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Riordan Clinic is a world-renowned, academic medical center that has led the world in integrative oncology and complex chronic illness care since 1975. The Riordan Clinic was established as a 501 (c)(3) non-profit organization with missions in research, provider education, and patient education. The Health Hunter Newsletter has been published since 1986 as an educational resource to providers and patients.



Unraveling the Mystery of Pyroles: A Teens Journey to Health and Vitality



Author
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At Riordan Clinic, we are dedicated to understanding and addressing the root causes of complex health conditions. One case that truly exemplifies the depth of our approach involves a 16-year-old male who came to us grappling with a range of debilitating symptoms. His story is a powerful illustration of how specialized diagnostics, like pyrrole testing, can uncover hidden biochemical imbalances and lead to improvements in health.

Our young patient arrived with a host of troubling symptoms: chronic anxiety, obsessive-compulsive disorder (OCD), relentless fatigue, intrusive thoughts, and a history of chronic Lyme disease treated with multiple rounds of antibiotics and anti-fungals. He also struggled with severe acne, chronic constipation, sleep disturbances, and social isolation. Despite numerous diagnoses and treatments over the years, his condition showed little improvement, leaving him and his family feeling increasingly frustrated and hopeless.

Given the complexity of his symptoms, we recommended a comprehensive evaluation using the Real Health Discovery Profile. This diagnostic tool, utilized at Riordan Clinic for nearly 50 years, encompasses over 90 nutrient and biochemical tests. It is designed to identify underlying imbalances that can contribute to chronic symptoms and complex health issues.

The results were striking. We observed a significant elevation in urinary pyrroles, a finding that pointed towards a condition known as pyrroluria. Additionally, the tests revealed deficiencies in essential amino acids and a low-normal level of serum B3 (niacin). These results suggested that pyrroluria might be central to the patient's ongoing health challenges.

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Pyrroluria is a biochemical condition characterized by elevated levels of pyrroles in the urine. Pyrroles are byproducts of hemoglobin synthesis and are usually excreted in minimal amounts. However, in individuals with pyrroluria, these levels become excessively high, leading to various health issues. This condition is often under recognized and can significantly impact mental and physical well-being.

Pyrroles bind irreversibly with Vitamin B6, forming a compound that is then excreted in the urine along with zinc. This process leads to severe deficiencies in both nutrients, which are essential for numerous biochemical functions in the body. The deficiency in Vitamin B6 and zinc can manifest in several ways:

Vitamin B6 Deficiency: Vitamin B6 is involved in over 100 enzyme reactions in the body. It plays a critical role in:

- **Blood Sugar Regulation:** Vitamin B6 helps convert stored blood sugar into glucose, providing fuel for the brain and other tissues.
- **Neurotransmitter Synthesis:** It is essential for the bio-synthesis of neurotransmitters like serotonin, dopamine, and GABA, which influence mood and cognitive function.
- **Amino Acid Metabolism:** Vitamin B6 aids in the metabolism of amino acids, which are the building blocks of proteins and neurotransmitters.
- **Immune Function:** It supports the immune system by aiding in the production of immune cells and antibodies.

Deficiency in Vitamin B6 can lead to mood disturbances, cognitive impairment, and weakened immune function, which could contribute to the patient's anxiety, OCD, and fatigue.

- **Zinc Deficiency:** Zinc is a vital trace mineral that functions in over 100 enzyme systems, particularly in the brain. It is crucial for:
- **DNA and RNA Synthesis:** Zinc is necessary for the synthesis of genetic material and cell division.
- **Cellular Growth and Repair:** It protects cellular membranes and supports growth and repair processes.
- **Immune Response:** Zinc is essential for the development and function of immune cells, making it critical for combating infections and inflammation.

Zinc deficiency can result in impaired cognitive function, mood disorders, and increased susceptibility to infections, all of which could exacerbate the patient's symptoms.

Pyrroluria is closely linked with various psychiatric disorders. Elevated pyrroles have been associated with conditions such as:

- **Schizophrenia:** Historically, psychiatrists have used pyrrole testing to aid in diagnosing schizophrenia. Elevated pyrroles can be a marker for this severe mental health condition.
- **ADHD:** Attention deficit hyperactivity disorder (ADHD) is another condition often associated with pyrroluria. The biochemical imbalances caused by elevated pyrroles can exacerbate symptoms of inattention and hyperactivity.
- **Depression and Anxiety:** The impact of pyrroles on neurotransmitter function and mood regulation can contribute to feelings of depression and anxiety.

Our patient's presentation—marked by anxiety, OCD, and social isolation—aligns with the known effects of pyrroluria. The deficiencies in Vitamin B6 and zinc may have played a significant role in his mental health challenges, as these nutrients are crucial for maintaining optimal brain function and emotional well-being.

Treatment and Management

Upon identifying pyrroluria, we developed a tailored treatment plan for our patient. This plan included:

- **P5P (Pyridoxine-5-Phosphate):** An activated form of Vitamin B6 was introduced to address the deficiency caused by pyrrole binding. This supplement supports neurotransmitter synthesis, mood regulation, and overall cognitive function.
- **Non-Flushing Niacin:** Niacin, also known as Vitamin B3, was added to help support metabolic processes without causing flushing, a common side effect of some forms of niacin.
- **Perfect Aminos:** This supplement provides essential amino acids in a research-determined ratio that supports enzyme function and overall health, addressing the patient's amino acid deficiencies.

As we implement this treatment plan, we anticipate that the patient will experience notable improvements in his health. We expect that addressing his elevated pyrrole levels through targeted supplementation, including P5P (activated Vitamin B6), non-flushing niacin, and Perfect Aminos, will help alleviate some of his challenging symptoms.

Specifically, we anticipate that his anxiety and OCD symptoms may become more manageable as the biochemical imbalances are corrected. We also hope that these interventions will contribute to better sleep quality and increased social engagement. While these are anticipated outcomes based on similar cases, we will continue to monitor his progress closely and adjust the treatment plan as needed to optimize his health and well-being.



Pyrrole testing is a valuable diagnostic tool that can reveal underlying health issues not immediately apparent through conventional tests. Elevated urine pyrroles may indicate various factors affecting mental and physical well-being, such as oxidative stress, emotional stress, nutrient depletion, and gut permeability. Early detection and treatment of pyrroluria can lead to meaningful improvements in quality of life.

At Riordan Clinic, the Bio-center Lab plays a pivotal role in this process. With over 35 years of experience in pyrrole testing, our lab is a leader in the field, offering essential diagnostic services that guide our treatment strategies.

Our case study demonstrates the profound impact that specialized diagnostics, like pyrrole testing, can have on understanding and addressing complex health conditions. If you or a loved one are struggling with unexplained symptoms or have not found effective treatment options, consider exploring the benefits of pyrrole testing and integrative medicine.

To learn more about pyrroles and how our clinic can help you, please visit our website or contact our office to schedule an appointment. Your journey to better health and vitality starts with a comprehensive understanding of your biochemical profile.

For further reading and resources on pyrroles and their impact on health, explore the following articles:

- *Orthomolecular Correction of Metabolic Imbalances Found in Attention Deficit Hyperactivity Disorder*
- *Elevated Levels of Toxic Marker in Urine Among Children with ADHD*
- *Pyrroles and Their Impact on Mental Health*

At Riordan Clinic, we are committed to pioneering solutions and offering hope to those navigating the complexities of chronic health conditions. Your path to health starts here. www.riordanclinic.org

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THE INFLAMMATION-IMMUNE ASSOCIATION:

Inhibiting Inflammation And Resuscitating the Immune System.



Author
Dr. Kirsten West, ND, LAc, FABNO
Integrative Oncologist

As a naturopathic doctor, one who works almost exclusively with cancer patients, there is a common theme: Inflammation and immune dysregulation.

In fact, inflammation, cancer, and immune dysregulation go hand in hand. This is why a large part of my case analysis, with all of my patients, is to assess the state of physiological inflammation. This is approached via patient history, lifestyle, and specific laboratory markers. When taken together, this information provides a picture into the nature of terrain and most specifically, the level of inflammation and how the immune system is working.

This perspective helps to guide our practice, case assessment, and best therapies in the management of inflammation. It is the way to move forward towards optimal health and most importantly, it is one of the ways of optimizing the terrain.

Inflammation is needed in the healing response. It is used to heal. We see this with a wound- the redness, swelling and pain harken its presence. However, inflammation (most notably chronic inflammation) can work against us and increase risk of disease. It does so by production of cytokines some which are responsible for immune suppression, continued inflammation and cancer growth.

If a wound never heals, that inflammation would create a continued aberrant immune response, and increased blood flow. The increased blood supply provides unchecked oxygen and nutrient delivery creating a fertile ground for unchecked cellular proliferation. . This is often why cancer could be considered a “wound that does not heal.”

“About 25% of cancers are preceded by this inflammatory response.”

Gastritis may precede gastric cancer, bronchitis may precede lung cancer, colitis may precede colon cancer and the list goes on. This is why we must address inflammation as a cornerstone of all health assessment and treatment.

In addition, the systemic immune system is highly taxed by a chronic inflammatory response, even if that response is limited to a certain organ. Once the process of acute inflammation begins, specific cytokines (cellular

messengers) are released into the systemic circulation. Several of these cytokines may actually blunt a proper immune response while others further stimulate an inflammatory response in an effort to heal.

It is a tightly regulated process. However, once that inflammation becomes chronic, what we once wanted to suppress becomes a risk.

The most important immune properties, those which we need to recognize cancer/unchecked cellular proliferation, are turned off and those which promote continued inflammation, are turned on. It becomes a negative feedback loop.

The case of inflammation speaks to the need to address the whole person, the whole system, when working to prevent disease and promote health. Labs must be checked and a proper history taken to determine presence of chronic imbalance.

Checking inflammatory markers are a mainstay in our practice at Riordan and are part of almost every lab panel. The good news is that once we identify inflammation- we have tools to mitigate it. These tools include but are not limited to:

- **supplements**
- **dietary intake**
- **intravenous therapies**
- **overall lifestyle mitigation**

The approach must be tailored because what works for one person, may not work for another.

One example of a staple anti-inflammatory is curcumin. For those who have been and are working with me, you know that this is one of my mainstays. It is the constituent found in Turmeric (a spice commonly found in Indian food). And in fact, curcumin is one of the best anti-inflammatory tools there is. One of its primary actions is the suppression of the cytokine, NF-κB. The simple addition of Turmeric to foods is a metabolic approach to cancer- one of MANY.

In summary, our bodies have gifted us with the healing capacity. We want to cultivate its balance and in so doing create physiologic harmony. This is who we mitigate chronic inflammation, immune dysregulation, prevent disease and wound that does not heal.



Living with ADHD:

My Adolescent Experience with Frequent Infections

By: Staci Moore, Guest Columnist

Growing up with ADHD was a rollercoaster ride of emotions, energy, and unexpected challenges. One of the lesser-known struggles was the frequent bouts of infectious diseases that seemed to come hand-in-hand with my condition. As I look back from the age of 56, I realize just how much those early health battles shaped my life.

From the very beginning, my grandmother, who raised me, noticed I had an abundance of energy. I was constantly moving and exploring, and she encouraged me to go outside to play and stay involved in many daily activities in an attempt to help me sleep. While I was not chronically sick, I did go through many common childhood illnesses, including colds, ear infections, chickenpox, mumps, and chronic constipation. It seemed like every other month I was down with something. While my friends recovered quickly, I often found myself sicker for longer periods. My grandmother did everything she could, but back then, there was no diagnosis for what I was experiencing.

Research now shows that adolescents with ADHD are more prone to infectious diseases. This heightened susceptibility can be attributed to several factors inherent to ADHD. Firstly, ADHD often comes with comorbidities such as anxiety and sleep disorders, both of which can weaken the immune system [1][2]. Secondly, the impulsivity associated with ADHD means that teens might not always follow hygiene practices as strictly as they should, increasing their exposure to germs [2].

I was always the one who couldn't sit still, constantly wanting to volunteer for everything, including running mail to the office and helping clean up the classroom. My teachers understood that my energy benefited them and made me a class helper often or allowed me special permissions when I finished my work so I wouldn't disturb others. My hyperactivity and verbal outbursts were exhausting, not just for my teachers and classmates, but for my immune system too. Stress and a lack of adequate sleep, both common in adolescents with ADHD, can significantly impair the body's ability to fight off infections. I remember many nights lying awake, unable to shut off my racing thoughts, which left me tired and more vulnerable to getting sick the next day.

I chose not to participate in school activities because of my lack of sleep and bowel issues. The anxiety of not participating and always being asked why I didn't want to stay at friends' houses made me feel like something was wrong with me. While I didn't frequently miss school, these health challenges caused me to miss out on vital social interactions and learning opportunities. It was a



vicious cycle; the more anxious I became about these issues, the more stressed I felt, which only exacerbated my problems further.

Moreover, the medications prescribed for constipation and other gut issues suppressed my appetite, leading to nutritional deficiencies. A balanced diet is crucial for a robust immune system, but I often struggled with maintaining one. The lack of essential nutrients made it harder for my body to fend off infections or manage mood swings between anxious and exhausted.

In my teenage years, the struggle continued. At 12, I now had allergies. And as a young adolescent, I battled chronic sinus infections and strep throat multiple times a year. Each episode felt like a setback, and I envied my peers who seemed to breeze through adolescence without such frequent health issues. It was frustrating and isolating, but it also made me resilient. I learned to bounce back quickly, developing a grit that would serve me well later in life.

As an adult reflecting on my adolescence, I can see how these experiences were interconnected with my ADHD. Today, there's a better understanding of the link between ADHD and susceptibility to infectious diseases, and I hope this knowledge helps current and future generations manage their health more effectively.

Living with ADHD comes with its unique set of challenges, but understanding the underlying causes and connections, like the one between ADHD and frequent infections, can lead to better management strategies. For parents of teens with ADHD, being aware of these risks can help in taking proactive steps to support their child's immune health. Ensuring good hygiene practices, adequate sleep, a balanced diet, and stress management can all play a role in reducing the frequency and severity of infections.

References

1. Keshavarzi, Z., et al. (2014). In a national sample of Iranian children and adolescents, emotional and behavioral problems correlate with sleep problems and anxious/depressive disorder, while controlling for ADHD. *Journal of Attention Disorders*. doi:10.1177/1087054713483006.
2. Cortese, S., et al. (2006). Sleep and alertness in children with attention-deficit/hyperactivity disorder: a systematic review of the literature. *Sleep*, 29(4), 504-511.

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OR



OR



OR



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2 capsules (1,000mg each) of Vitamin C-1000, 2x/day

2 scoops (2,000 mg per scoop) of Sufficient C, 2x/day

1 scoop (4,000 mg) of Vitality C, 2x/day

VITAMIN D

VITAMIN A



OR



OR



2 drops (1,000 IU per drop) of Vitamin D3/K2 Liquid, 2x/day

1 capsule (10,000 IU) 1x/every other day

1 capsule (10,000 IU) of Vitamin A, 1x/day

10 drops (1,000 IU per drop) of Micellized Vitamin A daily

SELENIUM

ZINC

N-ACETYL-CYSTEINE

QUERCETIN



1 capsule (200 mcg) of Selenium, 1x/day



1 capsule (30 mg) of Zinc Picolinate, 2x/day



2 capsules (600mg) of Oral NAC, 2x/day



2 capsule (500mg) of Quercetin 1x/day with Zinc

Peanut Butter Banana Oatmeal Bars



Ingredients

3 over ripe bananas	¼ teaspoon salt
⅓ cup nut milk	2 teaspoon vanilla extract
½ cup natural peanut butter	1 teaspoon cinnamon
2.5 cups gluten free oats	½ dark chocolate chips or chunks
1 teaspoon baking soda	Flakey sea salt (optional for sprinkling)

Instructions

- » Preheat the oven to 350 F and grease a 6x9 inch rectangular pan.
- » Directly in the pan, mash your bananas using a potato masher or fork until a smooth paste forms. Add in peanut butter, milk and vanilla extract
- » Once smooth, pour in oats, salt, baking soda, cinnamon and chocolate (if using) , bake for about 17-24 minutes or until the top begins to brown a toothpick inserted into the center of the baking tray comes out clean. Sprinkle with flakey sea salt and enjoy.

Nutrition

Calories: 198kcal | Carbohydrates: 26g | Protein: 5g | Fat: 9g | Saturated Fat: 3g | Polyunsaturated Fat: 2g | Mono-unsaturated Fat: 3g | Cholesterol: 1mg | Sodium: 145mg | Potassium: 260mg | Fiber: 3g | Sugar: 10g | Vitamin A: 30IU | Vitamin C: 3mg | Calcium: 31mg | Iron: 1mg

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The Power of Measurement:

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The Riordan Clinic's approach is rooted in the belief that every individual is biochemically unique, and tailored nutrient measurement is key to effective health management. Attendees will gain a deeper understanding of how nutrient imbalances can affect overall health and how data-driven strategies can lead to better health outcomes.

DATE: September 19, 2024

TIME: 11:30 AM

LOCATION: Virtual or In Person, 3100 N. Hillside, Wichita



<https://riordanclinic.org/events-archive/the-power-of-measurement/>

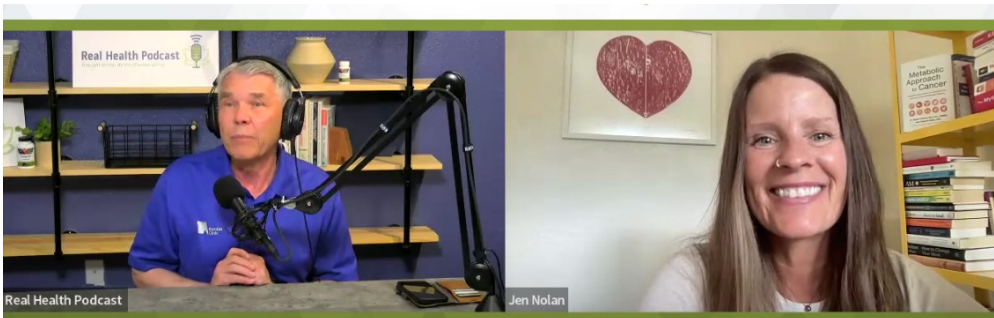
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Conquering Cancer: Nutrition Secrets for Survivors with Jen Nolan

In this episode of the Real Health Podcast, Chief Medical Officer Dr. Ron Hunninghake, MD, welcomes back Jenn Nolan, the owner of Remission Nutrition as they discuss the critical topic of cancer survivorship. Jenn shares insights on the importance of nutrition for those in remission, practical advice for rebuilding health post-therapy, and how to prevent recurrence.

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