The Cortisol Connection

A possible solution to your seemingly unrelated symptoms

Sharry Edwards, MEd

Pioneer/Founder, Institute of BioAcoustic Biology & Sound Health

Have you ever been so tired that you could barely keep your eyes open, only to awaken in the middle of the night with your mind suddenly racing?

You look at the clock. It's 2:00, 3:00, or perhaps 4:00 in the morning. Your body is exhausted, but your brain seems ready to start the day.

You might find yourself thinking about everything you need to accomplish, remembering things you forgot to do, or even developing new ideas. Going back to sleep seems impossible. **Sound familiar?**

Last month, we introduced the subject of cortisol balance and its influence on metabolism. The response suggested that a deeper look at cortisol might be worthwhile. People contacting us described extreme fatigue, immune concerns, breathing difficulties, and problems managing their weight. But one complaint stood out: waking between 2 and 4 a.m. and being unable to return to sleep.

That recurring observation led us to ask a question: Could there be a common biological connection among symptoms that seem completely unrelated?

When Symptoms Don't Fit Neatly into Categories

In my own search for answers, I've sometimes encountered a frustrating situation. I describe a symptom, and the conversation quickly turns toward a medication rather than an investigation into why the symptom is occurring.

For example, I reported that my blood pressure sometimes increased after eating. One specialist questioned whether that was possible. I had brought research suggesting that post-meal blood-pressure changes can occur under certain circumstances, but we were unable to have a productive discussion about it.

That experience left me wondering how often people encounter similar difficulties when their symptoms don't fit familiar patterns. Blood pressure can change after meals, although the mechanisms vary. Some people experience a decrease, while others may experience an increase. The important question is what is happening in that particular individual.

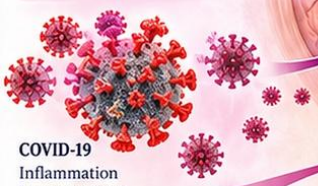
The same reasoning may apply to cortisol.

The Possible Cortisol Connection *To Better Health*

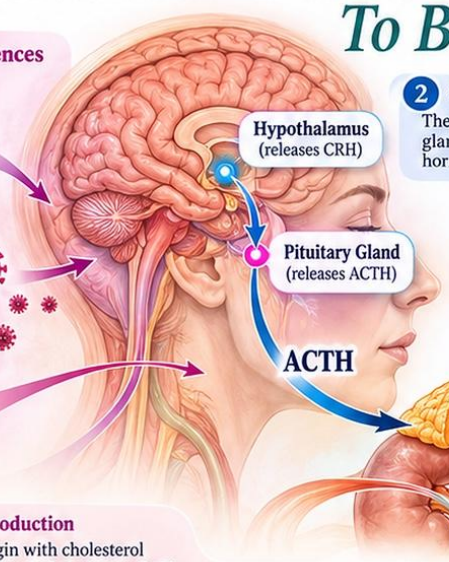
Many symptoms that seem unrelated may be connected through the body's stress-response and hormone systems.

1 Triggers and Influences

COVID-19, inflammation and ongoing physiological stress may influence hormonal regulation and some cytochrome P450 (CYP) enzymes.



COVID-19
Inflammation
Immune stress
Illness recovery
Chronic stress
Medications
Environmental factors

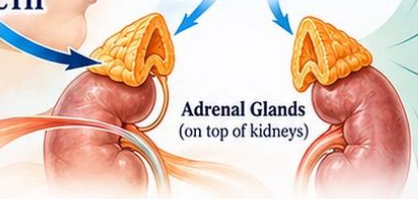


2 Brain Signals

The hypothalamus and pituitary gland communicate through hormonal signals.

3 Adrenal Glands

ACTH signals the adrenal glands to produce cortisol and other steroid hormones.



4 Steroid Hormone Production

All steroid hormones begin with cholesterol and follow different pathways. Cytochrome P450 enzymes (CYP) help convert each step.



Cholesterol
(from diet and body production)

CYP11A1 → **Pregnenolone**
(the starting point for steroid hormones)

Cortisol Pathway

CYP17A1 → 17-Hydroxy-pregnenolone
CYP21A2 → 11-Deoxycortisol
CYP11B1 → **Cortisol**

Cortisol helps regulate glucose, metabolism, immune activity, blood pressure and the daily sleep-wake rhythm.

Aldosterone Pathway

CYP17A1 → Progesterone
CYP21A2 → 11-Deoxycorticosterone
CYP11B2 → **Aldosterone**

Aldosterone helps regulate sodium, potassium, fluid balance and blood pressure.

Cortisol Affects Many Body Systems

- **Brain & Mood** — Alertness, memory, mood, stress response
- **Immune System** — Inflammation, infection response
- **Breathing** — Airway reactivity, immune balance
- **Blood Pressure** — Helps maintain blood pressure and fluid balance
- **Glucose & Metabolism** — Raises blood sugar, influences insulin sensitivity
- **Muscles & Energy** — Protein breakdown, muscle function, fatigue
- **Bones** — Helps regulate bone remodeling
- **Skin & Healing** — Changes in skin, easier bruising
- **Reproductive System** — Influences sex hormones, menstrual cycles, sex drive

5 The Nighttime Connection
Why 2–4 A.M.?



Many people report waking between 2 and 4 a.m. with a racing mind, even though they feel exhausted.

Possible Contributors

- Natural rise in cortisol toward morning
- Low nighttime blood glucose (triggering adrenaline and other hormones)
- Sleep disturbances (e.g., sleep apnea, restless legs)
- Pain, stress or anxiety
- Medications or insulin timing
- Environmental interruptions

The Result

The body releases stress-response hormones such as adrenaline and cortisol to restore balance.

This can cause sudden awakening with mental alertness, making it difficult to return to sleep.

6 How It All Comes Together

- Fatigue and low energy
- Weight and glucose changes
- Blood-pressure fluctuations
- Disturbed sleep and nighttime alertness
- Immune challenges and breathing concerns
- Mood and thinking changes
- Muscle weakness and bone loss

Different symptoms may have a common biological connection.
Understanding these pathways can help us ask better questions and explore new possibilities for better health.

This graphic provides a simplified overview for educational purposes. COVID-related effects on these pathways are under investigation.
Symptoms alone cannot establish a cortisol disorder. Always consult a qualified healthcare professional for medical evaluation and personalized advice.

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Cortisol: More Than a Stress Hormone

Most people associate cortisol with stress. But cortisol is involved in much more than the familiar fight-or-flight response.
It participates in ***glucose regulation, metabolism, immune activity, blood-pressure maintenance, and the body's daily biological rhythms.*** Persistently elevated cortisol, as occurs in ***Cushing syndrome***, may contribute to symptoms including:

- Unexplained weight gain, particularly around the abdomen
- Muscle weakness and fatigue
- Elevated blood pressure and blood sugar
- Skin changes and easy bruising
- Bone loss
- Mood and concentration changes
- Menstrual and other reproductive changes
- Reduced sex drive
- Greater susceptibility to infections

Of course, these symptoms can occur for many reasons. Having one or several does not establish that cortisol is elevated.
But understanding cortisol's broad influence may help explain why endocrine disorders can affect so many different systems.

Why Do We Wake Between 2 and 4 A.M.?

This question particularly interested me because it appeared repeatedly in the experiences people shared with us.
Cortisol follows a daily rhythm. In most people who sleep at conventional hours, cortisol is relatively low during the early part of the night and begins increasing toward morning, helping prepare the body for waking.

But cortisol is not the only participant.

Blood glucose can fall during the night. When that happens, the body may release adrenaline and other hormones to help restore glucose. The resulting response can awaken someone suddenly, sometimes leaving them unusually alert.
Sleep apnea, restless legs, medications, pain, stress, and environmental disturbances can also interrupt sleep.
In other words, waking at 3 a.m. does not necessarily mean that cortisol is too high.

Nevertheless, the repeated reports from our volunteers raise an interesting question: might changes in stress-hormone regulation contribute to this pattern in some individuals?

We believe the question deserves further investigation.

Then COVID-19 Entered the Picture

As we examined cortisol's biochemical relationships, another possibility emerged. Could COVID-19 influence some of the same systems?

A scientific review titled *The Role of Cytochrome P450 Enzymes in COVID-19 Pathogenesis and Therapy*, published in 2022 by Wang and colleagues examined the relationship between COVID-19, inflammation, and cytochrome P450 enzymes.

These enzymes are involved in processing medications and many substances naturally produced by the body.

Certain cytochrome P450 enzymes also participate in the production of steroid hormones.

One Of them, CYPIIBI, helps convert a substance called II-deoxycortisol into cortisol.

Another, CYP11B2, participates in the production of aldosterone, a hormone involved in sodium, potassium, fluid balance, and blood-pressure regulation.

The COVID-19 research raises questions about how illness and inflammation may influence enzyme activity. It does not establish that COVID-19 permanently damages these particular adrenal enzymes or causes chronic cortisol excess. Still, the biological relationships are worth examining.

Following the Hormonal Connections

The body doesn't produce cortisol in isolation.

Steroid hormone production begins with cholesterol, which is converted into pregnenolone. From there, different biochemical pathways lead toward cortisol, aldosterone, and sex hormones.

ACTH, a hormone released by the pituitary gland, stimulates the adrenal glands to produce cortisol.

Aldosterone is regulated primarily by the renin-angiotensin system and potassium, although ACTH can influence it temporarily.

Adrenaline belongs to a different hormone family but participates in the body's response to stress and low blood glucose.

These relationships may help explain why problems involving hormones, metabolism, electrolytes, and sleep can sometimes overlap.

Rather than assuming that every symptom has a separate cause, perhaps we should also ask whether several regulatory systems are interacting.

What Can the Voice Tell Us?

BioAcoustic Biology approaches these questions from a different perspective.

Over decades of research and development, we have created mathematical frequency relationships that we call MathWays, organized within our BioAcoustic mathematical matrix.

Our approach begins with the premise that biological processes can be explored through mathematical relationships and patterns found in vocal frequencies.

Using these relationships, we have developed vocal profiling tools intended to help people explore patterns associated with various biological substances and processes.

In our volunteer observations, some individuals whose vocal profiles exhibited patterns we classify as cortisol-related imbalance also reported waking between 2 and 4 a.m., Often with unusual mental alertness.

We find that relationship interesting.

However, a vocal profile is not a validated measurement of blood or salivary cortisol, and these observations do not establish a medical diagnosis.

The next research question is whether the vocal patterns correlate with independently measured cortisol levels, glucose fluctuations, or documented sleep disturbances.

Readers interested in exploring our BioAcoustic approach can visit SoundHealthPortal.com, where our public WorkStation provides access to selected vocal profiling tools.

The WorkStation is intended for educational exploration, not as a substitute for laboratory testing or medical care.

Could There Be a Cortisol Connection?

Perhaps the most useful lesson is that the body doesn't operate as a collection of unrelated parts.

Cortisol influences metabolism. Metabolism influences glucose. Glucose fluctuations can activate the Stress response. Sleep disturbances influence hormonal can rhythms, and those rhythms can affect how we feel the following day.

COVID-19 adds another area for investigation because infection and inflammation may influence several of these regulatory systems. Does this mean cortisol is responsible for every case of fatigue, weight gain, or nighttime awakening?
Certainly not.

But could cortisol regulation be an overlooked contributor in some cases?

That is a question worth asking. For a BioAcoustic evaluation of your own voice as it relations to Cortisol go to: SoundHealthPortal.com — choose templates related to your issues" cortisol, weight management, adrenal stress...

Quite a few articles on the internet suggest that herbal adaptogens such as Ashwagandha and Rhodiola Rosea Extract (caused dizziness for me) may help provide balance for Cortisol.

From online: "Ashwagandha has been a popular herb in Asia for thousands of years. It's considered an adaptogen, an herbal compound reported to help protect the body from stress. It's also known to support sleep, fertility! and exercise."

"One review looked at a group of studies on ashwagandha and stress. The analysis found that ashwagandha supplements may decrease serum cortisol levels. Another small study showed a 23% decrease in cortisol levels after 2 months of supplementation."

Listening to What the Body Is Telling Us

If you experience persistent fatigue, unexplained weight changes, muscle weakness, repeated nighttime awakenings, or unusual glucose and blood-pressure fluctuations, consider keeping a record of when these symptoms occur.

Look for patterns. Discuss them with your healthcare provider. Ask whether endocrine, metabolic, neurological, or sleep-related causes should be investigated.

People using insulin should be especially Selected references aware that nighttime hypoglycemia can cause sudden awakenings and requires appropriate treatment.

And remember that symptoms alone cannot establish whether cortisol is too high or too low. When cortisol disorders are suspected, validated laboratory testing and professional interpretation are essential.

Our goal is not to replace conventional medical evaluation, but to encourage curiosity, observation, and better questions. BioAcoustic vocal analysis identified ACTH balance as a major influence in keeping my cortisol balanced. — see chart - page 2

Perhaps better health begins when we stop looking at every symptom separately and start asking how the pieces might fit together.

Selected references

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SOUND HEALTH NOTES FOR NOVEMBER 2026

Note Association G
Color Association green blue
Astrological Association Scorpio

Entire month Cortisol stressed including aldosterone, adrenaline short tempers prevail. Fatigue via iron unbalance may be obvious. Every

moment frequencies are hurling toward the earth that influence our emotions and physiology.

These monthly Keynotes are meant to forewarn you of things to come.

Nov I— Nov 7

The joints and muscles seem to be under attack for the next few days, especially the back and hips. Deep hip muscles that support walking mobility and the upper back muscles are particularly vulnerable; the Gluteus Medius and Trapezius respectively are involved.

Also in stress for the next few days: Chondroitin sulfate which supports flexibility in the muscles and Hyaluronic acid that supports joint health and elasticity. Perhaps our flexibility is being challenged as we prepare to vote on Tuesday.

Calcium is an important nutrient in support of Vitamin D which begins to wane for those in the northern hemisphere as our blood begins to prepare for winter. Fibrinogen is an important factor for blood circulation and blood flow. Maybe some extra caution is needed as the days/nights get colder.

CAUTION: The internet is full of advice on losing weight. One of those suggestions is to sleep in a cold room to increase fat burning. This may not be a good idea for people who have blood viscosity issues.

Elastase fits well into this mix of frequencies for the next week. Although Elastase is not a much talked about enzyme; its purpose is to break down proteins particularly elastin which together with collagen supports connective tissues. Elastase also helps break down the proteins of incoming pathogenic invaders that are so prevalent in the colder months.

Immunoglobulin E (lgE) is now in play. lgE is responsible for supporting immunity against parasites, which happen to be Staphylococcus for the next few days. Asthma, sinus, and food sensitivities may be more prevalent in the coming week while lgE is active.

Calcium Ascorbate (orange juice) has the dual responsibility of supporting the immune system while being a vital support for collagen and connective tissue.

Nov 8-14

Genetic frequencies for Psoriasis (dry, red skin condition) are upon us and have been with us for many days now. If people wonder, why they are having flare-ups; it may be the frequencies coming to earth from our solar system. You could consider food sensitivities but this time it is likely not your fault.

B12 co factors are associated with the skin and are also on the rise in the next few days so you might want to ingest a few more B12 foods. Fish, meat, poultry, eggs, milk, milk products, cheese and some breakfast cereals are fortified artificially with B12.

Yeast has been reported as a good vegetarian source of B12. You don't need much B12 but it is essential for energy, blood formation and cell division.

The virus for the Common Cold is sneaking up on us and in keeping with Mother Nature's wisdom; ascorbic acid (part Of Vitamin C known to strengthen the immune system) is active as well. For those suffering from muscle stiffness and strength issues, Dopa, the

precursor for Dopamine will come in play on Monday next. Dopa is part of a cascade that produces the neurotransmitter of Dopamine, Serotonin and norepinephrine; all of which are involved with appetite and weight control.

Muscles coming into stress include the Levator Scapulae (shoulder arm), the hamstrings (back of the thigh), the Quadratus Lumborum (lower back) and the Tensor Fasciae Latae (hip).

We have created a template for Hives. It is available for use on our online WorkStation - www.SoundHealthPortaLcom

EBV (Epstein Barr virus), Cholesterol, myostatin, niacin, caffeine and magnesium stress combine to cause feelings of fatigue for the next few weeks.

Joint pain — especially the knees kick in this week — inflammation of and lack of joint fluid are the culprits. Too much fibrin can also contribute to joint pain. If you test your voice, you will find that the notes of F-G are too high. You can ask for a free nutrition evaluation at SoundHealthPortal.com.

Thyroid stress continues for the next two weeks. Iodine, selenium, and zinc are all thyroid support nutrients. The internet lists foods that are problematic to thyroid function. Selenomethionine may be supportive and can be found at your local health food store.

Niacin (vitamin B3) is especially important to brain function this week.

Expect shoulder girdle muscles to start to flare.

Genes for colon cancer and diabetes come into play for the next few weeks.

Nov 15-21

Knee muscles continue to flare and begin to involve thigh muscles. Muscle evaluations are available from SoundHealthPortal.com under CAMPAIGNS.

Nutrients in stress SAMe, vitamin D4, 25-hydroxycholecalciferol, calcifediol and Vitamin E.

Nanobacteria come into stress this week and can cause tooth plaque and heart sac inflammation. Heart Muscle is stressed this week.

Thyroid stress continues, especially for those using thyroid medications.

Stress involving proteins are active now and may cause gout symptoms (sharp joint pain).

Shoulder muscles continue to aggravate, involving Rhomboid, trapezius and chest wall that helps support shoulder movement.

Diabetes frequencies continue to soar: those with fatty livers will be especially vulnerable using a high-carb diet.

Muscle atrophy, both genetic and those caused by statins and aging. continue to plague, especially the elderly. You may find your muscles seem weak for the next few weeks.

Candida may be more active toward the end of the week. Sugar overload may cause an inflammatory flare-up.

Nov 22-Nov 28

The stress of iron is obvious for this week. Spine issues associated with Lumbar 5 (lower limb circulation, prostate, sciatic nerve) and Thoracic 4 (gall bladder, liver) may become active.

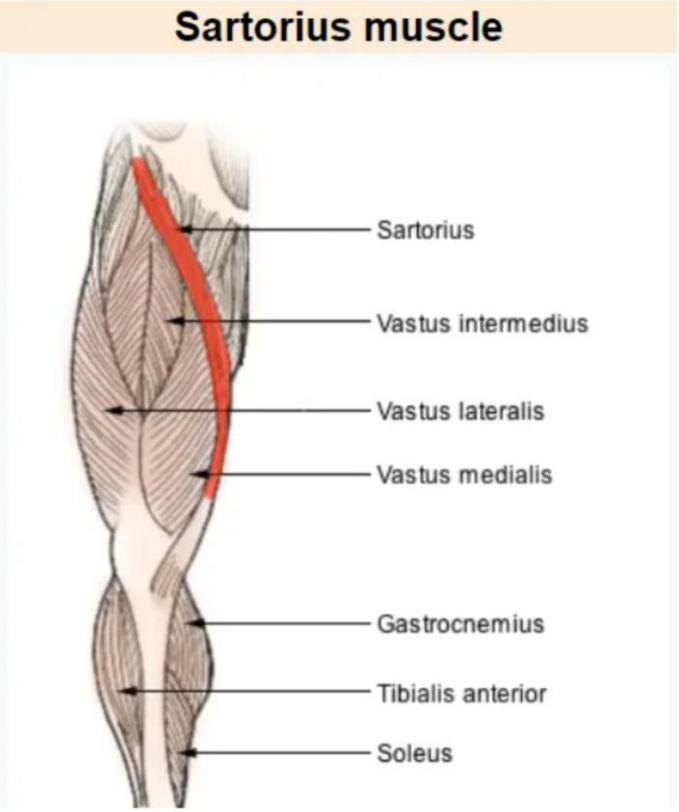
Shoulder and hip joints continue to need detoxification to relieve Glymph system fluid (waste clearance). Nitric Oxide — found in beets - may be of assistance.

The pancreas starts a fortnight of stress this week.

Staphylococcus aureus found as a cause of upper respiratory and skin issues comes into play on Wednesday.

Nutrient in stress — L-Carnitine, which supports energy metabolism of the mitochondria. Carnitine concentrates in cardiac and skeletal muscles.

The Sartorius Muscle begins to activate near the weekend. The Sartorius is a strap-like muscle from the upper outer thigh to the inside of the knee that supports the hips and knees.



Nov 29 – Dec 5

The Liver starts to stress via the gallbladder and bile salts — particularly cholic acid, which is synthesized from cholesterol — Co-Enzyme A is involved — may be Statin related.

Myopathy genes continue to activate. HMB (Hydroxy ß-methyl butyric acid) may be useful. It is used to prevent muscle wasting and is available as a dietary supplement.

Thigh muscles and upper jaw will need extra care and stretching. You may want to consider a massage or facial.

Glutamate and glycine receptors and stressed this week. Aspartame MSG toxicity may be more noticeable.