Vitamin B1 (Thiamine) Cheat Sheet

What is Vitamin B1?

- Known as thiamine, it's a water-soluble vitamin essential for energy production and nervous system health.
- **Key Forms:**
    - **Thiamine Hydrochloride/Mononitrate:** Common forms in supplements and fortified foods.
    - **Benfotiamine:** Fat-soluble, better for neurological health.

Roles of Vitamin B1

- **Energy Production:** Converts carbohydrates into energy (ATP) to fuel cellular functions.
- **Nervous System Health:** Supports nerve signal transmission and neurotransmitter production.
- **Heart Function:** Provides energy for heart muscle cells, aiding cardiac performance.
- **Mental Health:** Regulates mood, memory, and cognitive functions.
- **Pregnancy Support:** Prevents preeclampsia and supports fetal development with increased energy demands.

Signs of Deficiency

- **Fatigue and Low Energy:** Constant tiredness due to impaired energy production.
- **Neurological Symptoms:** Tingling, numbness, poor coordination, and memory loss.
- **Mood Changes:** Irritability, depression, and confusion (linked to Wernicke-Korsakoff syndrome).
- **Heart Complications:** Rapid heartbeat, shortness of breath, and, in severe cases, heart failure (wet beriberi).
- **Nervous Stress and Restlessness:** Increased sensitivity to stress due to impaired nervous system function.
- **Calf Edema:** Swelling in lower limbs due to cardiovascular strain.
- **Nightmares:** Vivid dreams linked to changes in brain chemistry and poor sleep quality.
- **Air Hunger:** Breathlessness due to compromised oxygen transport.
- **Loss of Appetite:** Decreased desire to eat, common in early stages of deficiency.
- **Muscle Weakness:** Reduced strength, especially in the lower extremities.
- **Digestive Disturbances:** Nausea, vomiting, and abdominal discomfort.
- **Mental Fog and Confusion:** Cognitive impairment seen in severe cases like Wernicke-Korsakoff syndrome.
- **Peripheral Neuropathy:** Tingling or numbness in extremities due to nerve damage.

- **Paralysis and Reflex Abnormalities:** Severe deficiency can cause paralysis and loss of reflexes (dry beriberi).

Who is at Risk?

- Chronic alcohol users (impaired absorption and increased excretion).
- People with gastrointestinal disorders (e.g., Crohn's, celiac disease).
- Older adults (reduced dietary intake and absorption).
- Diets high in refined grains and sugar.
- High caffeine consumers (increased thiamine excretion).

Top Sources of Vitamin B1

- **Foods:**
  - Whole grains (brown rice, oats).
  - Legumes (lentils, beans).
  - Nuts and seeds (sunflower seeds, flaxseeds).
  - Unfortified nutritional yeast.
  - Animal products (liver, eggs).
- **Supplements:**
  - **Benfotiamine:** Best for neurological and high-absorption needs.
  - **Thiamine Hydrochloride/Mononitrate:** Suitable for general supplementation.

Tips for Optimal Absorption

- Combine with **Magnesium** (cofactor for activation into TPP).
- Pair with **Vitamin C** for better absorption from plant sources.
- Avoid excessive caffeine, tannins (tea), and sulfites (processed foods), which inhibit absorption.

Test Your Levels

- **Blood Tests:**
  - Thiamine: Below 70 nmol/L indicates deficiency.
  - Thiamine Pyrophosphate (TPP): Below 40 nmol/L is insufficient.

Boosting Your Levels

- Increase thiamine-rich foods in your diet.
- Include nutritional yeast in your diet.
- Use targeted supplements, especially if at risk or showing symptoms.
- Monitor progress with follow-up testing and adjust intake as needed.

Remember: Thiamine is critical for energy, nerves, heart, and overall health—ensure daily intake for optimal well-being! 🌾