DEPRESSION, DIET, & BEHAVIOR - Part 1

by Lady Carla Davis, MPH
Specializing in Nutrition

A great deal of attention these days is being given to depression, mental illness, PTSD, bad behavior, and domestic violence. Millions of people, including teens, returning soldiers, and professionals are being afflicted with or affected by these debilitating conditions.

Suicide rates (16-64 years) are at an all time high, with an increase of 34% from 2000 to 2016. Recent statistics indicate that more than half (54%) of people who died by suicide did not have a known mental health condition. According to an online report (https://www.therichest.com/rich-list/the-biggest/the-10-professions-with-the-highest-suicide-rates/), professions with the highest rates of suicide occur among doctors, dentists, financial workers, lawyers, police officers, real estate agents, electricians, farm workers, pharmacists, and scientists in that order. Not only is their professional stress a factor, but equally are their unhealthy work conditions, environments, and unhealthy diets.

Healthy food is not readily available for people who work long hours and eat on the run. The same scenario often applies to students whose parents are both working to make ends meet. Everyone suffers when mothers with small children are forced back to work. And, gone are the days when nurturing grandmothers were part of the family. Sadly, most of them are now heavily medicated in a retirement community or a nursing home.

Two common causes of depression, mental illness, anxiety, bad behavior, and violence are nutritional deficiencies and/or hormonal imbalances. They are often misdiagnosed and treated with the two most common medical protocols, which are to medicate and/or provide psychotherapy. Thus, millions of people, especially women and children, are prescribed drugs that have serious adverse effects. Rarely, if ever, are the causes properly identified or addressed by the medical system, government regulators, or mainstream media. Adding insult to injury, is their lack of recognition, knowledge, and attention to the vital role nutrition, hormones in balance, and the environment play in depression, mental illness, anxiety, bad behavior, and violence. This is because depression and sickness care are big business for the pharmaceutical industries, who are also the largest advertisers in the media.

Allowing pharmaceuticals to be advertised was a big mistake because of the conflicts of interest that occur. And, this is in spite of the fact that depression and mental illness do not result from a Prozac or medication deficiency; the pharmaceutical industries are the most heavily sued and fined for fraud and harm; the four largest drug companies are convicted felons. In addition, there is the revolving door culture, where industry implants rotate back and forth between top regulatory government positions and top corporate positions. Both the FDA and CDC receives large amounts of money from big pharma. In the process, corruption, major conflicts of interest, approval of unsafe drugs and chemicals, cover ups, and damage to patients and our environment are rampant. Worse, the pharmaceutical industry was released from all liability in regard to vaccination injuries because of their influence in Congress. https://childrenshealthdefense.org/ & https://medicalveritas.org/articles-on-vaccines/ Hence, the true figures for death and damage are being ignored or covered up. As if that wasn't bad enough, antidepressant drugs that target neurotransmitters have an overall failure rate of about 60%, plus serious adverse health effects.

Antidepressant and antipsychotic medication are a multi billion dollar business. With 70% of Americans taking at least one prescription drug, and more than 50% taking two or more,

big pharma brings in over $250 billion per year. No wonder this issue is being swept under the carpet. Undoubtedly, people are being over prescribed and dying by the tens of thousands. Currently, 1,000 people a week are dying from opioids in America alone. On top of all this are the increasingly high costs to the Budget and the detrimental effects on future generations.

When it comes to antidepressant prescriptions, OECD ranked Australia as the second highest in the world. This amount has doubled from 10 years ago. Iceland, which lacks sunlight for most of the year, ranked first. What is Australia's excuse?

There are numerous complex causes of PTSD, which requires professional help of a different nature and on an individual level. PTSD is often caused from trauma of one kind or another such as violence, loss of loved ones, loss of home and/or security, war, domestic violence, natural disasters, or sexual abuse. When psychological therapy is combined with good nutrition the outcome is always much better, and the use of medication is often not needed.

POTENTIAL CAUSES OF DEPRESSION

GUT MICROBIOME & DIET

The gut microbiome plays a big role in depression, mental health, anxiety, and bad behavior. In addition, gut ecology is a major factor in inflammation, oxidative stress, and mitochondrial dysfunction. The gut is known as the body's second brain, because of its prolific amount of neurons and how they communicate with the brain. Communication is done via the vagus nerve. The gut also produces the same neurotransmitters, including serotonin, dopamine, and gamma-aminobutyric acid (GABA). In fact, the greatest concentration of serotonin is found in the gut. The signals gut bacteria send to the brain significantly influence one's moods, thoughts, and behaviour. Also, more than 70% of the body's immune system resides in the gut walls.

Babies are seeded with their mother's microbiome as they travel down the birth canal, unless they are born by cesarian delivery. When a mother's flora is out of balance, her baby receives an inferior microbiome that affects its gut and brain throughout its lifetime. Poor dietary choices, toxic chemical exposures, antibiotics, GMOs, EMFs, and other factors can further compromise gut and brain health.

According to renowned holistic psychiatrist and author, Dr. Kelly Brogan, over 300 million people around the world suffer from depression. In 2019, researchers at Baylor College of Medicine examined the mechanisms of depressive disorder in teenage girls (ages 12-17) and found that gut permeability (leaky gut) produced inflammation. This in turn can lead to depression. The Children's Depression Rating Scale-Revised (CDRS-R) and a clinical interview were used in the trial. In collecting data on the autonomic nervous system activity, researchers measured pre-ejected period (PEP) and respiratory sinus arrhythmia (RSA) data, which are indicators for the activity levels of the sympathetic nervous system and parasympathetic nervous system respectively. They measured the leakiness of the gut using the lactulose-mannitol ratio (LMR) to calculate the permeability of the gut lining. To measure inflammation, researchers measured inflammatory cytokines from blood sample. The results found that depression severity was associated with increased intestinal permeability. The leakier the gut and higher the concentration of cytokine IL1B, the more severe the depression. Additionally, their evidence suggested that increased intestinal permeability may activate the innate immune system and be the path between sympathetic nervous system activation and depression severity. Not only can the brain affect how the gut feels, but the

gut can relay its state (calm or alarm) to the nervous system and sends those immune reactions to the brain via the vagus nerve.

SUGAR, SWEETENERS & REFINED CARBS

There is a strong connection between refined sugar, processed foods, depression, mental illness, bad behavior, and violence. Recall that the gut is the body's second brain with more neurons than the brain. Therefore, what ever is fed to the microbiota in the gut will react (good or bad), and is then transmitted to the brain. Thus, food and chemicals have a profound effect on a person's mood, behavior, and ability to think clearly. Packaged foods, snacks, and drinks that parents think are healthy are in fact loaded with hidden sugar. Sugar also feeds the growth of candida and cancer cells. According to a Harvard study, sugar ages the body more than anything. (Note: alcohol is a form of sugar). The so called 'low fat' revolution of the 1970's, which replaced fat with sugar, did a lot of harm that is only recently being uncovered. Low fat, sugar laden products, along with other junk foods have a debilitating effect on a person's physical, emotional, and mental health. Children are particularly vulnerable.

Inflammation is the body's defensive response to stresses. When stressed, be it physically, psychologically, or environmentally, the immune system kicks into high gear to help protect and heal the body. Stress triggers the release of steroid hormones such as cortisol and adrenalin, and then inflammation occurs. When inflammation reaches the brain, anxiety-provoking chemicals like quinolinate are produced. Inflammation is the common denominator for type 2 diabetes, cardiovascular disease, asthma, and many other chronic illnesses, including depression. The rapidly rising statistics clearly show that the so called 'experts' responsible for regulating our health/medical care systems are either incompetent and uneducated; or, corrupt facilitators of big pharma and a costly sickness care industry!

A study from the Center for Addiction and Mental Health (CAMH) published in JAMA Psychiatry, underscores the relationship between clinical depression and brain inflammation. People with clinical depression have a 30% increase in brain inflammation, and the highest inflammation had the most severe depression. Neuron inflammation has also been linked to Alzheimer's disease, Parkinson's disease, and multiple sclerosis.

For more details on the harm of sugar READ: ***Sweet Treat Addiction: The Scourge of Sugar*, Parts 1-3,** by this author in *Masters of Health* e-magazine (Dec 2017, Jan, and Feb 2018), *The NZ Journal of Natural Medicine* (#8, 9, & 10, 2013), or http://www.NourishingBasics.com.

Also, check out the brilliant work and documentaries of pediatric endocrinologist, Dr. Robert Lustig, MD, M.S.L., professor of pediatrics in the division of endocrinology at the University of California. Dr. Lustig specializes in the field of neuroendocrinology.
https://robertlustig.com/ & https://robertlustig.com/blog/.

"What's the difference between marketing and propaganda?
The TRUTH.
The food industry has propagandized the last 40 years of nutritional information.
They got rich, and we got sick.
Time to embrace the *real science* of *real food*."
-Robert Lustig, MD, MSL

The harm from this addictive, toxic substance is so ubiquitous it is having a massively destructive impact our society and bankrupting our health systems. Numerous books have

been written and many documentaries have been made about it. The book, *Sugar Blues*, by William Duffy, is a dietary classic and reading must! SEE: **That Sugar Film,** an informative 2014 Australian documentary (FREE OL): https://vimeo.com/277876062

NUTRIENT DEFICIENCIES & IMBALANCES

Deficiencies and imbalances of minerals, vitamins, EFAs, and/or hormones play a big part in brain function, mood and depression. For example, a zinc deficiency impairs sugar and carbohydrate metabolism. A high calcium/potassium ratio alters thyroid activity and lowers the rate of metabolism. Adequate levels of potassium are required for normal thyroid activity.

Iodine is a vital mineral needed for thyroid and parathyroid functions. Iodine also plays a big role in preventing depression and suicide. I have worked with numerous cases of young people who were suicidally depressed. Then, within hours of taking iodine supplements (e.g. kelp, bladderwrack, kombu, etc.), they no longer felt depressed. Thyroid disorders also contribute to underweight, overweight, and obesity health conditions.

One of the biggest culprits of depression and behavior problems in America, Australia, NZ, and the UK is water fluoridation and the prevalence of it in food, drinks, medications, and the environment. Fluoride is an endocrine disruptor and neurotoxin that blocks the uptake of and hinders the production of iodine. Because of this it has contributed to an epidemic of thyroid disease. Fluoride is also a major contributor to the high rates of suicide, obesity, lower IQ in children, and numerous other debilitating diseases. There are over 53 studies that found elevated fluoride exposure is associated with reduced IQ in humans because of the damage it does to the brain and neurological system. It also plays a part in domestic violence.

Because fluoride is in many water supplies and food products, sprayed on crops (e.g. cryolite on grapes), and in many medications, it is very difficult to avoid. It is not a mineral as is claimed, nor needed by the human body. It is an industrial waste by-product of industry that is being disposed of, at taxpayer's expense, under the guise of dental health. Until this highly unethical, archaic, bad policy ends, diseases related to fluoride toxicity will continue to worsen. "Fluoride is probably one of the biggest health disasters of our time." Dr. Gerry Curatola, DDS on fluoride. To lean more go to: http://fluoridealert.org/, and please help support the wonderful work they are doing on behalf of all of us.

Another essential mineral is copper. However, it must maintain a balance in the body with other minerals such as zinc, in particular. Impairment of zinc metabolism affects the zinc/copper ratio and all protein structures including brain cells, hormones, and hair. A copper excess contributes to poor hair growth, hair loss, and hormone imbalances. Excess copper, which is very prevalent, also plays havoc with the brain and emotions. High copper is also synonymous with high estrogen levels and cancer. According to research done by Drs. Paul C. Eck and Larry Wilson, at Analytical Lab, copper has a stimulating effect upon certain hormones or neurotransmitters, such as epinephrine, norepinephrine, dopamine, and serotonin. These chemicals may cause arterial spasms, or in some way irritate delicate structures within the brain. A low zinc/copper ratio is associated with a predominance of copper in the tissues. Excessive tissue copper is commonly associated with mental depression and emotional distress, migraines, and acne. Excessive tissue copper in the brain often results in distorted thinking and an imbalance of neurotransmitters.

Neurotransmitters are hormones that are activated and greatly influenced by copper ions, which are essential for thoughts, brain waves, and messages, etc. When excessive copper

creates a brain disorder, one's thoughts can not be transmitted properly and mental confusion occurs, resulting in depression. Memory loss is commonly associated with a low zinc/ copper ratio, which is indicative of copper toxicity. Many copper-toxic individuals live in a lowered state of awareness.

DEPRESSION, DIET, & BEHAVIOR - Part 2

By Lady Carla Davis, MPH
Specializing in Nutrition

ESSENTIAL FATTY ACIDS (EFAs)
Essential fatty acids **in balance** are an integral part of all cell membranes throughout the body. The brain, retina, and other neural tissues have a particularly high requirement for EFAs, as they play a vital role in early brain development and brain function throughout life.

Some research and experts claim that too much omega 6 may cause a deficiency in omega 3 fats, which could account for the spiralling increase in omega 3 deficiency related diseases. Diets of processed foods usually contain plenty of omega 6 fats (often in a damaged form), but rarely any omega 3 fats. Hence, maintaining a correct balance is the key.

Mother's milk provides the best balance of fatty acids for a baby. Breast milk is the primary source of nutrition for a newborn during the first six months of life. In addition to brain and nerve development, it also provides many other benefits such as colostrum to build immunity and development of a baby's gut microbiome. What occurs in the gut has a strong impact on mental health. Gut microbiome communicate with the brain via the vagus nerve.

Babies breastfed for 9 months or more average 6 points higher IQ as adults. Plus, touching and gentile massaging while nursing promote growth and bonding for a baby's mental and emotional wellbeing. Breast feeding also benefits the mother by assisting the uterus to return to its size before pregnancy. All the more reason to promote a nourishing prenatal diet, the value of breast feeding, good nutrition for nursing mothers, and not forcing mothers back to work during the first two years after giving birth. Unfortunately, there is hardly a mention of this in the media, among government leaders, health regulators, or the medical establishment. Postpartum depression and a child's bad behavior can be greatly alleviated or prevented with more attention on a nutritious diet and proper mothering. This can also help prevent many suicides later in life.

The late Dr. Peter S. Cook, M.B., Ch.B., M.R.C.Psych., F.R.A.N.Z.C.P., D.C.H. stated: "This involves supporting healthy mothering, breastfeeding, and attachment, with generous maternity leave. Natural patterns of mothering work best with the support of a father and extended family and/or social group, within a suitable environment. It is better to work with Nature and not against her to promote health and wellbeing in children, their mothers, and society. Prevention is better than cure, and normal mother-child relationship is a love affair that needs the right conditions to flourish. Infancy cannot be re-run later. **Mothering Matters for both the individual and society!"**
https://www.naturalchild.org/articles/peter_cook/mothering_matters.html
https://www.naturalchild.org/articles/breastfeeding.html &
https://www.facebook.com/notes/emma-kwasnica/mothering-denied-an-ebook-by-peter-cook-the-cornerstone-of-my-own-maternal-femin/403436949914/
https://www.naturalchild.org/search/?q=Peter+cook+Child+Denied&search-submit.x=0&search-submit.y=0 &
https://www.naturalchild.org/articles/peter_cook/childrearing.html

There are three types of omega 3 fats:
- *Eicosapentaenoic acid* (EPA), found mainly in fish and other seafoods.
- *Docosahexaenoic acid* (DHA), found mainly in fish and other seafoods.
- *Alpha-linolenic acid* (ALA), found mostly in flax seed oil, flax seeds, walnuts, leafy vegetables, some animal fat, especially grass fed animals. The human body uses ALA for energy and to convert into EPA and DHA. While, conversion into EPA and DHA may not be easy in a small number of people, most people are able make the conversion without any problem and benefit by the process.

DHA significantly enhances visual acuity maturation, retinal development, and cognitive functions in newborns. DHA is vitally important for pregnant mothers, especially from the third trimester until her baby's second year of life. During this time, a developing child needs a steady supply of DHA to form the brain and other parts of the nervous system. In essence, DHA is a conditionally essential nutrient for adequate neurodevelopment in humans. It is also a vital part of gene expression.

A deficiency of omega 3 fatty acids during pregnancy can damage or hinder the neurological and physical development of a child and the mental capacity of their brain. This damage early on, makes a person more prone to depression, bipolar disorder, behavioural problems, domestic violence, PTSD, and suicide. I believe this deficiency or imbalance can also make a child more prone to harm from vaccinations that results in autism and ADHD. EFAs in balance also play a role in preventing type two diabetes, which involves many symptoms including mood swings and weight problems.

Statistics reveal that ADHD, autism, behavioral problems among children, depression and suicides at all ages are worsening and already a crisis in many places. Undoubtedly, diet, nutrition, and environment play a big part in this. Instead of drugging millions of people, including children, as the current medical system does, many cases of depression and mental illness could be alleviated more safely and affordably by addressing the causes. This includes addressing dietary ignorance, misinformation, and deficiencies; conflicts of interest; pollution and chemical exposure; corruption and cover-ups; junk foods/drinks; drugs; and the big void in good nutrition and prenatal care. Check out:
https://www.naturalchild.org/articles/peter_cook/childrearing.html &
https://www.organicconsumers.org/ & https://www.momsacrossamerica.com/

12 Foods That Are High in Omega-3

https://www.healthline.com/nutrition/12-omega-3-rich-foods#section10
- Mackerel (4,107 mg per one piece, or 5,134 mg per 3.5oz/100g)
- Salmon (4,023 mg per half fillet, or 2,260 mg in 3.5oz/100g)
- Cod Liver Oil (2,664 mg per 1 Tbsp serving)
- Herring (3,181 mg per fillet of raw Atlantic herring, or 1,729 mg per 3.5oz/100g)
- Sardines (2,205 mg per cup/149g, or 1,480 mg per 3.5oz/100g)
- Caviar/Roe (1,086 mg per 1Tbsp/14.3 g, or 6,789 mg per 3.5 oz/100g)
- Anchovies (951 mg per 2 oz can/45g of European anchovies, or 2,113 mg per 3.5 oz/100g)
- Oysters (565 mg per 6 raw Eastern oysters, or 672 mg per 3.5 oz/100g)
- Flaxseeds (2,338 mg per Tbsp/14.3g, or 7,196 mg per TBSP/14.3g of oil)
- Chia Seeds (4,915 mg per 1oz serving/23g)
- Hemp Seeds (6,000 mg of ALA omega 3 per 1oz/28g)
- Perilla Seed Oil (9,000 mg of ALA omega 3 per Tbsp/14g)
- Walnuts (2,542 mg per 1oz/28g, or about 7 walnuts)

• Soybeans (1,241 mg per 1/2 cup/86g, or 1,443 mg per 3.5oz/100g)

While fish/seafood are high sources of omega 3, consuming fish is a constant concern because of pollution and exposure to plastics, mercury, and other heavy metals. Farmed fish raises additional concerns because of contamination from antibiotics, bacteria, and viruses. Thus, the other sources of the EFAs are a safer option.

EFAs affect the function of cell receptors. Hence, they provide the starting point for making hormones that affect mood, blood clotting regulation, contraction and relaxation of artery walls, and inflammation. They also bind to cell receptors that regulate genetic function.

Children who are denied these benefits during the 9 months in the womb and the first two years of life will need far more support and health care throughout their lives. Forcing new mothers back to work and placing a child into day care before a child is two years old does permanent damage and actually costs society a lot more over the long-term. LEARN from: https://www.naturalchild.org/

HORMONES

After birth, a healthy woman produces prolactin and oxytocin to help breast feed her baby. The initial milk is called colostrum, which is high in the immunoglobulin IgA that coats the gastrointestinal tract. This helps to protect a newborn until its own immune system is properly functioning. It also acts as a mild laxative to expel meconium and helps to prevent a buildup of bilirubin (contributing to jaundice).

A polluted environment, which can include the average home, is full of chemical endocrine disruptors that can influence the endocrine system and alter hormonal functions. Endocrine disruptors can mimic naturally occurring hormones in the body, such as estrogens (female sex hormone), androgens (male sex hormone), and thyroid hormones. Hormones strongly influence a person's mood, behavior, physical appearance, and sense of wellbeing.

A hormonal imbalance can have a disastrous impact on a growing child, teenager, or adult, and during menopause. Endocrine disruptors can also produce adverse developmental, reproductive, neurological, and immune system damage. Endocrine disruptors include poisonous metals, chemicals such as fluoride, synthetic estrogens (e.g. DES), dioxin, polychlorinated biphenyls (PCBs), Di(2-ethylhexyl) phthalate (DEHP), DDT and other pesticides, glyphosate and other herbicides, agriculture chemicals, plastics such as bisphenol A (BPA) and formaldehyde, plastic bottles and containers, metal food cans, detergents, cleaning products, flame retardants, food additives, phytoestrogens (soy derived), toys, toiletries, and cosmetics.

Endocrine disruptors pose the greatest risk during prenatal and early postnatal development when organ and neural systems are forming. When endocrine disruptors bind to receptors in the cells, they block the endogenous hormone from binding, which in turn causes a failure of normal signals. When receptors fail, natural hormones fail to be made or controlled and their metabolism in the liver is altered. It is no wonder why so many young people are being born with gender related birth defects and millions of people are suffering from depression, anxiety, and mental illness. Both genders at all ages are harmed by endocrine disruptors. Hormonal imbalances are often mistaken for depression and mental illness and wrongly prescribed drugs to mask the symptoms. Sadly, these issues are not being properly addressed because of powerful industry influence in the media, governments, and the very regulatory agencies that are supposed to protect consumers. Hence, iatrogenesis is now the second

leading cause of death in the western world. And, prescribing of drugs remains big business, in spite of the fact that the pharmaceutical industry is the most heavily sued industry for fraud and harm! Learn from: https://childrenshealthdefense.org/ & https://medicalveritas.org/articles-on-vaccines/ & https://www.naturalmedicine.net.nz/

The best thing parents can do is stop buying these harmful products; eliminate a child's exposure to endocrine disruptors by getting them out of their home, food, and environment; and demand that endocrine disruptors be removed from vaccines, water supplies, work, school, and public places. Parents must have medical freedom to make informed decisions.

To maintain a healthy hormonal balance:
- Keep the liver healthy and avoid the endocrine disruptors mentioned above; alcohol, tobacco, caffeine and other drugs; damaged fats/oils; and refined sugar and carbs.
- Balance your minerals.
- Build a healthy gut microbiome that makes natural B vitamins.
- Nourish your liver well with good wholesome food for your blood type, beet root, fiber, and herbs such as dandelion and silymarin/milk thistle.

GLANDS

The adrenal and thyroid glands are the main energy-producing organs in the body. They work together to release sugars from the liver, and then process them into energy. These two glands also determine the rate of metabolism or oxidation rate. Energy derived from the adrenal and thyroid glands is also required before the body can eliminate toxins (detox).

Adrenal burnout may contribute to the accumulation of heavy metals as normal detoxification mechanisms become impaired. Adrenal burnout also contributes to fatigue, exhaustion, depression, mood swings, and PMS in women.

The adrenal glands produce adrenaline. Adrenal hormones are required for maintaining normal blood pressure and blood sugar, combating inflammation, carbohydrate metabolism, and to activate the body's response to stress or an emergency. They are also the sole source of female hormones after natural or surgically-induced menopause.

The current epidemic of thyroid disease clearly indicates that the causes of depression, diet, and behavior problems are not being properly addressed by conventional medicine. The thyroid is the emotion gland. When thyroid function is impaired or out of the optimal range, it can contribute to severe depression, irritability, hyperactive behavior, muscle cramps, anxiety, nervousness, paranoia, bone loss/osteoporosis, excessive hunger, reactive hypoglycemia, obesity, high blood pressure, or heart disease. Fluoride blocks the uptake of and suppresses the production of iodine, which can lead to many illnesses including manic depression, suicide, anxiety, lower IQ in babies, cretinism, Down's syndrome and other birth defects, bone loss, premature ageing, immune dysfunction, cancer, and heart disease.

Mandated government treatments with a one-size-fits-all policy, under the guise of public health, be it through our water supply or health care, defy real science, common sense, and moral integrity. Get informed: http://fluoridealert.org/ & https://childrenshealthdefense.org/

Increase your energy with these short simple exercises and techniques on Qi TV with Singer/Songwriter & Health Educator, Karen Atkins: https://www.karenatkins.com/vital-qi-tv/

For Part 3, see the next (August 2019) issue of Masters of Health Magazine to learn about the devastating effects of METALS as they relate to DEPRESSION, DIET, & BEHAVIOR.

DEPRESSION, DIET, & BEHAVIOR - Part 3

By Lady Carla Davis, MPH
Specializing in Nutrition

METALS
Metals in the human body can be essential nutrients (e.g. cobalt, magnesium, zinc), relatively harmless (e.g. ruthenium, silver, Indium), or highly poisonous (e.g. aluminum, arsenic, cadmium, lead, mercury). Some metals (e.g. copper, calcium, chromium, iron) are both vital nutrients in balance and also harmful when out of balance or in excess. Hence, maintaining a balance is the key.

Metals are defined by their density, atomic weight/number, or behavior in the body. Exposure to poisonous metals can do a lot of damage to nerve cells, including the brain. Yet, testing for metal contamination is rarely done by the medical profession unless it is specifically requested. And, unless testing is done quickly after exposure, blood tests are generally not reliable. This is because most metals are quickly removed from the blood and relocated into other parts of the body, such as the organs, nerve cells, and bones where they create havoc. Hence, the cause of various diseases, such as depression and mental illness, are rarely addressed or properly treated. In turn, the patient is never cured, but rather treated with costly drugs that often have serious long-term consequences.

Below are some common metals that are prevalent in our environment and a brief of the various problems associated with them as they relate to the nervous system, depression, behavior, and brain function. Reference: http://arltma.com/Mineral_Information/index.html

Aluminum (Al)
- blocks the action and potential electrical discharge of nerve cells, reducing nervous system activity.
- inhibits important enzymes in the brain such as NA-K-ATPase and hexokinase.
- inhibits the uptake of important chemicals by nerve cells, such as dopamine, norepinephrine, and 5-hydroxytryptamine.
- reduces intestinal activity, which can lead to colic and IBS.

Early symptoms of AL toxicity: Flatulence, headaches, colic, dryness of skin and mucus membranes, tendency for colds, burning pain in head relieved by food, heartburn and an aversion to meat.

Later symptoms of AL toxicity: Paralytic muscular conditions, loss of memory and coordination, confusion, and disorientation.

Other conditions associated with Al toxicity: Alzheimers, amyotrophic lateral sclerosis, anemia, hemolysis, leukocytosis, porphyria, colitis, dental cavities, dementia, dialactica, hypoparathyroidism, kidney disfunction, liver dysfunction, neuromuscular disorders, osteomalacia, Parkinson's disease, peptic ulcer.

Al is found in medications, vaccines, beverages from aluminum cans (e.g. soda, beer), foods cooked in aluminum cookware, use of aluminum-containing antacids, use of anti-perspirants, baking powders, drying agents in salt and other products, processed cheese,

bleached flour, drinking water (aluminum is frequently added to municipal water), and fluoridated water, which increases leaching of aluminum from aluminum products (e.g. pots, pans, foil, etc.).

As with various other metals, blood testing is not reliable because **Al** quickly moves to other parts of the body. Thus, blood levels do not indicate total body load of aluminum. Hair aluminum levels appear to correlate well with bone levels of aluminum.

Children are commonly born with **Al** toxicity passed from the mother to the fetus through the placenta.

Arsenic As in excess

- is an enzyme inhibitor.
- interferes with uptake of folic acid.
- inhibition of sulfhydryl enzyme systems.
- cause changes in gene expression (e.g. significant DNA hypermethylation of tumor suppressor genes, which increase the risk of carcinogenesis).

Symptoms and conditions associated with **As** excess are: abdominal pain, abnormal ECG, anorexia, brain damage, dermatitis, diarrhea, edema, fever, fluid loss, goiter, hair loss, headache, herpes, impaired healing, jaundice, keratosis, kidney damage, liver dysfunction, muscle spasm, pallor, peripheral neuritis, sore throat, stomatitis, stupor, vasodilation, vertigo, vitiligo, weakness.

Iodine and selenium are antagonists of arsenic. Arsenite accumulates in the hair tissues. Thus, hair analysis is a valuable means of detecting arsenic toxicity.

As is used in alloys of lead (e.g. car batteries, ammunition) and brass. It is also a common n-type dopant in semiconductor electronic devices. **As** and its compounds, (e.g. trioxide) are used in the production of pesticides, treated wood products, herbicides, insecticides, fertilizers, and some cancer drugs. **As** is also found in volcanic ash, smelter dust from copper, gold, and lead. Organic arsenate is found in a variety of foods including seafood. Inorganic arsenate or arsenite is found in rice; apple, pear, and grape juices; beer; table salt; drinking water; paint; cosmetics; pigments; rat poison; glass and mirror manufacture; fungicides; wood preservatives; and commercial chicken, turkey, and pork feed.

Cadmium (Cd)

- strongly inhibits essential enzymes in the Krebs energy cycle.
- inhibits release of acetylcholine and activates cholinesterase, which results in hyperactivity and directly damages nerve cells.
- alters calcium and phosphorus metabolism, contributing to arthritis, osteoporosis, and neuromuscular diseases.
- replaces zinc in the arteries, contributing to brittle, inflexible arteries.
- interferes with production of digestive enzymes that require zinc.
- can result in prostrate problems and impotence from a Cd-induced zinc deficiency.
- can cause to failure to thrive, delayed growth development, and diabetes.
- accumulates in the kidneys, resulting in high blood pressure and kidney disease.
- alters calcium and vitamin D activity, which can result in cavities and tooth deformities.

• associated with learning disorders and hyperactivity, which is related to zinc deficiency and inhibition of acetylcholine release in the brain.

Cd is associated with alopecia (hair loss), anemia, artherosclerosis, arteriosclerosis, osteo arthritis, rheumatoid arthritis, inhibited bone repair, cancer, cardiovascular disease, cerebral hemorrahage, elevated cholesterol, cirrhosis of the liver, diabetes, emphysema, enlarged heart, failure to thrive syndrome, decreased fertility, hyperlipidemia (high levels of fat in blood), hyperactivity in children, hypertension, hypoglycemia, inflammation, lung disease, migraine headaches, osteoporosis, renal (kidney) disease, schizophrenia, reduced sex drive, strokes, and vascular disease.

After **Cd** is ingested, it is quickly removed from the blood and transported into other parts of the body. Thus, blood has little diagnostic value (Cranston & Passwater, 1983).

Children are commonly born today with **Cd** toxicity passed from mother to child via the placenta. **Cd** in hair show a good correlation with **Cd** levels in the kidneys.

Cd is found in food grown in soil contaminated from sewage sludge, fertilizers, irrigation water, large ocean fish (tuna, cod, haddock), refined and processed foods, processed meats, cola drinks, instant coffee, cigarette smoke, contaminated drinking water, occupational exposure (battery manufacture, semiconductors, dental materials), solder in food cans, motor oil and exhaust fumes from cars, artists paints, air pollution (incineration of rubber tires, plastic and paints).

Copper (Cu) is involved in the
• structure of blood vessels, aorta and heart muscle, bone, and connective tissues.
• formation of hemoglobin.
• maintenance of the myelin sheath on nerves.
• reproduction (fertility and menstrual cycle).
• synthesis of stimulatory neurotransmitters.

Symptoms associated with a copper excess are acne, adrenal insufficiency, allergies, alopecia, anemia, anorexia, anxiety, arthritis, autism, elevated cholesterol, cancer, cystic fibrosis, mental depression, diabetes, estrogen imbalance, emotional distress, fatigue, fears, bone fracture, migraine headaches, hemorrages, heart disease hyperactivity, hypertension, hyperthyroidism, hypochlorhydria, hypoglycemia, infections, inflammation, insomnia, mind racing, mood swings, multiple sclerosis, myocardial infarction, nausea, pancreatic dysfunction, premenstrual tension, schizophrenia, sexual inadequacy, spaciness, strokes, tooth decay, urinary tract infection, and vitamin deficiencies.

Additionally, an imbalance or excess of **Cu** can disrupt the normal sexual and mental development of a fetus and baby's brain sex pattern and sex organs during early stages of development. This is because high **Cu** is synonymous with high estrogen levels, which can impair male development. These problems are exacerbated by exposure to synthetic estrogens, which are prolific in our environment and food supply. To learn more about the high **Cu**/estrogen factor and the increase in gender disruption read *Our Stolen Future,* by T. Colborn, D. Dumanoski, J. Peter Meyers. All the more reason why it is so important to stop sources of contamination and clean up our environment and food supply.

Many children are born with excessive copper levels passed to them from their mother in utero. Hair analysis is a good test for measuring Cu levels, ratios, and toxicity.

(Cu) sources come from both food and the environment. **Cu** as a mineral (mentioned in Part 1) plays an important role in the body for energy production, female reproduction, blood formation, and hormonal balance, which greatly impacts behavior. When **Cu** is not properly balanced with zinc and/or other nutrients, or is in excess, it can create havoc with one's hormones, emotions, and mental health. Adding to this complexity, low adrenal gland activity means copper may be present, but is bio-unavailable for use in the body. Slow oxidizers usually have high **Cu** or bio-unavailable **Cu**. Mercury toxicity often indicates a hidden **Cu** toxicity.

Environmental sources of **Cu** include: copper water pipes, copper sulfate added to drinking water, copper compounds used in swimming pools, mineral supplements (especially prenatal vitamins), copper cookware and tea kettles, birth control pills, copper intrauterine devices, vegetarian diets, stress, exhaustion of the adrenal glands. Many processed food products are made with soy or soy derivatives, which are also high in **Cu.**

Lead (Pb)

- can inhibit copper-dependent enzymes needed for neurotransmitters (dopamine, epinephrine, norepinephrine, which are associated with hyperactivity.
- inhibits copper and iron dependent enzymes in the Krebs cycle required for energy production resulting in fatigue.
- displaces and can cause a deficiency or bio-unavailability of calcium, zinc, manganese, copper, and iron.
- interferes with iodine uptake by the thyroid (the emotion gland) and can inactivate the thyroid hormone thyroxin.
- Is incorporated into bone in preference to calcium.

Pb toxicity can also contribute to anxiety, poor concentration, depression, mental hallucinations, hyperkinesis, memory impairment, mental retardation, mood swings, nightmares, psychotic behavior, and schizophrenia.

Children can be born with elevated lead, passed through the placenta from mothers. Diets deficient in calcium, magnesium, or iron increase lead absorption.

Within 30 days of exposure, most lead is removed from the blood and stored in body tissues. Thus, blood testing is not accurate for detecting chronic lead toxicity. Hair testing has been shown by the EPA to be a good method of testing for lead poisoning. However, several tests may be necessary before elevated lead levels are revealed.

Other conditions associated with lead toxicity include osteo arthritis, rheumatoid arthritis, lower pack pain, high uric acid contributing to gout, rickets, abnormal brain function, blindness, convulsions, deafness, dyslexia, encephalitis, encephalopathy, epilepsy, fatigue, insomnia, multiple sclerosis, muscular dystrophy, Parkinson's disease, vertigo, arteriosclerosis, artherosclerosis, cardiovascular dysfunction, abdominal pain, colic, constipation, indigestion, liver dysfunction, weight loss, spontaneous abortions, impotency, infertility, diminished libido, PMS, sterility, stillbirths, adrenal insufficiency, hypopituitarism, hypothyroidism, nephritis, renal dysfunction, pyorrhea, tooth decay, and anemia.

Sources of **Pb** toxicity comes from: coal fired power plants, ceramic glazes, cigarette smoke, colored ink, food cans soldered with lead, Grecian Formula and Youth Hair hair dyes, lead-based paint, lead water pipes, leaded gasoline, manufacture of batteries, mine smelting industries, pesticide residues, water contaminated with lead from industrial waste, and fluoridated water, which leaches lead from leaded pipes.

Lithium (Li)
- can decrease manic symptoms in manic depressive patients.
- may also modulate the conversion of essential fatty acids into prostaglandins.
- stabilize serotonin transmission,and ward off aggressive behavior.

Symptoms associated with a **Li** deficiency are excessive aggressiveness, manic states, and depression.

Symptoms associated with **Li** toxicity are disturbed mineral transport, fluid balance, nausea, tremors, thirst, thyroid swelling, weight gain, drowsiness, confusion, disorientation, delirium, seizures, coma, and death.

Li research by Frazier found that patients who were helped by lithium experienced increased an uptake of sodium through their cell membranes. According to Sheard, lithium can replace sodium in the cells and its structure resembles calcium and magnesium. Hence, it may have the same stabilizing effect on nerve cells as calcium and magnesium.

Small amounts of **Li** are found in a wide variety of foods (pulses, crustaceans, vegetables, kelp, blue corn, pistachios, grains, dairy, eggs, meat), lubricating grease, batteries, ceramics, glass, and medications used to treat bipolar disorder.

Mercury (Hg) exposure
- causes degeneration of nerve fibers, particularly the peripheral sensory nerve fibers and reduced motor conduction speed.
- concentrates in the thyroid and pituitary glands, interfering with their function.
- impairs adrenal gland activity.
- inhibit the enzyme ATPase, which impairs energy production in all body cells.

Hg toxicity can cause brain damage, depression fatigue, hearing loss, hyperactivity, insomnia, memory loss, mood swings, nervousness, numbness and tingling in arms and legs, schizophrenia, thyroid dysfunction, timidity, tremors, vision loss, weakness, paresthesia, limb pain, visual and audio disturbances. Motor disturbances results in changes in gait, weakness, falling, slurred speech, and tremors. Copper toxicity and zinc deficiency are often associated with mercury toxicity.

Children can be born with mercury toxicity that is passed through the placenta from their mothers. Mercury can also be passed to children in breast milk.

Both blood and hair have been used to detect mercury poisoning. Hair levels are about 300 times higher than blood levels.

Sources of **Hg** toxicity come from dental amalgam (silver fillings), tuna and sword fish, contaminated drinking water, vaccines (thimerosal), seeds and vegetables treated with

mercurial fungicides, medications (diuretics, Mercurochrome, Merthiolate, Preparation H, contact lens solution), occupational exposure (felt, algicides, floor waxes, adhesives, fabric softeners, paper manufacture, production of chlorine. Exposure to **Hg** also comes from polluted seafood, contaminated water, coal burning power plants, amalgam dental fillings, or other forms of contact.