Adrenal Fatigue
And other hormones
By Dr. Rachel West

Yes Dr. West...my child...
• Loves sweets or simple carbs (bread, pasta, cereal)
• Licks salt off foods or his sweat
• Has poor weight gain, or is too heavy
• Has low muscle tone
• Has dark circles under eyes
• Has allergies, colitis, eczema, asthma
• Has insomnia, is hyper, is fatigued
• Does not heal from viruses quickly

Let's learn about adrenals
• These symptoms may be related to adrenal imbalance!
• So many of us have this fatigue—ever hear of Starbucks? Quite a successful company! So many of us depend on superficial forms of energy because our adrenals are imbalanced. This causes many other imbalances internally

Adrenals and cortisol
• The adrenal glands sit above the kidneys
• The adrenal cortex almost exclusively produces cortisol
• The cortisol levels are highest in the morning (6-8) to wake us up, so sunshine, activity and a bite of food stimulates cortisol production
• Cortisol is lowest in evening to prepare us for sleep. Growth hormone and melatonin suppress cortisol at night to help us sleep
• Being alive means experiencing the "stress" of waking every day, which takes cortisol
• It is important to have enough cortisol to handle the amount of stress in our life. If you sit in meditation all day, you need less cortisol.

Definition clarification
• Glucocorticoids = family name for hormones both natural and synthetic that can raise glucose and prevent hypoglycemia
• Cortisol = bodies most potent glucocorticoid (endogenous, also a mineralocorticoid)
• Hydrocortisone = medication containing exogenous cortisol
• Cortisone = natural precursor to cortisol and has 80% of cortisol activity. It is the storage form of cortisol. A cortisol/cortisone ratio of .7 or higher indicates adrenal reserve
• Prednisone, prednisolone, methylprednisone, dexamethasone and betamethasone = synthetic derivatives of cortisol to increase its properties

3 properties of cortisol that keep us alive
• Increases blood sugar, thus energy and blood pressure
• Neutralizes inflammation (the body’s strongest antiinflammatory) thereby enhancing mood, dynamism, work capacity, stress resistance, anti-rheumatic, anti-pain
• Calms excessive activity of the sympathetic nervous system that produces adrenaline, the stimulating neurotransmitter responsible for emotional outbursts

How the adrenals are stimulated in body
• The hypothalamus in the brain secretes CRH
• This stimulates pituitary gland in the brain
• Pituitary releases ACTH
• This stimulates the adrenal glands (above the kidneys)
• Adrenal cortex releases cortisol
• The cortisol affects systemic organs and feeds back to the hypothalamus to say slow down

Stressors of the adrenal glands
• Anger, fear, worry, sadness, depression, guilt
• Overwork, physical or mental
• Sleep deprivation
• Light cycle disruption/fatigue
• Injury, accidents, surgery
• Noise
• Inflammation and pain
• Toxic exposure/toxins, heavy metals
• Nutrient deficiencies/vitamin/mineral deficiencies
• Allergies, food and environmental
• Heat
• Temperature extremes
• EMR/radiation/geophysical

General adaptation Syndrome—how we adapt to stress
Alarm reaction—first reaction to stress
Resistance: resistance diminished
Exhaustion: stage-alarm gone and resistance increase as we adapt to the stress
Exhaustion stage—long exposure wears down body resistance, adaptation energy gone, alarm signs reappear, body closes down.
### Progression of adrenal fatigue

- **Stage 1**—cortisol runs high, dhea (in adults) dives down and pregnenolone normal, so we start to steal pregnenolone to feed the cortisol pathway
- **Stage 2**—cortisol, dhea and pregnenolone are all lowering (bc we started stealing the pregnenolone)
- **Stage 3**—cortisol, dhea and pregnenolone are all low

### Chronic stress (high cortisol) response causes

- Low insulin sensitivity
- Low glucose utilization
- Higher blood sugar
- Bone loss
- Fat accumulation
- Protein breakdown increased
- Salt and water retention (intestines in face)
- Low secretory IgA
- Inc antigen penetration
- Inc IgG circulating
- Lower NK cell activity (to fight stress)
- Low interleukin 2
- Low T lymphocytes

### Stage 1

- So we get these hormones from the breakdown of our fats, which, as we know may already be low in cases of malabsorption.
- As our need for cortisol goes high in response to stress we see: overvoltage, agitation, euphoria, creating stress and drama
- Cortisol too high causes bone loss, low growth hormones, low muscle strength, loss of calcium in urine from the bone

### Stage 2

- So now we have been stressed for some time and are using up our stores of stress hormones. As cortisol and pregnenolone lower, it is important to begin to supplement them, to prevent failure

### Stage 3 and failure

- As cortisol and pregnenolone are lowered, symptoms of low levels will be present
- They must be supplemented to correct the imbalance

### Low pregnenolone

- Pregnenolone is indicated for MEMORY
- It is the king of all the hormones
- It is the first hormone our fat (cholesterol) turns into.
- Cholesterol testing on many of the kids has proven to show low levels.
- I have tested many low pregnenolone levels on my kids, and they are often low
- Pregnenolone turns into progesterone which is calming, anti-anxiety and aids in sleep

### LOW Cortisol—childhood symptoms

- Thinner narrow face
- Thinner narrow body
- Ear, nose and throat infections
- Allergies, including skin rashes, food all, asthma
- GI troubles including colitis and liver
- Excessive emotions, anger/irritability/outbursts
- Anorexia, difficulty to make eat except sweets

### Low cortisol—mental and emotional

- Anxiety in stressful situations
- Depression in stressful situations
- Extreme moodiness
- Cortisol: anxiety/depression, especially in stress
- Poor resistance to stress: experiencing stress as too much, as unfair
- Executive compensation for otherwise, and sensitivity to human suffering
- Irritability
- Nervousness
- Violent behavior
- Paranoid, quarrelsome, accusatory
- Anger, rage, paranoia, extreme anger, anxiety, panic attacks
- Frequent screaming or yelling
- Short verbal return, changing tonal patterns
- **Remember these are due to adrenaline, high catecholamines, low blood sugar and inflammation**

### Physical complaints

- Thyroid symptoms, difficulty breathing
- Gastrointestinal upset, nausea and vomiting
- Headache
- Numbness in arms, legs, fingers, toes, hands, feet
- Tenderness
- Muscle aches, achy in extremities, achy in head
- Irregular heartbeat, heart palpitations
- Wrist pain, leg pain
- Intolerance to cold
- Increased sensitivity to pain
- Increased body weight, increased appetite
- Inability to lose weight
- Hair loss
- Headaches in stress
- Skin rashes—eczema, psoriasis, vitiligo, cheloids, brown spots, tans easily
- Myalgias (muscle cramps), tendonitis, arthritis
- Inflammatory diseases (acute—allergies, conjunctivitis, otitis, rhinitis, pharyngitis, asthma, food allergies, tissue injury and connective tissue diseases)
- Prone to bacterial and viral infections
- Intolerance to medications
- Excessive sensitivity to pain
- Digestive inflammation—nausea, colitis, bloating, diarrhea
- Hunger attacks, sweet and salty craving
- Decreased appetite, especially for meat
- Difficult to function after emotional outburst, burned out, emptyheaded, distracted, absentmindedness, vertigo, fatigue, low energy during stressful situations
**Signs of low cortisol**
- Thin, but obese if after years of sugar craving
- Hair loss
- Painful tissues, hollow cheeks, yellow brown face, brown spots(form acth)
- Rhinitis, otitis, pharyngitis, tonsillitis
- Swollen lymph
- Blunted abd, colitis
- Heavy sweating, in armpit
- Brown elbow folds and armpits and skin folds in palms
- Wet palms and soles
- Hypermobile joints, sitting into joints
- Low blood pressure

**Signs cont**
- Nervous and irritable
- Melodramatic sharp verbal negative/aggressive
- Victim language and accusatory
- A website
- Fiber
- Joints, sitting into joints
- Rhinitis,
- 5)DNA gene test ACE mutation
- Melatonin and growth hormone lowers it
- Pregnenolone
- It may be repeated again
- It may take 4-6 weeks for improvement
- It may take 4-6 weeks for improvement
- It is in line with the concepts of this lecture

**Tests**
- 1) blood-total cortisol, CBG(transcorin), free cortisol, ACTH.
- Morning, afternoon eve
- ACTH stim test(1ug of ACTH injected)
- 24/24 hr urine for cortisol and total corticosteroids, 17-hydroxysteroids
- 3) saliva tests-morn, noon, eve, night
- 4) Progesterone, pregnenolone
- 5) DNA gene test ACE mutation
- 6) Dhea-sulfate in adults

**Treatments for low cortisol to raise it**
- Glucocorticoids—prednisone—cortisone
- Cortisone
- Dexamethasone
- Hydrocortisone
- Desamethasone
- Pulmonary edema
- Progesterone if low exp if anxiety/HPV with flu
- Early in adrenal through the day to help hydrate tissues and restore minerals lost
- Vanadium is in the cell wall and needs dead sea salt and balneal seaweed helpful
- Potassium is helpful
- Fix why the adrenals are tired root cause
- Patient will crave lots of cortisol throughout the day to boost cortisol if it is learned that it is a trigger that puts food in our mouth(grazer)
- Always helps with levels
- Make sure patient rests
- Make sure patient rests
- Make sure patient rests—restore and renew—use melatonin

**Alternative treatments**
- Adaptogens help move cortisol throughout pathways and can help adrenals.
- Ashwaganda
- B5-pantothenic acid
- Ginseng
- Rhodiola
- Schizandra berry
- Reishi mushrooms
- Maca root
- Balancing blood sugar in general(pantothenic acid, chromium)

**Balance blood sugar**
- Exercise
- Fiber
- Phytonutrients
- Insulin sensitizing—lipoic acid, chromium, vanadium, cinnamon
- Eat meals

**High dose prednisone treatment-a new option**
- So we talked about prednisone as a form of cortisol above
- A website (www.aheadwithautism.com writer) a series of a protocol being used by some children(especially with ADHD)
- Oscar(All Kids) Body Mass Index (BMI) >95
- Rule: 1 mg/kg/day or supportive care over 24hrs every 4 days or 50-75 mg/kg/day for 1/2 months then watered over 6 months
- Check urine glucose, blood potassium, blood electrolytes throughout
- It may take 4-6 weeks for improvement
- It may be repeated again
- It may be repeated again
- It is in line with the concepts of this lecture

**Lowering cortisol for bedtime or too high values as in level 1**
- Melatonin and growth hormone lowers it
- Phos serine
- Pregnenolone supports the pathway and is calming for bedtime
- 1 l-theanine
- Skull cap
- Ashwaganda regulates it
- Pregnenolone helps being stolen
- Dhea(proactleasing)
- Cumin helps
- Licorice(decreases cortisol and converts to cortisone for storage)
- Massage, relaxing stretching, relaxing music

**Other regulators**
- Sunlight(exp in am), small frequent meals, frequent mineral intake, paleolithic diet, protein
- Avoid milk, grains, sugar and sweets, vinegar, caffeine, alcohol, chronic stress, OCP
### Too much
- Emotional, agitated, euphoric, insensitive to suffering, craves and creates stress for others, insomnia, swollen hands, face and feet, petechiae, high blood pressure, atrophic skin

### Problem solving
- Lower dose if agitated versus others
- Make sure to have proper protein and anabolic hormone levels (growth hormone, sex hormones in adults)
- Longer acting treatment needed for inconsistent or variable effects with ups and downs
- Synthetic derivatives of cortisol have better activity for inflammatory conditions
- For vertigo or low blood pressure, you may want to add aldosterone or fludrocortisone
- For acute illness or skin rash, acute asthma, increase dose of cortisone for 1-7 days
- For persistent viral/bacterial and yeast infections, make sure to get enough proteins to boost thymus activity for the immune system

### Other hormones
- Thyroid
- Pregnenolone
- Progesterone
- Growth hormone
- Melatonin
- Sex hormones for adults