A microscopic view of several red blood cells, appearing as biconcave discs, set against a dark red background. The cells are illuminated from the side, creating a sense of depth and highlighting their characteristic shape. The overall image has a clinical and scientific feel.

Helping to Heal the Brain Through the Use of Properly Interpreted Laboratory Tests

Mark Schauss, DBA – Health Director LLC

My Background



- My work on laboratory interpretation began in 1985.
- I have developed a methodology of analyzing test result data using a unique mathematical algorithm which now is used in the Bio-Clarity™ Interpretive Report.
- My past work includes helping researchers at universities and pharmaceutical companies run clinical trials through the use of sophisticated computer programs.
- I have two patents on the use of multi-variant analysis on disease patterning, drug interactions, nutritional protocols and environmental influences.

My Background



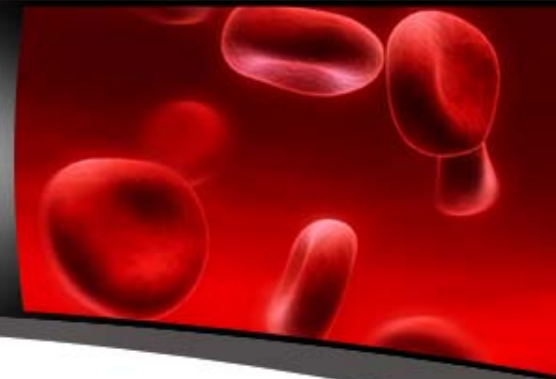
- Most importantly, I have spent the past 10 years researching answers on how to heal the brain.
- I did this because of my daughter Tasya who was diagnosed with a severe form of epilepsy.
- When she was 3 ½ she was given little chance of making it to the age of 12.
- She is now a healthy 14 year old.
- At one time she could have hundreds of seizures a day.
- Now it is rare that she has any seizures at all.

My Philosophy



- Try to stay objective
- One shoe size does not fit all
- Discover root causes
- Lab competency is critical
- Run fewest tests necessary but leave no stone unturned
- But above all always remember the following concept in everything I do...
- ***Biochemical Individuality***

Goal of This Lecture



- To give you a guide as to the best tests available to help heal the brain.
- To help you avoid tests that don't optimize the use of patient resources and may lead to a delay in helping improve your chances of healing their brains.
- To give you an understanding that the results of the lab tests is not as important as the interpretation of the data.
- And, to give you some clinical pearls that will help you better treat your patient.

A Clinical Pearl



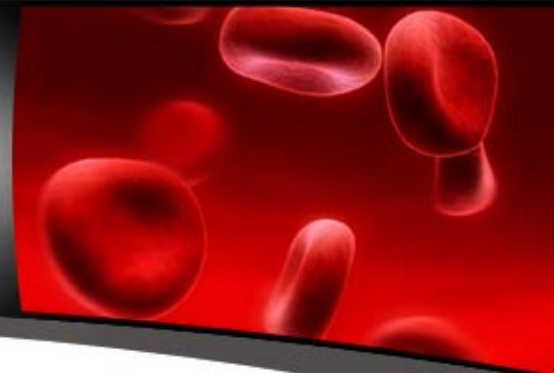
- It is well known that one of the leading causes of headaches is dehydration.
- You could run a comprehensive blood chemistry (which I highly recommend on every patient at least once a year) and determine low fluid intake.
- If you see an elevated hemoglobin, hematocrit, red blood cell count, and total protein, you can say the patient is dehydrated.
- Let me show you a simple method that can help you and your patient determine hydration at any moment.

A Clinical Pearl



- With your palms down on your lap, look at the veins on the back of your right hand, they should be puffy.
- Slowly raise your hand looking at the veins.
- Note when they disappear. When they do, this is your fluid level.
- In a fully hydrated person, the veins should disappear around chin to eye level.
- Any lower and you need to add fluids.
- If they do not disappear at all, this is a form of hypertension.

Testing Parameters



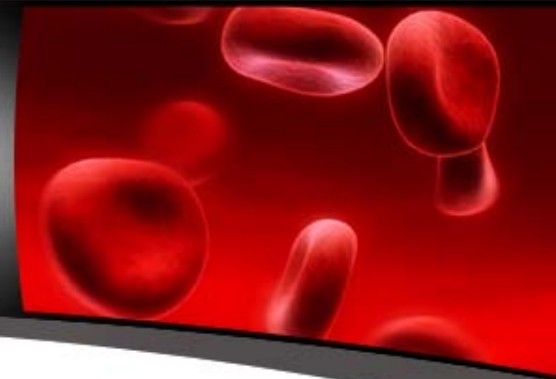
- LEAP MRT
- Plasma Amino Acids
- No or Limited Genetic Testing
- Toxicity Testing
- Comprehensive Blood Chemistry

A microscopic view of several red blood cells, which are biconcave discs, floating in a red, translucent fluid. The cells are illuminated from the side, creating a bright edge and a darker center. The background is a deep red color.

LEAP MRT Testing

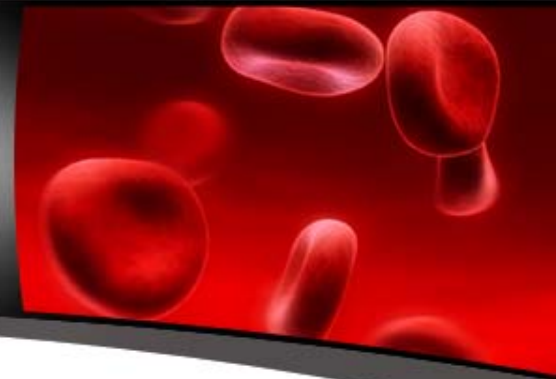
Stop Inflammatory Reactions to Help Heal the Brain

Inflammation and the Brain



- It is well known that inflammation has a dramatic affect on brain function.
- One of the main ways of causing inflammatory responses is from the foods we eat.
- Inflammatory reactions to foods is difficult to assess without running the proper tests as many of these reactions are delayed.
- It is not uncommon to not react to a food for between 4-12 hours after ingesting them.

Inflammation and the Brain



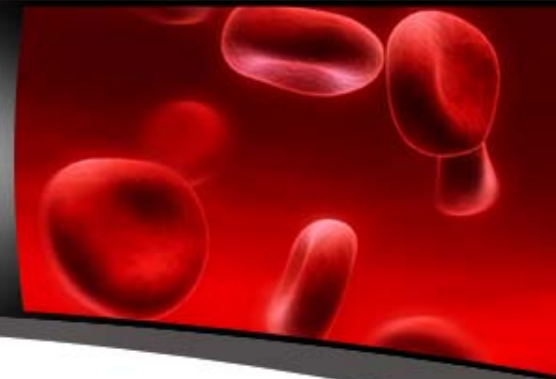
- Often times, you get a good feeling from a food that later causes an inflammatory reaction.
- This is due to the production of serotonin from the argentafin cells in the gut.
- This is why often times the foods you crave the most are the worst for you.
- In helping heal my daughter, the test that had the most dramatic impact on both stopping her seizure activity and reducing her aggressive and explosive behavior was the LEAP MRT test from Signet Diagnostics.

Inflammation and the Brain



- The inflammatory reaction to a food is somewhat different than an immune response.
- The inflammatory response usually precedes an immune response, but not always.
- With my daughter, she was highly reactive to over 15 foods when she was first tested.
- They were *not* the usual suspects.
- They *were* her favorites like crab, olives, mango, and pork.
- Other compounds she reacted to included tyramine, red dye and acetaminophin.

Inflammation and the Brain



- She was prone to violent outbursts 5-7 times a week without understanding why it happened.
- She would at times, have hundreds of seizures a day that were not controlled by medications or any nutritional support I was able to try on her.
- Within 5 days her behavior noticeably changed.
- Her seizure activity dropped dramatically.
- Over the next year she had only a few minor behavioral episodes and a 90% reduction in seizure activity.

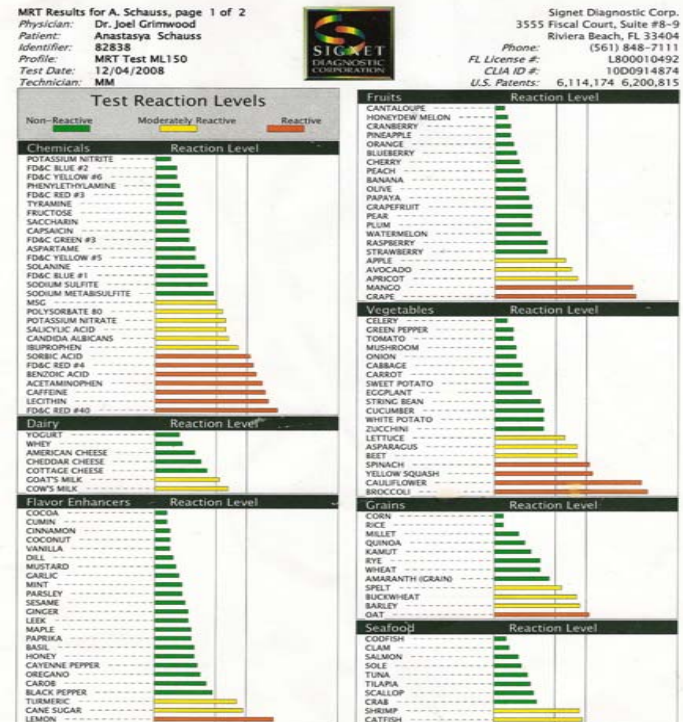
LEAP MRT and Toxicity



- One common thread comes up with most people who have a large number of reactive foods and that is toxicity.
- Whether it is petrochemical or heavy metal toxicity, toxins increase the individuals reactivity.
- When you engage in long-term detoxification, the number of foods a person reacts to will be greatly reduced.
- The latest LEAP MRT test run on my daughter, showed only 2 foods that are highly reactive, Sole and Parsley.
- You cannot heal the brain unless you reduce inflammatory reactions dramatically. This test will help you do that.

LEAP Sample - 2008

- This is my daughter's test from 2008.
- The red bars represent those foods and food additives that are highly reactive.
- The yellow bars represent those foods and food additives that are moderately reactive.
- The green bars represent low reactivity.
- Accumulative reactions can happen as well.



LEAP Sample - 2008

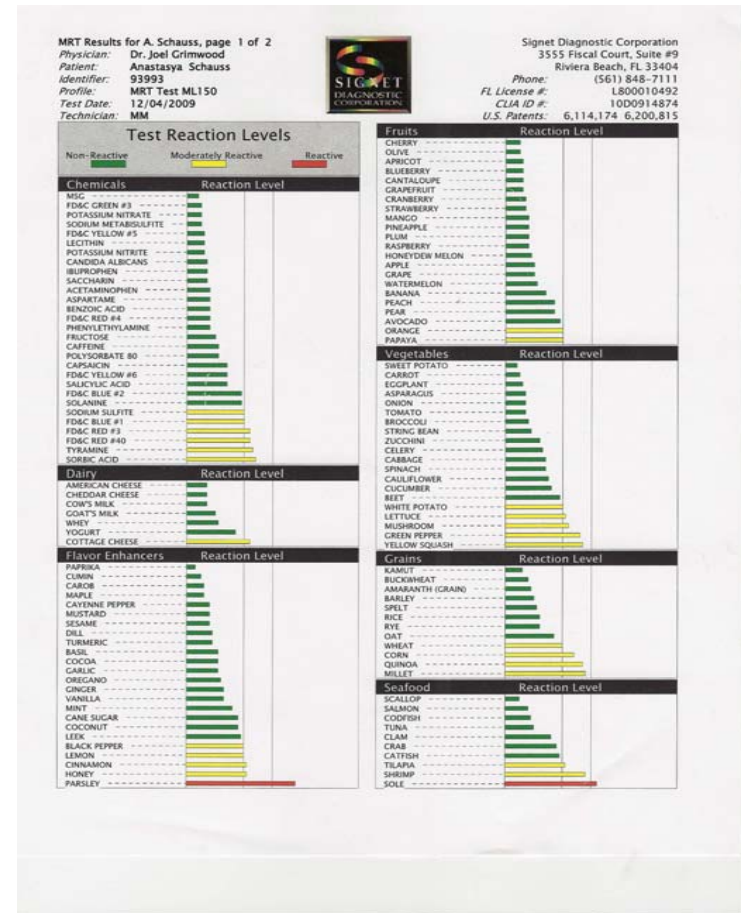
- This is the second part of her report.



Degrees of reactivity may not in all cases correlate with presence or level of clinical sensitivity to the food. Strongly positive results have been found to correlate with food reactivity. It is appropriate to eliminate foods with Reactive Scores. Moderately reactive scores should be evaluated by the physician or dietitian based upon patient history and frequency of consumption. After an appropriate period of elimination, reintroduce them one at the time under physician and/or dietitian supervision. If negative foods have been consumed regularly before drawing the blood for the test, there is high probability that they are 'safe' and are not likely to provoke symptoms. If test positive foods are eliminated from the diet, these non-reactive foods reasonably could remain in the permitted diet during the elimination phase. The clinician or dietitian should remain alert to the possibility that any of these foods might provoke symptoms.

LEAP Sample - 2009

- This is her latest report, after one year of aggressive detoxification especially the use of glycine and increasing her buffering capacity with electrolyte therapy.
- Note the dramatic improvement in the number of red or highly reactive foods.

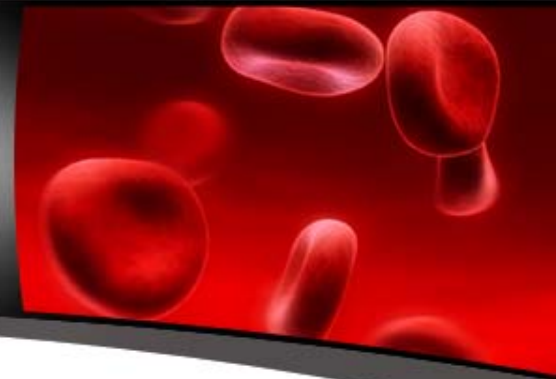


LEAP Sample - 2009

- Page 2 of the report.
- Still excellent improvements across the board.



General Lab Testing Thoughts



- With the LEAP MRT test, the results are pretty straight forward.
- If you react to a food, you need to eliminate it.
- With many other lab tests, the interpretation of the results are sometimes far more complicated.
- So my overall caveat is “Don’t run a lab test if you’re getting inadequate interpretations.”
- Just because you have a high cholesterol doesn’t mean you are going to get cardiovascular disease.

A microscopic view of a blood vessel showing several red blood cells. The cells are biconcave and have a reddish-pink color. The background is a dark red, and the vessel wall is visible at the bottom.

Plasma Amino Acids

The Building Blocks of the Healthy Brain

Amino Acids



- Dr. Eric Braverman's book, "The Healing Nutrients Within" was one of those breakthrough books that helped me unlock the world of amino acids and their ability to help me heal my daughter's brain.
- Amino acids like taurine, glycine and tryptophan have proven to be exceedingly helpful in brain function.
- Others like arginine, phenylalanine, tyrosine, aspartic and glutamic acid are beneficial as well.
- A caveat, it is the balance and metabolism of these amino acids that is most critical.

Amino Acids



- Incorrect supplementation of amino acids can cause damage to the brain.
- If an amino acid supplement is incorrectly formulated, you can induce hyperammonemia which can severely irritate the brain.
- Symptoms of hyperammonemia can include anxiety, headache, irritability, fatigue, mental confusion, poor concentration, seizures and bedwetting.
- Why would I mention bedwetting in a lecture on healing the brain?

Amino Acids, Bedwetting and Lab Testing



- Case Study:
 - Young male, 14 years old, constant nocturnal bedwetting.
 - Dietary interventions tried: eliminating dairy, wheat, corn.
 - Restriction of fluids tried.
 - Electro-shock therapy tried.
 - All failed.
- My recommendation was to run a comprehensive blood chemistry, a plasma amino acid test and a urinary organic acid panel.

Amino Acids, Bedwetting and Lab Testing



- Results came back and through the use of my interpretive reports, a finding of hyperammonemia was made.
- The urine organic acid test had high readings of citrate, orotate and cis-aconitate
- In the plasma amino acid test, the boys arginine was depressed.
- Arginine is important in the urea cycle to help remove excess ammonia through the arginase enzyme.
- In his comprehensive blood chemistry he had a low CO₂ which is also important in the urea cycle as well as markers for dehydration.

Amino Acids, Bedwetting and Lab Testing



- The hyperammonemia was causing an irritation in his bladder leading to his needing to urinate in the middle of the night.
- Administration of 500 mg arginine before bedtime with no fluid restriction was recommended.
- He ceased his bedwetting almost immediately.
- He went from being a shy boy to being much more self-assured.
- His father then admitted to being a bedwetter as a child as well.

Amino Acids, Bedwetting and Lab Testing



- I asked the physician whether the father had anger management issues along with being easily irritated.
- That was the biggest problem facing the family.
- We ordered the same set of tests and low and behold, hyperammonemia came up as well.
- The use of arginine made the father calmer and helped heal his brain as well as the family.
- Without seeing the overall picture and interpreting the data properly, even the most trained diagnostician may have missed this issue entirely.

Amino Acids in Brain Health



- By looking at the **balance** of amino acids, you can go a long way in helping to find the right way to heal the brain.
- A plasma amino acid test, interpreted correctly, can help find not only the deficiencies seen in many people but also metabolic blockades that can hinder proper metabolism into the important neurotransmitters and hormones that are so crucial in a healthy and active brain.
- A important caveat: The brain doesn't rebuild itself overnight. The process of healing the brain takes time.
- I believe that you should look at rebuilding the brain as a series of 5-year jobs.

Amino Acids in Brain Health



- The amount of research into the benefits and uses of amino acids in healing the brain is rich in the literature.
- The misuse and problems that improper amino acid supplementation can cause is equally rich in the literature.
- Proper balancing through proper interpretation of a plasma amino acid test gives enormous benefits to a wide range of neurological disorders running the gamut from epilepsy to aggression, from depression to autism.

A microscopic view of several red blood cells, which are biconcave discs, floating in a dark red fluid. The cells are illuminated from the side, creating a bright edge and a darker center. The background is a deep red color.

Genetic Testing

Buyer Beware

Genetic Testing Cautions



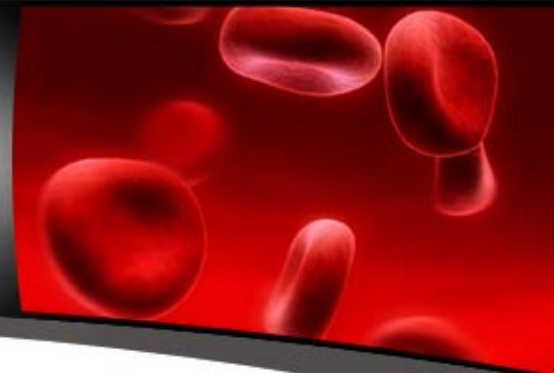
- Genetic testing is the latest, and sexiest testing to come on the market and on the surface, the most exciting.
- In my opinion, it is also the type of testing that can cause the most dangerous treatments.
- Let me explain.
- In 1983, Russian evolutionary geneticist Alexy Kondrashov, now a research professor at the University of Michigan presented a then revolutionary theory.
- Backup genes.

Genetic Testing Cautions



- His theory states in simple terms that in order for life to survive and evolve, there must be backup genes for many of the functions that our genes perform.
- This is due to the numerous mutations that genes go through over time, never more so than in our current toxic world.
- Similar to how we have two lungs, eyes, kidneys, losing one of them doesn't doom the person.
- If we have a supposedly defective gene, say the MTHFR, does that necessarily mean we are poor methylators?

Genetic Testing Cautions



- Not necessarily.
- There are likely to be backup genes to the MTHFR.
- In some people, it is pretty good at covering up the methylation problems.
- In other people, there are varying degrees of performance.
- People who don't have the MTHFR issue may also be poor methylators due to other reasons.
- I believe that it is preferable to use functional tests that can measure whether or not you perform the tasks your genes were meant to do.

Genetic Testing Cautions



- It is known in bacteria, that genes switch on and off in response to changes in the environment.
- We are changing our environment in such a way that we don't know how we are affecting future generations.
- The field of epigenetics is just now taking wings and what we are finding is that your genetics is not your future necessarily.
- It is how you function biochemically that makes the most difference.

Genetic Testing Cautions



- The other issue is that by treating a gene disorder you may be setting yourself up for creating another disease.
- If we eliminate sickle cell, you doom the people in equatorial Africa to die of malaria. That is an extreme condition, but it is known that others may cause a problem.
- If we treat using functional testing to see whether a person methylates instead of relying solely on a gene that may or may not have a reliable backup, we will do no harm. If we rely solely on the gene without knowing whether they have the gene or not, we may be causing real damage.

Genetic Testing Caution



- One final thought on genetic testing comes from Dr. H. Frederik Nijhout, Department of Biology, Duke University. He states that the environment is as, if not more important than ones genes.
- “Think about using a key to open, then turn on a car. The key doesn’t actually control the car but it can be thought to be correlative to the control. The key must be turned and used to turn on the car. It is a stimulus from the outside influences – a human – that makes it work, the true controller and causation of the car turning on and moving. the gene is just a key that needs outside stimulus (environment) to turn on.”
- “When a gene product is needed, a signal from its environment, not an emergent property of the gene itself, activates expression of that gene.”

A microscopic view of several red blood cells, which are biconcave discs, floating in a red, translucent fluid. The cells are illuminated from the side, creating a bright rim and a darker center. The background is a deep red color.

Toxicity Testing

The Cause of Many Brain Injuries

Neurotoxicity



- According to scorecard.org, there are approximately 1,175 suspected neurotoxins in our environment.
- Many of them have only been in existence for less than 20 years.
- Most are petrochemically based.
- Humans have been exposed to heavy metals for thousands of years.
- We have only been exposed to petrochemicals for less than 200 years.

Heavy Metal Testing



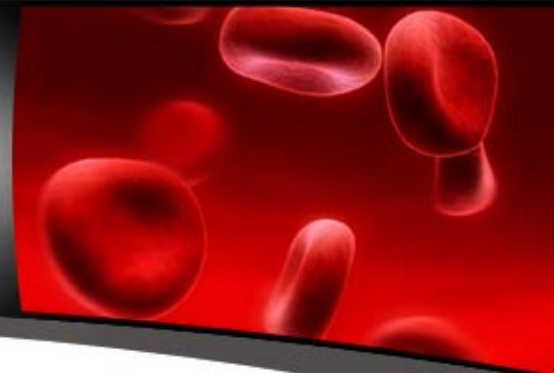
- When it comes to heavy metal testing I believe in using either hair, fecal or urine but not challenges.
- Urinary metal challenges are ok, but there are risks.
- Urine metal challenges also are not accurate for measuring true body burden.
- Hair, if properly interpreted gives us a far better picture of true burden of many of the metals, especially mercury.
- While certainly neurotoxic, I want to focus the last part of this lecture on the newer toxins in our environment.

Petrochemical Toxicity



- Toxins such as xylene, toluene, and benzene and styrene are showing up in the blood stream of every single person, regardless of where they live.
- They are known carcinogens, endocrine disruptors, are genotoxic and of course, neurotoxic.
- In the biotransformation process of Phase I detoxification many of these chemicals become more toxic than in their original state.
- It is at this point they become their most neurotoxic.

Petrochemical Toxicity



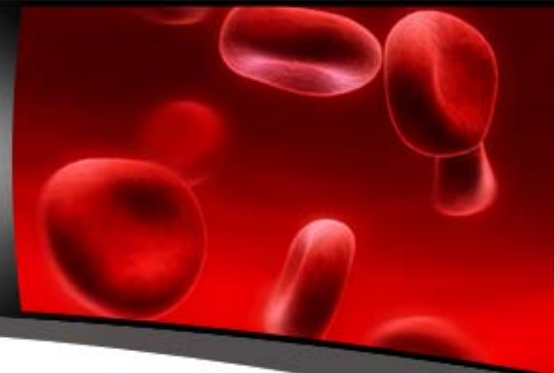
- An example:
 - Xylene, becomes 2-methylbenzoate after Phase I.
 - If ample glycine is available, conjugation (Phase II detoxification) occurs which produces 2-methylhippurate which is then excreted through the urine.
- Autistic children are well known to have up regulated Phase I detoxification process.
- They are also well known to have a down regulated Phase II.
- They are not keeping up with the toxicity removal which causes them to be affected neurologically.

Petrochemical Toxicity and Testing



- The use of glycine in many autistic based on this imbalance in their detoxification capacity is highly beneficial.
- So, how to test for this?
- US Biotek based in Seattle has a first morning urine test that looks for the markers for xylene, toluene, styrene, benzene, trimethylbenzene, parabens and phthalates.
- It also looks at the balance between Phase I and Phase II detoxification.
- I recommend that every person, regardless of health get this test done regularly.

Phthalates



- Phthalic acid, a plasticizer and its many esters, are increasingly coming under scrutiny as causing a myriad of health concerns.
- The one that has me most concerned is its effect on males.
- For the first time in human history, males as a percentage are more infertile than females.
- In my discussions with physicians around the world, the feminization of males, especially those under the age of 30 is reaching frightening proportions.
- Phthalates have been proven to depress testosterone in males and females.

Phthalates



- Phthalates are found in numerous products.
- They are found in plastic bottles which only leach when heated.
- The more predominate sources that enter into our bodies is from personal care products, and any thing that holds an aroma or scent like air fresheners and scented candles.
- To find out if your personal care product has phthalates in them (or any number of toxins) go to www.ewg.org and look at their database called Skin Deep.

Phthalates, Autism, ADHD, and other Neurological Issues



- Phthalates were introduced to humans in the 1970s.
- It has a greater effect on males than on females.
- It depresses testosterone which is critical in brain development.
- Its effects on developing brains is becoming more and more evident.
- Numerous studies have come out showing an inverse relationship between I.Q. and levels of phthalates, more so in male children than female.

Phthalates, Autism, ADHD, and other Neurological Issues



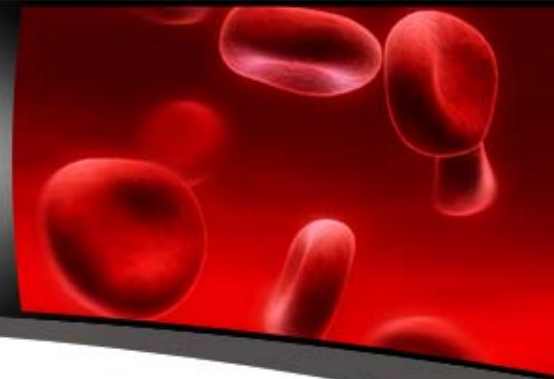
- Phthalates can negatively effect thyroid function which is well known to interfere with brain function.
- According to a study published earlier this year, high-molecular weight phthalates such as those found in medical tubing, vinyl floor and wall coverings were not associated with behavioral changes.
- It is the low-molecular weight phthalates such as those found in shampoos, perfumes, cosmetics, and nail polish that were significantly associated with increased scores on aggression, attention, conduct problems and depression.

Phthalates, Autism, ADHD, and other Neurological Issues



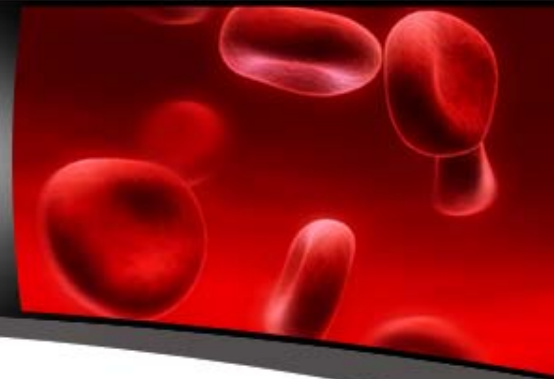
- The study by Engel, et al from the journal *Environmental Health Perspectives*, found “Behavioral domains adversely associated with prenatal exposure to LMW phthalates in our study are commonly found to be affected in children clinically diagnosed with conduct or attention deficit hyperactivity disorders.”
- Using the lab test from US Biotek on women *and* men wanting to have children should not be an optional test, it should be the standard of care for all people.

Phthalates and Erectile Dysfunction



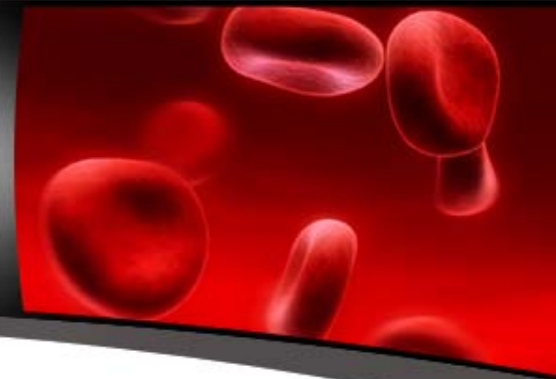
- As you know E.D. is not a deficiency in Viagra, Cialis or Levitra.
- It is likely in some cases due to phthalates.
- While we know of the link between diabetes and E.D., phthalates have been known to cause insulin resistance in males.
- We are also aware that phthalates affect male reproductive organs, especially in fetuses and young children.
- Many of the more toxic forms are being banned in Europe, but very slowly here in the U.S.
- Much more needs to be done.

Phthalates and Blood Testing



- To test for phthalates you can use the US Biotek test or run a blood test from the Accu-Chem division of Metamatrix.
- In their Phthalate and Parabens Panel, they look at four methylphthalate compounds which are highly toxic.
- They also have a Volatile Solvent panel which tests for benzene, styrene, ethylbenzene, styrene, toluene, xylene, hexane and 2- & 3-methylpentane.
- They also have a PCB test and a Chlorinated Pesticide test for DDE, DDT, dieldrin, heptachlor epoxide, hexachlorine, mirex, oxychlordane, and trans-nonachlor

Interpreting the Toxicity Data



- Running the tests I have recommended is really only the first step in helping heal your patients brains.
- The real “magic” comes in how you interpret the data.
- In my new role as VP of Research and Development for Health Director, we have taken the interpretation of lab data to a new level.
- Many of you may be aware of my work on the LabAssist™ and CellMate™ reports, but the team at HD has really stepped up to create the next generation of reports known as Bio-Clarity™.

Clinical Tip



- Vitamin D deficiency is rampant.
- Why are we all suddenly D deficient?
- It isn't caused by sunscreen and lack of dietary intake.
- It is because of toxicity!!!
- I believe that due to a number of reasons, toxins either block the metabolism of vitamin D or they cause the increased need for vitamin D.
- Vitamin D is crucial for a healthy brain.
- Get your patients tested and make sure their levels go over 80 ng/mL.

A microscopic view of several red blood cells (erythrocytes) in a blood vessel. The cells are biconcave and appear as bright red, disc-like structures against a darker red background. The lighting creates a sense of depth and highlights the texture of the cells.

Comprehensive Blood Chemistry

Baseline and Insight

Comprehensive Blood Chemistry



- There is no way I could possibly discuss the many reasons why you should always run a comprehensive blood chemistry on any patient who is in need of brain healing.
- The data and research that has been gathered on this test is greater than all other tests combined.
- As with all lab tests, but more so with this test, it is the interpretation that is key.
- Key areas to review include electrolytes, depressed potassium is related to depression.
- Calcium – elevations relate to aggressive behavior.

Comprehensive Blood Chemistry



- CO₂ – low readings are consistently found in autistics and epileptics. This is an important buffer in the blood.
- Cholesterol – readings below 160 mg/dL are linked to an increased risk of suicide and depression.
- Liver enzymes (sGOT, sGPT, GGT) – elevations or low readings can mean improper detoxification or alcohol abuse.
- Co-morbidities are common and overall health of the individual are important to deal with as healing the body is important when healing the brain.

Contact Information



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