NEUROTRANSMITTERS
Anxiety, Depression, & Emotional Trauma
Root Causes, Effects of Your Body &
Directions for Treatment

Brought to you by:
Dr. Jess P. Armine
and
The Center For Bio-Individualized Medicine
www.drjessarmine.com
What We Hope To Accomplish Tonight

✓ Define Anxiety
✓ Define Depression
✓ Define Emotional Trauma
✓ How Do the Above Effect Your Physiology
✓ How to Determine Root Causes
✓ What Are The Treatment Options

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Depression is an *Emotion*

• Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behavior, feelings and sense of well-being.
• People with depressed mood can feel sad, anxious, empty, hopeless, helpless, worthless, guilty, irritable or restless.
• They may lose interest in activities that were once pleasurable.
Anxiety is an *Emotion* characterized by:

- An unpleasant state of inner turmoil
- accompanied by nervous behavior, such as pacing back and forth, somatic complaints and rumination.
- It is the subjectively unpleasant feelings of dread over anticipated events, such as the feeling of imminent death.
Emotional Trauma

• *(Emotional)*Trauma is an emotional response to a terrible event like an accident, rape or natural disaster.
• Immediately after the event, shock and denial are typical. Longer term reactions include unpredictable emotions, flashbacks, strained relationships and even physical symptoms like headaches or nausea.
• While these feelings are normal, some people have difficulty moving on with their lives.
  • American Psychological Association
Emotions are the **EXPRESSION** of the Neurotransmitters in your Brain

Reference: http://choosinghealthnow.com/blog/does-this-neurotransmitter-make-my-butt-look-fat/

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Neurotransmitters and their Functions

Neurotransmitters
**Excitatory Neurotransmitters**

- **Epinephrine**
  - Low: Fatigue, Lower Focus, Weight Gain
  - High: Sleep Trouble, Anxiety, Tremor, HTN

- **Norepinephrine**
  - Low: Low Energy, Low Focus, Low Motivation, Low Mood

- **Dopamine**
  - Low: Ahedonism, Lack of Joy
  - High: Reward, Psychosis, Cell Death, Cravings, Developmental Delay, PDD, Poor Intestinal Function

- **Glutamate**
  - Low: Cell Death, Brain Damage (Permanent?), Seizures
  - High: Sleep Difficulty, Mind Running, Anxiety

- **PEA**
  - Low: Low Focus, Low Attention, ADD
  - High: Sleep Difficulty, Mind Running, Anxiety
Inhibitory Neurotransmitters

Low
- Anxiety
- Insomnia
- Depression
- Uncontrolled Appetite (Usually sugars/carbs)
- Headaches
- Unexplained GI Sx

High
- Road Rage
- Hot Flashes
- Serotonin Syndrome
- Irritability

Low
- S-HIAD
- Same as Above
- Urges
- Impulsivity

High
- Intestinal complaints

Low
- Taurine
- Arrhythmias
- Panic Attacks
- Cynicism
- Pessimism

High
- Insomnia
- Hyperactivity

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Gamma-Aminobutyric acid is the chief inhibitory neurotransmitter in the mammalian central nervous system.
Areas of the Brain

Their Functions and the Associated Symptoms of Dysfunctions
### Pre Frontal Cortex

<table>
<thead>
<tr>
<th>Function</th>
<th>Dysfunction</th>
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</thead>
<tbody>
<tr>
<td>Attention</td>
<td>Distractibility</td>
</tr>
<tr>
<td>Judgement</td>
<td>Impulsivity</td>
</tr>
<tr>
<td>Impulse Control</td>
<td>Poor Judgement</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>Lazy</td>
</tr>
<tr>
<td>Empathy</td>
<td>Tardy</td>
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<tr>
<td>Emotional Awareness</td>
<td>Lack of Forethought</td>
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<tr>
<td>Grows until age 25</td>
<td>Hyperactivity</td>
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<tr>
<td></td>
<td>Procrastination</td>
</tr>
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<td></td>
<td>Writer’s Block</td>
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</table>

Dopamine - Epinephrine - Norepinephrine

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# Anterior Cingulate

<table>
<thead>
<tr>
<th><strong>Function</strong></th>
<th><strong>Dysfunction</strong></th>
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<tbody>
<tr>
<td>Gear Shifter</td>
<td>Stubborn</td>
</tr>
<tr>
<td>Cognitive Flexibility</td>
<td>Holds Grudges</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Obsessions/Compulsions</td>
</tr>
<tr>
<td>Seeing Options</td>
<td>Addictions</td>
</tr>
<tr>
<td>Move From One Idea to the Next</td>
<td>PMS</td>
</tr>
<tr>
<td>Go with the Flow</td>
<td>Road Rage</td>
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<tr>
<td>Cooperative</td>
<td>Oppositional</td>
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<tr>
<td></td>
<td>Argumentative</td>
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</table>

**Serotonin**

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# Thalamic/Limbic

<table>
<thead>
<tr>
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<tbody>
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<td>Emotional Filter</td>
<td>Depression</td>
</tr>
<tr>
<td>Colors Experiences</td>
<td>Appetite/Sleep Problems</td>
</tr>
<tr>
<td>Tags Interior Importance</td>
<td>Decreased Sex Drive</td>
</tr>
<tr>
<td>Charged Emotions</td>
<td>Social Isolation</td>
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<tr>
<td>Libido</td>
<td>Increased Negative Thinking</td>
</tr>
<tr>
<td>Smell</td>
<td></td>
</tr>
<tr>
<td>Appetite</td>
<td></td>
</tr>
<tr>
<td>Sleep Cycles</td>
<td></td>
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</tbody>
</table>

**Serotonin**

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# Temporal Lobe

**Floor of the Brain**

<table>
<thead>
<tr>
<th>Function</th>
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<td>Left:</td>
<td>Left:</td>
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<tr>
<td>Process Language</td>
<td>Aggression</td>
</tr>
<tr>
<td>Short Term Memory</td>
<td>Fighting</td>
</tr>
<tr>
<td>Long Term Memory</td>
<td>Sensitive to Slights</td>
</tr>
<tr>
<td>Auditory Learning</td>
<td>Difficulty Finding Words</td>
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<tr>
<td>Complex Memories</td>
<td>Auditory Processing Problems</td>
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<tr>
<td>Right:</td>
<td>Right:</td>
</tr>
<tr>
<td>Facial Recognition</td>
<td>Difficulty with Faces</td>
</tr>
<tr>
<td>Decoding Vocal Inflections</td>
<td>Trouble Decoding Voices</td>
</tr>
<tr>
<td>Rythm-Music</td>
<td>Social Skill Trouble</td>
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</tbody>
</table>

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**Memory**
- Ginko - ACH - Dopamine

**Bipolar Disorder**
- Anti-Convulsants - GABA

**Psychosis**
- Anti-Psychotics
Genetic SNPS

Are There Genetic Predispositions?

Another Area for a Full Podcast, Yes?
Acknowledgement

I want to thank Dr. Ben Lynch for allowing me to use many of his Pathway Planners in this lecture.

Benjamin Lynch, ND
Pioneer, Innovator, Researcher, Clinician, Helluva Nice Guy!

www.seekinghealth.com
World’s Best Vitamins!!

www.seekinghealth.org
Join the discussion forums!!
Methylation videos!!
EXCITATION CAN CAUSE THESE SYMPTOMS, WHICH SNPS ARE IMPORTANT TO CONSIDER?

**COMT, MAO**

<table>
<thead>
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<th>SNPs</th>
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<th>AA</th>
<th>Status</th>
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<td>GT</td>
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</table>

SNPs slow down the metabolism (drainage) of catecholamines and eventually, they will “overflow.”

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**INCREASED GLUTAMATE CAN CAUSE EXCITATION**

What SNPs can cause that?

**GAD**

---

**Association between glutamic acid decarboxylase genes and anxiety disorders, major depression, and neuroticism.**


Hettema JM1, An SS, Neale MC, Bukszar J, van den Oord EJ, Kendler KS, Chen X.

---

<table>
<thead>
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<td>T</td>
<td>CC</td>
<td>-/-</td>
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</table>

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**Excitatory Neurotransmitter**

**Inhibitory Neurotransmitter**

---

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SOD suspect mitochondrial involvement. Involved in MCS

PON1 Organophosphates (Patient lives in a farming community)

Suspect difficulty in metabolizing aldehydes.
Also involved in MCS

TransSulfuration

When it does express you may see brain fog, high ammonia on lab tests and/or high taurine on NT testing.
METHYLATION


Mitochondrial Complex 1 - The Most Important

<table>
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<td>T</td>
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</tbody>
</table>

NADH-ubiquinone oxidoreductase (NDUFS) - GSSG will block the entry of the electron donors into the electron transport chain.

Complex 1: NDUFS
Complex 3: UQCRC2
Complex 4: COX
Complex 5: ATP synthase

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Pearl: Patients like this will internalize stress and/or have chronic dysthymia. People with this pattern who have PTSD will respond better to EMDR than psychotherapy (talk therapy).

What Can Alter Our Neurotransmitters?

• Those Things that Damage the Cell:
  - Chemical/Physical
    - Heavy Metals
    - BPA, Benzene
    - Heat, Salt
    - Shock, Radiation
    - Trauma
  - Microbial
    - Mold, Fungi
    - Bacteria, Parasites
  - Psychological
    - Yelling, abuse
    - Isolation, abandonment
    - PTSD

Naviaux, R.K., Metabolic features of the cell danger response, Mitochondrion (2013), http://dx.doi.org/10.1016/j.mito.2013.08.006
NEI

Neurotransmitters

Histamine
Immune / Inflammation

Hormones
Endocrine

Rule Out

Toxicity, Foods, Metals, Viral, Bacterial, Autoimmune

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Causes of Distress and Imbalances

**Immune**
- Toxins
- Xenobiotics
- Dietary peptides
- Dysbiosis
- Bacterial
- Viral
- Fungal
- Parasites
Emotional Trauma

JUST as important as microbial and physical trauma.
An event will most likely lead to emotional or psychological trauma if:

- It happened unexpectedly.
- You were unprepared for it.
- You felt powerless to prevent it.
- It happened repeatedly.
- Someone was intentionally cruel.
- It happened in childhood.
Commonly Overlooked Causes of Emotional Trauma

• Falls or sports injuries
• Surgery (especially in the first 3 years of life)
• The sudden death of someone close
• A car accident
• The breakup of a significant relationship
• A humiliating or deeply disappointing experience
• The discovery of a life-threatening illness or disabling condition
What will these cellular assaults cause?
Methods of Assault
Leaky Gut Creates Inflammation
What can Inflammation do to us?


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HPA/HPT/HPG Axis

Distress or imbalance in one axis can cause dysfunction in all three.

http://rlv.zcache.com/the_hypothalamic_pituitary_axes_poster

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How are they identified?

Mood Disorders have numerous causes....
“Listen to your patient, he is telling you the diagnosis”

Sir William Osler, Bt
Founder Father of Johns Hopkins Medical Center


REMEMBER, In Real Estate, It’s “Location, Location, Location.”

In Health Care it’s, “History, History, History!”
The Root Causes
• Neurotransmitter and stress hormone testing to identify the level of adrenal stress
• Looking at gut function for Leaky Gut Syndrome, food allergies, candida, dysbiosis, etc...
• Looking for immune dysfunction from possible metal allergies, chronic viral, bacterial, fungal or auto-immune disease.

**Most of all, root cause analysis requires someone who can....**
The downstream effects

Look For
Cell Damage = changes in:

- Cellular Electron Flow
- O2 Consumption
- Cellular fluidity
- Vitamin Availability
- Metal Homeostasis
Acute Conditions cannot be treated like Chronic Conditions

**Acute CDR**
- Little/No downstream effects
- Quick Recovery

**Chronic CDR**
- Numerous Downstream effects
- Homeostatic Mechanisms Ineffective
- Numerous CDRs Synergize
- Healing Impossible Unless Treating the Root Causes AND Downstream Effects

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If We Treat Symptoms:

Primary Complaints of Depression & Anxiety

The Traditional Medical Route:

• Antidepressant Medications like Prozac, Zoloft, Lexapro (SSRI)

• If that doesn’t work after 4-6 weeks. Then, maybe, Wellbutrin (SNRI, SDRI)

• If that doesn’t work after several weeks, then maybe one of the newer meds like Pristiq or maybe referral to a psychiatrist for even stronger meds.

• Let’s not forget the Ativan for the anxiety

• None of this gets at the CAUSE
Neurotransmitters
Microbial Testing & More

Testing Options
Let’s look at the sequence of NT patterns as the neuro system’s ability to compensate over time.

Initial Immune Pattern.

Global Excitation.

About 1 year later. Note: indication of adrenal fatigue

About 3 years later. Inhibitory NTs are lower & more definite adrenal fatigue

10 years later, ALL NT’s are on their way down

15-20 Years. Pretty Much Exhausted

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Microbial Involvement
Lyme Disease: Adult Symptoms

Fast Facts
- Lyme is fastest growing vector-borne disease
- 85% do not recall tick bite
- Less than 70% of people develop a rash
- Treatment should begin without testing if rash is present
- Lab tests may be negative in the first 4-6 weeks

Early symptoms
- Flu-like illness (fever, chills, sweats, muscles aches, fatigue, nausea and joint pain)
- Rash (10% have EM rash)
- Bell's palsy

Later Symptoms
- Headache
- Stiff neck
- Light or sound sensitivity
- Cognitive impairment
- Sleep disturbance
- Depression, anxiety, or mood swings
- Arthritis
- Fatigue
- Abdominal pain, nausea, diarrhea
- Chest pain, palpitations
- Shortness of breath
- Tingling, burning or shooting pains
Children's Symptoms

Lyme pediatric specialist Charles Ray Jones, MD, compiled a list of common symptoms of infection in his young patients: severe fatigue unrelieved by rest
insomnia
headaches
nausea, abdominal pain
impaired concentration
poor short-term memory
inability to sustain attention
difficulty thinking and expressing thoughts
difficulty reading and writing
being overwhelmed by schoolwork
difficulty making decisions
confusion
uncharacteristic behavior
outbursts and mood swings
fevers/chills
joint pain
dizziness
noise and light sensitivity

Dr. Jones has also documented congenital, or gestational, Lyme disease in some children who were infected in utero or by breastfeeding. In these patients his suspicion is raised when the child has:
• frequent fevers
• increased incidence of ear and throat infections
• increased incidence of pneumonia
• irritability
• joint and body pain
• poor muscle tone
• gastroesophageal reflux
• small windpipe (tracheomalacia)
• cataracts and other eye problems
• developmental delay
• learning disabilities
• psychiatric problems

http://www.lymedisease.org/resources/children.html

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Hong Kong: 27 year old female with recalcitrant anxiety

Results for this specimen:

<table>
<thead>
<tr>
<th>Neurotransmitter</th>
<th>Value</th>
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<tbody>
<tr>
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<td>🔴</td>
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<td>GABA</td>
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<td>🔴</td>
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### Of Interest

<table>
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<td>Duchenne cardiomyopathy</td>
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<td>Korrapati et al. (2012)</td>
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**Suramin**: Anti Parasitic Drug  
**Apyrase**: Used to treat Trichomonas
Treatment options
The Order of Treatment

"Reduce Stress, Heal the Cells, Heal the Gut, Kill the Bugs!!"

Foundational treatment
Reduce Stress
I Think We Sometimes Forget,

The **Foundation** of Life Happens in THE CELL!!

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Basis of Cellular Function...

Energy Creation

Energy Management

Waste Management

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Neurotransmitters

Balance
TAAT

stands for

Targeted Amino Acid Therapy

Abbreviations.com

Gottfried Kellerman. PhD
Neurogenetics and Nutrigenomics of Neuro-Nutrient Therapy for Reward Deficiency Syndrome (RDS): Clinical Ramifications as a Function of Molecular Neurobiological Mechanisms

Kenneth Blum1,5,6,8,10,11,12,15,*; Marlene Oscar-Berman2, Elizabeth Stuller3, David Miller4,5, John Giordano6, Siobhan Morse6, Lee McCormick7, William B Downs5, Roger L Waite5, Debmalya Barh8, Dennis Neal9, Eric R Braverman1,10, Raquel Lohmann10, Joan Borsten11, Mary Hauser12, David Han13, Yijun Liu1, Manya Helman14, and Thomas Simpatico15

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Treatment for Emotional Trauma

1. Emotional Release Technique
2. Cellular Emotional Release Technique
3. Emotional Release Technique Tapping
4. Emotional Trauma Therapy
5. Trauma Counseling Techniques
6. Emotional Healing Techniques
7. Trauma Group Therapy Techniques
8. Neuro Emotional Technique
9. EMDR (Eye Movement Desensitization and Reprocessing Therapy)

Medicines usually don’t help get rid of the downstream effects of these root causes
To Address Mood Disorders, you MUST consider

Not only Neurotransmitter imbalances but:

• Causes of inflammation
• The integrity of the cell wall
• Mitochondrial function
• Nutritional deficiencies
• Genetic polymorphisms
• Nutrigenomics
• And more…
But if you want to get well...

BACK TO THE BASICS
Working Together to Create a Healthier World

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Evidenced Based References


• The Brain from Top to Bottom: http://thebrain.mcgill.ca/flash/i/i_01/i_01_m/i_01_m_ana/i_01_m_ana.html


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