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A short guide to requesting trace elements (Zinc, Selenium, Copper) for adults in primary care

At-risk groups for deficiency

Deficiency of zinc, selenium or copper is uncommon in the UK except potentially in **vegetarians & vegans**, and in patients with **malabsorption** or on **long term TPN**, and following **bariatric surgery**.

- Alcoholism, pregnancy or sickle cell anaemia increase the risk of zinc deficiency.
- Patients who are on thiazides, loop diuretics or angiotensin receptor blockers AND have a chronic history of malnutrition or poor diet are at increased risk of zinc deficiency (medication-use alone should not be considered a risk factor).
- Chronic peritoneal dialysis or haemodialysis and excessive zinc ingestion increase the risk of copper deficiency.

When to test for possible deficiency

- Following **bariatric surgery** – refer to guidance on RSS: "GP Guidance: Management of nutrition following bariatric surgery". Annual monitoring (or as directed by secondary care) in patients with sleeve, bypass or duodenal switch.
- Patients in **at-risk groups** who exhibit **multiple specific symptoms** associated with trace element deficiency.
- Requests from **secondary care** or other services (e.g. Mental Health, ENT or in CF patients) should be clearly indicated in clinical details.

Requests with no relevant clinical details will not be analysed.

When NOT to request

- **We do not recommend trace element testing for any patients who do not have clear risk factors for deficiency.**
- For investigation of alopecia - refer to Dermatology page on RSS.
- Trace elements, including zinc, are not required prior to referral to CAHMS.
- Copper is not required to screen for ?Wilsons – request caeruloplasmin.

Symptoms of deficiency

Symptoms of trace element deficiency are unlikely to occur individually.

Zinc

Impaired wound healing and skin lesions (primarily in the extremities or around body orifices); immune dysfunction; impotence / hypogonadism / oligospermia; alopecia / change in hair colour; impaired or loss of taste; night blindness; anaemia; diarrhoea.

Copper

Fragile hair; depigmentation of the skin; muscle weakness (myeloneuropathy); neurologic abnormalities (ataxia, neuropathy); hepatosplenomegaly; osteoporosis; anemia (usually normocytic; sometimes macrocytic and occasionally with microcytic cells), neutropenia, rarely thrombocytopenia.

Selenium

Skeletal muscle dysfunction; cardiomyopathy; mood disorders; impaired immune function; macrocytosis; whitened nailbeds.

TOXICITY

Toxicity of zinc, selenium or copper is unusual, except in patients taking excessive supplementation.

Note that the optimal range for dietary intake of **selenium** is narrow; potentially toxic intakes are closer to recommended dietary intakes than for other dietary trace minerals. Thus, supplementation may be beneficial for individuals with low selenium intake, but could be detrimental to those with normal or high selenium intake.

Excessive **zinc** ingestion may interfere with copper absorption, and high zinc intakes (>150 mg/day) can lead to **copper** deficiency.

Copper levels are NOT required for the investigation of **Wilson Disease**. Caeruloplasmin is the preferred biochemical marker. Note that the majority of patients with Wilson Disease are diagnosed between the ages of 5 and 35 years. Caeruloplasmin requests for the investigation of ?Wilson or abnormal LFTs in patients over the age of 50 years will be rejected.