

SYLLABUS

2024 FELLOWSHIP

in Functional & Integrative Psychiatry

Winter 2024 Cohort (January – December 2024)

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(Topics, Curriculum & Readings)

PSYCHIATRY REDEFINED

Continuing Online Education to
Transform Mental Health Care

Group Supervision Schedule

Winter 2024 Cohort

Please refer to your LMS section, "Supervisions, Office Hours & Lectures," for the most accurate schedule. Supervision dates are subject to change; we apologize for any inconvenience! Any/all changes will be communicated to Fellows via email with as much advance notice as possible.

Discussion Topic	Supervision Dates
Intro to Functional Psychiatry / Suicide Prevention	January 10 & 24
Intro to Integrative Psychiatry / Nutritional Augmentation for Antidepressants	February 15 & 28
Depression	March 13 & 27
Hormones	April 17 & May 1
Anxiety Disorders	May 15 & 29
Psychedelics / Practice Management	June 5 & 19
Addiction	July 10 & 24
Metabolic Psychiatry & Ketogenic Diets	August 7 & 21
Infections	September 4 & 18
ADHD	October 2 & 16
Eating Disorders	November 6 & 20
Bipolar Disorder / Schizophrenia & Psychosis	December 4 & 18

Helpful Tips for LMS Use

CURRICULUM

- All courses, webinars, and conference packages can be found on your LMS student dashboard. Upon login, please navigate to the top menu > My Dashboard to find all Fellowship curriculum in which you are enrolled. Each course (webinar or conference) has a small course image, title, and course progress indicator. **Please be sure to click "Start Course" to view the educational content; the "See Overview" button only provides a description of said course and will not lead you to course content.*

LOCATING A COURSE

- If you have trouble locating a course on your dashboard, please enter a course title or keyword in the search bar on the right side of your dashboard (top menu > My Dashboard). Given the countless number of courses in this training, you may also need to use the arrows at the very bottom of your dashboard to navigate through all pages and course listings.

SYLLABUS & READINGS

- To find monthly topics, overviews, recommended readings and a curriculum list, please refer to the **2024 Fellowship: Syllabus & Readings** course, which can be found on your dashboard.

SUPERVISIONS, OFFICE HOURS & SPECIAL LECTURES

- Dates, Zoom links and details for group and testing supervisions, office hours, and any special lectures (live or recorded) can be found in the system as: **2024 Fellowship: Supervisions, Office Hours & Lectures**
- Upcoming supervision/office hour dates and links are organized by month (each has a separate chapter). Once a live supervision/office hour ends, the recordings are added to each monthly chapter for later viewing. Post-production for these recordings generally takes about 5-8 business days. We appreciate your patience and aim to upload recordings as quickly as possible!

CME CERTIFICATION

- CME certification for each accredited course is available as a separate "course" in the learning system. These certification components (post-tests, evaluations, certificate forms) are separate from the educational lectures and modules. Certification instructions are available at the end (final chapter) of each accredited course. You can also find these separate CME Certification courses on your dashboard.

WEBINARS

- Dozens of exclusive webinars by faculty and guest lecturers are available as part of your monthly curriculum or as supplemental educational material. Links to monthly curriculum, like webinars and course, can be found within the Syllabus & Readings course.
- Webinars can also be found on your student dashboard – you may need to use the search bar to locate a webinar.
- If you cannot find a webinar, please check the courses titled, **Webinar Bundle 2021, 2022, or 2023, respectively**. These are where all public webinars are housed and the webinar presentation may be included in one of these Bundles (instead of as an individual course on your dashboard).

EDUCATIONAL EVENTS & RECORDINGS

- Fellows receive complimentary access to all of our online educational events (conference, seminars, symposiums). Our Fellowship Director, Heather Getz, will generally email all fellows with information on upcoming events and special fellows coupons for free access. If you have questions, cannot locate your complimentary event coupon, or need further information on an upcoming educational event, please email Heather at hgetz@psychiatryredefined.org.
- Online events are not held in the LMS, but lecture recordings from live events will be added to the event “package” as soon they become available. Event recording post-production time takes approx. 4-6 weeks (post-event) – we appreciate your patience!

NEW COURSES & EVENT PACKAGES

- If a new course or event package is released during your Fellowship study, it will be added to your curriculum automatically when available. It can then be found on your student dashboard.

ACCOUNT MANAGEMENT & BILLING

- To manage your LMS student account, please navigate to the top right menu where you will find your name and a drop-down menu. From that menu, you can edit your profile, password and billing information.
- If you would like to make a change to the credit card on file, please navigate to billing and update or add a new card. If a payment is declined and/or card is no longer processing upcoming payments, we request that you update the card via your account. If a card is declined for longer than 2 months and we cannot reach out, access to the Fellowship curriculum will be paused until successful payment is processed.
- Please note: The system does not house certificates for CME within this section of your account. These are generated and provided externally. If you have trouble locating a CME certificate, please email Heather Getz at hgetz@psychiatryredefined.org.

Topic: Intro to Functional Psychiatry

Mental illness should be seen as a reflection of multiple internal imbalances. If we understand the causes of these imbalances, we will understand the cures.

Functional medicine – or root cause medicine – is an individualized, patient-centered approach to treatment that focuses on balancing the body's biology and systems by treating the underlying causes of illness and disease. Functional psychiatry is whole-body approach to treating psychiatric conditions like depression, anxiety, or ADHD. This approach identifies the root causes of mental illness in order to treat and restore health of the body and brain.

The root causes of mental illness are unique to each patient, and may be genetic, biochemical, nutritional, hormonal, metabolic, dietary, lifestyle-related or environmental. Functional medicine targets these root causes, along with the underlying chemistry affecting brain and behavior, to promote healing and recovery. Through precision medicine testing and treatment of deficiencies, imbalances, infections, inflammation, and toxins, functional medicine can help patients achieve healing beyond what traditional treatment can provide.

Functional psychiatry (or precision psychiatry) provides an enhanced way to treat psychiatric conditions and care for the whole-person, not just their symptoms. Conventional psychiatry relies heavily upon pharmaceuticals to reduce or mask the symptoms of mental illness. It assumes nearly every illness is due to a neurotransmitter imbalance, and that medication will alleviate symptoms. However, there are far more factors that influence mental health than just neurotransmitters like dopamine and serotonin. And medication alone will not resolve the root cause or underlying triggers.

Functional psychiatry, on the other hand, treats the underlying imbalances that are causing the symptoms in the first place. By resolving these imbalances, patients have a greater chance at lasting recovery and overall wellness.

Curriculum

- Course: Intro to Functional Psychiatry (Greenblatt)

Recommended Readings

- Psychiatry Redefined: The ZEEBRA Model by James Greenblatt, MD

Topic: Suicide Prevention

Research aimed at uncovering biologic susceptibilities to mental illness has exploded over the last decade. Genetic mutations, nutrient deficiencies, immune dysregulation... these and many other biologic variables have been identified as distinct factors that can cause or contribute to psychiatric disease, i.e., biomarkers.

Current suicide prevention approaches are inadequate, but the medical and scientific communities do not lack for viable options. We know there are biomarkers capable of identifying at-risk patients and, more importantly, distinguishing those at-risk patients who are more likely than others to cross whatever invisible threshold separates ideation from attempt. We have the means to test for these biomarkers and evidence-based strategies that can simply and effectively address biologic imbalances that such testing may reveal. The time to enact positive, evidence-based change is now.

This month introduces a model of suicide prevention inclusive not only of psychosocial factors but also biological factors - biomarkers linked to an increased risk of suicide. It explores new research supporting the legitimacy and potential clinical utility of biomarkers such as deficiencies of essential lipids, vitamins, and minerals well as blood-based markers of inflammation - all of which are robustly associated with increased risk. Bridging research, concept, and application, this month seeks to redefine our suicide prevention efforts, and reshape those systems meant to provide a lifeline to those in most critical need of our attention, care, and support.

Curriculum

- Course: Biological Models for Suicide Prevention (Greenblatt)
- Webinar: Functional Medicine for Suicide Prevention - APA Caucus on Complementary & Alternative Medicine (Greenblatt)
- Webinar: The Role of Low Cholesterol in Substance Abuse, Depression & Suicide (Greenblatt)

Recommended Readings

- Brundin L, Bryleva EY, Thirtamara Rajamani K. Role of Inflammation in Suicide: From Mechanisms to Treatment. *Neuropsychopharmacology*. 2017;42(1):271-283.
- Chen S, et al. Serum cholesterol levels preceding to suicide death in Japanese workers: a nested case-control study. *Acta Neuropsychiatrica*. 2019;31:266-269.
- Dolsen. 20. Suicidal ideation and suicide attempts_associations with sleep duration, insomnia, and inflammation
- Greenblatt J. Suicide prevention redefined: opportunities for change. *Mad In America*.
- Grudet. 14. Suicidal patients are deficient in Vitamin D - associated with a pro-inflammatory status in the blood
- Memon A, et al. Association between naturally occurring lithium in drinking water and suicide rates: systematic review and meta-analysis of ecological studies. *Br J Psychiatry*. 2020;217(6):667-678.
- Whitaker. 18. Suicide in the age of Prozac

Topic: Intro to Integrative Psychiatry

Join Dr. Peter Bongiorno this month for his discussion and exploration of how mental health symptoms have multivariate underpinnings that span all disciplines of medicine: hematology, immunology, endocrinology, gastroenterology, neurology, etc. Even more, there are strong lifestyle, dietary, and environmental reasons as well as genetic predispositions that affect our physiology. Given this new holistic and functional paradigm, Dr. Bongiorno will thoroughly explore the etiology and pathology of mental illness. He will identify important but often overlooked aspects of truly caring for psychiatric patients. Dr. Bongiorno will review the essentials of an integrative psychiatric first intake.

In the spirit of “testing, not guessing”, he will identify important key laboratory tests a clinician can use to artfully understand the underlying causes. From here, the discussion will focus on key pertinent lifestyle, environmental and food treatments that can help steer mental health back into balance. Finally, you will learn how to best prioritize supplementation (vitamins, herbs, amino acids and more) based on lab tests and your thorough patient history, to maximize clinical efficacy.

Finally, Dr. Bongiorno will spend time positioning the clinician as to how best work with this integrative approach for patients not taking meds, and for those already on meds, as well as how to safely wean off medications when appropriate using natural medicines to support this transition. Dr. Bongiorno will draw on his 20 years of experience and share clinical pearls you can use in your practice the very next day. This month and the Intro course are designed to set you up for a higher level of clinical success by employing the best integrative care has to offer.

Curriculum

- Course: Introduction to Integrative Psychiatry (Bongiorno)
- Course: Adaptogens in Psychiatry (Bongiorno)
- Webinar: Introduction to Integrative Medicine and Nutrition for PTSD & Complex Trauma (Korn)
- Conference: Functional Medicine for Psychiatry – The Moral Imperative of Integrative Medicine (Cady)

Topic: Depression

Depression accounts for more disability than any other health condition and is linked to the highest global suicide rate in history. Labeling this phenomenon a “crisis” is congruent with the body of research demonstrating that rates of depressive illness are increasing worldwide. Of equal concern, rates are increasing in spite of the fact that traditional psychiatry possesses a well-established treatment model – one based on symptomatic suppression and heavily reliant upon pharmaceutical intervention.

It is clear the traditional treatment model is inadequate. Depression remission rates, even with the newest medications, remain poor, and a significant percentage of patients taking medication suffer from unresolved symptoms. *We can do better.*

Research confirms that depression etiology is highly complex. Powerful evidence supports that depression is moderated by underlying metabolic abnormalities, genetic susceptibilities, and psychosocial factors, all of which can impact neurologic health through a variety of biologic pathways. Similarly, imbalances of essential micronutrients can alter brain function, and have been linked to a variety of psychiatric pathologies... including depression. Depression thus invites an integrated approach that encompasses psychology and biology, coalescing a complete paradigm of care.

This month presents a Functional Medicine model in which the concept of depression as the result of underlying biochemical, genetic, and environmental factors is explored. Fact will be separated from fiction as the month's curriculum shines an objective spotlight on mental healthcare today – the good, the bad, and the opportunities for change.

Research revealing robust associations between metabolic disturbances, nutrient deficiencies, and psychosocial influences will be reviewed. Additional research illustrating the benefits of nutritional augmentation to optimize brain function will be explored; evidence-based interventions will be described; and a treatment approach centered upon objective biologic measurement and biochemical individuality will be presented.

Curriculum

- Course: Functional & Integrative Medicine for Depression
- Webinar: Functional Medicine for Adolescent Depression (Greenblatt)

Recommended Readings

- Greenblatt J. Psychiatry Redefined: integrative medicine for depression. Townsend Letter.
- Vellekkatt F, Menon V. Efficacy of vitamin D supplementation in major depression: A meta-analysis of randomized controlled trials. *J Postgrad Med.* 2019;65(2):74-80.
- Laird E, et al. Low vitamin B12 but not folate is associated with incident depressive symptoms in community-dwelling older adults: a 4 year longitudinal study. *Br J Nutr.* 2021;1-22.
- Wang J, Um P, Dickerman BA, Liu J. Zinc, Magnesium, Selenium and Depression: A Review of the Evidence, Potential Mechanisms and Implications. *Nutrients.* 2018;10(5):584.
- Liao Y, et al. Efficacy of omega-3 PUFAs in depression: A meta-analysis. *Transl Psychiatry.* 2019;9(1):190.

Topic: Hormones

While many psychiatrists do not consider endocrinology in the purview, there is no question that you cannot adequately treat anxiety, depression or other mental health concerns without a keen understanding of how hormones affect psychiatric balance. Throughout this month, you will gain a clear understanding of hormonal balancing therapies and approaches you can use with your next patient to enhance mental health.

This month will take you through each major hormone, and connect each to neurotransmitter balance, stress response, and relationship to other hormones. This tour will likely make you think differently and more completely about the role of hormonal individuality and their interplay. We will examine how different hormone scenarios can be effectively treated using naturopathic and functional medicine modalities.

We will begin with a brief history of hormones, then progress through progesterone, prolactin, oxytocin, testosterone, DHEA, thyroid hormone, cortisol, insulin and melatonin. We will review how to test hormones and the casues of hormonal imbalances, along with the role of liver in hormonal balance.

We will also cover oral contraceptives, bioidentical hormones, and key nuances in the female hormone, estrogen. Being that estrogen is anti-inflammatory, and cardio- and neuro-protective, it is also essential to proper immune system functioning. It plays a critical role in the health of the gut microbiome. Virtually every cell in the female body has receptors for estrogen. You'll learn the ABCs of hormone therapy for menopausal brain health. We'll explore the interplay between the endocannabinoid system, women's health and female hormones, with a special focus on Borderline Personality Disorder.

Curriculum

- Course: Hormones & Mental Health (Bongiorno)
- Course: The Impact of Menopause on the Brain (Gersh)
- Course: The Endocannabinoid System, CBD & Women (Gersh)
- Course: The Oxytocin Paradox – Miracle Cure or Extraordinary Hype? (Carson)
- Webinar: The Impact of Menopause on the Female Brain & Optimizing Therapeutic Approaches (Gersh)
- Well Woman Conference lectures
 - Estrogen: The Hormone of Life and Female Health (Gersh)
 - Bioidentical Hormones for Brain Health in the Menopausal Woman (Hathaway)
 - An Integrative Approach to Perinatal Depression & Anxiety (Pirec)
 - Adaptogens: Adrenal Resilience for Women's Mental Health (Bongiorno)
- Conference: Functional Medicine for Psychiatry lecture
 - Hormones & Mental Health: Focus on Thyroid and Testosterone (Cady)

Recommended Readings

- Gersh. 20. Menopause and hormone replacement therapy in the 21st century
- Jett. 22. Ovarian steroid hormones_ a long overlooked but critical contributor to brain aging and Alzheimer's disease - Copy
- Nuguru. 22. Hypothyroidism and Depression_a Narrative Review
- Ratner. 19. Neurosteroid Actions in Memory and Neurologic - Neuropsychiatric Disorders - Copy
- Saito. 18. Emerging Roles of Estrogen-Related Receptors in the Brain_Potential Interactions with Estrogen Signaling

Topic: Anxiety Disorders

This month provides a comprehensive introduction to a Functional Medicine model for the treatment of anxiety disorders. Following an empirically substantiated rationale for the deprioritization of symptom classification, and a step away from psychopharmacology, the viability of a Functional approach will be elucidated through reviews of studies showing anxiety to be associated with nutritional deficiencies, neurotransmitter dysfunction, inflammation, and other endogenous factors. The mechanisms through which these factors impact cognition and behavior will be explored, with an emphasis on the practical ramifications of biochemical individuality.

In addition to generalized anxiety, the month will also shine a focused spotlight on obsessive compulsive disorder (OCD) – a potentially debilitating illness for which the mainstream therapeutic arsenal is limited, often administered per a traditional “trial & error” model, and associated with high rates of treatment failure. Considerations of biologic etiology are typically absent from such models, too, despite growing evidence of discrete contributors such as genetics, inflammation, gut dysbiosis, and – notably – serotonergic dysfunction.

In line with a Functional Medicine model, this month will review research evidence corroborating biological contributors to OCD that open novel avenues for targeted treatment. This approach joins the latest in biomedical analysis with personalized medicine to address the biological, psychological, and environmental factors that contribute to the emergence or entrenchment of OCD. By implementing personalized Functional Psychiatry interventions designed to target such underlying causes, it moves patients beyond symptom suppression and into recovery with confidence... setting them along a stable path towards lasting healing.

Curriculum

- Course: Integrative Medicine for Anxiety (Greenblatt)
- Course: The Integrative Management of Stress and Anxiety (Prousky)
- Well Woman Conference lecture: GABA for Anxiety, Self-Medicating with Alcohol, and Intrusive Thoughts in Women (Scott)
- Webinar: Redefining Anxiety Treatment Models for Children & Teens (Greenblatt)

Recommended Readings

- Greenblatt J. Integrative therapies for obsessive compulsive disorder. 2019.
- Noah L, et al. Effect of magnesium and vitamin B6 supplementation on mental health and quality of life in stressed healthy adults: post-hoc analysis of a randomised controlled trial. *Stress Health*. 2021;37(5):1000-1009.
- Aylett E, et al. Exercise in the treatment of clinical anxiety in general practice - a systematic review and meta-analysis. *BMC Health Serv Res*. 2018;18(1):559.
- Ooi SL, Green R, Pak SC. N-Acetylcysteine for the Treatment of Psychiatric Disorders: A Review of Current Evidence. *Biomed Res Int*. 2018;2018:2469486.
- Kayser RR, et al. Acute effects of cannabinoids on symptoms of obsessive-compulsive disorder: A human laboratory study. *Depress Anxiety*. 2020;37(8):801-811.

Topic: Practice Management

A growing number of clinicians are turning to Functional and Integrative Medicine, frustrated by the limitations of the “one-size-fits-all” model of traditional psychiatry. Utilizing new, research-based approaches can improve patient outcomes and provide a larger therapeutic arsenal for providers. However, while access to Functional Medicine training has expanded, there remain significant obstacles in the translation to real-world clinical practice, including biases from colleagues, patient doubts, coverage gaps from insurance companies, implementation challenges, and more.

This month, join faculty as they tackle these challenges head-on during our group supervisions and special lectures. Each will explore unique institutional, cultural, and socioeconomic factors contributing to the difficulties providers encounter in pursuing Functional and Integrative Medicine. We will engage in a comprehensive discussion about strategies for navigating logistical, professional, and interpersonal obstacles in establishing a Functional Medicine practice and conclude with an examination of the various benefits associated with implementing them.

Curriculum

- Special Lecture: Practitioner Business Essential (Jenn Malecha)
- Special Lecture: Health Intelligence for Functional Health Practitioners (Jeremy Malecha)
- Webinar: How to Safely Practice Telemedicine: Legal Considerations for 2021 and Beyond (Rattigan)
- Webinar: Clinical & Ethical Challenges in Integrative Psychiatry (Greenblatt)

Topic: Addiction

This month's curriculum elucidates a comprehensive Functional Medicine approach to the treatment of substance use disorders (SUDs), targeting reward-pathway dysregulation and the many nutritional deficiencies associated with addiction that can alter brain function and further entrench or amplify addiction.

Integrating mainstream approaches such as MAT and psychotherapy with evidence-based Functional Medicine approaches such as nutrient therapy, acupuncture, and mindfulness, this month provides clinicians with a roadmap for navigating disorders of addiction and bringing patients into balance.

Curriculum

- Course: Integrative Medicine for Addiction (Podesta & Greenblatt)
- Webinar: Functional Medicine for Alcoholism (Greenblatt)
- Webinar: Understanding the Role of NAD+ in Addiction (Podesta)

Recommended Readings

- Blum K et al. Neuronutrient amino-acid therapy protects against reward deficiency syndrome: dopaminergic key to homeostasis and neuroplasticity. *Curr Pharm Des.* 2016;22(38):5837- 5854.
- Ham BJ, Choi IG. Psychiatric implications of nutritional deficiencies in alcoholism. *Psychiatry Investig.* 2005;2(2):44-59.
- Meckel KR, Kiraly DD. A potential role for the gut microbiome in substance use disorders. *Psychopharmacology (Berl).* 2019 May;236(5):1513-1530.
- Narasimha VL et al. Pellagra and alcohol dependence syndrome: findings from a tertiary care addiction treatment centre in India. *Alcohol Alcohol.* 2019 Mar 1;54(2):148-151.
- Chang CT, Hsieh PJ, Lee HC, Lo CH, Tam KW, Loh EW. Effectiveness of Nacetylcysteine in Treating Clinical Symptoms of Substance Abuse and Dependence: A Meta-analysis of Randomized Controlled Trials. *Clin Psychopharmacol Neurosci.* 2021;19(2):282-293.

Topic: Metabolic Psychiatry & Ketogenic Diets

Metabolic psychiatry is a new and growing field exploring the overlap of mental health issues with metabolic dysfunction, including insulin resistance, excess inflammation, metabolic syndrome and obesity. In treatment, metabolic psychiatry focuses on the removal of processed foods and refined carbohydrates, often implementing a ketogenic diet for the metabolic benefits. If dietary approaches are too challenging for patients, they may also include medications to help achieve therapeutic metabolic effects.

Why do ketogenic diets improve mental health? Because the mind and body are connected! By consuming a ketogenic diet, the brain switches from utilizing glucose for fuel to ketones from fat. Ketones provide a number of different potential benefits for mental health. Ketones affect neurotransmitter signaling and inhibit excess brain cell excitability. They also support energy production while reducing the generation of reactive oxygen species or free radicals. Other evidence points to direct anti-inflammatory and neuroprotective effects from ketones.

We will review the scientific rationale for the use of ketogenic diets in psychiatric practice and potential benefits for those with cognitive decline, mood disorders, schizophrenia, neuroregeneration, and beyond. We will address common safety concerns, describe how these diets may be applied as either an adjunctive or a standalone therapy, and summarize where the clinical science in the field currently stands. We'll cover how this root cause intervention can help some patients avoid, reduce, or eliminate the need for psychiatric medications.

Curriculum

- Course: Ketogenic Diets for Psychiatric Disorders (Ede)
- Webinar: Treating Mental Health Conditions with the Ketogenic Diet (Ivantu)
- Conference: Ketogenic Diets in Psychiatry (6 lectures)
- Functional Medicine for Mental Health Conference – all Day 1 Lectures: The Impact of Ketogenic & Low Carb Diets on Mental Health
- The Benefits of Glucose and Ketone Testing for the Patient, Practitioner, and Society (Dorian Greenow)
- Functional Medicine for Binge Eating & Food Addiction: Is there a place for the Ketogenic Diet? (Greenblatt)

Recommended Readings

- Sethi S, Ford JM. The Role of Ketogenic Metabolic Therapy on the Brain in Serious Mental Illness: A Review. *J Psychiatr Brain Sci.* 2022;7(5):e220009. doi:10.20900/jpbs.20220009
- Dietch DM, Kerr-Gaffney J, Hockey M, et al. Efficacy of low carbohydrate and ketogenic diets in treating mood and anxiety disorders: systematic review and implications for clinical practice. *BJPsych Open.* 2023;9(3):e70. Published 2023 Apr 17. doi:10.1192/bjo.2023.36
- Omori NE, Malys MK, Woo G, Mansor L. Exploring the role of ketone bodies in the diagnosis and treatment of psychiatric disorders. *Front Psychiatry.* 2023;14:1142682. Published 2023 Apr 17. doi:10.3389/fpsy.2023.1142682
- Chmiel I. Ketogenic diet in therapy of bipolar affective disorder - case report and literature review. *Dieta ketogenicna w terapii zaburzenia afektywnego dwubiegunowego - opis przypadku i przegląd literatury.* *Psychiatr Pol.* 2022;56(6):1345-1363.

Topic: Infections in Psychiatry - Lyme, PANS/PANDAS, Mold & More

Environmental factors have long been recognized as robust determinants of mental health. Traditionally, analyses of such factors have largely focused on sociocultural and psychosocial influences. More recently, however, environmental factors that influence discrete neurobiologic processes have gained the attentions of the scientific community.

Studies investigating immune- and inflammation-related dysfunction have brought infection-mediated psychopathology into a novel limelight. Epidemiologic analyses have yielded stunning insights as to the prevalence of infectious cascades in mental illness, as well as robust evidence linking specific pathogens to diagnoses. Terms such as *B. burgdorferi*, *T. gondii*, *Streptococcus*, *C. difficile*, *C. albicans*, and more now appear throughout the literature; as this list grows, so does the impetus for clinicians to develop familiarity with infection-mediated psychiatric dysregulation.

This month's curriculum will explore involvements of infection-related autoimmune, inflammatory, and neurologic cascades in mental illness. It will introduce empirical evidence linking specific pathogens with discrete diagnoses, focusing heavily on the neurologic sequelae of *Clostridia* and *Candida* overgrowth, presentations of PANS/PANDAS, mold, and Lyme neuroborreliosis. Monthly content will focus heavily on methodology and clinical application, endowing Fellows with a working understanding of the laboratory evaluations, and treatment protocols indicated for patients with infection-mediated neuropsychiatric dysfunction.

Curriculum

- Course: Microbes & Mental Illness: What Every Mental Health Professional Should Know About Lyme Disease (Kinderlehrer)
- Course: PANS - Infection, Autoimmunity & Mental Illness (Kinderlehrer)
- Webinar: A Functional Medicine Review of Kryptopyrrole Testing (Greenblatt)
- Webinar: An Integrative Approach to PANS/PANDAS (Song)
- Webinar: The Neuropsychiatric Effects of Mold (Ackerley)
- Functional Medicine for Mental Health Conference – all Day 2 lectures: Mold, Lyme, PANDAS, COVID & Beyond
- Child & Adolescent Psychiatry Redefined Symposium lecture: PANDAS/PANS: Transforming a Devastating Chronic Illness into a Treatable Disorder (O'Hara)
- Special Lectures: Mold & Mycotoxin Effects (Filidei) and Lyme Disease & Co-Infections (Filidei)

Recommended Readings

- Swedo SE, et al. Overview of Treatment of Pediatric Acute-Onset Neuropsychiatric Syndrome. *J Child Adolesc Psychopharmacol*. 2017;27(7):562-565.
- Hommer RE, Swedo SE. Anorexia and Autoimmunity: Challenging the Etiologic Constructs of Disordered Eating. *Pediatrics*. 2017;140(6):e20173060.
- Sutterland AL, et al. Beyond the association. *Toxoplasma gondii* in schizophrenia, bipolar disorder, and addiction: systematic review and meta-analysis. *Acta Psychiatr Scand*. 2015;132(3):161-179.
- Maxwell SP, et al. Neurological Pain, Psychological Symptoms, and Diagnostic Struggles among Patients with Tick-Borne Diseases. *Healthcare (Basel)*. 2022;10(7):1178

Topic: ADHD

Scientific evidence confirms ADHD to be a neurologic, brain-based disorder represented by numerous biological abnormalities. What is observable as atypical behavior is merely the tip of an iceberg that extends down to an individual's unique biochemical makeup. Certain nutritional imbalances, which can profoundly impact cognition and behavior, are significantly correlated with this common disorder. Diet, micronutrient status, and individual biochemistry, however, are frequently overlooked or excluded from "typical" ADHD assessment and treatment protocols.

Fortunately, addressing nutritional imbalances with a Functional Medicine approach has proven effective in treating ADHD.

This month introduces the Plus/Minus Plan for ADHD and provides a comprehensive overview of the biochemistry "beneath" the disorder. Dietary interventions and augmentation strategies for the mitigation of specific nutrient deficiencies will be reviewed, as well as recommendations for going "beyond biochemistry" to enhance treatment outcomes.

Curriculum

- Course: Integrative Medicine for ADHD (Greenblatt)
- Course: Broad Spectrum Micronutrients (Pentz)
- Conference: New England Conference on ADHD (all lectures)
- Symposium: Child & Adolescent Psychiatry Redefined lectures:
 - The Emerging Role of B Vitamin & Micronutrient Coenzymes in Pediatric Depression & ADD (Farah)
 - Finally Focused: A Functional Medicine Approach to ADHD (Greenblatt)
 - Broad Spectrum Micronutrients: Evidence & Applications for ADHD (Villagomez)
- Webinar: Disruptive Behavior Disorder in Children and Adolescents (Greenblatt)

Recommended Readings

- Greenblatt J. Finally Focused - Mineral Imbalances and ADHD. Parts I and II. 2017.
- Greenblatt et al. OPCs for the treatment of Attention-Deficit Hyperactivity Disorder. The Neuropsychotherapist. <https://www.thescienceofpsychotherapy.com/theneuropsychotherapist-issue-5-volume-5/>. Published 2017.
- Arbuckle TE, Davis K, Boylan K, Fisher M, Fu J. Bisphenol A, phthalates and lead and learning and behavioral problems in Canadian children 6-11 years of age: CHMS 2007- 2009. *Neurotoxicology*. 2016;54:89-98.
- El Baza et al. Magnesium supplementation in children with attention deficit hyperactivity disorder. *Egypt J Med Hum Gen*. 2016;17(1):63-70.
- Harding KL, et al. Outcome-Based Comparison of Ritalin® versus Food-Supplement Treated Children with ADHD. *Altern Med Rev*. 2003 Aug;8(3):319-30.

Topic: Eating Disorders

With a combined mortality rate exceeding that of any other mental illness, eating disorders (EDs) represent a serious challenge to today's clinicians. Whether pharmaceutical or psychologic, interventions comprising mainstream psychiatry's therapeutic arsenal for the treatment of anorexia nervosa, bulimia nervosa, and binge eating disorder are, together, inadequate, as evidenced by consistently high rates of relapse across diagnoses. We can do better.

Instead of focusing exclusively on psychologic factors, we can examine the body as well as the mind – for biologic testing reveals EDs to be characterized by a host of physiologic abnormalities that affect brain function and contribute to the emergence of a disease state. While EDs initially present as preoccupation with food and weight, they ultimately become brain-based disorders marked by profound malnutrition.

Curriculum this month will review current ED models and presents an evidence-based Functional Medicine approach to treatment. New research illustrating the benefits of nutritional supplementation – with a special emphasis on zinc and essential fatty acids – to enhance patient outcomes and support relapse prevention will be explored, proving clinicians with a well-rounded therapeutic arsenal with which to face the challenges of eating disorder treatment with confidence.

Curriculum

- Course: Integrative Medicine for Binge-Eating Disorder (Greenblatt)
- Course: Integrative Medicine for Anorexia Nervosa (Greenblatt)
- Symposium: New Hope for Binge-Eating Disorder and Food Addiction (8 presentations)
- Webinar: A Functional Medicine Approach to BED & Food Addiction - Is there a Place for the Ketogenic Diet? (Greenblatt)
- Seminar: Nutritional Psychiatry for Anorexia Nervosa
- Well Woman Conference lecture: Eating Disorders in Women – The Silent Epidemic (Greenblatt)

Recommended Readings

- Greenblatt J. Answers to anorexia: nourishing the brain and nurturing the mind. Excerpted from: Greenblatt J, et al. *Answers to anorexia (2nd ed.)*. Victoria, BC: FriesenPress; 2021.
- Shih PB. Integrating multi-omics biomarkers and postprandial metabolism to develop personalized treatment for anorexia nervosa. *Prostaglandins Other Lipid Mediat*. 2017;132:69.
- Parra-Fernández ML, et al. Pathological Preoccupation with Healthy Eating (Orthorexia Nervosa) in a Spanish Sample with Vegetarian, Vegan, and Non-Vegetarian Dietary Patterns. *Nutrients*. 2020;12(12):3907.
- Reed KK, Abbaspour A, Bulik CM, Carroll IM. The intestinal microbiota and anorexia nervosa: cause or consequence of nutrient deprivation. *Curr Opin Endocr Metab Res*. 2021;19:46-51.
- Valbrun LP. The Opioid System and Food Intake: Use of Opiate Antagonists in Treatment of Binge Eating Disorder and Abnormal Eating Behavior. *J Clin Med Res*. 2020;12(2):41-63.
- Greenblatt J. Psychiatry redefined – integrative medicine for binge eating. Excerpted from: Greenblatt J. *Integrative Medicine for Binge Eating*. Victoria, BC: FriesenPress; 2019.

Topic: Bipolar Disorder

Known to the ancient Greeks and Romans as a distinct psychiatric ailment characterized by cyclic extremes of mood and behavior, bipolar disorder remains today one of the most challenging mental illnesses for clinicians to address – challenging to identify, challenging to treat.

Mainstream interventions adhering solely to psychopharmaceutical approaches are incomplete, and do not account for biologic factors that so often influence the trajectory of this complex disorder. Through a functional and integrative approach, it becomes possible to address etiologic factors that contribute to bipolar disorder (BD), and formulate targeted, personalized interventions for patient health.

Discover a novel functional medicine model for the treatment of BD, of which medication is just one of several therapeutic pillars. Approved pharmaceuticals for mania, depression, mixed-episodes, and maintenance will be reviewed in detail, and we'll explore biochemical abnormalities associated with BD that open the doors to functional interventions. Genetics, nutritional deficiencies that impact neurotransmission and signaling cascades, mitochondrial dysfunction, and other factors will be examined, as will evidence-based interventions that address intrinsic imbalances, support balanced neurochemical signaling, and optimize affective regulation. Clinical pearls and multiple therapeutic tiers, including medication, nutritional interventions, and natural therapies will be addressed. Concept-to-application bridges are offered throughout the month, supporting a collaborative, patient-provider paradigm that make balance possible.

Curriculum

- Course: Functional & Integrative Medicine for Bipolar Disorder (Greenblatt)
- Webinar: A Functional Medicine Approach to Bipolar Disorder - A New Way Forward (Greenblatt)

Recommended Readings

- Chakrabarti.16. Treatment-adherence in bipolar disorder_A patient-centred approach
- Pipich.19. Bipolar Disorder and Suicide_What 12,000 Lives Can Teach Us
- Post.18. Multigenerational transmission of liability to psychiatric illness in offspring of parents with bipolar disorder
- Rowland.18. Epidemiology and risk factors for bipolar disorder
- Carta.15. The Burden of Depressive and Bipolar Disorders in Celiac Disease
- Rosenblat.17. Bipolar Disorder and Immune Dysfunction_Epidemiological Findings, Proposed Pathophysiology and Clinical Implications
- Lojko.19. Impaired Glucose Metabolism in Bipolar Patients_The Role of Psychiatrists in Its Detection and Management

Topic: Schizophrenia and Psychosis

Schizophrenia is a multifactorial psychiatric disorder producing a spectrum of symptoms that range from odd-but-harmless behavioral abnormalities to full clinical psychosis. Such variable symptomatic presentations, in tandem with research supporting a biologic model of schizophrenia pathogenesis, invite Functional Medicine approaches to treatment that emphasize biochemical individuality and the mitigation of etiologic risk factors.

This month incorporates the classical theories of orthomolecular medicine into modern nutritional psychiatry, presenting decades of research evidence supporting the efficacy of Functional approaches to the treatment of schizophrenia. Micronutrient deficiencies, toxic neurochemical aggregations, systemic inflammation, and other etiologic factors will be elucidated in regard to the mechanisms through which they precipitate neurologic dysfunction, and addressed through comprehensive Functional protocols that can be applied in clinical practice.

Curriculum

- Course: Integrative Medicine for Schizophrenia and Psychosis (Greenblatt)
- Webinar: Schizophrenia Redefined - Exploring Gluten Intolerance, Celiac and Keto Diets (Greenblatt)
- Webinar: Folate Receptor Alpha Autoantibodies - Novel Biomarkers in Autism, Miscarriage & Schizophrenia (Dawson)

Recommended Readings

- Harrow M, et al. Does treatment of schizophrenia with antipsychotic medications eliminate or reduce psychosis? A 20-year multi-follow-up study. *Psychol Med*. 2014;44(14):3007-3016.
- Amminger GP, et al. Long-chain omega-3 fatty acids for indicated prevention of psychotic disorders: a randomized, placebo-controlled trial. *Arch Gen Psychiatry*. 2010;67(2):146-154.
- Greenblatt J. A functional perspective on gluten, psychosis, and schizophrenia. [Psychiatryredefined.org](https://www.psychiatryredefined.org/a-functional-perspective-on-gluten-psychosis-and-schizophrenia/). <https://www.psychiatryredefined.org/a-functional-perspective-on-gluten-psychosis-and-schizophrenia/>. Published October 14, 2019.
- Włodarczyk A, et al. Ketogenic diet for schizophrenia: Nutritional approach to antipsychotic treatment. *Med Hypotheses*. 2018;118:74-77.
- Tsamakidis K, et al. Gut Microbiome: A Brief Review on Its Role in Schizophrenia and First Episode of Psychosis. *Microorganisms*. 2022;10(6):1121.