Thiamin deficiency is fairly common, despite the so-called fortification of our food supply. Thiamin is an essential nutrient that is often under diagnosed. Deficiency of thiamin makes it difficult for a person to digest carbohydrates, and is associated with hypoglycemia, low blood pressure, chronic HCl need, carbohydrate sensitivity, PMS, cyclic personality, anxiety, and excess alcohol, refined food, and drug consumption. A chronic thiamine deficiency leaves too much pyruvic acid in the blood, causing loss of mental alertness, labored breathing, and cardiac damage.

Beriberi is the disease of thiamin deficiency. The most advanced neural changes occur in the peripheral nerves, particularly the legs. The distal segments are involved earliest and most severely.

**Early Signs of Deficiency**

- Easy fatigue
- Loss of appetite
- Irritability and emotional instability
- Confusion and loss of memory will appear if the deficiency persists.

**Early deficiency produces** fatigue, irritation, poor memory, sleep disturbances, precordial pain, anorexia, abdominal discomfort and constipation. Peripheral neurologic changes are bilateral and symmetric, usually in the lower extremities. Paresthesias of the toes, burning of the feet (especially at night), calf muscle cramps, pain in the legs, loss of vibratory sense in the toes and difficulty in rising from a squatting position are early signs.

**Later signs include** loss of ankle jerk, then knee jerk and loss of vibratory and position sensation in the toes, atrophy of the calf and thigh muscles and finally foot drop and toe drop. The arms may become involved after the leg signs are well-established.

Cerebral beriberi or Wernicke-Korsakoff syndrome is a state of mental confusion commonly seen in alcoholics.

**How to Assess for Thiamin Deficiency Using Functional Diagnosis**

In Functional Diagnosis we are concerned with the early detection of thiamine deficiency. One of the best ways to do this is to monitor closely the signs and symptoms your patient presents with. The following are some of the symptoms associated with a thiamin deficiency:

- Loss of muscle tone or heaviness in arms/legs
- Pulse slow (below 65 in a non-exercising individual)
- Numbness, tingling, or itching in extremities
- Can hear heart beat on pillow at night
- Fragile skin, easily chaffed when shaving
- Cheilosis (cracks at corner of mouth)
- Wake up without remembering your dreams

Vitamin B1 is necessary for hydrochloric acid (HCl) production. One possible way to check for thiamin need is to use neurolingual testing and see if the Chapman Reflex for the stomach is less tender while the client is holding thiamin in his or her mouth. You can use thiamin mononitrate or thiamin cocarboxylase. The relief of tenderness in the stomach reflex indicates a need for thiamin.

At this point you may be asking yourself what all the fuss is about. Surely if you give someone a good diet and a multi-vitamin their thiamine problems would be sorted out.

Well, it’s not as simple as that. Thiamine has a number of very important metabolic functions (blood
sugar control, HCL production, brain chemistry stabilization etc.) and unfortunately the levels of thiamine, even with supplementation of a multiple vitamin, appear to be low.

So far I have told you how to check for thimine deficiencies by looking at some of the more common signs and symptoms. Now I would like to focus on using blood tests to help determine thiamine need.

**How to assess Thiamine need on a blood test**

Thiamine deficiency can be assessed by checking red blood cell transketolase levels. RBC transketolase is an enzyme that cannot be produced in the absence or deficit of thiamine. Unfortunately it is an expensive test, so check for the following first:

- Decreased CO2 <25
- Increased anion gap >12
- Low normal or decreased HCT (<37 or 0.37 in women and <40 or 0.4 in men)
- Low normal or decreased HGB (<13.5 or 135 in women and <14 or 140 in men)
- Due to thiamine's role in glycolysis, LDH levels may be decreased and glucose levels may be normal to increased (>100 or 5.55 mmol/L)

If you see the above pattern on your chem. screen and CBC, and you notice some of the signs and symptoms associated with thiamine deficiency, and you see they have a functional hypochlorhydria, then you can be sure that thiamine supplementation is needed. By all means run the RBC transketolase test to make sure!

**For more information on using your Blood Chemistry and CBC Analysis to gather this type of information please click here**

**Functional Diagnosis Power Strategy Lesson 8 will be coming shortly so stay tuned!**

All the best,

*Dicken Weatherby, ND*