

## Stress is Everywhere

*How stress affects the cardiovascular, gastrointestinal, and endocrine systems*

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**LEXINGTON** The “mind-body connection” is an old concept with deep roots in our culture; this entrenchment is for good reason. While it might seem challenging to draw an exact line from the new stress in your life to your suddenly very picky, grumbling bowels, it is not as difficult as you might guess. How our mind assesses and manages life’s stressors will often present with very real, tangible physical symptoms in our bodies. While living a no-stress, or even low-stress, life is nearly impossible, we can better recognize and manage those physical symptoms.

Of all the organs, the heart receives the most attention in society, from pop love songs to historic literature. It is our metaphorical center, guiding us through life’s ups and downs that make us human. It is not a coincidence that some of medicine’s strongest findings of stress and its physiological effects involve the heart. A sudden stressful event causes the heart rate to increase and blood

vessels to dilate, leading to the fight-or-flight adrenaline surge that is built into our DNA. The relationship between acute stress and physical symptoms is obvious in these scenarios, but we recognize physiological effects of chronic stress too.

Chronic stress increases inflammation. When blood vessels, such as the coronary arteries that feed the heart and the carotid arteries that feed the brain, are inflamed, the risk of a heart attack or stroke is higher. Inflammation can also increase cholesterol levels, which is another risk factor for a heart or brain event. For these reasons, stress management will appear on every top ten list of modifiable risk factors of cardiovascular disease.

Perhaps the most tangible example of stress and the heart is seen each time Takotsubo cardiomyopathy, colloquially known as broken-heart syndrome, is diagnosed. Broken-heart syndrome can be seen after stressful events, such as the loss of a close loved

one. The patient can develop intense chest pain and shortness of breath, or even an arrhythmia, related to surges of stress-related hormones. The surge will cause a portion of their heart to function poorly. Fortunately, full recoveries are usually made. Just as the emotional mind recovers from trauma, so can the heart.

### Gut Checks and Hormone Rushes

Symptoms such as bloating, heartburn, loose stool, belly cramping, and various other gastrointestinal annoyances are ubiquitous in the primary care setting. We have all experienced these symptoms at some point. There are millions of neurons in the gut that are directly synced with the brain, creating a brain-gut communication. The sensation of feeling “butterflies” is an example of this communication. When stress is felt by the mind, the gut can be affected. Stress can cre-

ate over-activity or under-activity of the GI tract, often presenting with the GI symptoms that have us reaching for the closest bottle of Pepto. Furthermore, there are billions of bacteria lining the inside of the bowels. When the brain-gut communication feels stress, the bacteria can be altered, which may lead to symptoms involving the bowels.

Another example of stress on the body can be seen in the endocrine system, whose role is to regulate the hormones that keep our body humming correctly on a daily basis. The hypothalamic-pituitary-adrenal (HPA) axis is the portion of the endocrine system that is activated when stress occurs. The hypothalamus and pituitary reside in the brain, while the adrenal glands sit just above each kidney in the flanks. When the pituitary recognizes stress, a series of events are initiated in the HPA axis. The cascade effect ends with the adrenal glands producing the cortisol hormone. Cortisol is the “stress hormone” and is very helpful in acute episodes of stress, as it increases energy and focus. However, when too much cortisol is produced for prolonged periods of time due

to chronic stress, then it negatively affects the HPA axis. Issues such as fatigue, depression, and metabolic disorders (e.g. diabetes, weight gain) can occur. It can also negatively affect the immune system.

## Our Approach

Now that we recognize the strength of the mind-body connection, and are likely very stressed about being stressed, what can we do to minimize its negative effects, or better yet, harness the connection to our benefit? In our practice, we start with giving credit where credit is due: evaluating the possible stressor(s) and giving credence to the mind-body connection in relation to the physical symptoms. Once this is established, the treatment must be based on a wholistic approach. At Downtown Drs. Brown, we emphasize making time to discuss keys to stress, such as nutrition, sleep, exercise, and mental health. Then we create a treatment plan for both the physical symptoms and the stress behind the symptoms. For example, that upset gut we mentioned earlier could be treated with a prescription for Carafate (a medicine that coats

the lining of the stomach) and a discussion about meditation or walking outside or yoga or another de-stressing activity that will also protect the lining of the gut. The physical symptoms likely will not improve until the stressor is also addressed.

Managing the stressors of life is an incredibly difficult task, but there are many proven approaches that help. Working with a mental health provider is likely the most effective. Creating robust social support with family and friends has positive effects on the mind and physical symptoms. These social connections should focus on being done in-person or on the phone versus the highly edited world of social media. Routine physical activity has been shown many times over to reduce stress, as has getting adequate sleep each night.

No one can remove stress from his or her life, but simply recognizing stress and its physical effects can be very beneficial. The next step would be to work with your physician to mindfully add activities and habits that specifically work well for your stress management. Your mind and body will appreciate your efforts. **MDU**



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