



Biomedical Test Panels

See www.OnwardMentalHealth.com (Resources) for an array of integrative mental health material including the latest version of this monograph, extracted and expanded from our book, *Choices in Recovery*.



WHAT IS THE ESSENCE?

Mental health lab tests look for markers that may identify potential underlying medical conditions that can cause or dramatically influence mental health symptoms. When these root-causes are addressed, symptoms very often improve.

A robust set of blood, urine, and stool sample tests should be run, with hair and cerebral spinal fluid potentially evaluated. Regrettably, baseline testing for numerous important physical ailments is not as common as it should be for people diagnosed with serious mental illness.¹

You should therefore find a qualified biomedical practitioner well-versed in robust testing for mental health. With this practitioner, you can select a reasonable set of tests based on your symptoms and medical history. The following are tests to consider.

- **General Blood Profile.** This includes complete blood count, complete metabolic panel, calcium (assess for parathyroid issues²), phosphate, iron, ferritin, Vitamins B12 and D. Low *Cholesterol* is a marker of *Error! Reference source not found.* both associated with mental health issues, especially depression. Statins can adversely impact memory and cognition.³ Consider this mandatory.
- **Organic acids test.** The Organic Acids Test (OAT) provides a snapshot of metabolism. The tests can uncover abnormal yeast and bacteria in the gut to help ensure microbiota health. It covers minerals, antioxidants, and amino acids. Consider this mandatory.
- **Biochemical imbalance tests.** It is important to discover if any of the six most common mental health biochemical imbalances are present (copper overload, Vitamin B6 deficiency, zinc deficiency, methyl/folate imbalances, oxidative stress overload, and amino acid imbalances).⁴ The following tests should be considered mandatory.
 - **Serum copper.** Excess copper can alter synaptic activity for dopamine and norepinephrine.
 - **Copper/Zinc.** Zinc is an essential trace element is required for the activity of over 300 enzymes and is involved in most major metabolic pathways. As zinc goes down, copper goes up and vice versa. The immune system depends on zinc in almost every aspect. Zinc has an inverse relationship with copper in the body.
 - **Methylation test.** Over 60% of people with depression, anxiety and psychosis have a serious *Methylation* imbalance,⁵ so testing for methylation irregularities should be considered mandatory. The best test is likely a SAM-e/SAH ratio test. (www.DoctorsData.com is one of the few labs in America that run this test). A suitable alternative is whole blood histamine. People with overmethylation often thrive on vitamin B9, while people with undermethylation often improve depressive symptoms using SAM-e.
 - **Urine Pyrroles.** This test can identify a pyrrole disorder (an imbalance in hemoglobin synthesis) and oxidative stress.
 - **Serum ceruloplasmin.** Ceruloplasmin is a copper-binding protein. If more than 25% of copper is not bound to ceruloplasmin, a metal metabolism disorder involving oxidative stress may be present.
 - **Liver Enzymes.** Include gamma-GT, aspartate aminotransferase, alanine aminotransferase, bilirubin, albumin, and alkaline phosphatase. Elevated enzymes, a common side effect of psychotropics, suggest that the liver is stressed—which can indicate the need to avoid high doses of vitamins B3, A, D, and E.



- **Endocrine tests.** Endocrine tests look for potential issues with the glands. Of these, the thyroid panel should be considered **mandatory** because thyroid irregularities are relatively common in those with mental distress. Detailed endocrine testing can be done based on specific situations (e.g. for treatment-resistant depression, rapid-cycling bipolar, and in cases when a woman's psychiatric symptoms seem to vary with the menstrual cycle). If needed, these are often ordered by an endocrinologist.
 - **Thyroid Panel.** Test for TSH, free T3, T4, and T4. Hypothyroidism (underactive thyroid) often accompanies nutrient issues.
 - **DHEA and DHEA-sulfate.** Test for DHEA-sulfate levels especially in patients over 40 years of age. If low, DHEA supplementation may improve depression and improve symptoms for those with schizophrenia, bipolar and dementia.
 - **Sex-specific tests.** Women should consider tests for estrogen, progesterone, FSH, LH, and Prolactin. Men may be evaluated for free testosterone and bio-available testosterone.
 - **ACTH test.** This test is used to diagnose adrenal insufficiency, Addison's disease, and related conditions. It can help distinguish between adrenal and pituitary issues.
 - **Cortisol.** Cortisol is a stress hormone. A 24-hour free cortisol excretion level > 100 micrograms indicates possible Cushing's syndrome caused by endocrine tumors. CT/MRI/ultrasound scans can detect tumors. Excess cortisol is associated undermethylation and altered gene expression.^{Error!}
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 - **Plasma parathyroid hormone (PTH).** This tests for proper functioning of the parathyroid gland. Blood calcium levels are checked at the same time since PTH controls calcium levels.
 - **Plasma metanephrines.** Used to determine presence of a rare pheochromocytoma tumor.
- **Allergy Tests.** Food allergies are much more common in those with mental health issues than the overall population, with gluten, soy and corn being the most common. Gluten allergy testing should be considered mandatory, especially for those with schizophrenia. A variety of testing methods are possible including elimination diets. Consider antibody tests for gluten allergy (anti-endomysial – EMA and anti-tissue transglutaminase – tTG) and sensitivity (gliadin - AGA).
- **Lithium.** Lithium is broadly important in mental health and may be needed for normal brain growth. It is clearly implicated in bipolar, dementia and autism. It can be assessed through hair or blood tests.
- **Heavy Metal/Toxin Tests.** These tests are often run using hair and/or blood samples. These should be considered standard in testing since toxins can be absorbed from several different sources.
- **Homocysteine.** Homocysteine levels are a strong indicator of health and high levels are associated with cognitive impairment in bipolar, schizophrenia, dementia, and depression. Deficiencies in folate, B12 and B6, and zinc nutrients can lead to an accumulation of homocysteine.
- **Pathogen and inflammation tests.**
 - **C-reactive protein.** C-reactive protein (CRP) is a marker of inflammation. An elevation suggests possible bacterial or viral infection.
 - **HPHPA Test.** HPHPA is a marker for the presence of Clostridia pathogens. Especially in cases of psychosis, severe depression, and autism, consider looking for elevated HPHPA. (See www.GreatPlainsLaboratory.com).
 - **Autoimmune.** Psychiatric symptoms can be caused by an autoimmune dysfunction often triggered by common infections. Consider erythrocyte sedimentation rate (detects inflammation), antinuclear antibodies (present in almost all people with systemic lupus erythematosus), and serum fluorescent treponemal antibodies (diagnostic test for syphilis).
 - **Translocator proteins.** Elevated levels, a marker for brain inflammation, are associated with suicidal depression.



- **Cerebral spinal fluid metabolites.** This test is more rare. A blood-brain barrier exists that inhibits the movement of certain substances from the blood to the central nervous system. Blood tests, therefore, don't necessarily give an accurate picture of the substances in the spine and brain. For more precise information, spinal fluid can be removed (a spinal tap) with a needle. A preliminary study indicates this testing may be important for treatment-resistant depression, where cerebral folate deficiency was most common imbalance discovered.⁶

Test protocols.

- **Walsh Institute Test Protocols.** The Walsh Institute is a leader in *Nutrition Therapy* (www.WalshInstitute.org). A testing protocol overview can be found in Chapter 10 of Dr. Walsh's book *Nutrient Power*.
- **Comprehensive Mental Health Panel.** Great Plains Laboratory (www.GreatPlainsLaboratory.com) offers a comprehensive set of mental health panels to consider. They can also connect you with a doctor who can order the tests and consult with you on treatment.
- **Koran Algorithm.** A baseline protocol (<https://goo.gl/nBpmZK>).
- **BMJ Best Practice Assessment for Psychosis.** A protocol directed toward those with psychosis. <http://goo.gl/ibCU2e>.
- **SpectraCell Laboratories.** www.spectracell.com.

WHAT CONSIDERATIONS SHOULD I KEEP IN MIND?

It is important to recognize the conventional psychiatrists rarely run more than a general blood profile since their prescribing is usually based solely on patient symptoms and not thorough lab tests. Start by finding an *Integrative Biomedical Practitioner* (see monograph at www.OnwardMentalHealth.com/resources) who uses comprehensive biomedical tests to help create a mental health differential diagnosis. Different combinations of tests can be run, and some tests will overlap. Practitioner preferences will vary. Insurance coverage also varies. Common tests are often covered by insurance; more specialized tests likely are not.

Failure to run a thorough biomedical test panel risks an important opportunity for healing. If you don't run needed tests, you face the risk of not discovering what might be a relatively straightforward path to improved mental health—keeping in mind that these test results won't automatically guarantee that an underlying disorder will be found.

Lab tests should be run by labs with CLIA certification.

REAL-WORLD EXPERIENCE

Practitioner's Story 1 – Importance of Biomedical Testing

Dr. Mary Ackerley is an Integrative Physician in Tucson, Arizona, with a specialty in psychiatry. She believes that extensive biomedical tests must be run in cases of significant mental health issues, to create a quality differential diagnosis. She recognizes that this step is often not performed by psychiatrists, since medical schools historically have not focused on Biomedical Restorative Therapies and the testing that can target their use.

Bottom Line: *To get a quality differential diagnosis, ask to have your practitioner run quality and comprehensive biomedical tests.*

¹ De Hert M et al, Physical illness in patients with severe mental disorders. I. Prevalence, impact of medications and disparities in health care, *World Psychiatry*. 2011, <http://goo.gl/awbVFo>.

² Bains AS, Abnormal calcium level in a psychiatric presentation? Rule out parathyroid disease, *Current Psychiatry* 2015, <http://goo.gl/stJRWg>.

³ Moyer M, It's Not Dementia, It's Your Heart Medication: Cholesterol Drugs and Memory, *Scientific American*, 2010, <https://goo.gl/AQBgjV>.

⁴ Walsh W, *Nutrient Power Heal Your Biochemistry and Heal your Brain*, Skyhorse Publishing, 2014, <http://goo.gl/DxolvQ>.

⁵ Walsh W, Evaluation & treatment of over- and under-methylation in the psychiatric population, *Walsh Research Institute*, 2015, <https://goo.gl/aO3nbp>.

⁶ Pan LA et al, Neurometabolic Disorders: Potentially Treatable Abnormalities in Patients With Treatment-Refractory Depression and Suicidal Behavior, *Am J Psych*, online pub, <http://goo.gl/B79g2A>.