

Appendix 5-1: Information Cards

CARD 1

Despite the fact that our brains are innately programmed with a bias towards negative emotions to help us survive, there are a wealth of benefits that accrue as a result of positive emotions. Positive emotions can improve physical health, help us build trust, compassion and more meaningful social connections, and recover from stress cultivating resilience and resourcefulness.

(adapted from Psychology Today: Positive Emotions and Well-being, <https://www.psychologytoday.com/ca/blog/between-cultures/201611/positive-emotions-and-well-being>)

CARD 2

When we are engaged, we willingly participate in doing even the most challenging tasks, like taking care of our health. When we are engaged, we think better, we are more creative, are better able to solve complex problems, come up with better ways to behave and act, and our view of the world and our experiences are clearer and

The unconscious neural response to threat and reward influences the extent to which we are engaged. The chemicals released by our brain when we experience reward (dopamine, oxytocin, serotonin) provoke feelings of happiness, well-being and a willingness to cooperate with others whilst the chemicals associated with threat (cortisol and adrenaline) may protect our immediate survival but have a long-lasting and significantly damaging effect on our health and longevity. When we think we are being rewarded, we will be more engaged. When we think we are being threatened, we will be less engaged.

(Neuroscientist Evian Gordon, 2008; from <https://www.allthingsic.com/wp-content/uploads/2015/09/Engagement-and-Wellbeing-Interim-Report-CBLB-Aug-2015.pdf> and <https://employeeengagement.com/wp-content/uploads/2011/07/Neuroscience-of-engagement.pdf>)

CARD 3

Stress has long been suspected as having major effects on metabolic activity. The effects of stress on glucose metabolism are mediated by a variety of “counter-regulatory” hormones that are released in response to stress and that result in elevated blood glucose levels and decreased insulin action. This energy mobilizing effect is of adaptive importance in a healthy organism. However, in diabetes, because of a relative or absolute lack of insulin, stress-induced increases in blood glucose cannot be adequately metabolized. Thus, stress is a potential contributor to chronic hyperglycemia in diabetes, although its exact role is unclear.

(<https://pubmed.ncbi.nlm.nih.gov/8105502/>)

CARD 4

To slow the diabetes epidemic, researchers are now looking more closely at lifestyle factors (other than poor diet, inactivity, and tobacco) that can trigger onset. A study at Maastricht University Medical Center in the Netherlands evaluated the role of social connectedness and diabetes risk, and they unearthed a valuable data point: a person who cultivates broader, genuine social groups—and stays connected—can reduce their chances of diabetes.

(<https://healthsolutions.fitbit.com/blog/social-connectedness-may-minimize-the-risk-of-diabetes/>)

CARD 5

Type 1 diabetes is a challenging, time-intensive disease that often strikes children, and new research suggests that strong family support helps improve the well-being of young adults with the condition.

The study found that young adults (under 30) with type 1 diabetes were more likely to be “flourishing” if they had good family connections. Flourishing was defined in the study as having a general sense of well-being, including having a purpose in life, feeling self-acceptance, and having positive relationships with others.

(<https://medicalxpress.com/news/2020-04-family-ties-young-adults-diabetes.html>)

CARD 6

In a national study of older Americans with normal baseline glucose levels, we found that individuals with high baseline purpose in life had lower HbA1c levels at 4-year follow-up compared with individuals with low baseline purpose in life. Though these differences in HbA1c levels at 4-year follow-up were small in magnitude, they correlated with a significant decrease in the 4-year incidence of prediabetes and type 2 diabetes among individuals with high versus low baseline purpose in life. Given the prevalence of prediabetes and type 2 diabetes, these findings may have important population health implications. ... Strategies that seek to enhance purpose in life should be developed and tested to prevent type 2 diabetes and prediabetes, either alone or as a complement to existing evidence-based strategies such as Diabetes Prevention Programs that primarily target the biologic drivers of the disease by focusing on weight loss and physical activity.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6082637/#s6title>

CARD 7

Some researchers have coined a “new” type of diabetes, called “type 3 diabetes” that is marked by insulin deficiency in the brain. Folks at Rhode Island Hospital and Brown University discovered that insulin and certain kinds of protein are made in the brain; low levels of both can lead to degeneration of neurons, increasing the risk for Alzheimer disease. This brings us to this question: What, if anything, can be done to prevent a decline in cognitive function? The answer? Brain supplements such as 120–240 milligrams per day of the herb Ginkgo biloba and 50 milligrams every other day of the provitamin beta-carotene. So be prepared to eat about 4 cups of spinach every day.

<https://www.diabetesselfmanagement.com/blog/boosting-brain-health-do-supplements-really-help-part-1/>

CARD 8

Sugar Balance is a type of dietary supplement that you can opt for if you feel that your blood sugar levels are getting out of hand. There are several ways this product helps attain a better control on blood sugar. Firstly, Sugar Balance helps keep cravings in control. This helps prevent your glucose levels from rising. Secondly, the product detoxifies the liver and increases its ability of insulin regulation. Lastly, it improves the functioning of pancreas which ultimately improves the insulin production. In these three steps, Sugar Balance can successfully decrease your risk of experiencing high blood sugar. Moreover, it also keeps your diabetes in check.

<https://www.riverfronttimes.com/newsblog/2020/07/16/sugar-balance-reviews-a-simple-solution-for-a-diabetes-free-life>

CARD 9

Traditional indigenous healing methods have provided effective alternative treatments for diabetes-related illnesses. Rick Favel, elder and traditional knowledge keeper, often shares his experience with kidney failure as a result of diabetes. His use of holistic medicines has helped improve his kidney function from 1-2 percent back to nearly 100 percent. Medical doctors had told him he would never be off a dialysis machine and that his kidney function would never improve beyond 30 percent. Favel said, “The difference between contemporary medicine and traditional healing methods is that traditional medicine focuses not only on the body but also aims to heal spiritually, emotionally and mentally.”

<https://www.healthing.ca/diseases-and-conditions/diabetes/exploring-indigenous-traditional-healing-in-the-treatment-of-diabetes>

Appendix 5-2: Thinking Organizer

**(think aloud example included in green font—it may be removed if desired)*

Information Card Topic (summarize in one sentence)	Ways to help people with diabetes lead the healthiest life possible (Ideas taken directly or inferred from the information)	How did scientific literacy to help you use with the information given?
CARD 1 Being positive helps people to stay healthy in many ways.	-celebrate the positive aspects of your life: good friends and family that support you; access to excellent health care, ... - leverage your strengths (if you enjoy physical activity, set up a fitness routine that will offset the physical effects of diabetes)	- connected general information to everyday life - used my scientific understanding of diabetes to come up with specific way to help
CARD 2		
CARD 3		
CARD 4		
CARD 5		
CARD 6		
CARD 7		
CARD 8		

Appendix 5-3: Guide to “Are you being scientifically literate?”

- **Have you selected 3-5 reliable sources from which to gather information and justified why you believe the sources selected are reliable?** (for example, read laterally—can the same ideas or conclusion be found across a number of sources; how are quotes being used—if too many, or incomplete, may suggest misuse of information, or lack of understanding) See lesson 2 for selecting reliable sources?
- **Have you selected the most relevant and useful information?** Consider selecting no more than 10 pieces of information (consider what and how much information is presented on the information cards—is it all useful?)
- **Have you considered the quality of the information?** Does the information identify what is known and what is not yet known – what is still being researched; does the information clearly state its limitations – it may suggest areas where further research is needed or areas in which it can be broadened. Good information presents both its strengths and limitation.
- **Have you considered if the information identifies choices or options?** *Options allow you to select that which best fits with the individual or intended audience (Type 1 or Type 2 diabetes, lifestyle, economic situation, medical condition, age etc.)*
- **Have you connected the scientific information to real situations/people in everyday life?** Select information to connects with the life experiences of your audience, for example, their diet, daily activities, work, where they live, their economic and social conditions.
- **Are you considering information that supports future-oriented thinking and action?** Select information that helps to create a better future.
- **Have you selected information that is based in scientific truths, generalizes specific observations or data and allows for sound decision-making?**
- **Have you translated the selected information into words and images that convey accurate scientific understanding that is understandable for your target audience?**
- **Have you been...**
 - open-minded (willing to open your mind to the ideas of other ideas as long as they are supported by quality evidence)
 - full-minded (you make up your mind only after considering enough evidence)
 - fair-minded (you don't reject any evidence until you've thought about its quality regardless of source)