

Biology-Informed Psychiatry

Translating neurometabolic pathway biology into objective clinical decision support



Structured neurometabolic (biological) profiling to support psychiatric decision-making

HealthyMentis is building a Clinical Decision Support (CDS) and Treatment Optimization (TxO) platform (before regulatory approval classified as a non-device CDS, after regulatory approval classified as Software as a Medical Device) that:

- Captures **patterns of neurometabolic differences** derived from **multiple dry urine samples**
- Supports **biological stratification of patients** relevant for treatment decisions
- Enables **personalized treatment**
- **Reduces time** spent identifying an optimal treatment strategy
- Improves the **therapy effectiveness and responsiveness**

Our objective is to **introduce neurometabolic profiling** of patients **into psychiatric decision-making** to help reduce prolonged trial-and-error treatment selection. We do **not aim to define causal biomarkers nor diagnostic classifications**.

Neurometabolic platform

Workflow

Patients at home:

questionnaire



dry urine samples



HealthyMentis proprietary software

subjective symptoms

+

objective neurometabolic indicators

- Neural pathway dysfunctions
- Neurometabolic profiles
- Treatment optimization

Clinician report: CDS/TxO

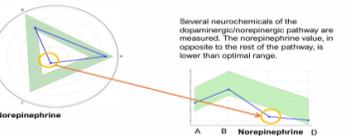
NEUROMETABOLIC PROFILE (NP) - MOOD AND ENERGY

Jane Doe

The results and all other contents of this report are for informational purposes only and are not intended as medical advice. HealthyMentis does not diagnose, treat, cure, or prevent any disease. Please consult your doctor for diagnosis and treatment.

1. Introduction
Neurometabolism refers to the biochemical processes that enable the nervous system to function - regulating its signalling, energy production, and maintenance - including the brain, spinal cord, and peripheral nerves. These processes depend on neurochemicals (e.g. typtophan, serotonin, SHGA) and their metabolic pathways. Numerous human studies have shown that neurochemicals correlate with mental health, reinforcing the view that mental health reflects the condition of the entire nervous system, not just the brain in isolation. Expository human studies have particularly examined urinary biomarkers of dopaminergic and serotonergic metabolism (see References).
A neurometabolic assessment evaluates the functional state of the nervous system by analyzing its metabolic activity to reveal pathway level impairments that may influence mental health. A neurometabolic profile is a visualisation of the above.

2. Neurometabolic Profile (NP) of Jane Doe
The Mood NP visualises 3 measured values representing different neurometabolic pathways, which have all impact on the mood symptoms. Of those 3, 1 value, Norepinephrine, is lower than optimal range and described further as an example.



3. Impact of NP with low norepinephrine on mood and energy

Table 3.1 presents the research on the impact of low norepinephrine on the mood and attention (references at the back of the document).

Effect of Low Norepinephrine (NE)	Explanation	Evidence Strength
Low mood	Reduced signaling in prefrontal cortex	Strong
Low energy & drive	Reduced activation of the locus-coeruleus arousal system	Strong
Cognitive slowing	Less efficient prefrontal processing	Strong
Excessive sleepiness	Reduced sympathetic tone	Moderate
Poor concentration & impaired attention	NE modulates attention networks in prefrontal cortex	Moderate

Current Psychiatry:

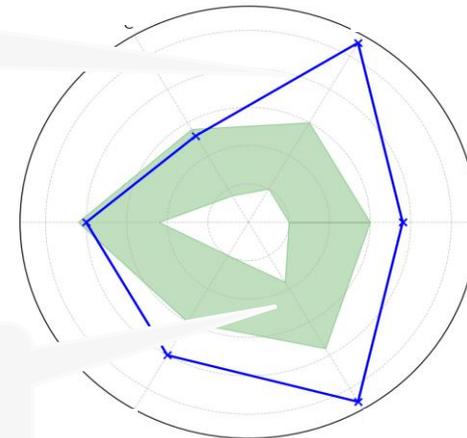
- Symptom-based diagnosis
- Broad medication classes
- Iterative trial-and-error

HealthyMentis enables:

- Identification of ADHD sub-profiles
- Stratification of patients
- Personalized treatment selection
 - Pharmaceuticals
 - Nutraceuticals

Patient profile

Reference range



Supportive scientific discoveries

Key discoveries in recent times support our neurometabolic assessment and treatment design

Dry urine cards

- ▶ The technology of dry urine cards for home use has opened new possibilities for cost efficient home sampling, and diagnostics (since 2016)

Neurometabolic indicators

- ▶ Dry urine measurements have demonstrated statistically significant associations with symptom domains in mental health research settings and represent a scalable, non-invasive biological sampling approach (as opposed to e.g., cerebrospinal fluid or plasma¹) (since 2000)²⁻⁷

Blood-brain-barrier

- ▶ Carrier systems transport nutrients into the central nerve system and transport the toxins out of it despite the blood-brain barrier (since 2017)^{8,9}

Influence of nutrition on mental health

- ▶ Nutritional interventions effectively improve mental health (since 2017)^{10,11}

Nutrient associations with neurometabolic indicators

- ▶ Nutrients are associated with measurable shifts in neurometabolic indicators in published studies (since 2012)¹²⁻¹⁵

Join the HealthyMentis Pilot Network

We are inviting psychiatrists and ADHD specialists to:

- Experience neurometabolic decision support in practice
- Provide structured feedback
- Contribute to the evolution of biology-informed psychiatry

For more information or a short introduction meeting please reach out to roland.pfeuti@healthymentis.com.

We look forward to hearing from you.

Appendix: References

Footnotes Page 6

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