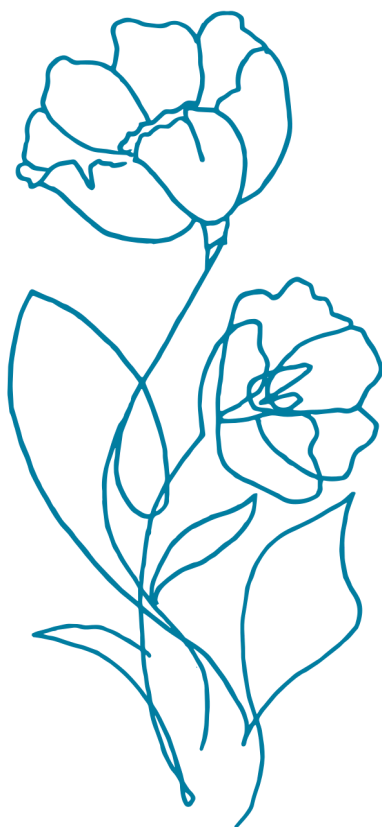


# HEALTHY EATING WITH CYSTIC FIBROSIS





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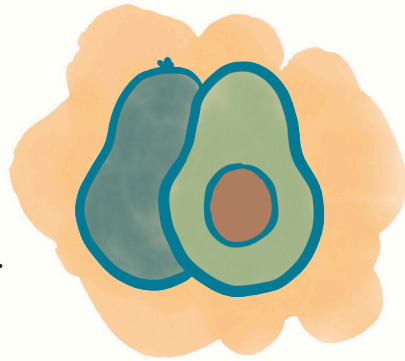


# HEALTHY EATING WITH CYSTIC FIBROSIS

CF teams often focus a lot on nutrition during childhood, especially gaining and maintaining weight. And with good reason – proper nutrition is important for your health. When you eat a healthy, well balanced diet and maintain a good body weight it can help you maintain better lung function, improve your immunity and give you the energy your body needs.

But so much emphasis on calories may mean eating sometimes feels like a chore, rather than eating for enjoyment as well.

Our hope is with a bit of knowledge about what healthy eating looks like for people with CF, and tips from adults about how to eat well when you're busy, you'll learn how good nutrition improves your overall health and how to enjoy the experience of managing your own diet.



## PANCREATIC SUFFICIENCY

If you're pancreatic sufficient it means you can digest your foods normally and you don't need to take pancreatic enzymes. Generally, you can eat a normal, balanced diet but you may need to include more high-fat foods than what's recommended by the Ministry of Health. Talk with your dietitian about what's right for you.

## PANCREATIC INSUFFICIENCY

Your pancreas is found behind your stomach, and two of its jobs are to make hormones (chemicals that control many of your body's functions) and make enzymes to help break down food to be absorbed by your body.

With CF, usually these pancreatic enzymes are unable to flow out of the pancreas into the intestine because the tiny pancreatic tubes



are blocked with thick, sticky mucus.

About 85% of people with CF in New Zealand are pancreatic insufficient and take pancreatic enzymes to help digest food. In New Zealand, CREON is the brand name for pancreatic enzymes that's commonly available and prescribed.

## BRIEF OVERVIEW OF MACRO NUTRIENTS

Most of your nutrition comes from three macronutrients – carbohydrates, protein and fats.

### CARBOHYDRATES

Carbohydrates provide your body with most of its energy and about 50% of what you eat daily should come from foods containing carbohydrates.

Good sources of carbohydrate foods include bread (wholemeal is best), pasta, rice, grains, potatoes and legumes (including chickpeas, lentils and beans).

Some foods high in carbohydrates such as wholegrain bread, pasta and oats are also high in fibre. Fibre is important to help keep foods passing through your digestive system and minimise your risk of constipation and bowel blockages.



### PROTEIN

Proteins are the building blocks of muscles and help with growth and repair of your body's tissues, including your hair, skin, organs and muscles. Preservation of muscle mass is very important in people with CF as it will help maintain lung function (respiratory muscles), improve muscle function and how much exercise you can do.

Protein-rich foods you can easily include in your

daily diet include meat, chicken, fish, eggs, milk and cheese. Plant-based protein comes from soy products such as soybeans and soy milk, nuts, beans and grains such as quinoa.

Protein is made up of amino acids and our bodies require 20 different amino acids to grow and function properly. Protein from animal sources contain all the amino acids we need, as do soy protein and quinoa. All other plant-based protein lack one or more amino acid, so if you're vegetarian or vegan focus on eating a variety of plant-based foods together, such as nuts or seeds with whole grains e.g. peanut butter on whole grain toast or dahl with brown rice.

## FATS

Chances are you know how important it is to include fat in your diet. If you're pancreatic insufficient it's hard for your body to absorb nutrients from foods, especially fats and fat-soluble vitamins A, D, E and K. If you're underweight, adding extra fats into your diet is the easiest way to increase the number of calories you're eating and can help you gain weight.

## UNDERSTANDING THE DIFFERENT TYPES OF FATS

There are 4 types of fats – polyunsaturated, monounsaturated, saturated and trans fat.

Polyunsaturated and monounsaturated fats are known as the 'good' fats and are considered healthier as they're from natural products .

### Sources of polyunsaturated fat

- Fatty fish, such as salmon, tuna, sardines, kahawai, mullet, trevally
- Walnuts
- Sunflower, sesame, flaxseed, pumpkin seeds
- Soybeans and soymilk
- Tofu

## Sources of monounsaturated fat

- Olives and olive oil
- Canola oil
- Nuts – including almonds, hazelnuts, cashews, pistachio, macadamia, peanuts
- Avocados and avocado oil
- Nut butters – peanut, cashew, almond, hazelnut

## Sources of saturated fat

- Red meat – beef, lamb and pork
- Chicken skin
- Butter
- Dairy products – cheese, cream, milk, ice cream
- Coconut oil
- Processed meats



## Sources of trans fat

Some margarines – anything containing hydrogenated or partially hydrogenated vegetable oil

Commercially baked products – biscuits, cookies, muffins, doughnuts, cakes, pastries, frozen pizza

Packaged snack foods – potato chips, corn snacks, crackers, pop corn

Fried foods – hot chips, deep-fried takeaway food, fried chicken

Processed meats – burgers, sausages, salami, luncheon, deli meats

Try to choose healthier fats where possible, to fortify your foods and boost your energy intake. However you may sometimes need to include other sources of fats if you're finding it hard to put on or maintain your weight other sources of fats and your dietitian may recommend eating more saturated fats. All fats contain the same amount of energy, but polyunsaturated and monounsaturated food contains more nutrients.

## FRUITS AND VEGETABLES ARE IMPORTANT TOO

Eating 5 + a day of fruits and vegetables is just as important for people with CF as the general population. While there's an increased emphasis of the importance of including lots of fats in your diet, the health benefits of lots of fruits and vegetables also applies to people with CF.

Aim to eat at least 3 servings of vegetables and 2 servings of fruit each day. Try to include a variety of vegetables and fruits – think of this like eating a rainbow of foods.

Foods in season are usually cheaper and have more nutrients than those out of season, for e.g strawberries during summer, pumpkin during autumn and winter. Frozen vegetables and fruits are also a good option as they're convenient and high in nutrients.



## SALT

People with CF need to include more salt in their diet, especially when you're exercising and during hot weather.

### **Simple ways to increase your salt intake**

- Adding salt to cooking – table salt, sea salt, Himalayan, rock salt
- Try flavoured salts – garlic, chicken, celery
- Pre-made seasonings – Moroccan, BBQ, lemon pepper
- Using salty sauces and dressings – soy sauce, pickles, chutneys, marinades, ketchup
- Salty snacks – chips, pretzels, crackers
- Cheese – cheddar, tasty, colby, feta, processed, cheese spread.
- Tinned fish – in brine, tomato sauce, sweet chilli, smoked, lemon pepper

**Check out [foodcomposition.co.nz](http://foodcomposition.co.nz) if you want to know what's in your food. The searchable database provides the nutrient content of over 2,700 foods commonly prepared and eaten in New Zealand**



# HOW TO PUT THIS INTO PRACTICE

Knowing what nutrients you need to eat is great, but what's more important is how to use this knowledge to eat well.

Our meal ideas and are an example of how you can eat healthy while making sure you eat enough fats to support your health.

## Breakfast ideas

- Porridge/granola with fruit and yogurt
- Scrambled eggs on wholegrain toast
- Poached eggs on a toasted English muffin
- French toast with peanut butter and jam/banana and honey/bacon and maple syrup
- Waffles with banana, bacon and maple syrup
- Avocado, bacon and tomato on a bagel
- Toasted fruit bread with fresh fruit, yogurt and honey
- Omelette with cheese/ham
- Cheesy baked beans on wholegrain toast
- Zucchini/pumpkin fritters with sour cream
- Banana and nut/ham and cheese muffins
- Breakfast burrito – sausage, cheese and cooked potato cubes
- Toasted sandwich filled with cheese and tinned spaghetti/banana and peanut butter

## Lunch ideas

- Wraps – filled with tuna/chicken with mayo, cold meat/cheese and salad with mayonnaise



- Tortilla – bacon/ham, cheese, cherry tomatoes, cooked potato, onion, cooked broccoli, capsicums
- Pasta/rice/quinoa/couscous salad – include ham/chicken/tuna/chickpeas and vegetables. Add avocado and sprinkle with a mix of nuts and seeds (pumpkin, sunflower, sesame, almond, pistachio, peanuts) to add extra calories
- Soup and a cheese/ham toasted sandwich
- Mac 'n' cheese

## Dinner ideas

- Roasts – use leftover meat to put in a sandwich, wrap or salad the next day, or make into a hash with leftover potatoes and vegetables
- Mince – make into burgers, meatballs, meatloaf, bolognaise sauce, chilli tacos
- Pork – chops, schnitzel are quick and easy to cook
- Chicken – thigh meat is juicier than breast meat, use to make fajitas, curries, stir-fry, pita pockets by adding herbs and spices when cooking



Nutritional content of chicken (140g breast meat)

- Grilled = 230 kJals, 5g fat
- Grilled, with skin = 276kJals, 11g fat
- Crumbed and baked = 309kJals, 13g fat
- Crumbed and fried = 392kJals, 24g fat
- Battered nuggets (6) = 296kJals, 20g fat

- Sausages – make your own loaded dogs by adding cheesy coleslaw, chilli, guacamole and corn chips
- Fish – Use frozen, battered or crumbed fish for fish burgers or fish tacos

- Beans & pulses – use as well as or instead of meat in casseroles, curries, burger patties
- Chickpeas – make into falafels
- Lentils – make dahl to eat with roti
- Red kidney beans – use instead of mince in chilli tacos
- Mixed beans – cook with diced beef or pork in a tomato sauce for a hearty stew
- Tofu – use in stir-fries and noodle dishes, for e.g. pad Thai, laksa, mie goreng
- Meat alternatives – there are many products in the supermarket freezer and chillers. Look for those with pea protein, chickpea or beans in the ingredients as these provide a good source of protein

## **Add sauces to your meals**

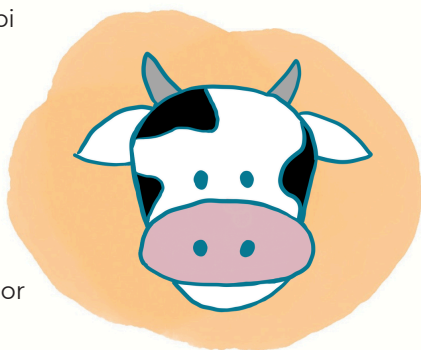
- Mayonnaise
  - One tablespoon of mayonnaise = 148kcal, 16.4g fat. Jazz up your mayonnaise by adding:
    - Garlic to make aioli
    - Chopped capers & gherkins to make tartare sauce
    - Tomato ketchup to make seafood or marie rose sauce
    - Horseradish, mustard or wasabi
    - Minced onion
    - Curry powder or paste

You can also use Greek style yogurt instead

## **White/milk based sauce**

Make up packet sauces with full fat milk or add cream to make it extra rich

- Cheese
- Cheese and onion/leek
- Garlic and herb
- Parsley or other herbs
- Chopped ham or chopped fried bacon



Tomato pasta sauce

- Add full fat milk or cream
- Sour cream
- Grated cheese
- Basil and other herbs and olives
- Chopped pepperoni, chorizo, sausage, ham

### **Snack ideas**

- Trail mix – make your own with your favourite nuts, seeds and dried fruit
- Potato chips
- Corn snacks
- Bhujia mix
- Salted nuts and snacks
- Hummus and vegetable sticks
- Apple and peanut butter
- Celery and cream cheese or cheese spread
- Crackers or pretzels with cheese or hummus
- Banana bread or fruit toast with nut butter
- Guacamole and corn chips
- Granola bars, nut bars, birdseed slice
- Cheese and spinach/zucchini/ham/pumpkin muffins
- S'mores
- Frozen yogurt and berry iceblocks
- Bliss balls

### **Drink ideas**

- Hot chocolate made with milk



- Instant soup – choose ‘cream of’ versions and make with milk or ½ milk and water
- Smoothies – fruit, milk, scoop of ice-cream or full fat yogurt.
  - Add crushed weetbix for home-made UP&Go
  - For a protein boost, add 1 tablespoon of nut butter or a tablespoon of milk powder
- Milk & ice cream shakes
  - Use full cream milk
  - You can use Ensure powder, Sustagen or Fortisip powder to replace the milk powder
  - Add extra sugar, flavourings or ice cream to taste

Home-made shakes:

- 200ml milk (134 kcals, 8g fat)
- 1 tablespoon milk powder (37kcals, 2g fat)
- 1 dessert spoon of flavouring
- 1 scoop of ice cream (99kcals, 5.5g fat)

Using full fat milk = 270kcals, 15.5g fat

Ensure powder 6 scoops in 200ml blue milk = 300kcals, 15.7g fat

Adding ice cream to Ensure powder shake = 400kcals, 21g fat

Beat or blend together. Serve chilled.

Keep drinks in the fridge and use within 24 hours. Throw out any leftovers.

## WHAT TO LOOK OUT FOR IN THE SUPERMARKET AISLES

Food labels give valuable nutritional information about the product, so you can check out levels of energy, fats, sugar, and carbohydrate before you buy.

Our tips for a well-stocked pantry

### **Fruit and vegetables**

- Buy what's in season: visit [5aday.co.nz/whats-available](http://5aday.co.nz/whats-available) and

[vegetables.co.nz/vegetables-a-z](http://vegetables.co.nz/vegetables-a-z) to learn more.

### **Bulk bins**

- Stock up on nuts, chocolate or yogurt coated dried fruits, pretzels, bhuja mix, breakfast cereals

### **Bakery**

- Cheese topped buns, twist breads with cheese and pesto/tomato/garlic
- Include a variety, such as muffins, bagels, pitas and flat breads
- Doughnuts, iced buns, danish pastries – buy extra and freeze, defrost in microwave for a quick snack
- Buy block cakes and decorate yourself with whipped cream/chocolate sauce/chopped nuts

### **Biscuits & crackers**

- Choose cream filled, chocolate coated sweet biscuits
- Muesli bars, especially chocolate coated or containing chocolate chips and extra nuts
- Chocolate coated 'pocky' sticks and pretzels
- Choose crackers with added cheese, for e.g Jatz = 15kcal, 0.7g fat, Cheds = 39kcal, 2.1g fat

### **Breakfast cereals**

- Choose ones that contain nuts and seeds for extra protein

### **Nutritious drinks (available in various flavours)**

- Primo, Primo Extremo: 600ml and 2L bottle, 250ml carton
- Tatarua Coffee: 350ml, 600ml and 2L bottle
- Anchor CalciYum: 250ml, 2L bottle
- Meadowfresh Calci Strong: 250ml carton, 2L bottle
- Up&Go: 250ml carton
- Up&Go Energize: 350ml carton
- Mammoth Supply Co: 600ml, 2L bottle
- Milo, Horlicks, drinking chocolate made with full fat milk and extra cream

## PANTRY STAPLES

Coconut cream and coconut milk

Add these to:

- 'just add' cans for casseroles or make up with full fat milk instead of water, add extra cream to make them richer
- condensed soups or make up with full fat milk instead of water
- curry pastes – to make Indian and Thai curry

### **Milk powder**

Add to milk: 4 tablespoons per 500ml milk

### **Canned rice**

Add extras, for e.g. sultanas, banana, golden syrup/honey/caramel sauce, extra cream

### **Dairy food/puddings & Long life sponge puddings**

Add custard, cream or ice-cream

## IN THE FREEZER

- Ready-made pastry – add pastry lid to casseroles. Average 50g portion adds 250kcal and 14g fat
- Muffins, danish pastries, doughnuts, pikelets, crumpets, bagels
  - defrost in the microwave for quick snack
- Fruit – stewed or quick frozen for smoothies
- Batch cook casseroles, pasta sauces, chilli, mince and onions in gravy
- Herb butters
- Ice cream

## GRABBING A BITE TO EAT WHEN YOU'RE OUT

Takeaways tend to be high fat, high calorie, high salt, which are great for many people with CF. Some good options to choose include:

## **Burger chains**

Ask for extra cheese, extra bacon, mayonnaise, avocado

Skinny and French fries are higher in calories and fat

Add in an ice cream sundaes or thick shake

## **Sandwiches**

Choose extra cheese, extra bacon, avocado, mayonnaise and other dressings

Buy a packet of chips or cookie as well

## **Pizza**

Order one with Bacon, salami and pepperoni

Ask for a 4 cheese pizza or extra cheese

## **Pies**

Choose a plus cheese option, such as mince and cheese or steak and cheese

## **Coffee shops and cafes**

Order a latte, hot chocolate or iced coffee/chocolate

Choose cupcakes, brownies, pastries, biscuits, slic rolls.

## **Sushi**

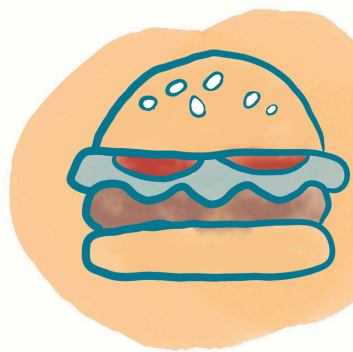
Sushi tends to be lower in kcals and fat, so aim to choose options that include

- mayonnaise & avocado
- crumbed & fried fillings such as teriyaki
- tempura battered & deep fried vegetables and meat

Add edamame beans as a side to boost protein

“Find your favourite takeaways or easy mean and stick with them, so you can get your pancreatic enzymes and insulin right.”

“Some chain restaurants, such as McDonalds, publish its carbohydrate and fat contents online, so you can calculate better how many pancreatic nzymes to take.”





"I grew up with a love of cooking, but found after I got CF related diabetes I took way more interest in what was actually in the food I was eating. So perhaps the recognition of food as a way to help fuel and strengthen your body and minimise harm is the best motivation."

"If it's affordable and you have the time, an online meal pack like My Food Bag could be great to get interested in cooking and trying different healthy meals. Just about anything tastes better with cheese, butter and cream and My Food Bag often has meals you can increase the fat content in."

"I make sure I have Creon in a little pouch attached to me keys, a container in my bag, at my parent's house, at my best friend's house and a few in my wallet so I never eat without taking them and always have some around."

## ALCOHOL AND CYSTIC FIBROSIS

Enjoying an alcoholic drink with friends and family is important for many adults. Choosing whether or not you drink alcohol is a personal decision, but it's important to be informed about alcohol's affect so you can make the right choice for you.

**The Ministry of Health has recommended guidelines about alcohol, including how to reduce the risk of alcohol affecting your health and information about the alcohol content of standard drinks. Every Kiwi, regardless of whether they have CF or not, should be familiar with the potential effects of alcohol.**

**As someone with CF, alcohol can affect your health differently than other adults without CF.**

- When you drink, your liver works hard to detoxify the alcohol. If CF has damaged your liver, drinking can cause further damage and increase your risk of liver disease.
- Alcohol can affect the effectiveness of your medications. Certain medications can enhance the affect alcohol has, for e.g. make you drunk faster.
- Alcohol can also affect your blood glucose levels, which is important to consider if you have CF related diabetes.



- Alcohol is a depressant and can affect your mood and motivation. This may impact on your daily treatments and affect your lung function, weight and overall health.
- Alcohol can be enjoyed in moderation and incorporated sensibly into your life if you choose. The Ministry of Health notes no amount of alcohol is considered safe; however it does offer guidelines for people who choose to drink to reduce your risk of long-term damage to your health:
  - Two standard drinks a day for women and no more than 10 standard drinks a week
- Three standard drinks a day for men and no more than 15 standard drinks a week
  - And a least 2 alcohol-free days every week.

To reduce your risk of injury on a single occasion of drinking, the MoH recommends drinking no more than:

- Four standard drinks for women on any single occasion
- Five standard drinks for men on any single occasion.

Talk with you team about your alcohol intake, and if you do choose to drink, do so sensibly.

“There are lots more low-carb and low-alcohol drinks available these days that offer some of the social benefits of drinking but offset some of the harmful effects.”

“For most of my adult life I’ve chosen not to drink alcohol. I’d rather not deal with a handover on top of CF related issues. I don’t make a big deal about it socially and I’m comfortable turning down a drink and opting for a non-alcohol drink instead. If I get asked why I don’t drink, I just say I prefer not to, and I like being the sober driver for family and friends, which is the truth!”

## CYSTIC FIBROSIS RELATED DIABETES

Cystic fibrosis related diabetes (CFRD) affects around 22% of Kiwis with CF. Type 1 diabetes occurs when your body’s immune system destroys the cells in your pancreas that make insulin, which helps

your body use the energy from food. It's commonly diagnosed in childhood and requires you to take insulin.

Type 2 diabetes, which occurs more often in adults who are overweight, is caused by the lack of a normal response to insulin and also the pancreas not making enough insulin.

CFRD is different to Type 1 and Type 2 diabetes but shares some common features with both. In people with CF, the thick, sticky mucus causes scarring of the pancreas. This scarring prevents the pancreas from producing normal amounts of insulin; so, like people with Type 1 diabetes, they become insulin deficient.

In addition to insulin deficiency, people with CF can also develop insulin resistance, especially during acute illness, with liver disease, during pregnancy and when prescribed glucocorticoids. People with CF who are pancreatic sufficient and possibly overweight may also experience a decline in insulin production by the pancreas as a result of aging. The prevalence of CF related diabetes increases with age.

### **How diet is important**

A diagnosis of CFRD doesn't change the usual CF dietary recommendations, and your diet should always favour CF to maintain a good nutritional status and optimise blood glucose control.

The majority of people with CFRD still have higher energy requirements than people without CF, and should aim for 45-65% of their total energy from carbohydrate. If you're under-weight you may need to include refined sugars such as sweet foods, but as these foods cause a rapid increase in blood glucose levels when eaten alone, they should be as part of a meal or substantial snack. People with CF who are pancreatic sufficient and possibly overweight should consider avoiding refined sugar from sweet foods and beverages. Good nutrition supports good lung health and managing your blood sugar levels reduces your risk of developing diabetes related complications.

Where possible you should choose carbohydrate foods with a low glycaemic index and eat these consistently throughout the day to help achieve optimal glycaemic control.

## Carbohydrate foods

Carbohydrate foods are sugars and starch and are the main source of fuel for your body. Carbohydrates break down into sugar in the blood, called glucose. Not all carbohydrates are the same – some are fast acting and others are slow-release – but both impact your overall blood glucose level.

An adequate carbohydrate intake helps ensure your body is supplied with enough energy and avoids the unwanted surge of glucose release. Some people find carbohydrate counting is helpful to support appropriate carbohydrate intake alongside their individualised insulin regimen to optimise glycaemic control.

### Counting carbohydrates

Carbohydrate counting is a meal planning approach used by people who have diabetes, and focuses on carbohydrate as the primary nutrient affecting your post-meal glucose level. There are different types of carbohydrate counting methods and resources used and your CF dietitian can help work out which one is right for you.

The EasyDietDiary app is one resource that maybe helpful. This app was produced by the Xyris group who also produce the food analysis programme for Australasia called 'Foodworks'.



If you have CFRD, the goal is to have a good nutrition, good lung health and well controlled glucose levels. It's important to make sure you have established a good nutrition and stable lung health when working on glycaemic control because poor lung health makes it difficult to try to manage optimal glycaemic control. It's also important any changes in your diet don't cause an unwanted decrease in your overall energy intake as this can lead to unintentional weight loss and impact on your lung function.

"When I was diagnosed with CFRD at age 12, it was definitely looked at as a secondary issue, so at that time, I was only taught a few things about diabetes and diabetes management, how to test blood sugars, and calculate and administer insulin (which I only had to do once a day).

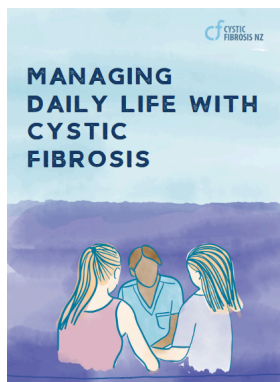
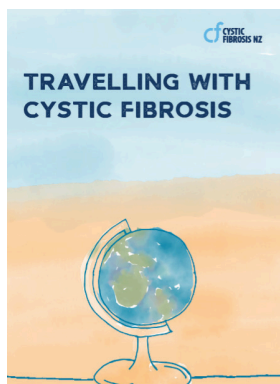
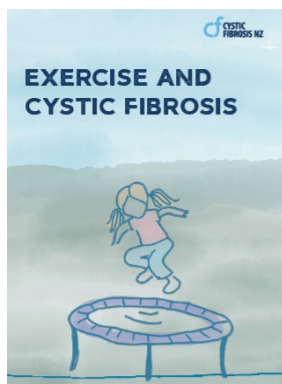
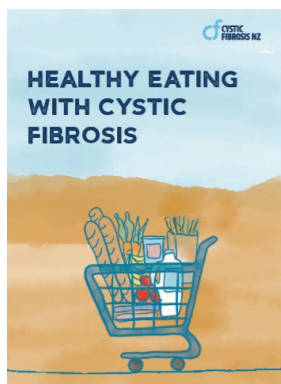


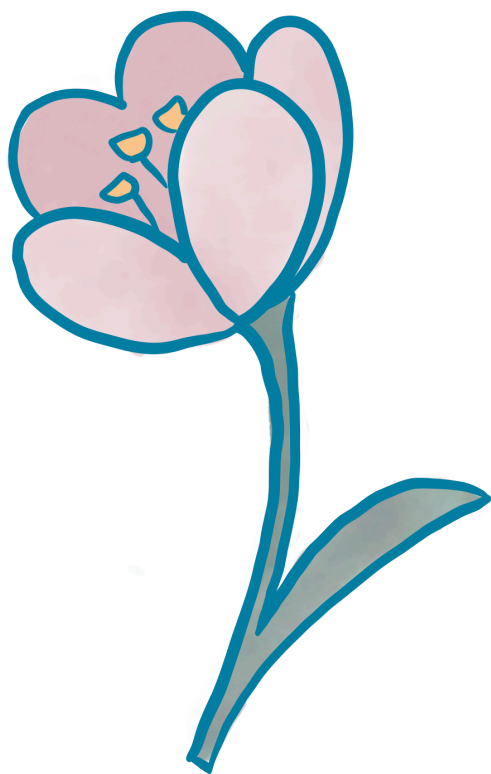
After I had a lung transplant, the medication I was on tipped me into “full-blown-diabetes.” This meant more frequent BSL testing, counting carb, and giving insulin with every meal. This was a lot to take on board and I would have appreciated learning those aspects of CFRD earlier. I started going to the diabetes dietitian who taught me some easy to remember tips and tricks for calculating carbs. I also found out there was a group workshop-type education session on managing your diabetes, and although CFRD is slightly different from type-1 and type-2 diabetes, I feel better being geared with all the knowledge!

I'm a huge advocate for continuous glucose monitors (I use the Freestyle Libre sensor). This is a small sensor on my arm that is constantly measuring my blood sugars. Rather than having to do a finger prick, I just use an app on my phone to scan the sensor, which then shows a graph of what my sugars have been doing for the last eight hours. I feel more confident with my insulin administration when I know what's happening with my sugars between sensor scans. It is a costly piece of equipment, but it makes a big difference and is worth it in my opinion – I wouldn't want to be without it.”

## DOCUMENTS IN THE ADULT GUIDE SET:

Click on icon to below to view other resources.





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**Cystic Fibrosis New Zealand**

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