Vitamin B1 and healthy blood vessels

written by Tessa Jupp RN

As a follow-up to the articles in the last newsletter on **raised blood sugar** leading to excretion of **25 times more Vitamin B1** than normal **in the urine** and the effect this can have on nerve tissue, I thought I would this time look into the effect of **low B1** on the vascular system, ie how it **affects blood vessels**.

Same vitamin deficiency - but a host of different disease categories because everything is dependant on other nutrients also being there for a particular function to occur - the 'ring-a-ring-a-rosy' story again.

A **shortage of Vitamin B1** was known as **beri-beri** and that was classed as ***dry*** if it affected the nervous system and ***wet*** if it affected the **vascular sysytem.**

Blood vessels go to every part of the body to top up nutrients and oxygen, carry red and white blood cells, hormones, enzymes and dispose of waste. So damage to blood vessels can affect eyesight, heart, lungs, digestion, liver, kidneys and circulation anywhere in the body. **Blood vessels need to be** elastic to respond to the beat pressure from the heart and the lining **strong enough not to leak** yet allow exchange to body cells as needed. These linings need the right nutrients to **not be fragile** and leaky and to **not** be subjected to **toxic** levels like constant **ups and downs in blood sugar levels.**

As **Margaret Orr** has found with her **story on page 3**, damage to blood vessels can come out of the blue without us realising why and there can be many predisposing factors that we overlook. As well I recommend you go back and looking at my article in the **June 2015 Polio newsletter** on other ways to control spikes in blood sugar which as well as the **foods we might eat,** includes **stress, lack of sleep** and **nutrient deficiencies.**

It all comes back to what I keep putting in the newsletter, about **reading the signals our body sends out** when they are little problems and responding then so we don't end up with major disease. Following are **some of the gems I** found on my on-line searches through **medical research** literature that might surprise you.

Not sure if you have blood sugar problems?

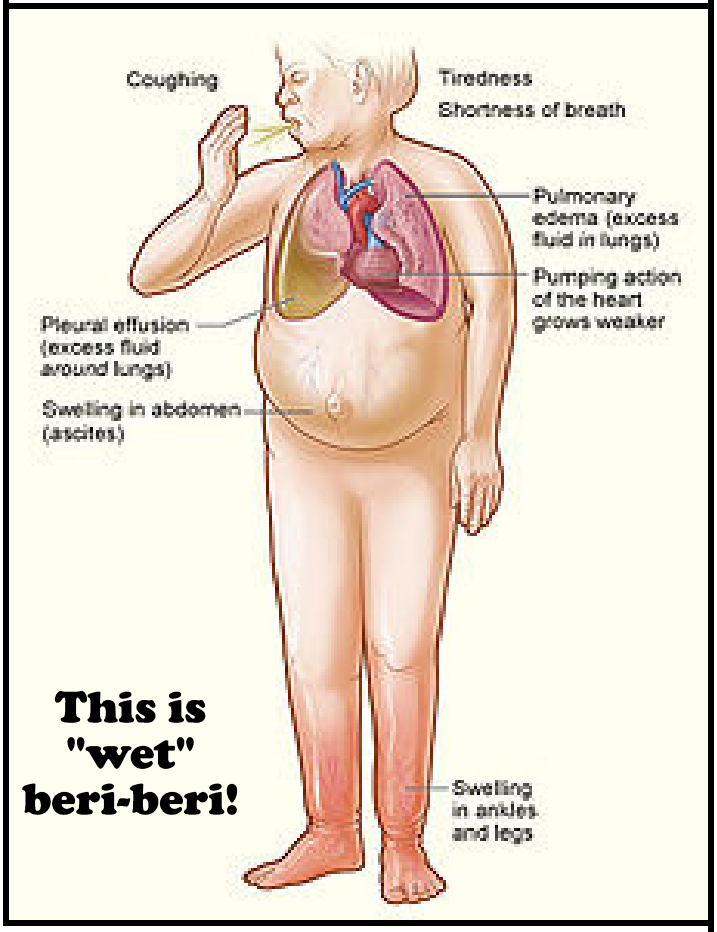
If you haven't had your blood glucose tested, there are a few telltale signs it may be out of whack:

- You've **gained** some **weight** – especially around your midsection
- You feel **sleepy** after you eat (when you have diabetes, glucose can't get into your cells to give you energy).
- You have that unbearable **craving** for a **'lolly'** or some other **'sweet snack'** (that is your body's signal that the cells need glucose).

"Blood sugar imbalances damage the small blood vessels throughout your body.

The key to healthy blood sugar is *balance*. **Combat low blood sugar with high protein.**

Common indicators of how low B1 affects blood vessels.



Drinking lots of water every day can help prevent high blood sugar. It's absolutely true – water is essential to life.

Every time you eat a meal that is filled with a lot of **simple carbohydrates** – ie any white breads, pasta, pizza, cakes, biscuits etc it **destroys your blood vessels,** slowly but surely.

Medical experts have believed for years that the neuropathy so many diabetics struggle with is caused by nerve damage. But a **new study from Johns Hopkins Uni** published in June 2011 in the journal *Brain* reported that **small blood vessel damage** may actually be at the root of the e**xcruciating pain, numbness and tingling that can drive many people mad.**

Balance your blood sugar and get cravings under control by **filling up on lean meats,** fish, low-sugar fruits, fresh vegetables, nuts, and plenty of healthy fats.

Most importantly, make an effort to **eat more protein throughout the day**. This will blunt blood-sugar spikes and put the brakes on excess insulin release. All with the end result of stable glucose levels, energy, and appetite.

You can also reduce the impact of any mild hypoglycemic reactions that do arise by keeping glutamine on hand.

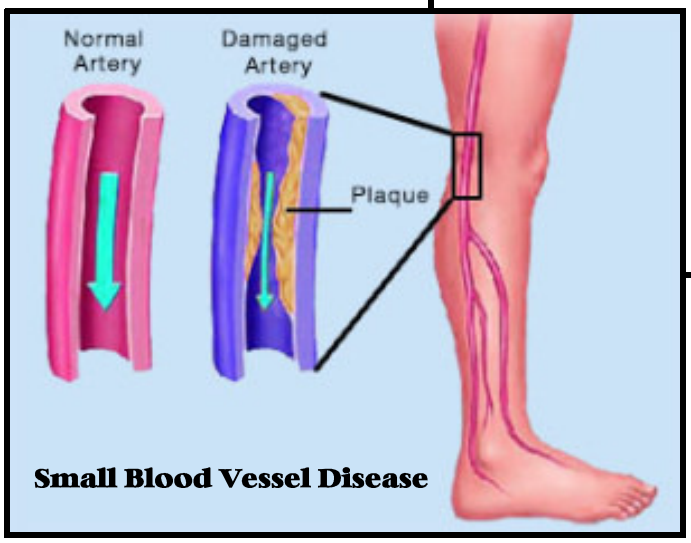
Glutamine is a kind of **"rescue remedy"** for people trying to kick sugar. It's an amino acid that furnishes your muscles and brain with energy. (Glutamine - Polio Office)

Glutamine also helps to **inhibit excessive insulin** release, which prevents blood-sugar crashes that trigger cravings.

"Glutamine re-balances blood sugar by stimulating the release of glycogen - your body's backup glucose supply. And it's even able to **stand in for sugar** itself when your body really needs energy.

You can **take up to 2,000 mg of glutamine (morning)**, and a bit more **whenever sugar cravings strike.**

New evidence shows that saturated fat is *not* your enemy. In fact, research shows that trying to avoid it and other **fats can actually *increase* insulin resistance.**



Mono-unsaturated **fatty acids** (MUFAs) have been shown in studies to **help lower blood sugar** - which can reduce your risk of diabetes. Good MUFA sources include macadamia nut oil, olives, nuts, and **avocados**. The only fat you should completely **ban** from your diet is **trans-fat**, which is what you get when you heat up polyunsaturated plant oils and that are used in most packaged foods. Trans fats decrease insulin sensitivity - which ups your chance of getting diabetes.

A study in *European Journal of Clinical Nutrition* found that a deficiency in various nutrients altered immunity, even when the deficiency is relatively mild. **Low levels of** zinc, selenium, iron, copper, Vitamins A, C, E and B6 and folic acid dramatically weaken immunity and can possibly be **linked to diabetes.**

L-carnitine is critical to kidney health, and a deficiency can trigger kidney disease. One review found that L-carnitine helps improve kidney-disease complications like anemia, weakness, and fatigue.

Turmeric is turning out to be good for pretty much everything. And protecting your kidneys is no exception. In one randomized clinical trial, diabetic patients taking 500 mg of turmeric three times daily had improved kidney function.

Caution: Keep close tabs on your magnesium levels
Magnesium is a critical nutrient for basic cell activity and overall health. The body absorbs magnesium from food, stores it in bones, and excretes it in urine.

Magnesium is required to drive **potassium** into the cell. **Magnesium and B1 are also depleted by diuretics.**

Higher magnesium intake reduces risk of impaired glucose and insulin metabolism and slows progression from pre-diabetes to diabetes in middle-aged people. Researchers stated, **"Magnesium intake may be particularly beneficial in offsetting your risk of developing diabetes,** if you are high risk."

Taking mega doses of vitamin D supplements ***without*** sufficient amounts of **Vitamin K2** and magnesium can lead to vitamin D toxicity and magnesium deficiency symptoms, which include inappropriate calcification (ie **plaque build-up)** that may damage your heart and blood vessels anywhere in the body. (**Note - K2** is now available Polio Office. More on Vit K2 next newsletter)

"The best way to tell if you are getting enough magnesium is the* "bowel test".** ***You know when you have too much magnesium when your stools become loose. This, in fact, may be a blessing for people with constipation… which is one of the many ways magnesium deficiency manifests."

Vitamin B1 is useful in blood sugar control. **B1 prevents** diabetes-induced **increases** in plasma **cholesterol**. High-dose B1 therapy counteracts diabetes-induced cardiac fibrosis (ie stiff). (I find most people need 4 of B1 250mg tablets - take in morning.)

B1 treated people have improved growth of new blood vessels and reduced cell death in the ischemic areas.

symptoms of small blood vessel disease

- Cold hands and feet
- Feeling cold all the time
- Numbness or tingling in the hands or feet
- Blurred vision
- Skin bruising that doesn't heal quickly
- Frequent urination
- Leg and/or toe cramping

"Dr RW Donnell concludes from the **ACCORD study**:

1) Intensive **glycemic control in** Type Two **Diabetes does not prevent vascular disease.**
2) Diabetic Drugs, including insulin, have the potential to **cause macro-vascular harm.**

Why did this happen? The answer is obvious. Using high dose insulin to drive blood sugar into B1 deficient cells can be harmful. The cells are pumped full of glucose which they **cannot metabolize because of B1 deficiency**. Instead, the glucose is shunted into alternate pathways creating harmful and damaging metabolites which **cause accelerated vascular disease.**"

Effect of high blood sugar and low Vit B1 on eyes

written by Tessa Jupp RN

Another complication of not having sufficient Vitamin B1 is damage to eyesight usually attributed to Diabetes.

Sight must be one of our most precious gifts, yet many of us tend to take it for granted until something goes wrong.

Seeing is a complex multi-step function that occurs continuously at amazing speed. Anything that interferes with this can create problems. **Good food is vital.** When we feed our bodies, we also feed our eyes. Plant foods we eat are digested to blood sugar. If we have a glut of blood sugar **the body uses up Vit B1** in converting glucose for energy or storage and also **loses B1 in the urine** as excess sugar is excreted. Eating protein with our plant foods helps to slow down the release of blood sugar too quickly.

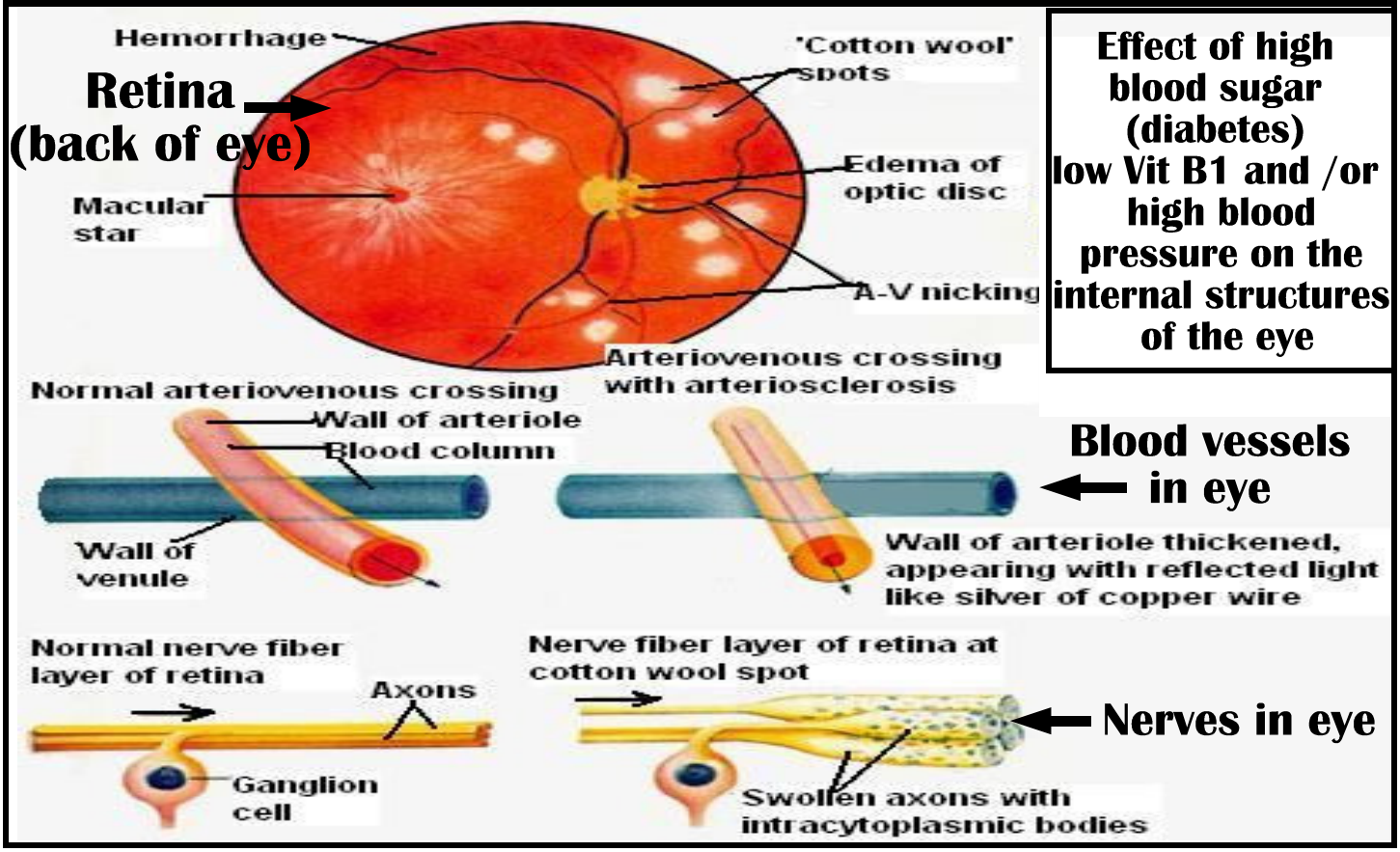
A deficiency of just one nutrient can lead to a wide range of eye conditions. As some eye complaints are irreversible, so prevention is the key to keeping reasonable eyesight.

So low levels of B1 from whatever cause can create problems in the eyes. Even common high blood pressure can result in thickening of the blood vessels inside the eyes. This can cause loss of vision or even blindness. Diabetes or excess blood sugar can also contribute to blindness due to haemorrhaging of **damaged blood vessels** in the retina.

Low Vit B1 allows the capillaries of the retina to weaken and **leak fluid or blood,** thus damaging the rod and cone cells of the eye. These are the optic nerves cells in the retina that transmit what we see to the brain.

New blood vessels grow, but they are fragile and may leak fluid too. This **causes the retina to swell** and become deprived of nutrients and oxygen, causing vision loss and possibly blindness. **"Cotton wool" spots** are fatty deposits.

Even having an **infected tooth** can **damage eyesight** because of common nerves and blood vessels.



Effect of high blood sugar (diabetes) low Vit B1 and /or high blood pressure on the internal structures of the eye

Diabetic retinopathy is traditionally viewed as a disease of the retinal blood vessels, but nerves are now implicated too.

In the early stages we are not aware that this damage is happening. As it progresses we may experience:

Diabetic Retinopathy

- Patients may complain of **specks, spots or floaters.**
- **Central vision may become blurred** or go in and out of focus.
- Patients may complain of **streaks or blockage** of vision if a large haemorrhage occurs inside the eye.
- Others may notice **difficulty seeing at night**.

If any of these are occurring, start taking B1 tablets 4 by 250mg, address blood sugar triggers and see your GP.

Patchy vision loss from diabetic retinopathy or low B1