancer treatment. Excluding food groups or multiple foods can increase your risk of nutritional deficiencies. It may also affect your ability to maintain weight during cancer treatment. This may have a negative impact on your treatment plan.

We recommend you maintain a stable weight during cancer treatment, even if you are overweight<sup>3</sup>. This is because weight loss during cancer treatment can affect your body's ability to cope with the treatment and the possible side effects<sup>4</sup>.

After cancer treatment, it is helpful to maintain a healthy body weight to reduce your risk of cancer recurrence, diabetes and heart disease. If you are considering following a particular diet, discuss it with your doctor or a dietitian.

A dietitian is a registered healthcare professional that can assess, diagnose and treat dietary and nutritional problems at an individual and wider public-health level. Dietitians are the only nutrition professionals regulated by law, and are governed by an ethical code to ensure that they always work to the highest standard.

A dietitian will ensure that your diet meets your particular needs during your cancer journey. If you are not eating well or are experiencing a reduced appetite, then please ask your doctor to refer you to a dietitian.

University College Cork in partnership with Breakthrough Cancer Research have a number of free cookbooks for cancer patients which are written by oncology dietitians and these can give you ideas if you have a poor appetite, swallowing difficulties or just want to follow a healthy diet (see page [32](#)).

## MEAT

### Should I avoid red meat and processed meat?

Red meat includes all fresh, minced, or frozen beef, pork, and lamb. Processed meat includes meat that has been processed using salting, curing or fermenting. Examples include bacon, ham, salami and sausages such as chorizo or hotdogs.

The World Cancer Research Fund (WCRF), has classified processed meat as Group 1 carcinogens<sup>2</sup>. This means that there is a definite link between cancer and processed meat. Specific preservatives called nitrates and nitrites are added to processed meat to increase the shelf life. These preservatives have the ability to cause damage to cells in our body which may lead to cancer<sup>5-8</sup>.

Red meat has been deemed as a Group 2A carcinogen<sup>2</sup>. This means that it is a 'probable' cause of colorectal cancer but the evidence is not as strong. The risk of cancer is due to the red pigment called haem that is naturally found in red and processed meat. When haem is cooked at high temperatures (grilling, baking in the oven), it has the potential to produce carcinogenic compounds.

### Should I follow a meat free diet?

Some large population studies have shown that people who follow a vegetarian diet are at a lower risk of certain cancers<sup>7</sup>.

However, scientists are unsure whether this is due to the lack of meat in their diet or related to other factors in their lives such as being health conscious, eating more plant-based foods, not smoking, or drinking less alcohol.

It is safe to follow a vegetarian or vegan diet if you have been diagnosed with cancer but there is no evidence that these types of diets provide any significant advantage<sup>9</sup>. Following a vegetarian or vegan diet can make it harder to meet your nutritional requirements for some food groups especially protein. Vegetarian and vegan diets can also be low in certain nutrients such as vitamin B12, calcium, iron, vitamin D, iodine and zinc and you may need a supplement.

If you have been diagnosed with cancer and are following a vegetarian or vegan diet, ask your oncology team to refer you to a dietitian who can make recommendations to optimise your diet.

Red meat is very nourishing and is an excellent source of protein, iron, zinc and vitamin B12, when consumed in modest amounts. Small amounts of red meat can be consumed as part of a healthy, balanced diet, although consuming red meat is not necessary to maintain adequate nutritional status<sup>2</sup>. Fresh white meat such as chicken, turkey or fish are not linked with cancer.

### How much is too much?

The WCRF recommends that red meat intake should be limited to less than 500g cooked meat (or 750g raw meat). This equates to roughly 2 to 3 portions per week<sup>2</sup>. A portion can be measured as roughly half the size of the palm of your hand.

Processed meat is generally high in calories (energy), fat and salt and there are currently no recommendations for safe intake. High intakes of processed meat could also cause weight gain which we know can increase cancer risk. It is recommended that processed meat is avoided. Processed meat is also high in salt which could contribute to cardiovascular disease<sup>7</sup>.

### How can we cut back on red and processed meats?

There are lots of ways to cut back on red and processed meats without feeling like you're missing out.

- Bulk up with beans. Use kidney beans, chickpeas or lentils to replace some of the meat in dishes (e.g. Bolognese). These are good sources of protein.
- Eat smaller portions of red meat and include meat free days during the week.
- Choose fish instead.



## SOYA

### Does soya cause cancer?

No, there is no link between consuming soya and an increased cancer risk. Soya is a protein naturally found in soyabeans and edamame. You can also find soya in tofu, soya milk, soya yogurts and tempeh.

Products made from soya contain compounds called phytoestrogens. Phytoestrogens have a similar chemical structure to the hormone oestrogen which is made naturally in our bodies. Oestrogen has the ability to stimulate some cancers and it was previously thought that foods containing phytoestrogens might have the same effect<sup>10,11</sup>. Women in particular with breast cancer were previously advised to avoid soya containing foods.

However, no human studies have shown a link between eating soya or soya products and an increased risk of cancer. There is now more evidence to show that an increased intake of soya-containing foods is safe to consume and can even reduce the risk of certain cancers<sup>2</sup>, including breast cancer<sup>12,13</sup>. This may be due to the high fibre content which is known to be beneficial in reducing bowel cancer risk<sup>2</sup>.

As previously discussed, we know that red and processed meat have been linked to an increased risk of cancer. Soya products can be used as part of a healthy balanced diet as a non-meat source of protein.

There is no evidence to support the use of soya dietary supplements and these are *not* recommended<sup>14</sup>.



## ALCOHOL

### Is there a link between alcohol and cancer?

Scientists have known about a link between alcohol and cancer since the 1980s. The World Cancer Research Fund have deemed that there is no safe level of alcohol when it comes to cancer risk, and for cancer prevention, it is best not to drink at all<sup>2</sup>. The risk of alcohol-related cancers increases the more you drink. In Ireland, 900 people are diagnosed with alcohol-related cancers every year and alcohol is responsible for 1 in 8 breast cancers in Ireland<sup>15</sup>.

### How does alcohol increase the risk of cancer?

There are many ways in which alcohol can increase our cancer risk. When we consume alcohol, it can damage our cells and stop our body being able to repair this damage. Alcohol affects chemical signals which can make cells more likely to divide. This increases the chance that cancer will develop<sup>16-18</sup>. It is important to note that it's the alcohol itself that causes the damage. All types of alcoholic drinks have the same cancer risk<sup>2</sup>.

Alcohol also contains a lot of calories (energy) and when consumed regularly can cause weight gain. **Being overweight or obese is a well-known cancer risk factor.** Whatever your drinking habits, cutting down can reduce your risk.

### Low Risk Guidelines

If you do consume alcohol you should not exceed the national guidelines. In Ireland this means 11 standard drinks for women and 17 standard drinks for men and having 2-3 alcohol-free days per week<sup>19</sup>.

Some examples of a standard drink in Ireland are:

- a pub measure of spirits (35.5ml)
- a small glass of wine (125mls and 12.5% volume)
- a half pint of beer
- an alcopop (275mls bottle)

**It is important to note that these are the guidelines for the general population. If you have been diagnosed with cancer or are currently undergoing treatment for cancer you should discuss alcohol with your doctor.**

## VITAMIN AND MINERAL SUPPLEMENTS

### Should I take a Vitamin and Mineral Supplement?

In general no, a healthy balanced diet should provide you with all the vitamins and minerals you need. A diet rich in fruit and vegetables, wholegrains, dairy products or fortified non-dairy alternatives, good quality lean meat and fish, in addition to healthy fats from oils, nuts and seeds is an important part of preventing cancer<sup>2</sup>. It is important to remember that vitamins and minerals are best absorbed when eaten in food. A food-first approach is best, with added supplementation only when required.

Some people believe that taking a high dose of vitamin or mineral supplements will strengthen their immune system during treatment, however there is no scientific evidence that any supplements can prevent or cure cancer<sup>20</sup>. International cancer guidelines do not recommend the use of high-dose micronutrients unless a person has a proven deficiency<sup>20</sup>.

### Are there any exceptions?

There are some exceptions. The Department of Health in Ireland recommends that all adults should take a vitamin D supplement between October and March. This is because our skin makes vitamin D from exposure to the sun and there is not enough sunlight during these months. The recommendation is 10-15ug depending on your age<sup>21</sup>.

If you exclude certain foods from your diet (e.g. meat, dairy) you may be at risk of certain nutritional deficiencies such as vitamin B12.

If you must exclude certain food groups it is important to get advice from a registered dietitian.

### **It is best to discuss supplementation with your medical team.**

If you have been diagnosed with cancer or are currently undergoing cancer treatment you may find it difficult to consume a balanced diet. In this case your doctor or dietitian may recommend a good quality multivitamin and mineral supplement to help you meet your needs.



During your treatment your doctor may also prescribe dietary supplements. For example, if your treatment involves hormonal therapy this may weaken your bones and your doctor may prescribe a calcium and vitamin D supplement. Some people with cancer may be prescribed iron supplements if their blood count is low. If you have had major cancer surgery on your gut you may be advised to take certain vitamins and minerals (e.g. Vitamin B12 injections after a total gastrectomy, or fat soluble vitamins if you have malabsorption).

### Are there any risks?

While most supplements at the recommended dose are safe for people with cancer to use alongside their conventional treatment, there is also a risk that some supplements, especially at high doses, could interact with types of anti-cancer drugs such as chemotherapy and make them less effective<sup>22</sup>. Because of this, it is important to discuss with your doctor or dietitian if you are taking supplements or considering taking them.

### Intravenous Vitamin C (IV Vitamin C)

There is no evidence that administering vitamin C by intravenous drip can cure or treat cancer<sup>23</sup>. High dose injections of vitamin C are not routinely available for cancer patients in Ireland and it is not currently recommended by any major international cancer organisation<sup>2</sup>.

Until well-designed randomised controlled trials with human patients are conducted, we won't know whether injecting high doses of vitamin C could be an effective way to treat cancer. It is also possible that high doses of vitamin C could also interact with standard cancer treatments such as chemotherapy and radiotherapy and make them less effective <sup>24,25</sup>.

Commercial IV vitamin C is becoming increasingly available in Ireland from private clinics. Some of these clinics give up to 12,000mg of vitamin C in a single infusion. Our body only needs 110mg of vitamin C a day. The upper tolerable dose of vitamin C is 2000mg, so these very high-dose infusions are giving many times the upper tolerable dose.

From a safety perspective, it is not recommended to attend these clinics if you have been diagnosed with cancer. These clinics do not have access to your medical history or medications. This might lead to dangerous side effects including the development of kidney stones. Administering vitamin C by intravenous drip also increases the risk of infection. These IV treatments can also be very expensive and have not yet been proven to be beneficial.

The proposed mechanism of action is that people diagnosed with cancer experience higher levels of oxidative stress and inflammation which is known to increase the body's use of ascorbate (vitamin C). The body's stores of ascorbate are consumed during periods of inflammation as it reduces free-radical activity. Free-radicals are highly reactive chemicals that have the potential to harm cells<sup>25</sup>. Free radicals occur naturally in the body and play an important role in normal cellular processes.

The purpose of anti-cancer treatments like chemotherapy and radiotherapy is to produce free-radicals to destroy cancer cells and it has been suggested that high doses of antioxidants like vitamin C may reduce the effectiveness of these treatments<sup>26</sup>.

Not enough is known yet about possible side effects of high dose vitamin infusions. Studies using high doses of another similar antioxidant, have shown an increase of the incidence of lung cancer in male smokers when given a high dose of vitamin A<sup>27</sup>. So it is important to use caution until we know more.

Initial studies that looked at vitamin C showed promising results but were later found to be flawed, so until well-designed clinical trials are completed we cannot be sure of the links between IV Vitamin C and the treatment of cancer<sup>23-28</sup>.



## ORGANIC FOOD

### Will eating organic food reduce my cancer risk?

No, there is no strong evidence that shows that organic food reduces the risk of developing cancer. Organic food refers to food grown without using artificial fertilisers, pesticides or chemicals. This usually refers to dairy products, fruit and vegetables. Organic food tends to be more expensive and has become increasingly popular due to claims that it is 'safer and more nutritious'. However, the nutritional value of food is not altered when grown organically, so the nutritional composition of organic food versus non-organic food is the same<sup>29-31</sup>.

In Europe, there are tight regulations set around the use of pesticides in food. Food Safety Authorities have a responsibility to ensure that the levels found in our food are within safe limits.

Studies have reported a link between organic food and reduced cancer risk but this is more likely because people who report eating organic food are more likely to engage in healthy lifestyle behaviours, such as not smoking and exercising regularly, which would reduce their cancer risk. It was also suggested that people who eat organic fruit and vegetables are more likely to have a healthier diet overall which also reduces cancer risk<sup>32</sup>.

We do know that a diet rich in fruits and vegetables is a key part of cancer prevention<sup>2</sup>, so the main priority is to include them as much as you can - **organic, non-organic, fresh, frozen and tinned all count!**

## SUPERFOODS

### Can Superfoods help protect me from cancer?

No, there is no single food or nutrient that can prevent or cure cancer<sup>14</sup>. Superfoods are foods that are marketed as having nutritional benefits that enhance health and protect against diseases such as cancer. You might have heard of kale, spinach or blueberries being referred to as superfoods. Claims surrounding superfoods are often very misleading as they are usually based on results of studies looking at the effect of nutrients on cells in the lab. Although these studies give us important results, the findings cannot be automatically translated to human diets for a number of reasons.



Firstly, we don't eat individual nutrients, we eat whole foods<sup>14</sup>. A nutrient in isolation may cause a different response than if consumed within a whole food. Secondly, the nutrients being investigated are often studied at very high levels, levels much higher than what we would be able to eat in our diet.

Finally, our bodies also don't act the same way cells do in laboratory studies. The relationships seen at cellular level might not exist at a whole-body level. So we need large scale population studies before we can make recommendations on individual nutrients.

In reality, there is no such thing as a superfood. No single food has the ability to 'undo' the effect of an unhealthy diet or lifestyle. Foods that have demonstrated beneficial properties are best incorporated as part of a healthy diet, along with a wide variety of other healthy foods.

There is also no evidence that taking shots of turmeric, wheatgrass, ginger or any other type of herbs or spices can protect against cancer. It has also been suggested that high doses of turmeric may interact with some chemotherapy drugs and make them less effective<sup>33</sup>. If you are taking any spices or any herbal remedies please inform your oncology team.

It is also important to know that buying supplements or herbal products online might put you at risk of unwanted side-effects. Herbal products and supplements sold in food shops and in pharmacies have to comply with quality standards set out by the Food Safety Authority of Ireland. Products bought online may not have undergone such rigorous testing and may be potentially dangerous. Some products have been found to contain illegal substances and toxic herbs. The amount of the active ingredient can also vary widely between products.

No reputable cancer organisation supports the use of herbal remedies and if you are considering trying herbal medicine you should discuss it with your oncology team<sup>2</sup>.

Our overall dietary pattern is where we see the strongest link to reduced cancer risk. The World Cancer Research Fund recommend that a diet rich in wholegrains, fruit and vegetables and pulses, with lean meat, fish and low-fat dairy should be the focus for cancer prevention<sup>2</sup>.



## DAIRY

### Can Dairy Products cause cancer?

No, there is no strong evidence that links dairy products to an increased risk of cancer<sup>34</sup>. The myth that dairy is linked to cancer often comes from concerns the public have surrounding the addition of hormones to milk and meat products. In Europe, the addition of hormones to milk or meat is strictly banned and the sale of meat from countries where the addition of hormones is allowed is also illegal. So there is *no* need to worry about this.

### What are the benefits of dairy products?

Dairy products are high in protein and calcium which are important for strong bones and teeth. There is also evidence to suggest that the high calcium content of dairy products contributes to a reduced risk of bowel cancer<sup>2</sup>. The Department of Health recommends 3 portions of dairy a day.

**1 portion** is equal to:

- a 200ml glass of milk,
- or a matchbox size portion of cheese
- or a 125g pot of yogurt.

For those who don't consume dairy, choose fortified alternatives<sup>35</sup>. If you are buying plant-based milks try to ensure it has calcium and vitamin D added to it to help your bones stay strong. For cancer prevention, choose low-fat dairy products. This will help with weight management.

If you are undergoing cancer treatment and experiencing a reduced appetite or weight loss, you might be advised to increase your intake of full-fat dairy products.



## SUGAR

### Do I need to avoid sugar in my diet?

No. Many people ask questions about sugar intake and its effect on cancer. Cancer cells use sugar (glucose) for energy but so do all the other healthy cells in the body. Some people have suggested that reducing sugar intake can slow cancer cell growth. Unfortunately it is not that simple. Restricting the amount of sugar you eat has not been proven to slow down or control the growth of cancer cells in humans<sup>36</sup>. Laboratory studies have shown that the metabolism of glucose occurs more rapidly in cancer cells than in normal cells. This is often misinterpreted as sugar directly feeds cancer cells<sup>36</sup>.

Sugar does not need to be totally avoided and can be included as part of a balanced diet. When digested in our body, glucose (sugar) is also found in several healthy foods such as fruits, vegetables, and wholegrains such as bread and porridge. These foods are high in fibre, full of minerals and vitamins, and have been linked to a lower risk of cancer. For more information see the section below on Ketogenic diets.

However, there is an indirect link between sugar and cancer. Eating a lot of foods with added sugar such as fizzy drinks, chocolate, biscuits, and cake, can increase your risk of being overweight or obese and are *not* recommended by the Department of Health<sup>35</sup>. Being overweight or obese has been linked to an increased risk of cancer<sup>2,37</sup>.

**If you have been diagnosed with cancer and are losing weight you may need to consume some foods containing sugar to help reduce weight loss and to help keep your energy levels up. Speak to a dietitian or healthcare professional if you have any concerns.**

**It is also important to note that there is no need to avoid any fruit because of its sugar content. Fruit is full of fibre, vitamins and minerals which are very beneficial for your health.**



## ARTIFICIAL SWEETENERS

### Should I avoid artificial sweeteners?

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No, large studies have shown there is no link between artificial sweeteners and increased risk of cancer<sup>38</sup>. Artificial sweeteners are substances used to sweeten food but contain few or no calories (energy). They are usually derived from herbs and other plants, or from sugar itself and are typically many times sweeter than sugar. This means smaller quantities can be used<sup>14</sup>. Examples include aspartame, saccharin, xylitol and mannitol.

Artificial sweeteners can be found in diet fizzy drinks, toothpaste, mints, and chewing gum. Often these products are advertised as 'low sugar', 'diet' or 'zero'. All sweeteners used in Ireland undergo strict testing by the European Food Safety Authority (EFSA) and have been deemed safe to use on a daily basis and in a moderate amount<sup>39</sup>.

Early studies reported that saccharin caused bladder cancer in laboratory animals (mice) but human studies have reported no increased cancer risk<sup>38</sup>.



## KETOGENIC DIETS

### Should I follow a Ketogenic diet?

No, neither the National Cancer Control Programme here in Ireland, nor any other major cancer organisation recommends the ketogenic diet for cancer patients. It is also not advised for cancer prevention.

### What is the Ketogenic Diet?

The ketogenic diet is a high-fat, moderate to low protein and very-low carbohydrate diet. The classic ketogenic diet includes 75-80% energy from fat, 15-20% energy from protein and 5% energy from carbohydrates<sup>40</sup>. For someone on a 2,000 calorie diet, this means eating less than 25g of carbohydrate per day, the amount found in 1 apple. There are some versions of the diet that contain slightly more carbohydrates. The Department of Health recommends that at least 45% of the energy in your diet should come from carbohydrate, 25% from protein and 30% from fat.

### What is the theory behind the ketogenic diet in cancer?

All our cells need energy for us to be able to breathe, move and survive. The fuel for energy comes from food. The preferred fuel for most of the body's cells is glucose (sugar). Sugar is delivered to the cells from carbohydrates. In the 1920's, a scientist called Warburg found that cancer cells fuel their growth through using large amounts of sugar. He saw cancer cells breakdown sugar for fuel in a different way to healthy cells. Cancer cells are less effective at making energy from sugar than healthy cells. This is called the Warburg effect<sup>41</sup>.

If our body doesn't have access to sugar, it will start to produce ketones from fat stored in our body. Healthy cells can use ketones for energy but cancer cells may not be able to use them as easily. The theory of the ketogenic diet attempts to deprive cancer cells of sugar.

### Is there evidence for using ketogenic diet in cancer?

Most claims about the benefit of the ketogenic diet and cancer are from studies on cells in test tubes (in-vitro) or animal studies<sup>42</sup>. These types of studies are not considered good forms of research. The effects found in animals or cell studies are rarely reproduced in studies of humans<sup>42</sup>.

There are some studies of the ketogenic diet in humans. The results do not show an increased rate of survival when following a ketogenic diet<sup>43-49</sup>. Some research shows that people actually lose weight while following the ketogenic diet<sup>50-51</sup>. Therefore the ketogenic diet is *not* advised during cancer treatment or in cancer prevention.

Weight loss during cancer treatment should be avoided where possible. Research also showed that some people found the diet unpleasant or experienced significant treatment related side effects including constipation, tiredness, headaches and nausea<sup>52-53</sup>.

**It is *not* recommended to follow a low carbohydrate or ketogenic diet if you have been diagnosed with cancer or while undergoing treatment.**



## INTERMITTENT FASTING

This type of diet involves fasting, or eating very little for prolonged periods of time. If you have been diagnosed with cancer this type of diet is not recommended. Fasting can reduce your ability to consume all the important nutrients that you need. If you are undergoing cancer treatment your body needs plenty of energy, protein, vitamins and minerals to help it cope<sup>54</sup>.

Fasting also places you at an even greater risk of losing weight. We know that it is important to maintain your weight during cancer treatment, even if you are overweight<sup>3</sup>.

The research into intermittent fasting is in an early phase and has mainly been conducted in animal and cell studies<sup>55</sup>. Hence, there is limited evidence to support intermittent fasting<sup>56</sup>. Fasting is not recommended for patients who are at risk of malnutrition or those who have diabetes.

## GLUTEN

### Should I avoid gluten?

No, there is no evidence that following a gluten free diet has any considerable health benefit for the general population<sup>14</sup>.

Gluten is a protein found in wheat, rye and barley that causes no harm to the majority of people. People who have been diagnosed with coeliac disease are advised to follow a gluten-free diet by their doctor or dietitian to prevent other adverse effects.

Some individuals experience gluten-sensitivity without having been diagnosed with coeliac disease. For these individuals, gluten may contribute to inflammation in the gut and cause unwanted gastrointestinal symptoms such as bloating or changes in bowel movements<sup>14</sup>. However, there is *no* evidence that consuming gluten increases the risk of GI cancers in the general population<sup>57</sup>.

It is *not* advised to avoid foods containing gluten as these foods can be a good source of fibre and often contain vitamins and minerals that may be cancer protective<sup>2</sup>. Foods that are high in fibre have been linked to a reduced risk of bowel cancer<sup>2,57</sup>.

## ALKALINE DIETS

### I've read about Alkaline Diets – are these a good idea?

No, there is no evidence to show that following an alkaline diet reduces cancer risk or protects against cancer. The theory behind this diet is that an acidic body environment promotes diseases like cancer and an alkaline environment contributes to good health.

This diet has become very popular in the media but any studies that reported these results were done in a laboratory setting, and do not directly translate to the human body<sup>58</sup>. The acidity or alkalinity of your blood are measured using the pH scale and this is tightly regulated by your kidneys.

A pH of 0 is completely acidic, a pH of 14 is completely alkaline and a pH of 7 is neutral. Different parts of our bodies have different pHs in order to carry out their various roles effectively. Blood is naturally slightly alkaline (pH around 7.4), whereas your stomach is very acidic (pH around 3.5) so it can help break down food. It is not possible to alter blood pH through the food that you eat.

Following an alkaline diet (where meat and dairy is often avoided) will not change the pH of your blood or any other organ. Following this type of restrictive diet may contribute to weight loss and result in inadequate intakes of many nutrients including calcium, vitamin D, vitamin B12 and protein, and could have a negative impact on your condition and treatment. Even if diet could change blood pH, it is important to note that an alkaline environment may interfere with the efficacy of chemotherapy treatments<sup>59</sup>.

**It is *not* recommended to follow an alkaline diet or any restrictive diet if you have been diagnosed with cancer or while undergoing treatment.**



## JUICING AND DETOX DIETS

### Should I start juicing or try detox diets?

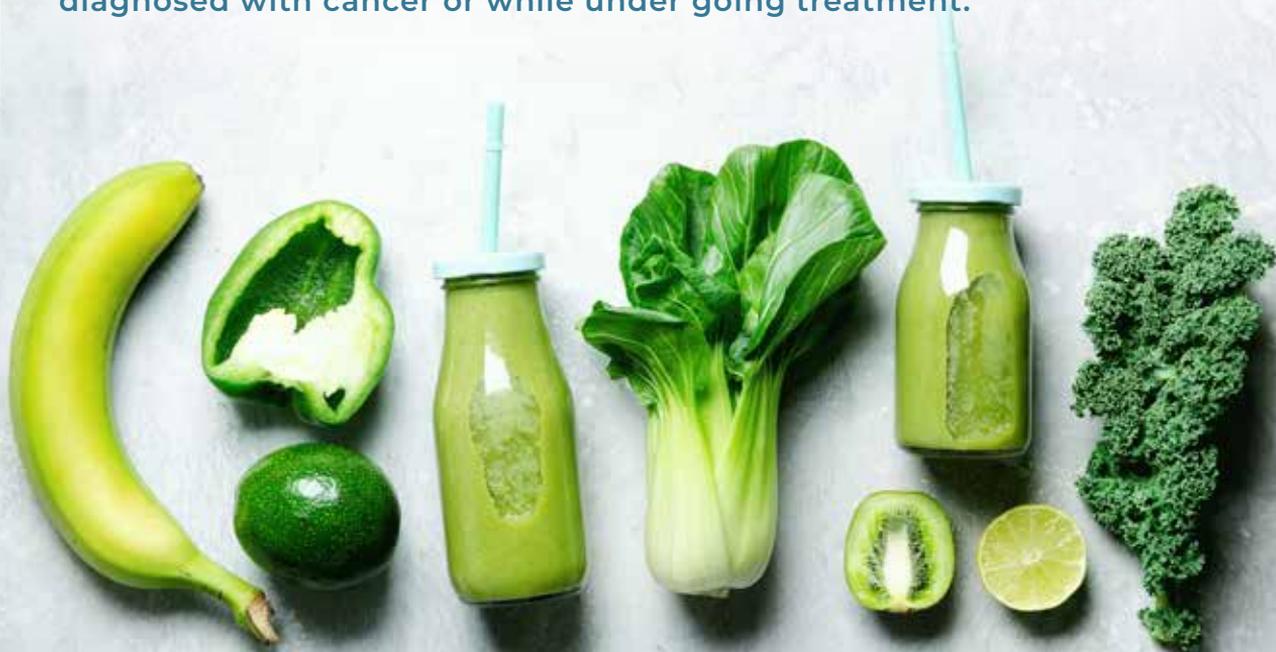
No, there is no evidence that juicing or a detox diet will prevent or treat cancer.

Juicing is removing the juice from fruits and vegetables using a juicer or blender. It was previously thought that consuming only fresh juice for a prolonged period of time would get rid of all the toxins in the body that might cause cancer. Research shows that detoxes are not necessary or healthy to do<sup>14</sup>. Our liver and kidneys play a key role in removing unwanted toxins from our body.

Fruits and vegetables contain a lot of important nutrients that have been shown to reduce cancer risk but to get the full benefit it is better to eat them whole. Juicing removes the important nutrient fibre. Fibre has been linked to lower rates of bowel cancer<sup>2</sup>.

Following a juicing or detox diet may cause more harm than good<sup>60</sup>. These diets usually involve a severe calorie (energy) restriction and cause weight loss. This may impact your own ability to cope with treatment. It is hard to meet your nutritional requirements while following a juicing diet and it is likely that you will miss out on essential food groups such as protein. However, if your diet is low in fruit and vegetables or you are having difficulty chewing or swallowing food during your treatment, juicing can be an option to add valuable nutrients into your diet. Your dietitian will discuss this with you.

**It is *not* recommended to follow a juicing or detox diet if you have been diagnosed with cancer or while under going treatment.**



## GERSON THERAPY

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Gerson therapy has not been shown to be an effective way to treat cancer and it is not recommended by any national or international cancer organisation. This diet is plant-based and involves consuming 'super doses' of organic juices alongside taking thyroid and potassium supplements, pancreatic enzymes and other vitamin and mineral supplements<sup>61</sup>.

This treatment also recommends coffee enemas multiple times per day. Following a Gerson diet also involves restricting your intake of animal fat (dairy products) and protein. These food groups play an important role in helping to keep your weight stable and helping to maintain your muscles. If you have been diagnosed with cancer it is not recommended to exclude these food groups<sup>20</sup>.

The aim of this diet is to boost the immune system and cleanse toxins from the body. Removing toxins is the natural job of the kidneys and the liver, and as discussed previously, it is *not* recommended to follow a detox diet if you have been diagnosed with cancer.

As mentioned earlier, high-doses of vitamin and mineral supplements can negatively impact anti-cancer treatments such as chemotherapy and make it less effective<sup>22</sup>.

Some aspects such as eating lots of fruits and vegetables can be beneficial and is known to positively influence cancer risk, but only when consumed as part of a healthy balanced diet and not taken to extremes. As we have discussed previously, following a juice-based diet can deprive you of other important food groups such as protein. This can be particularly harmful for people who have lost weight or are at risk of losing weight.

Most Gerson Therapists encourage people to stop chemotherapy while following a Gerson diet. Choosing to stop or delay the conventional treatments recommended by your doctor can greatly reduce overall survival and can be harmful for your health.

## COFFEE ENEMAS

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Despite the growing popularity of colon cleansing using coffee enemas, there is no evidence to support claims that it can help to treat cancer and may actually cause more harm than good<sup>62</sup>.

Enemas involve injecting large amounts of fluid into the rectum. Coffee enemas can cause gastrointestinal distress such as nausea, vomiting and diarrhoea. Other side effects include; dizziness, dehydration, electrolyte abnormalities, acute kidney insufficiency, bowel perforation and also an increased risk of infection<sup>62,63</sup>.



## APRICOT KERNELS & VITAMIN B17

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Amygdalin is a bitter plant substance found in raw nuts, almonds and apricot/peach kernels. Laetrile is a partly man-made form of the natural substance amygdalin. Laetrile is often referred to as vitamin B17, although it is not actually a vitamin<sup>64</sup>.

It was thought that in the body, amygdalin converts into hydrogen cyanide which has the ability to kill cancer cells. But this effect has only been shown in studies using cells in the lab. Cyanide is a type of poison and is extremely dangerous. Cyanide may destroy cancer cells but it will also destroy healthy cells in the process<sup>64</sup>.

Reported side effects of taking vitamin B17 include fever, dizziness, liver damage, lack of oxygen to body tissues, nerve damage, confusion, coma and possible death<sup>64</sup>.

Despite claims made about laetrile (vitamin B17) and its anti-cancer properties, there is no evidence to support these claims<sup>65,66</sup>. There are currently no well-designed clinical trials investigating the anti-cancer effect of laetrile or amygdalin, hence there is no reliable evidence available<sup>66</sup>.

Laetrile has been banned by the Food and Drug Administration in the US since the 1980s and it has never been authorised in Europe<sup>66</sup>. The sale of raw apricot kernels has even been prohibited in Australia and New Zealand due to the dangerous side effects<sup>67</sup>. The European Food Safety Authority estimate that even consuming 1-2 small kernels can place a person at an acute health risk<sup>68</sup>.

## OTHER ALTERNATIVE TREATMENT CENTRES

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You may have heard of some alternative treatment centres in countries outside of Ireland.

The most common centres are in Mexico, Germany, Hungary and Spain. These centres and the treatments they provide are not endorsed by any major international health organisation, for example the US Food and Drug Administration or The World Cancer Research Fund. The majority of treatments provided at these centres have no evidence to support the claims that they treat cancer and many of these centres encourage their patients to stop their conventional treatments such as chemotherapy or radiotherapy.

Delaying or stopping the anti-cancer treatments recommended by your oncology team may have a negative impact on your overall health. These centres do not give conventional medical treatment and rely on vitamin infusions, coffee enemas, unregulated 'medications' (banned in several countries including Ireland), urine vaccines, light therapy, heat therapy, oxygen therapy, multiple food restrictions and other unproven 'therapies'.

Depending on your cancer stage and current symptoms, you may also put yourself at risk if you choose to fly to one of these treatment centres. These centres are extremely expensive to attend and can cost tens of thousands of euro depending on your length of stay. These centres often encourage patients to take out a mortgage or loan, or use crowd-funding to finance the cost of attending these centres. This can cause unnecessary financial stress for you and your family.

If you are considering attending an alternative treatment centre, please discuss it with your oncology team.

# WHAT CAN I DO TO EAT WELL DURING CANCER TREATMENT?

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Good nutrition is important during cancer treatment. Cancer itself and cancer treatment can change the way you eat. Eating well may help you feel better and help you to maintain your strength during treatment<sup>20,69,70</sup>. It may also help reduce treatment related side-effects such as nausea and fatigue<sup>4</sup>. The most important thing is to continue eating foods that you enjoy and to not feel restricted by fad diets discussed in the media.

Good nutrition can help reduce your risk of infection and help you recover quicker after cancer treatment<sup>70</sup>. Maintaining your weight during treatment can help with this.

## **Aim to keep your weight steady during treatment**

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It is recommended to monitor your weight twice a month during your cancer treatment.

Ask to see a dietitian if you are losing weight or think you might be losing weight. Some cancer patients report that they are happy to be losing weight but research shows that it is more beneficial to keep your weight steady during cancer treatment, even if you are overweight<sup>3</sup>.

Studies have shown that 50-80% of patients with cancer experience some degree of weight loss during their cancer journey<sup>4</sup> and that over 4 in 10 cancer patients lose very significant amounts of muscle.

It is also important to know that using body mass index (BMI) is not always accurate. A person may have a healthy or overweight BMI and still experience significant muscle wasting. Muscle wasting is associated with poorer tolerance to treatment, increased complications and reduced quality of life<sup>4,71,72</sup>.

Weight stability during cancer treatment can help maintain strength and reduced tiredness. It may also help reduce side effects of cancer treatment<sup>73,74</sup>.

## **Eat a nutritious diet**

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A healthy diet includes a variety of foods including carbohydrates, protein, fats, vitamins and minerals. A diet rich in energy (calories) and protein can help patients to maintain a healthy weight during cancer treatment. Keeping well nourished is vital for recovery and yields many physical and mental benefits.



## Have protein in at least two meals per day

Include protein in at least 2 meals per day. Examples of protein include fish, eggs, lentils, beans, poultry, meat, dairy such as yoghurt or milk, quorn, tofu and nuts. Protein provides 'building blocks' to maintain muscle and strength during treatment.

## Be physically active

It is important to keep active, but you may need to be careful with the activities you choose. This will depend on your cancer type, your treatment plan, side effects of treatment and any other medical conditions you might have.

Speak to your doctor if you have concerns before exercising. Staying active during cancer treatment can help reduce fatigue<sup>75</sup>, maintain strength<sup>76</sup> and can help with recovery<sup>77</sup>. Guidelines for physical activity suggest that people with cancer should be as physically active as they feel comfortable with. The recommendations are:

- At least 30 minutes of moderate-intensity activity 5-days per week. Examples: walking, jogging, cycling, swimming. This can be completed in short ten minute sessions a few times per day. People who have been previously inactive may need to build up to this level over time.
- Two 20 minute resistance exercise sessions per week, involving all major muscle groups (arms, legs, tummy). This could include lifting weights, exercises using your body weight or climbing stairs.

*Always speak to your oncology team if you have any concerns with physical activity during cancer treatment.*

# HEALTHY EATING DURING CANCER TREATMENT

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## When should I follow this advice?

You should follow a healthy diet if:

- You are coping well with treatment
- You are not suffering with side effects or symptoms that are affecting your food intake
- If you have not lost weight
- If you have gained weight during your cancer treatment

## Have a balanced diet.

Eating well means eating a varied and balanced diet that provides your body with all the nutrients it needs. These nutrients include protein, carbohydrates, fats, vitamin and minerals<sup>2,20,35</sup>.

## Try to:

- Avoid skipping meals. Eat at least three meals every day during treatment.
- Have wholegrain carbohydrate in each meal. Examples: brown pasta, rice, potatoes, sweet potato, butternut squash, wholegrain bread and cereals. These foods are rich in fibre, B vitamins and minerals.
- Include protein in at least 2-3 meals per day. Examples: fish, eggs, lentils, beans, poultry, meat, cheese, quorn, tofu and nuts. Protein helps maintain your muscles and muscle strength during cancer treatment. Try to include some in each meal.
- Limit red meat to 2 portions per week and try to avoid processed meats such as bacon, rashers, black pudding and deli meats such as ham, salami.
- Include 2 portions of oily fish per week such as salmon, mackerel, herring, trout or fresh tuna.
- Include fruits and vegetables in your meals every day. Aim for 5-7 portions per day. Aim for “eat the rainbow” by having different colour fruit and vegetables throughout the week. These can be fresh, frozen, tinned or dried. These foods are rich in vitamins, minerals, phytonutrients and fibre.

- Include 2-3 portions of dairy in your diet each day. This includes milk, yoghurt and cheese. If you dislike dairy then use dairy alternatives, such as soya or almond milk. Choose alternatives that are fortified with calcium and vitamin D.
- Drink at least 8-10 cups of fluid each day. This could include water, tea, coffee, and no added sugar fruit squash or fruit juice (150mls per day).
- Include heart-friendly olive, rapeseed or vegetable oil, avocado, nuts and seeds in your diet. Be careful to ensure these are eaten in small amounts as they are high in calories.
- Limit your intake of fats and fatty foods such as cream, butter, fatty meats, pastries, chips, crisps, cheese, chocolate, cakes and ice-cream.
- Try grilling, poaching and baking meals where possible and limit fried foods.



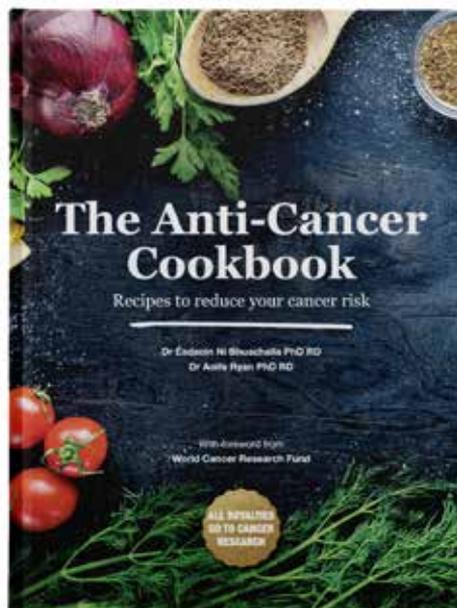
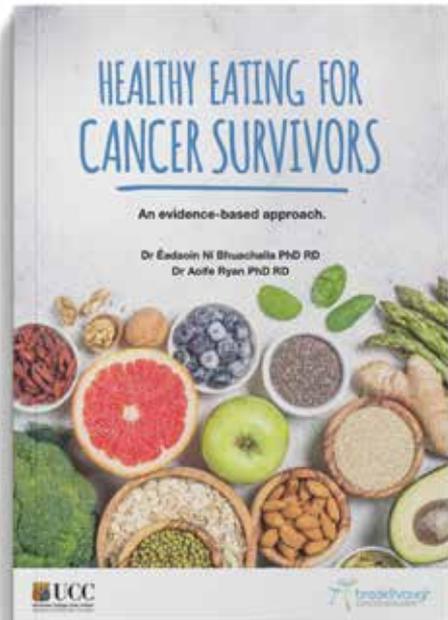
Breakthrough Cancer Research and oncology dietitians at University College Cork have produced two healthy eating cookbooks for cancer survivors. 'Healthy Eating for Cancer Survivors' is available free of charge from their website and from Irish Hospitals. This book gives guidance on healthy eating and a selection of recipes based on WCRF guidelines for cancer survivors.

The second book is called 'The Anti-Cancer Cookbook: Recipes to Reduce Your Risk' which is available in bookshops or from

*[www.breakthroughcancerresearch.ie](http://www.breakthroughcancerresearch.ie)*

with all proceeds going to Breakthrough Cancer Research. This book is a full hardback cookbook with over 100 healthy recipes that comply with cancer-prevention guidelines and are suitable for all the family.

Its contents have been endorsed by the World Cancer Research Fund, the National Cancer Control Programme in Ireland, the Irish Society of Medical Oncology and the Irish Nutrition & Dietetics Institute.



Please note these healthy eating cookbooks are not suitable for patients on cancer treatment who have a poor appetite, unintentional weight loss or swallowing difficulties. Please see the following section if you have been affected by these issues.

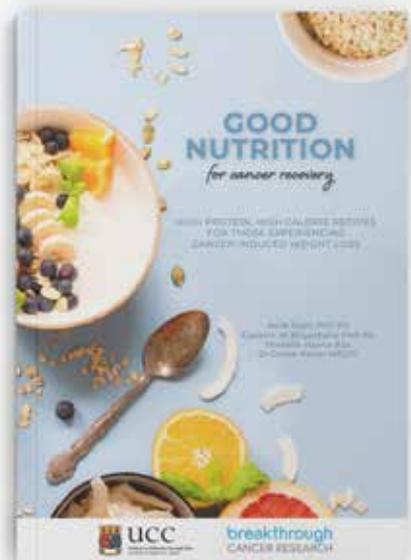
## Eating well when your appetite is reduced or you have weight loss

Weight loss and muscle loss are common in patients on cancer treatment<sup>3,4</sup>. It is caused by reduced food intake and poor appetite, side-effects of treatment (nausea, vomiting, diarrhoea, taste and smell changes, sore mouth, indigestion, pain, fatigue) and as a consequence of the cancer itself leading to changes in metabolism. Cancer can stimulate a host-response whereby the body makes lots of chemical messengers that directly break down muscle and fat stores. Patients can lose dramatic amounts of weight very quickly. Some patients with cancer of their mouth, throat and upper gut can also have swallowing difficulties.

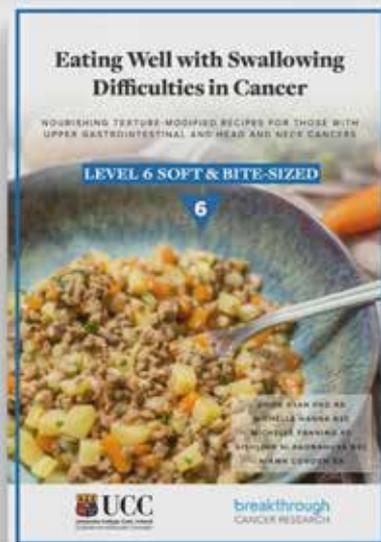
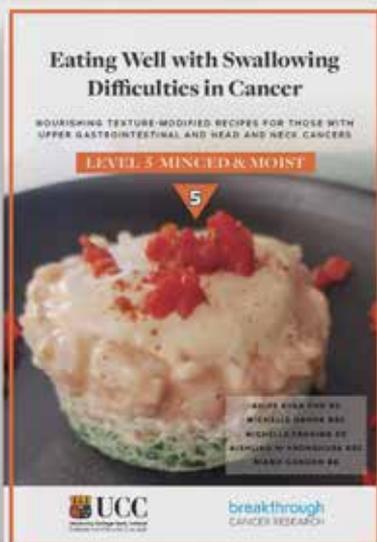
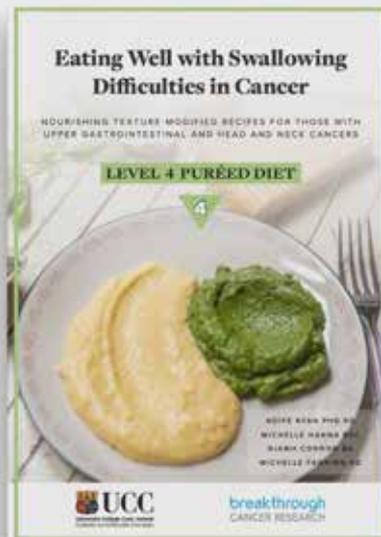
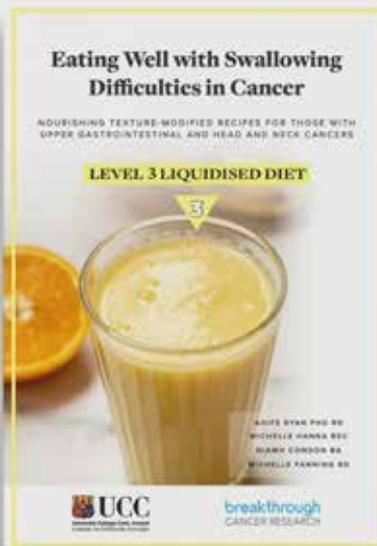
If you are experiencing any of the above problems it is important you let your medical team know, and they can refer you for individual advice from a registered dietitian. A dietitian can help you maximise your intake with small portions of nutritious foods and may recommend you take a liquid or powdered nutritional supplement. In certain circumstances patients may need to alter the texture of their food (if they have swallowing difficulties), or may require periods of tube feeding or intravenous feeding to support them during cancer treatment. Dietitians are uniquely qualified to help with these eating problems and should be the first port of call for nutritional advice.

There are a number of free resources to help patients with poor appetite and/or swallowing difficulties which are written by dietitians, oncologists and speech and language therapists. Breakthrough Cancer Research has sponsored the printing of a series of books which are available free of charge from their website and also in Irish hospitals.

‘Good Nutrition for Cancer Recovery’ is a free 280 page high-protein high-calorie evidence-based cookbook which has helped numerous patients with poor appetite and weight loss regain strength and weight during cancer treatment.



'Eating Well with Swallowing Difficulties in Cancer' is a series of four free texture-modified cookbooks for patients with swallowing problems. It was written by a team of dietitians at University College Cork in collaboration with a dysphagia chef, a speech and language therapist and clinical specialist dietitians working in the HSE. It is compliant with international guidelines for swallowing difficulties (IDDSI) and is available in Liquidised; Puréed; Minced and Moist; and Soft and Bite Sized versions.



## TOP TIPS DURING CHEMOTHERAPY

Keep a weight chart to track your weight during your treatment. During cancer treatment, aim to maintain your weight even if you are overweight.

Some people lose muscle during cancer treatment. Protein helps keep your muscles strong during treatment. Have protein in 2-3 meals per day unless advised otherwise by your doctor. Physical activity also helps.

Keep active during your chemotherapy. Exercise can help reduced tiredness that is common with cancer treatment. It also protects from muscle loss. Exercise can include walking, gardening, housework, cycling, swimming, running or going to the gym.

Cancer treatments can affect your taste buds. Food may taste unpleasant, bland, metallic, sweet or salty. Having a dry mouth can affect your taste. Drink plenty of fluids and brush your teeth twice a day with a soft toothbrush. Experiment with flavours using herbs, spices, sauces and marinades. If plain water is difficult to drink then try squash, fruit teas or carbonated water. If certain meats become less enjoyable try other sources of protein such as eggs, fish, nuts, dairy, beans or pulses.

Prevent constipation by staying hydrated. Aim for at least 8-10 cups of fluid but you may even need more than this. Have fibre in your diet. This includes wholegrain breads or cereal, brown pasta or rice, pulses, beans, fruits and vegetables. Physical activity also helps regulate bowel function.

Diarrhoea can be a side effect of cancer treatment. If you are experiencing diarrhoea, try not to restrict the amount you eat. It may be easier to eat little and often rather than having larger meals. Try temporarily reducing caffeine, spicy foods, nuts, seeds, high fibre bread and cereals. Remember to keep hydrated.



If you experience nausea, try small meals and eat more often. Some people find bland foods such as toast, potato, rice, pasta or crackers easier to manage. Food or drink containing ginger or peppermint may help ease nausea. If the smell of cooking makes you feel sick, try cold foods and snacks. Frozen meals that can be easily reheated may help. Sit upright when eating and after eating, if possible.



If you're feeling unwell, try to avoid lying down for at least an hour after meals. It is important to avoid dehydration, especially if you have vomited. Try sipping drinks. Ice cold, fizzy drinks such as sparkling water or soda water may help.

You may experience mouth problems during or after cancer treatments.

Some common problems include:

- soreness or ulcers in your mouth and throat
- mouth infections such as thrush
- dry mouth and lack of saliva or thick and sticky saliva
- difficulty swallowing and chewing
- bad breath

Try to keep your mouth as clean as possible. This will help your mouth feel fresh and may improve taste. Remember to brush your teeth at least twice per day. If you have sore teeth or gums, try using a soft bristle tooth brush and use an alcohol-free mouthwash after meals. If you have a dry mouth, try sucking on sugar-free boiled sweets or chewing gum. This can help stimulate saliva and keep your mouth moist. Keep a bottle of water with you for regular sips too.



If you have a sore mouth: temporarily avoid acidic or spicy foods such as citrus fruit, vinegar, chilli, or tomato-based sauces. Having softer meals with extra sauces or gravy will make it easier to chew and swallow. Soups, smoothies, fish pies, cottage pies, yogurts, milk puddings or porridge made with milk are all suitable meal ideas.

## REDUCING YOUR RISK OF INFECTION

Your immune system helps protect your body from infection and disease. It may not work as well as normal during and after your cancer treatment. It is important to follow good hygiene and you should also avoid particular foods<sup>78,79</sup>.

### Preparation

- Wash your hands thoroughly with soap and warm water before preparing, cooking, and eating food. Cover any cuts or grazes with a waterproof plaster.
- Wash and disinfect all worktops and chopping boards before and after cooking.
- Use different chopping boards for raw and ready-to-eat foods.
- Check food is in date and it doesn't have any mould on it.
- Keep the fridge temperature at 5°C or below. Keep freezer temperature -18°C or below.
- Wash fruit and vegetables under cold running water before you eat them.
- When cooking check that food is piping hot throughout before you eat it.

### Leftovers

- If refrigerated, eat within two days.
- Freeze in individual portions.
- Reheat until steaming hot throughout and reheat only once.
- Reheat and eat cooked food within 24 hours of defrosting.



## Reusable shopping bags

- Use separate bags for raw foods.
- Check for spillage of meat juices and soil – if this occurs, throw the bag away.
- Wash cotton and fabric bags regularly.



## Foods to avoid

We recommend that these foods are avoided because they are uncooked and may increase your risk of infections:

- Uncooked (unpasteurised) soft cheeses with white rinds such as Brie, chèvre (goats cheese)
- Uncooked (unpasteurised) blue cheeses such as Gorgonzola, Roquefort, and Stilton
- Pâté – meat, fish and vegetarian
- Raw and undercooked meat or eggs
- Raw shellfish
- Unpasteurised milk

## Reliable sources of information

EU Food safety:

[www.safefood.eu/food-safety](http://www.safefood.eu/food-safety)

Irish Nutrition and Dietetic Institute: [www.indi.ie](http://www.indi.ie)

The British Dietetic Association:

[www.bda.uk.com](http://www.bda.uk.com)

Breakthrough Cancer Research:

[www.breakthroughcancerresearch.ie](http://www.breakthroughcancerresearch.ie)

Irish Cancer Society:

[www.cancer.ie](http://www.cancer.ie)

Macmillian Cancer Support:

[www.macmillan.org.uk](http://www.macmillan.org.uk)

National Centre for Complementary and Integrative Health

[www.nccih.nih.gov](http://www.nccih.nih.gov)

## References

1. Sullivan E, Rice N, Kingston E, Kelly A, Reynolds JV, Feighan J, Power DG, Ryan AM. A national survey of oncology survivors examining nutrition attitudes, problems and behaviours, and access to dietetic care throughout the cancer journey. *Clinical Nutrition ESPEN* 2021 Feb;41:331-339.
2. World Cancer Research Fund (WCRF). Recommendations and public health and policy implications. 2018. American Institute for Cancer Research. Accessed 8/11/21; available <https://www.wcrf.org/wp-content/uploads/2021/01/Recommendations.pdf>
3. Martin et al. Diagnostic Criteria for the Classification of Cancer-Associated Weight Loss. *J Clin Oncol.* 2015; 33: 90-99
4. Ryan et al. Cancer-associated malnutrition, cachexia and sarcopenia: the skeleton in the hospital closet 40 years later. *Proceedings of the Nutrition Soc.* 2016; 75: 199-211
5. Bouvard V, Loomis D, Guyton KZ, et al. Carcinogenicity of consumption of red and processed meat. *Lancet.* 2015;16: 1599-1600.
6. Pan A, Sun Q, Bernstein AM, et al. Red meat consumption and mortality: results from 2 prospective cohort studies. *Arch Intern Med* 2012; 172: 555-63.
7. Davey GK, Spencer EA, Appleby PN, et al. EPIC-Oxford: lifestyle characteristics and nutrient intakes in a cohort of 33 883 meat-eaters and 31 546 non meat-eaters in the UK. *Public Health Nutr* 2003; 6: 259-69.
8. Chan DSM, Lau R, Aune D, Vieira R, Greenwood DC, et al. (2011) Red and Processed Meat and Colorectal Cancer Incidence: Meta-Analysis of Prospective Studies. *PLoS ONE* 6(6): e20456. doi:10.1371/journal.pone.0020456
9. Should people with cancer go vegan? [Internet]. World Cancer Research Fund. 2021 [cited 2022 Jan 18]. Available from: <https://www.wcrf-uk.org/our-blog/should-people-with-cancer-go-vegan/>
10. Adlercreutz H. Phyto-oestrogens. *The Lancet Oncology.* 2002;3(6):364-73
11. Rothwell JA, Knaze V, Zamora-Ros R. Polyphenols: dietary assessment and role in the prevention of cancers. *Curr Opin Clin Nutr Metab Care.* 2017 Nov;20(6):512-521. doi: 10.1097/MCO.0000000000000424. PMID: 28915128.
12. Shu XO, Zheng Y, Cai H, et al. Soy Food Intake and Breast Cancer Survival. *JAMA.* 2009;302(22):2437-2443. doi:10.1001/jama.2009.1783
13. Chen M, Rao Y, Zheng Y, et al. Association between soy isoflavone intake and breast cancer risk for pre- and post-menopausal women: a meta-analysis of epidemiological studies. *PLoS One.* 2014;9:e89288.
14. Rock CL, Thomson C, Gansler T, Gapstur SM, McCullough ML, Patel AV, et al. American Cancer Society guideline for diet and physical activity for cancer prevention. *CA: A Cancer Journal for Clinicians.* 2020;70(4):245-71.
15. National Cancer Registry Ireland, 2020. Modifiable risk factors and cancer in Ireland. Accessed 09/11/21; available [https://www.ncri.ie/sites/ncri/files/pubs/NCRI\\_Risk%20factors%20Report%2006102020.pdf](https://www.ncri.ie/sites/ncri/files/pubs/NCRI_Risk%20factors%20Report%2006102020.pdf)
16. Seitz HK, Stickel F. Molecular mechanisms of alcohol-mediated carcinogenesis. *Nat Rev Cancer.* 2007;7:599-612.
17. Seitz HK, Stickel F. Acetaldehyde as an underestimated risk factor for cancer development: role of genetics in ethanol metabolism. *Genes Nutr.* 2010;5:121-128.
18. Parry CD, Patra J and Rehm J. Alcohol consumption and non-communicable diseases: epidemiology and policy implications. *Addiction* 2011; 106: 1718-24.
19. Department of Health. Health Service Executive. 'Low Risk Drinking Guidelines. 2019. Accessed 09/11/2021; available from <https://www2.hse.ie/wellbeing/alcohol/improve-your-health/weekly-low-risk-alcohol-guidelines.html>
20. Arends, J. et al. ESPEN guidelines on nutrition in cancer patients. *Clin. Nutr.* 36, 11-48 (2017).

21. Food Safety Authority of Ireland (FSAI). Vitamin D Scientific Recommendations for Food Based Dietary Guidelines for the Older Adult in Ireland .2020. Report of the Scientific Committee of the Food Safety Authority of Ireland. Accessed 09/11/21;
22. Block, K et al. "Impact of antioxidant supplementation on chemotherapeutic toxicity: a systematic review of the evidence from randomized controlled trials." *International journal of cancer* vol. 123,6 (2008): 1227-39. doi:10.1002/ijc.23754
23. Zasowska-Nowak A, Nowak PJ, Ciałkowska-Rysz A. High-Dose Vitamin C in Advanced-Stage Cancer Patients. *Nutrients*. 2021 Feb 26;13(3):735.
24. Vitamin C jab to beat cancer? [Internet]. Cancer Research UK - Cancer News. 2008 [cited 2021 Dec 20]. Available from: <https://news.cancerresearchuk.org/2008/08/13/vitamin-c-jab-to-beat-cancer/>.
25. Klimant E, Wright H, Rubin D, Seely D, Markman M. Intravenous Vitamin C in the Supportive Care of Cancer Patients: A Review and Rational Approach. *Current Oncology*. 2018 Apr 1;25(2):139–48.
26. Antioxidants and Cancer Prevention - National Cancer Institute [Internet]. 2014 [cited 2021 Dec 21]. Available from: <https://www.cancer.gov/about-cancer/causes-prevention/risk/diet/antioxidants-fact-sheet>
27. The Effect of Vitamin E and Beta Carotene on the Incidence of Lung Cancer and Other Cancers in Male Smokers. *N Engl J Med*. 1994 Apr 14;330(15):1029–35.
28. Böttger F, Vallés-Martí A, Cahn L, Jimenez CR. High-dose intravenous vitamin C, a promising multi-targeting agent in the treatment of cancer. *J Exp Clin Cancer Res*. 2021 Dec;40(1):343.
29. Bradbury KE, Balkwill A, Spencer EA, et al. Organic food consumption and the incidence of cancer in a large prospective study of women in the United Kingdom. *Br J Cancer*. 2014;110: 2321-2326.
30. Hemler EC, Chavarro JE, Hu FB. Organic foods for cancer prevention—worth the investment? *JAMA Intern Med*. 2018;178:1606-1607.
31. Dangour, Alan D et al. "Nutritional quality of organic foods: a systematic review." *The American journal of clinical nutrition* vol. 90,3 (2009): 680-5. doi:10.3945/ajcn.2009.28041
32. Baudry J, Assmann KE, Touvier M, et al. Association of Frequency of Organic Food Consumption With Cancer Risk: Findings From the NutriNet-Santé Prospective Cohort Study. *JAMA Intern Med*. 2018;178(12):1597–1606. doi:10.1001/jamainternmed.2018.4357
33. Somasundaram S, Edmund NA, Moore DT, Small GW, Shi YY, Orłowski RZ. Dietary curcumin inhibits chemotherapy-induced apoptosis in models of human breast cancer. *Cancer Res*. 2002 Jul 1;62(13):3868–75.
34. Thorning, T. K., Raben, A., Tholstrup, T., Soedamah-Muthu, S. S., Givens, I., & Astrup, A. (2016). Milk and dairy products: good or bad for human health? An assessment of the totality of scientific evidence. *Food & nutrition research*, 60, 32527. <https://doi.org/10.3402/fnr.v60.32527>
35. Healthy Ireland and Department of Health Report. Healthy Ireland: Eat Well. Healthy Eating Guidelines 2019. Available at <https://www.gov.ie/en/publication/da7f19-eat-well/#healthy-eating-guidelines>
36. Rossi-Fanelli F, Franchi F, Mulieri M et al. Effect of energy substrate manipulation on tumour cell proliferation in parenterally fed cancer patients. *Clin Nutr*.1991; 10(4): 228-232
37. Perez-Hernandez AI, Catalan V, Gomez- Ambrosi J, Rodriguez A, Fruhbeck G. Mechanisms linking excess adiposity and carcinogenesis promotion. *Front Endocrinol (Lausanne)*. 2014;5:65
38. National Cancer Institute. Artificial Sweeteners and Cancer. Accessed 09/11/21. [cancer.gov/about-cancer/causes-prevention/risk/diet/artificial-sweeteners-fact-sheet](https://www.cancer.gov/about-cancer/causes-prevention/risk/diet/artificial-sweeteners-fact-sheet)
39. European Food Safety Authority. Regulation (EC) No 1333/2008 of the European

Parliament and of the Council of 16 December 2008 on food additives (Text with EEA relevance). Accessed 09/11/21; available <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32008R1333>

40. Martin-McGill et al. Understanding the core principles of a “modified ketogenic diet”: a UK and Ireland perspective. *Journal of Human Nutrition and Dietetic*. 2019; 32(3):385-90
41. Oliveira CL, Mattingly S, Schirrmacher R et al. A nutritional perspective of ketogenic diet in cancer: A narrative review. *J Acad Nutr Diet*. 2018; 118:668-688
42. Mak IW, Evaniew N, Chert M. Lost in translation: animal models and clinical trials in cancer treatment. *Am J Transl Res*. 2014; 6(2):114-118
43. Schmidt et al. Effect of a ketogenic diet on the quality of life in 16 patients with advanced cancer: A pilot trial. *Nutr & Metabolism*. 2011; 5 (54)
44. Fine EJ, Segal-Isaacson CH, Feniman RD et al. Targeting insulin inhibition as a metabolic therapy in advanced cancer: A pilot safety and feasibility dietary trial in 10 patients. *Nutrition*. 2012; 28(10):1028-1035
45. Rieger J, Bahr O, Maurer GD et al. ERGO: A pilot study of ketogenic diet in recurrent glioblastoma. *Int J Oncol*. 2014; 44(6): 1843-1852
46. Schwartz K, Chang HT, Nikolai M et al, Treatment of glioma patients with ketogenic diets: Report of two cases treated with an IRB- approved energy –restricted ketogenic diet protocol and review of the literature. *Cancer Metab*. 2015;3:3
47. Jansen N, Walach H. The development of tumours under a ketogenic diet in association with novel tumour marker TKTL1: A case series in general practice. *Oncol Lett*. 2016; 11(1):584-592
48. Zuccoli G, Marcello N, Pisanello A et al. Metabolic management of glioblastoma multiforme using standard therapy together with a restricted ketogenic diet: Case report. *Nutr Metab(Lond)*. 2010; 7:33
49. Kelment RJ, Sweeney RA. Impact of a ketogenic diet intervention during radiotherapy on body composition: I. Initial Clinical experience with six prospectively studied patients. *BMC Res Notes*. 2016; 9:143
50. Paoli A et al. Beyond weight loss: a review of the therapeutic use of very-low-carbohydrate (ketogenic) diet. *Eur J Clin Nutr*. 2013; 67: 789-796
51. Weber D et al. Ketogenic diet in the treatment of cancer- where do we stand? *Molecular Metabolism*. 2019; In press- Available online - <https://www.sciencedirect.com/science/article/pii/S2212877819304272>
52. Zahra et al. Consuming a ketogenic diet while receiving radiation and chemotherapy for locally advanced lung and pancreatic cancer: The university of Iowa experience of two phase 1 clinical trials. *Radiation Research* 2017; 187 (6); 743-754
53. Oliveira CL, Mattingly S, Schirrmacher R et al. A nutritional perspective of ketogenic diet in cancer: A narrative review. *J Acad Nutr Diet*. 2018; 118:668-688
54. Is a fasting diet beneficial to cancer patients? [Internet]. [cited 2022 Jan 18]. Available from: <https://www.cancer.org.au/iheard/is-a-fasting-diet-beneficial-to-cancer-patients>
55. Piersol B. Intermittent Fasting and Breast Cancer: What You Need to Know | Memorial Sloan Kettering Cancer Center [Internet]. [cited 2022 Jan 18]. Available from: <https://www.mskcc.org/news/intermittent-fasting-and-breast-cancer-what-you-need-know>
56. Clifton KK, Ma CX, Fontana L, Peterson LL. Intermittent fasting in the prevention and treatment of cancer. *CA A Cancer J Clin*. 2021 Nov;71(6):527–46.
57. Um, C.Y., Campbell, P.T., Carter, B. et al. Association between grains, gluten and the risk of colorectal cancer in the Cancer Prevention Study-II Nutrition Cohort. *Eur J Nutr* 59, 1739–1749 (2020). <https://doi.org/10.1007/s00394-019-02032-2>
58. Schwalfenburg GK (2012) The Alkaline Diet: Is there evidence that an alkaline pH diet benefits health? *Journal of Environmental and Public Health*. Vol. 7.
59. Fenton TR & Huang T (2016) Systematic review of the association between dietary acid load, alkaline water and cancer. *BMJOpen*. Volume 6; Issue 6.

59. Fenton TR & Huang T (2016) Systematic review of the association between dietary acid load, alkaline water and cancer. *BMJOpen*. Volume 6; Issue 6.
60. Lien YH. Juicing is not all juicy. *Am J Med*. 2013;126:755-756.
61. How it works [Internet]. Gerson Institute. [cited 2021 Dec 13]. Available from: <https://gerson.org/how-it-works/>.
62. Mishori R, Otubu A, Jones AA. The dangers of colon cleansing. *J Fam Pract*. 2011 Aug;60(8):454-7. PMID: 21814639.
63. Son H, Song HJ, Seo H-J, Lee H, Choi SM, Lee S. The safety and effectiveness of self-administered coffee enema: A systematic review of case reports. *Medicine*. 2020 Sep 4;99(36):e21998
64. Laetrile/Amygdalin (PDQ®)–Patient Version - National Cancer Institute [Internet]. 2005 [cited 2022 Jan 6]. Available from: <https://www.cancer.gov/about-cancer/treatment/cam/patient/laetrile-pdq>
65. Třísková A, Rudá Kučerová J. Can Amygdalin Provide any Benefit in Integrative Anticancer Treatment? *Klin Onkol* [Internet]. 2019 Oct 15 [cited 2022 Jan 6];32(5). Available from: <https://www.linkos.cz/english-summary/klinicka-onkologie-journal/2019-10-15-5-en/ma-amygdalin-sve-misto-v-integrativni-protinadorove-lecbe-1/>
66. Milazzo S, Horneber M, Ernst E. Laetrile treatment for cancer. *Cochrane Gynaecological, Neuro-oncology and Orphan Cancer Group*, editor. *Cochrane Database of Systematic Reviews* [Internet]. 2015 Apr 28 [cited 2022 Jan 6]; Available from: <https://doi.wiley.com/10.1002/14651858.CD005476.pub4>
67. Can eating apricot kernels cure cancer? [Internet]. [cited 2022 Jan 6]. Available from: <https://www.cancer.org.au/iheard/can-eating-apricot-kernels-cure-cancer>
68. EFSA Panel on Contaminants in the Food Chain (CONTAM). Acute health risks related to the presence of cyanogenic glycosides in raw apricot kernels and products derived from raw apricot kernels. *EFSA J* [Internet]. 2016 Apr [cited 2022 Jan 10];14(4). Available from: <https://data.europa.eu/doi/10.2903/j.efsa.2016.4424>
69. Baldwin C, Spiro A, Ahern R et al. Oral nutritional interventions in malnourished patients with cancer: a systematic review and meta-analysis. *J Natl Cancer Inst*. 2012; 104:371-385
70. Gillis C, Buhler K, Bresee L et al. Effects of Nutritional prehabilitation, with and without exercise, on outcomes of patients who undergo colorectal surgery: A systematic review and Meta-analysis. *Gastroenterology*. 2018; 155(2):391-410.e4
71. Prado CM, Cushen SJ, Orsso CE, Ryan AM. Sarcopenia and cachexia in the era of obesity: clinical and nutritional impact. *Proc Nutr Soc*. 2016 May;75(2):188-98.
72. Daly LE, Prado CM, Ryan AM. A window beneath the skin: how computed tomography assessment of body composition can assist in the identification of hidden wasting conditions in oncology that profoundly impact outcomes. *Proc Nutr Soc*. 2018 May;77(2):135-51.
73. Capuano et al. Prevalence and influence of malnutrition on quality of life and performance status in patients with locally advanced head and neck cancer before treatment. *Supportive Care in Cancer*. 2010; 18(4): 433-437
74. Hill et al. Associations between nutritional status, weight loss, radiotherapy treatment toxicity and treatment outcomes in gastrointestinal cancer patients. *Clin Nutr*; 30: 92-9
75. Mustian et al. Comparison of pharmaceutical, psychological and exercise treatments for cancer related fatigue: A Meta-analysis. *JAMA*. 2017; 3(7): 961-968
76. Van Rooijen et al. Systematic review of exercise training in colorectal cancer patients during treatment. *Scand J Med Sci Sports*. 2018; 28:360-370
77. Moran et al. The ability of prehabilitation to influence postoperative outcome after intra-abdominal operation: A systematic review and meta-analysis. *Surgery*; 160(5): 1189-1201
78. Safe Food. Safe and Healthy Eating on the Island of Ireland. 2019. Available at <http://www.safefood.eu/food-safety>
79. Bloodwise. Eating well with neutropenia: A guide for people with blood cancer (patient information). 2017. Available at <http://bloodwise.org.uk>





## CONTRIBUTORS

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### Clodagh Scannell RD, MSc

Clodagh graduated from UCC in 2018 with a BSc (Hons) degree in Nutritional Science. She then completed her MSc in Human Nutrition and Dietetics at the University of Limerick. Clodagh is currently undertaking her PhD at University College Cork under the supervision of Dr Aoife Ryan and Dr Erin Sullivan. Clodagh is a CORU registered dietitian and is also a member of the Irish Nutrition and Dietetic Institute. Clodagh hopes that this resource will help to resolve some of the confusion that is often felt by cancer survivors regarding diet and nutrition. She hopes that the key message taken from this resource is that people who have been diagnosed with cancer should continue to eat the foods that they enjoy and should not feel restricted by what they eat.



### Aoife Ryan PhD RD

Aoife graduated from TCD/DIT with a BSc Human Nutrition and Dietetics in 2000 and completed her PhD at Trinity College Dublin in 2007. She was Assistant Professor of Nutrition at New York University from 2008-2010 and joined the academic staff at University College Cork in 2011 where she is now a Senior Lecturer. She is a CORU registered Dietitian. She has been awarded a number of research grants to investigate nutrition and cancer. Her main areas of interest are: disease relate malnutrition, cancer cachexia and sarcopenia. Her team at UCC have previously developed several cookbooks for patients with cancer which are all available from [www.breakthroughcancerresearch.ie](http://www.breakthroughcancerresearch.ie). Her book 'The Anti-Cancer Cookbook' is available in book shops and online as an evidence-based approach to healthy eating to reduce your risk of cancer. It is endorsed by several major cancer organisations and all proceeds go to Breakthrough Cancer Research.



## Michelle Hanna

Michelle graduated from UCC in 2020 with a BSc (Hons) in Nutritional Sciences. She submitted her MSc (by research) in 2022 under the supervision of Dr. Aoife Ryan. Michelle is a member of The Nutrition Society. She is passionate about providing evidence-based nutritional support to those vulnerable to malnutrition, namely those with cancer and geriatric populations. She also believes that food is more than just fuel and has a keen interest in its social and cultural connotations. Michelle is currently a first year graduate entry medical student at the University of Ulster.



## Katie Mulcahy

Katie graduated from UCC with a BSc (Hons) in Nutritional Sciences in 2018. She then worked in the food industry for two years, before returning to UCC to complete her masters in Human Nutrition and Dietetics. She is a student member of the INDI. She is currently carrying out her research project on Cystic Fibrosis in Cork University Hospital. Katie is captivated by the area of diet and cancer, in particular speaking the truth and counteracting misinformation on the topic. She was involved in analysing recipes for a previous cookbook produced by Breakthrough Cancer Research as part of her final year project with Dr. Aoife Ryan.



## Aoibheann O'Sullivan

Aoibheann is a graduate of nutrition at IT Sligo and is currently in her final year of a MSc Human Nutrition & Dietetics at University College Cork. She is very interested in nutrition and oncology and specifically the development of patient resources for swallowing difficulties and disease-related malnutrition.



## CONTRIBUTORS

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### **Dr. Derek Power MRCPI**

Dr. Power is a Consultant Medical Oncologist at both the Mercy University Hospital and Cork University Hospital since 2010. He completed his medical oncology training at Memorial Sloan Kettering Cancer Centre, New York. He is a registered RCPI trainer of SHOs, registrars and Specialist registrars in medical oncology. His interests include melanoma, gastrointestinal and genitourinary cancers, familial cancer genetics as well as the impact of cancer on nutritional status. He has over 120 citations in the international scientific literature and has co-authored 5 book chapters. He is a national principal investigator on several Cancer Trials Ireland clinical trials in gastrointestinal cancers and melanoma.



### **Orla Dolan MSc**

Orla Dolan is a graduate of University College Cork and University of Limerick's Kemmy Business School. She is the Chief Executive of Breakthrough Cancer research, an Irish charity committed to funding research to improve cancer care and outcomes. Orla is also a former board member of the National Cancer Registry of Ireland.





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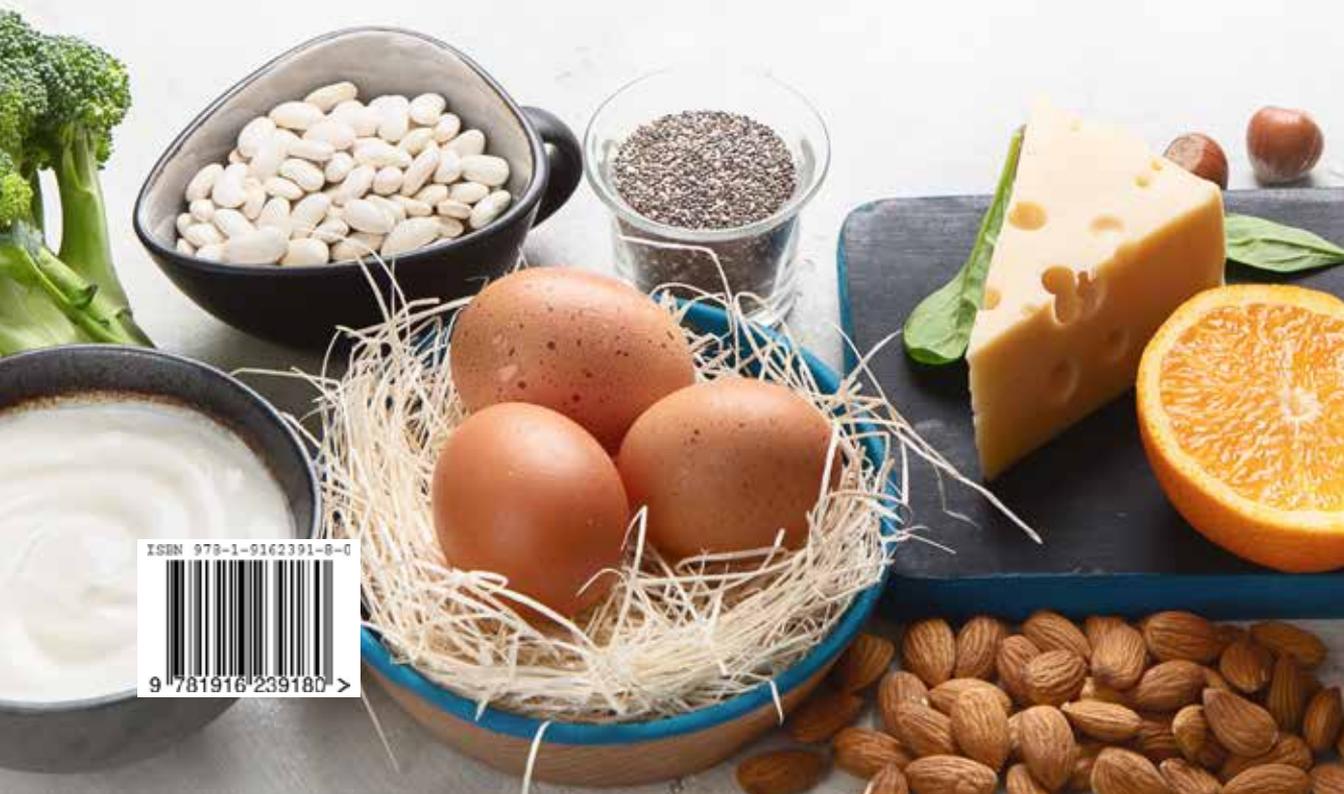
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