

## Diabetes and Technology

As technology develops, so does our approach to diabetes management. In recent years, we have seen a rise in diabetes-related technology such as apps, continuous glucose monitors (CGMs), different types of insulin pumps (including automation), and increases in access and funding. While these technologies can help diabetes become easier to manage, it can also bring along a range of emotions, such as frustration, stress, worry, hopelessness, and/or feeling overwhelmed. This is understandable and expected. Change can be difficult, especially when it is related to something so significant as your health.

This resource has been created to address some of the common worries related to incorporating technology into your diabetes management. It seeks to:

1. Explore some of the common worries experienced with diabetes-related technology
2. Provide some strategies for addressing these worries, to ensure that you feel ready to use diabetes-related technology should you decide to.

### Topics Covered in This Resource

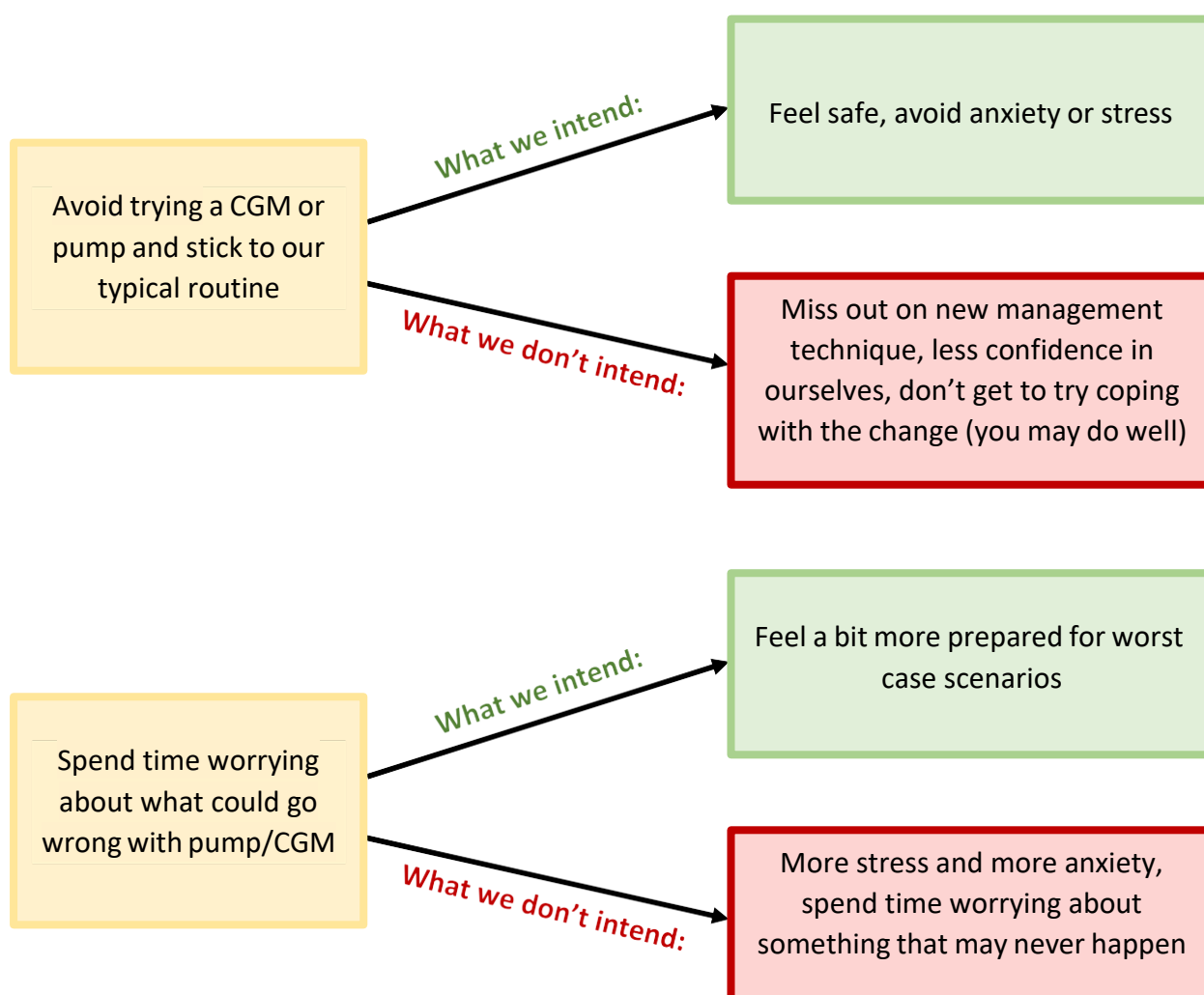
Fear of the Unknown.....	2
Expectations (And Feeling Let Down!) .....	6
Alarm Fatigue .....	11
Information Overload.....	14
Giving up Control and Trusting Technology .....	16
Attaching Technology to my Body.....	21
Where to Go for Further Support.....	24

For further support regarding these topics, and how to bring them up with your whānau, support people and/or your healthcare providers, please see the end of this resource.

## Fear of the Unknown

We can expect a level of uncertainty in our lives – it is a normal part of being human. We can never be completely sure about what may happen next. While sometimes, uncertainty can be exciting, at other times, it can be very stressful – particularly, when it comes to health and diabetes. It's normal that we would want to get rid of this feeling of stress and uncertainty.

However, did you know that trying to get rid of uncertainty can lead to some unhelpful consequences? In many cases, it can actually lead to more stress and worry, and less confidence.



## How Do We Manage Fear of the Unknown?

### *Strategy #1. Manage any uncomfortable emotions as you go*

We may feel as though we need to be completely certain before we make a decision, but this is not the case. We can expect a level of emotional discomfort when we do something outside of our comfort zone. The key is to name the emotion and allow it to be there while you pursue your next step. This will build confidence in your ability to cope, even when things are uncertain. This might look like:

Taking a moment to address the emotion. What is it? What does this emotion tell you? If you are worried, where do you feel this in your body? Take some slow, deep breaths – feel these breaths rise and fall in your puku (stomach).

Name the feeling out loud, and give yourself the permission to feel it (e.g., “I feel worried, and it’s ok for me to feel this way”).

### *Strategy #2. Consider that needing certainty may come with some unhelpful actions*

It can help to weigh up the pros and cons of requiring certainty in your life. How is certainty helpful? How is it unhelpful? Are there things that you do while uncertain that cause more stress and worry? Take some time to ask yourself these questions – try to be open and curious as you reflect.

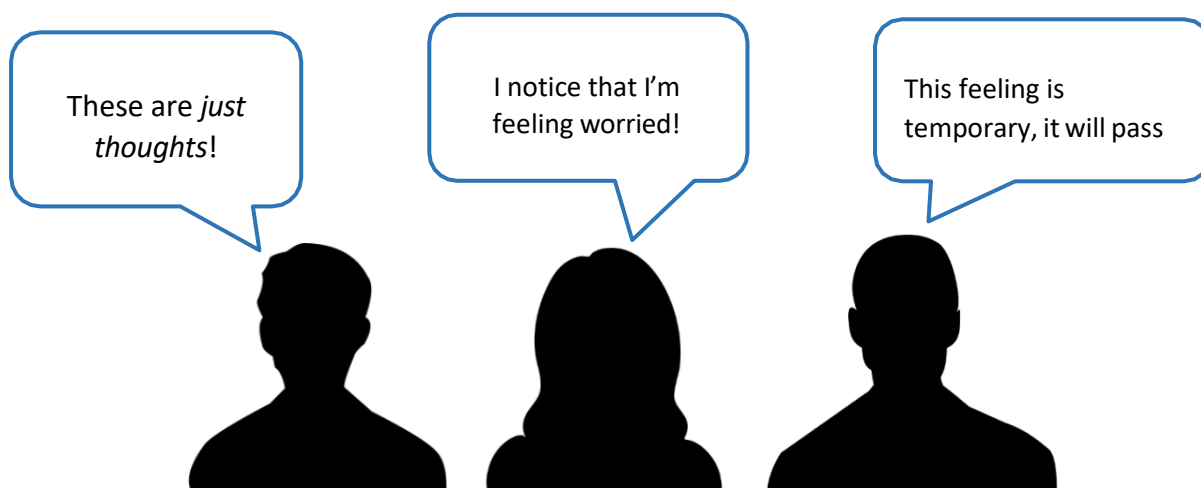
### *Strategy #3. Give yourself some distance from your uncertainty*

When we are feeling an emotion very strongly, we can become “hooked” by it. In other words, we can get caught up in the feeling and allow it to take our attention away from what is important in the here and now.

With time and practice, we can learn to give ourselves some distance from our thoughts. We can do this by:

- Reminding ourselves that thoughts are *just thoughts* – we can allow them to come and go without reacting to them.
- Creating some space by noticing your feelings. Saying “I’m noticing that I feel worried” rather than “I’m worried” This helps to bring curiosity to our experience and remind us that what we are experiencing is a feeling, rather than our reality.

In doing this, we can then remind ourselves that feelings are a temporary experience, and despite the discomfort they bring, they will pass.



#### *Strategy #4. Self-compassion*

It's very easy to be hard on ourselves – particularly when it comes to diabetes management. Diabetes requires a lot of attention, and there are a huge number of expectations on those with diabetes to maintain tight control of blood glucose.

It is understandable that you might put extra pressure on yourself in times of uncertainty, as a way to try and provide yourself with more certainty or gain a sense of control over the situation. However, we also must accept that there are always going to be some factors in diabetes care outside of our control. So, what can we do?

- Notice your thoughts and feelings, and acknowledge that you are human. Everyone faces challenges – it's a universal part of being human. Being aware helps to normalise your experience, which can reduce feelings of isolation or loneliness.
- Try asking yourself how you would respond to a friend who came to you with the same problem. What would you suggest? How would you tell them to respond? We are often a lot harder on ourselves, without realising it. Treating ourselves as we would a friend can reduce unhelpful negative thoughts and self-criticism.

*End of section reflection: write any thoughts or questions you may have, and consider sharing with your healthcare team.*

## Expectations (And Feeling Let Down!)

For many tāngata whaiora (person seeking health/wellness) with diabetes, new access to diabetes technology comes with excitement and anticipation. If you have waited for a long time to have access to diabetes technology, you may have a lot of hope that it will change the way you manage your diabetes, for the better. You may expect that this technology will make your diabetes much easier to manage.

While these technologies exist to support people with managing diabetes, and certainly can help make diabetes feel more manageable, it is also common for people to feel disappointed or let down, especially initially as they adjust to a new method of management. Some people find that the technology is not as they expected or comes with challenges that they did not anticipate.

It is okay to experience disappointment or feel let down. So, how do we identify whether our expectations are problematic?

We might consider expectations to be problematic when they are too rigid, or too high, which may result in the following:

- Not giving yourself enough time to adjust to the technology
- Experiencing unhelpful beliefs and then stopping use of technology too quickly.

### How Do We Manage Expectations?

*Strategy #1. Consider your criteria for success*

It can be helpful to consider: what are you hoping and expecting to gain from this new technology? Try discussing this with an informed loved one, or with your health team. Write these down so you can reflect on them.

If you find that your expectations are rigid or unrealistic, try writing down some new, more flexible expectations. Keep these somewhere you can see or easily access and use them as a reminder when you feel discouraged.

### *Strategy #2. Set yourself realistic goals*

Setting a goal can give us motivation, direction, and a sense of purpose - that is, if they are realistic. If our goals are based on unrealistic expectations, we end up setting ourselves up for failure, which can have the opposite effect, leading to feeling disheartened, or disappointed in ourselves.

#### **How do I set realistic goals?**

Try setting yourself a SMART goal. SMART goals are:

**S**pecific – ask yourself who/what/where/when/why?

**M**easurable – it is easiest to track your success when you can measure it!

**A**chievable – make sure your goal is not too easy, or too difficult to achieve.

**R**elevant – is your goal worthwhile to you? Does it contribute to your growth?

**T**ime-based – give yourself a deadline!

### *Strategy #3. Be aware of “thinking traps”*

Regardless of how familiar you are with technology, when it comes to using it for your health, you may find that you need more time to adjust than you expected. Keep an eye out for “thinking traps” – these are unhelpful ways of thinking that might prevent us from seeing things as they really are. Thinking traps may contribute to your technology expectations and make you feel more stressed, anxious, or disappointed.

### Some examples of thinking traps:



**All-or-nothing thinking:** seeing things as black or white.  
e.g., *“If my pump doesn’t perform the way I expect, there’s no point having it.”*



**Fortune-telling:** predicting situations only with negative outcomes.  
e.g., *“I’m never going to get used to using my pump!”*



**Catastrophising:** imagining the worst thing possible and expecting that you won’t be able to cope with it.  
e.g., *“My CGM will fail and I won’t have my glucometer and I’ll have a hypo and won’t know what to do!”*



**Should Statements:** these are a result of have rigid rules or expectations.  
e.g., *“I should understand all of these numbers by now!”*

### How should we deal with thinking traps?

- Notice them - a big part of changing unhelpful thought patterns is by simply becoming aware that they exist.
- Try countering the thought with a different, more realistic thought, or ask yourself whether this thought is fair. For example, you could respond to *“I should understand these numbers by now!”* with *“This is a new experience for me, and it is going to take time to adjust. It is more helpful to take this one day at a time”*.
- Try giving yourself some separation from the thought. It can be easy to become overwhelmed or caught up in a thought trap. To become unstuck, we need to remind ourselves that these are just thoughts, and not necessarily the truth.

### Strategy #4. Perfectionism vs being “good enough”

Our goal should always be progress, not perfection.

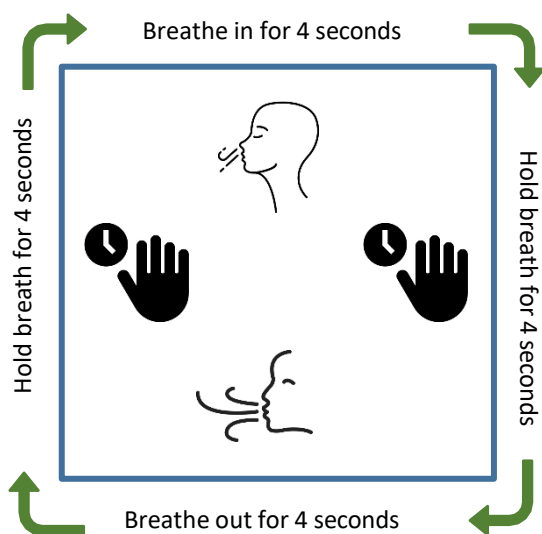
Diabetes is a life-long condition and requires huge effort to manage daily. When expectations are high, we can become perfectionistic – we expect ourselves and our diabetes management to be “perfect”. However, nobody is perfect in anything, and it is important to think about more flexible and realistic goals that are “good enough” for you.

*An example: Time-in-Range is the percentage of time your blood glucose is within the ‘target range’ of 3.9mmol/l to 10mmol/l. The target for time in range is 70%, which means that six hours outside of this range will still result in an HbA1c at target. In other words – we’re not aiming for perfection.*






#### How should I manage perfectionistic tendencies?

- Balance with self-care, and stress management. What “fills your cup”, or makes you feel good? Consider trying some practical strategies for managing your stress – such as grounding or breathing.

#### Box Breathing



#### 5-Senses Grounding

-  Five things you can see
-  Four things you can touch
-  Three things you can hear
-  Two things you can smell
-  One thing you can taste

- Consider some compassionate self-talk – how often do we tell ourselves it’s ok to feel angry, stressed or sad? If you find it hard to bring compassion to yourself, try imagining a loved one being in your position, and respond as you would to them.

*End of section reflection: write any thoughts or questions you may have, and consider sharing with your healthcare team.*

## Alarm Fatigue

Diabetes technology features a number of alarms to notify that something is amiss. These include blood glucose, the alarm system itself, or insulin delivery. Alarms on CGM diabetes technology can be set up to identify periods of hyperglycaemia (high blood glucose) and hypoglycaemia (low blood glucose), which are especially helpful if you experience symptom unawareness (i.e., if you don't experience symptoms when having high or low blood glucose). Insulin pumps also have a range of alarms including for insulin reservoirs, low battery, or blockages.

While alarms can help prompt you to treat your blood glucose readings appropriately and help optimise your time in range, it can be frustrating to deal with constantly being reminded of your diabetes by having these alarms. This feeling is what is referred to as 'alarm fatigue'.

*You can become frustrated or desensitised to the alarms for two reasons:*



The alarms feel too frequent, creating “trust issues” where the more alarms you get, the more you ignore them - this increases the chance that something might go wrong, as it means you are less likely to respond to an alarm. You may experience frustrated thoughts such as “there goes that stupid alarm again!”.



Stress or anxiety in response to alarms: Diabetes technology produces many different beeps and vibrations. These noises can be scary because they are there to tell you something is amiss, but this does not necessarily mean imminent danger. Regardless, if you are stressed or anxious, you may experience thoughts such as “something has gone wrong!”.

Alarms can also trigger the body's stress response, where you may experience your heart beating faster, sweaty palms, feeling nauseous, or racing thoughts. This is a natural reaction to when we perceive something as dangerous and can be set off when we're facing something stressful.

## How to Manage Alarm Fatigue:

### *Strategy #1. Acknowledge and respond to thoughts and feelings*

- Acknowledge that receiving a new device can bring up lots of different thoughts and feelings, including overwhelm, frustration, and anxiety.
- Consider trying some anxiety and stress management techniques in response to any sensations described above – e.g., box breathing or 5-senses grounding.
- Be kind to yourself throughout this process. For example, you may find it helpful to say to yourself:

**It's okay to feel  
frustrated**

**The alarms are  
there to help me**

**I'm not alone in  
this experience**

### *Strategy #2. Familiarise yourself with alarm settings*

Familiarising yourself with the different types of alarm settings can help reduce the anxiety response. Check what alerts are turned on and consider why they are there.

Discuss with your healthcare team to see what alarms are appropriate and whether they are helpful in assisting you to manage diabetes. This can also help you set reasonable expectations for what the alarms are for and to identify possible malfunctions. Discuss with your healthcare team about giving yourself permission to make changes that work for you.

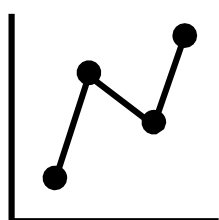
*End of section reflection: write any thoughts or questions you may have, and consider sharing with your healthcare team.*

## Information Overload

With the introduction of technology comes the introduction of a lot more data. This can be overwhelming, intimidating and can contribute to thinking that we need to be perfect. There is a lot of information in a CGM download or a glucose level every 3 seconds. The value of a CGM is to see patterns of glucose levels rather than know what your glucose level is doing every 3 seconds or 5 minutes.

### How to Cope with Information Overload:

*Strategy #1. Know what data is important for you right now*



Remind yourself that the data is designed to provide patterns of glucose levels and that glucose levels will, and do, fluctuate across the day due to emotions, stress, hormones, and of course after eating and insulin has been delivered.

Remember and remind yourself that if urgent action is needed the alarms will alert you to this.

*Strategy #2: Set a limit to the frequency of “checking”*

Catch yourself when are you engaging in behaviours that are contributing to the feeling of overwhelm. For example, are you constantly looking at glucose levels immediately after a meal and worrying that they are going too high and responding to them?

Try and reduce the frequency of checking. Set yourself a limit as to how often you will look at the glucose level or only look when you can or need to “do” something about the glucose levels (e.g., meal or snack times, or when alarms activate).

*Strategy #3. Create some realistic and helpful self-talk*

Throughout the course of a day, we can expect fluctuations in glucose levels. Glucose levels rise and fall in response to a range of different things – this is true of people both with and without diabetes. It can be helpful to remind yourself of this when feeling overwhelmed.

For example, tell yourself that “glucose levels rise and fall in response to food and insulin. It is normal for glucose levels to be rising after eating. I don’t need to do anything about it right now. My alarms will tell me when action is required.”

*End of section reflection: write any thoughts or questions you may have, and consider sharing with your healthcare team.*

## Giving up Control and Trusting Technology

Technology can provide some incredible tools when it comes to diabetes management. Some technologies, like CGMs, can help to provide a full picture of blood glucose over time. Others, like insulin pumps, can mimic the body's natural process of glucose metabolism. While these are exciting features of technology advancement, it is also understandable that you may be worried about trusting in your device to manage your diabetes. This can be a particular concern for people who are used to "being in control" and you are now expected to hand over that control to technology and trust in a device.

Questions about device reliability, and whether the readings and algorithms can be trusted are really common. They are often driven by a desire to keep you or your loved one safe. They have also developed because you have been managing without aspects of technology for however long diabetes has been in your life.

### How Do We Manage Loss of Control and Increase Trust in Technology?

*Strategy #1: Evaluate the pros and cons of using technology*

Writing out the pros and cons for using diabetes technology allows you to approach your decision objectively and make an informed choice about what is best for you. This means that your emotions and potential fear or worry are less likely to get in the way of your decision making.

It may be helpful to talk to others with lived experience of diabetes technology and/or your healthcare team to see what they think the benefits and limitations are. This may involve talking to your healthcare team about managing expectations such as the use of finger pricking alongside using diabetes technology.

### *Strategy #2: Identify what areas you can have control over*

Talk to your healthcare team about finding a balance between manual and complete automation to figure out what areas you do have control over.

As mentioned in the alarm fatigue section of this resource, it can also be helpful to familiarise yourself with alarm settings. Allow yourself some flexibility to check what alarms are turned on and why.

### *Strategy #3: Become informed*

It is important that when making decisions about technology use, these are informed decisions (rather than based on hearsay or driven by emotions). It is important to look at the information from trustworthy sources as well as your healthcare team regarding how technology may be useful for you.

It can be helpful to enquire about how the technology works. For example, CGMs measure glucose levels under your skin, while finger pricks measure it in your blood, so there can be small differences but typically not unsafe differences. Enquire about how technology would work in different scenarios that are relevant to you (e.g., exercise, hypoglycaemia). Enquire with your healthcare team if you can you trial a system before having to commit to it.

### *Strategy #4: Be aware of thoughts and respond to them*

It can be common to experience ‘thinking traps’ in the context of giving up control and/or trusting technology. These are unhelpful ways of thinking that might prevent us from seeing things as they really are. Identifying ‘thinking traps’ can help us to recognise when thought patterns are unhelpful. For example, some common thinking traps may be:



**Emotional Reasoning:** accepting emotions as fact – “I feel it so it must be true”.

*E.g., I’m worried about the algorithm doing something differently to how I would have done it – therefore, it must be wrong*

Try countering with a fairer thought: *“I feel anxious, but just because it is different doesn’t mean it is wrong.*

*Strategy #5: “Name it to tame it” - Identify and manage uncomfortable emotions*

The need for control is often driven by feelings of fear or anxiety. It’s common to try and ignore how you’re feeling, or to push the feeling/s away - however, this can be unhelpful in the long term as the fear/worry/anxiety can bottle up. Much like pushing a beachball under water, pushing emotions away is a lot of effort and often just results in them springing back up when we least expect it!

Naming how you’re feeling and making the conscious decision of letting it go can help reduce the intensity of the emotions you feel.

One way to do this can be through a visualisation exercise, to release the emotion/s and replace the image with something more calming, for example:



Name the emotion/s that you’re having and imagine them as a balloon floating away.



Picture yourself blowing away your emotions like you are blowing on a dandelion.

If you enjoy visualisation, you can try the below exercise. This is an exercise that can be useful to help you identify your feelings, and let them pass without getting caught up in them. It is called “Leaves on a Stream”.



*Imagine yourself sitting by a peaceful stream or river, with leaves floating by along the surface. Picture this scene for a moment, focussing on what sitting here looks, and sounds like.*

*Now, for the next few minutes, pay attention to how you're feeling and what emotion/s come up for you. Imagine yourself taking that feeling, and placing it on a leaf. Now, let that leaf float by in its own time and pace.*

*If a difficult or uncomfortable feeling arises, just acknowledge it. Say to yourself “I notice I'm having the feeling of \_\_\_”.*

*From time to time, your thoughts and emotions may hook and distract you from being fully present in this moment. This is normal. If your mind wanders elsewhere, bring your attention back to the leaves on the stream.*



Please note: If you enjoy visualisation and/or mindfulness exercises such as this one, there are a number of similar guided audios that can be found via google search.

*End of section reflection: write any thoughts or questions you may have, and consider sharing with your healthcare team.*

## Attaching Technology to my Body

Common concerns that tāngata whaiora (people/person seeking wellness) have when attaching technology to their body is worrying that the attachment is going to be painful, worry about knocking the device and/or it falling off, as well as concerns about their body image and what other people will think or respond to seeing your device.

Introducing technology to your diabetes management can be an adjustment, and it's understandable to be worried about these practicalities, especially if it's a change to what you're used to.

Some people may choose to have their devices visible, and others may want to cover it up. It's okay to do what feels most comfortable to you.

### How to Manage Concerns About Attaching Technology to My Body:

#### *Strategies for worry about pain/application*

If you fear that the application will be painful or have anxiety around the process of attaching technology to your body, some helpful strategies are to:

- Create sensory overload by tickling, pinching, or massaging the application area. It may also be helpful to rub your skin with ice to numb the area before applying technology to your body.
- Practice some deep breathing techniques before attaching the device to your body. This helps calm the mind and body's stress response. When we tense up, we may experience more discomfort due to tense muscles causing an increase in nerve sensitivity. Deep breathing can help to relax our muscles so that this does not occur.

- Positive self-talk such as “I can do this”, “this will be a quick and easy process”, “I have managed with injections and finger pricks before”.
- Having a consistent routine and allowing yourself adequate time to attach the technology to your body/do site changes so you don’t feel rushed.

### *Strategies for worry about wearing technology*

Some people don’t want anything attached to their body, and devices like pumps or CGMs can cause distress. Some strategies to approach this concern include:

- Being open with your healthcare team about the reasons why you may be hesitant about wearing a device. This can help your team to talk with you about any concerns you may have - such as “What if I can’t do XYZ while wearing a pump/CGM?”. Enquire if your team offer wearing a ‘dummy’ or non-functioning pump so you can get the “real feel”.
- Consider talking to others who already have these device/s, to see if they have experienced the concerns or worries you have. Weigh up the pros and cons of how having technology attached to their body impacted them – try writing a list where you consider both, to help you make an informed decision.
- It may be helpful to start with a CGM and see if this works for you. Most people resolve their worries after a within days or weeks of wearing one. Experiment with attaching it to different areas of your body to see how you feel.
- Adhesive patches/tape are available to help prevent the device from being knocked or falling off. These are especially good for those who are active or have difficulty with the sensor staying on.
- There are also different ways to wear a device to make it more discreet if this is a concern. For example, pump belts and internal pockets for clothing.

### *Strategies for concerns about self/body image*

- Notice thoughts you have about yourself and your body.
- Engage in activities that make you feel good about your body.
- Practice self-compassion and talk to yourself how you would talk to a friend.



*End of section reflection: write any thoughts or questions you may have, and consider sharing with your healthcare team.*

## Where to Go for Further Support

If you are having difficulty with any of these topics in this resource, your healthcare team are there to support you.

It can be helpful to write questions down to bring to your appointments, and/or bring a whānau member or support person with you.

The Diabetes New Zealand website has further information, including questions about funding and the different types of CGMs and insulin pumps available:

<https://www.diabetes.org.nz/>



If you are concerned about your psychological wellbeing or need someone to talk to, there are various free helplines available for support:

**Need to talk?:** text or call 1737

**Lifeline:** call 0800 543 354

**Depression Helpline:** call 0800 111 757

**Suicide Prevention Helpline:** call 0508 828 865

### References and Resources

- Abdoli, S., Jones, D. H., Vora, A., & Stuckey, H. (2019). Improving diabetes care: should we reconceptualize diabetes burnout?. *The diabetes educator*, 45(2), 214-224.
- Anxiety NZ (2024). Name it to tame it. <https://anxiety.org.nz/updates/name-it-to-tame-it>
- Dexcom (N.D.). Sensor Adhesion Issues. Dexcom. <https://www.dexcom.com/faqs/sensitive-skin>
- Gonder-Frederick, L. A., Shepard, J. A., Grabman, J. H., & Ritterband, L. M. (2016). Psychology, technology, and diabetes management. *American Psychologist*, 71(7), 577.
- Harris, R. (2009). ACT made simple. Oakland, CA: New Harbinger Publications, Inc. <https://www.mindfulnessmuse.com/wp-content/uploads/2011/09/Cognitive-Defusion-Exercise-1.pdf>
- Kilvert, A., & Fox, C. (2023). The impact of diabetes technology advances on quality of life: addressing the barriers to uptake. *Practical Diabetes*, 40(5), 23-28. <https://wchh.onlinelibrary.wiley.com/doi/pdf/10.1002/pdi.2476>
- Kubiak, T., Priesterroth, L., & Barnard-Kelly, K. D. (2020). Psychosocial aspects of diabetes technology. *Diabetic Medicine*, 37(3), 448-454.
- Naranjo, D., Tanenbaum, M. L., Iturralde, E., & Hood, K. K. (2016). Diabetes technology: uptake, outcomes, barriers, and the intersection with distress. *Journal of diabetes science and technology*, 10(4), 852-858.
- Oriot, P., Ponchon, M., Weber, E., Colin, I. M., & Philips, J. C. (2023). Benefits and limitations of hypo/hyperglycemic alarms associated with continuous glucose monitoring in individuals with diabetes. *Diabetes Epidemiology and Management*, 9, 100125.
- Polonksy, W. (2023) *Psychosocial Impact of Diabetes Technology*. [Presentation] Behavioural Diabetes Institute.
- Psychology Tools (2024). *Intolerance of Uncertainty*. Psychology Tools. <https://www.psychologytools.com/resource/intolerance-of-uncertainty/> p