

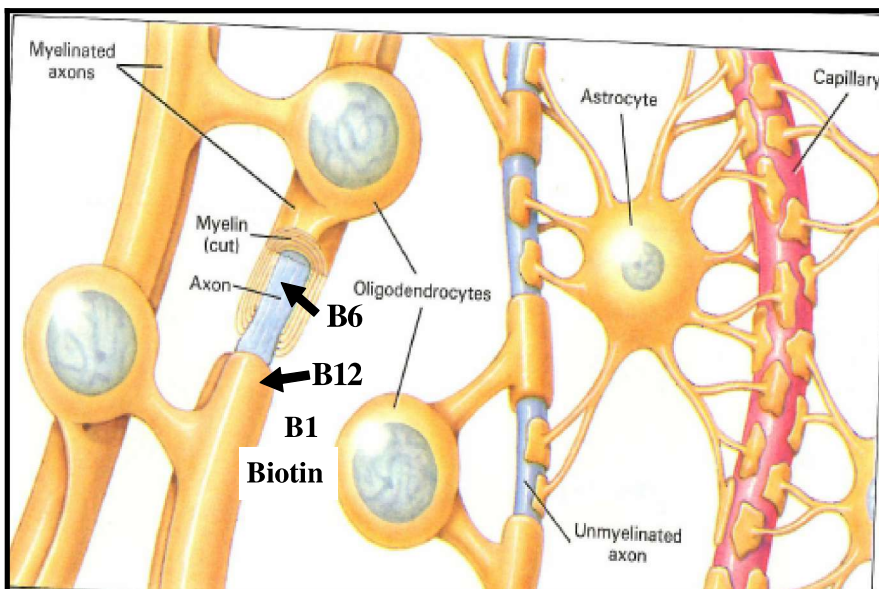
# Why B Vitamins are essential for nerve function

I have given many talks to other like-organisations on nerve function and perhaps now I should put some of this information in the Polio Newsletter too. More people who have had polio (and their families) are experiencing problems with nerve function and doctors may be at a loss having eliminated all the usual causes and may not be able to offer any further solutions to these problems.

When there is damage or weakness from having had polio, nerves may be more fragile, worn out, overused or simply need more nutrients than normal to continue functioning. With epigenetics it is now realised that we can be passing the tendency for some of these problems on to our children and grandchildren too.

## So we need to go back to "How do nerves work"?

This is a picture of nerves from physiology books. Just like an electric cord has a plastic insulating protective outer lining, so do nerves - called the **myelin sheath**. The inner conductive wire is where the nerve message is passed along to activate something. This can be muscles, blood vessels, eyes, ears, nose, heart, lungs, gut, bladder etc.



be necessary for nerve function.

Nutrients needed for the myelin sheath include **B12, biotin, B1**.

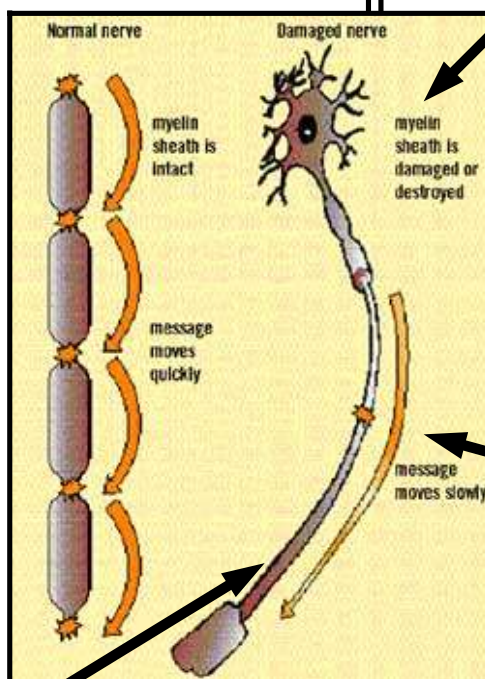
For nerve transmission - **B6, magnesium, B5, glutamine, choline, sodium, potassium**.

For nerve repair - **B6, B1, B3, C, E, fish oils, Alpha Lipoic Acid**.

*Tessa Jupp RN*

## What happens when our B12 is low?

- **Numbness and loss of feeling** in lower extremities progressing to paralysis
- Less sense of vibration and position sense
- Poor muscle coordination and **unsteadiness on feet**
- Muscle weakness
- **Memory loss**
- Confusion, agitation
- Depression
- Mental slowness
- Poor carbohydrate metabolism
- **Shortness of breath** (less oxygen carrying)
- Indigestion, diarrhoea
- Smooth beefy tongue
- **Prone to spurs, bursitis, shingles**
- B12 needed to unlock folate so can it work •
- Impaired making of **myelin sheath and neurotransmitters**
- B12 needed to make Alpha Lipoic acid
- Pernicious anaemia (large red blood cells)
- **Fatigue** (low energy, less nutrition transport)
- Homocysteine high (heart and brain problems)



## Symptoms of Biotin deficiency

- Can cause **demyelination** of nerves
- **Peeling of cuticle** near fingernails
- Red irritated eyes and eyelids
- **Fatigue** /lethargy /muscle weakness
- Hair loss (NB Biotin needs manganese)
- Respiratory problems (eg wheezing, difficulty breathing, rapid breathing)
- Visual impairment/ optic nerve atrophy

## Choline - Why is it necessary?

**Choline** is needed to make acetylcholine, a neurotransmitter vital to nerves and muscles

## Symptoms of Choline deficiency

- Fatty liver
- Poor memory recall/brain fog
- Poor concentration
- **Fatigue** /muscle weakness
- Insomnia
- Rise in blood pressure
- Hardening of arteries
- Choline is lowered by methotrexate

**Vitamin B1 is essential for the central nervous system to function normally.**

Early deficiency symptoms are **fatigue**, irritability and **poor memory**. People low in B1 experience painful symptoms such as burning, itching, or tingling sensations, or they might begin to have a lack of certain sensations such as heat, cold, or even touch. If these symptoms are left untreated, peripheral neuropathy can develop and lead to much more deteriorating problems such as loss of balance



**Thiamine (Vit B1) deficiency induced peripheral neuropathy causes pain, tingling, numbness and/or burning sensations to the feet or legs.**

**Neurological system:**

- **Myelin sheath degenerates if B1 low.**
- Toes feel numb /loss of sensation
- Leg muscles become sore
- **Walks unsteadily**
- Difficulty getting up from a squatting position
- The feet may hang limp (footdrop).
- **Poor memory**, irritability, sleep disturbance
- Bilateral, **pins and needles** in lower extremities
- **Burning pain** in feet
- Calf muscle pain and cramps
- Decreased vibratory position sensation
- Loss of reflexes in the knees and feet
- Muscle wastage/loss

**Cardiovascular system:**

- There is a **rapid heartbeat and sweating**
- Eventually the **heart muscle weakens**
- Because the smooth muscle in the blood vessels is affected, the arteries and veins relax. Blood vessels dilate allowing fluid to leak and accumulate in the tissues around the cells causing **swelling**, known as **oedema**, particularly in the legs. As the condition worsens, swelling occurs in the abdomen (ascites), around the lungs (pleural effusion), in the lungs (pulmonary oedema) causing shortness of breath and the pumping action of the heart grows weaker **causing heart failure**.

**Musculoskeletal system:**

- There is widespread **muscle pain caused by the lack of B1** in the muscle tissue.
- **B1 deficiency can be caused by lack of enough magnesium.** Try more.



"Not to worry. Water retention is a common symptom of menopause."

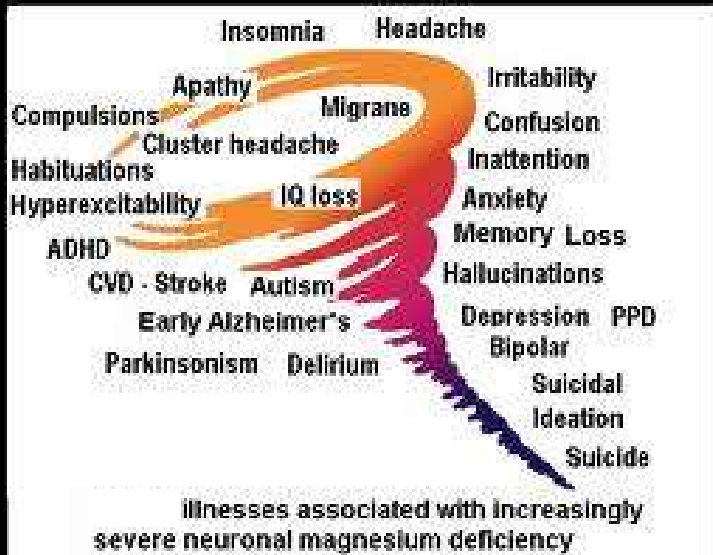
**INTERESTING RESEARCH ON MAGNESIUM**

"Their most important finding was that while calcium is the prime conductor of these minute electrical currents, it is magnesium that maintains normal levels of calcium in the system. **How does magnesium regulate calcium levels?** Inside the body, these two minerals are positively charged. When they come into contact with negatively charged particles, an electrical current is formed. It is believed that fatty acids comprising the major portion of nerve tissue are negatively charged. It is for this reason, then, that calcium and magnesium supplies must be constantly renewed; **as without them, the flow of current by the nerves cannot be maintained.**

In like fashion, a storage battery "works" only when a positive and a negative electrode are present to maintain an electrical current. When the positive plates become exhausted, the battery is no longer any good. By this same mechanism, small amounts of electrical currents flow from the calcium ion to the negatively charged nerve lipids.

**When magnesium levels are low**, the calcium supply becomes exhausted, and in the absence of adequate calcium, the **nerve cells cease to function**. If this happens, even taking magnesium later doesn't restore nerve function

Ref: *Lancet*; Dr. J Caddell, George Washington School of Medicine



**HOW TO TAKE IF MORE OF THESE NEEDED**

**B12** levels rise best by injection initially. Blood levels are not good indicators. **B12 injections are safe** to have every day for a few weeks if needed. B12 is water soluble. Safe - your body just excretes what isn't needed.

**Biotin** - take 4 x 300 mcg daily Available in Nature' Own - but labelled as "**Strong Nails**".

**Choline** - 1000 mg daily (100G powder available from Polio Office for \$22 + postage)

**B1** - Usual dose is 4 x 250 mg before breakfast

**B6** - 1 - 4 x 200 mg before breakfast. **NB** if needed tablets taste sweet or no taste. If taste really YUK (bitter) then you don't need B6.

**Magnesium and Vit C** - take both twice a day to bowel tolerance ie just below the dose that gives diarrhoea. Cheap effective powder - Polio Office. Ring for advice on any of these or to buy any.