



**Women's Health Research Institute**  
*Putting Women's Health Research First*

**August 2013**

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Dear Friend,

This August we invited our colleagues from the Center for Psychological Research in GI at Northwestern's Feinberg School of Medicine to write on the sex differences related to the gastrointestinal (GI) tract. [The Center for Psychological Research in GI](#) is uncovering research connecting trauma to GI disorders. Approximately 50% of all individuals will be exposed to at least one traumatic event in their lifetime, and research indicates that women are twice as likely to develop lasting symptoms. Understanding and investigating the psychological connection between trauma and GI disorders are necessary steps towards improving the quality of life for women.

We hope the below article better illuminates these connections and helps you become better informed on the psychological and physiological ramifications of stress and trauma.

Happy August!

Sincerely,

The Institute Staff

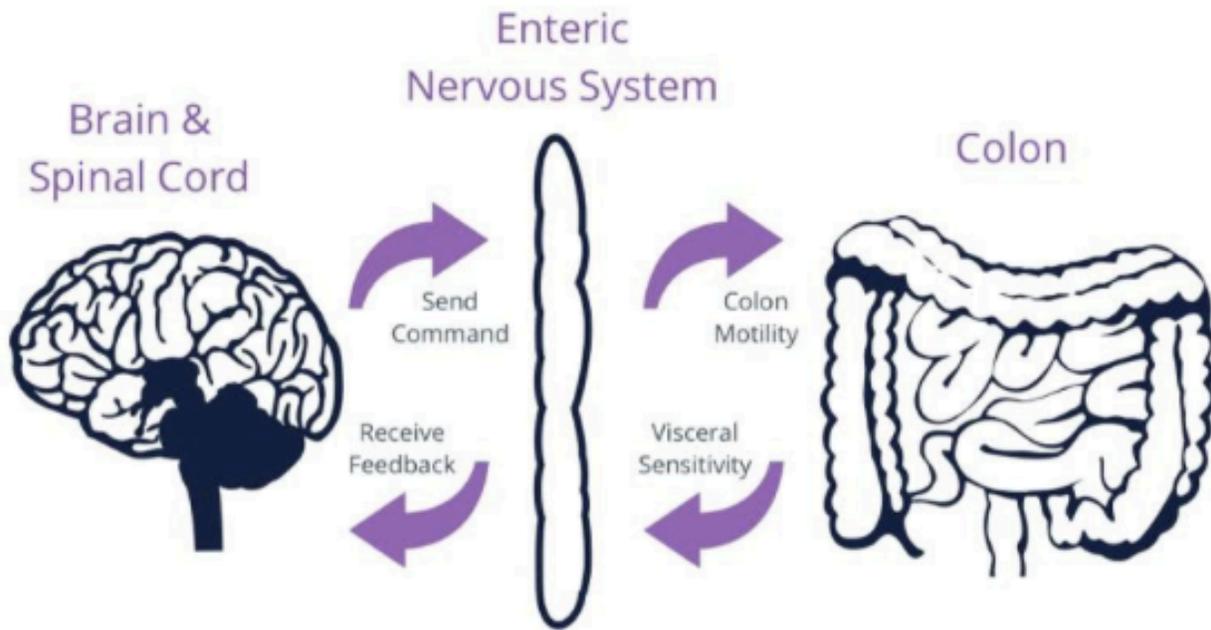
**Traumatic Stress in Women with Functional Gastrointestinal (GI Disorders)**

Gastrointestinal problems encompass a wide range of diseases and syndromes; most common are the "functional" gastrointestinal (GI) disorders including irritable bowel syndrome (IBS), chronic constipation, functional heartburn and persistent abdominal pain. Functional GI syndromes are called such because there are no obvious physiological or chemical abnormalities to explain the symptoms of pain, cramping, diarrhea, bloating, nausea, rumination, constipation or gas. Rather, the symptoms occur because there is a disruption in the function of the gastrointestinal tract.



Disruption in gastrointestinal function occurs largely through a disturbance in how the brain and central nervous system (CNS) interact with the gut and its own enteric nervous system (ENS). Digestion is controlled through the careful integration of signals between the CNS and the ENS, each system "takes turns" managing digestion as food moves through the system. The enteric nervous system regulates muscle control and fluid movement as well as coordinates between multiple systems through chemical messengers including serotonin. Therefore, because of its direct interaction with the brain

(brain-gut connection), the GI tract is more susceptible to the effects of stress than many other organ systems. The cause of functional GI conditions is multifactorial and data continues to suggest that adverse life events, including trauma, can play a critical role in a woman's susceptibility to develop a functional gastrointestinal condition, her overall symptom experience and response to treatment.



### What is the connection between trauma and GI disorders?

Trauma can be defined in many ways, but typically involves situation(s) in which an individual witnesses or directly experiences something which is life-threatening or very scary. Trauma is often associated with intense feelings of fear, horror, shock or helplessness. Common traumas include combat, witnessing the death or severe injury of a loved one, rape or sexual assault, physical, sexual or emotional abuse, being bullied, being in a serious accident and so on. The mental consequences of trauma can last long after the actual event has ended (nightmares, intrusive memories, feelings of disconnectedness or numbness, quick startle response), and many women with histories of trauma also experience physical effects like heart palpitations, increased circulation of stress hormones, excessive sweating or clammy hands. As a result of this persistent arousal, women who experience trauma, especially early on in life, are more prone to health problems, high healthcare use and poor quality of life. Considering the impact of trauma on the GI tract alone, we find that women with a history of sexual abuse are 1.5 to 2 times more likely to report GI complaints and have poorer quality of life than those who do not. Even more staggering is that as many as 40% of women with functional gastrointestinal disorders endorse a history of trauma.

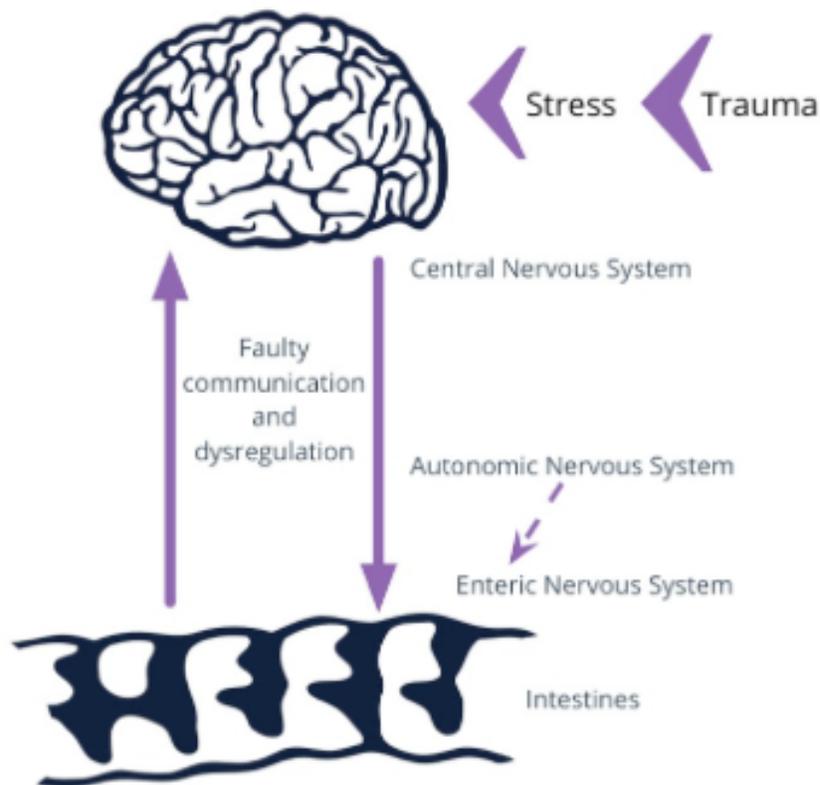


Traumatic stress later in life can also have an impact on gut function through similar pathways. Considerably less is known about emotional abuse, but women with irritable bowel syndrome have been found to score higher on measures of emotional abuse than women with other diseases. Military trauma has been associated with a 50% to 115% excess risk of developing irritable bowel syndrome in women veterans. Whether this staggering statistic is from high rates of sexual trauma in the military, multiple stressors associated with deployment alone or an increase in women in the military is still uncertain.

### **How does trauma impact gastrointestinal function?**

While research is ongoing, it is likely that trauma impacts the gut's function through 2 pathways:

1. Trauma creates stress which directly influences the GI tract, including its ability to regulate the hormones, chemicals, nerves and muscles that move food and waste through the gut at the right pace (motility). Stress can also interfere with the brain's ability to regulate physical sensations coming from the gut, resulting in feelings of pain, burning or bloating. One of the reasons for this is that after a traumatic stressor, the body takes a while to return back to a normal state of arousal-until that normal state returns, there is often excess secretion of stress hormones and increased arousal which the gut has a difficult time integrating into its complex system.
2. When trauma occurs during early childhood, the development of certain parts of the brain, nervous system and immune system can be thwarted, making a person at higher risk for the development of all types of mental and physical health problems. Much of the gastrointestinal tract develops after birth, and therefore can be greatly affected by early life experiences.



### The simple version?

Exposure to trauma in early life, including things like child abuse, neglect, poor parenting, natural disasters, violence in the home or community, and even death of a parent can lead to physiological changes in the brain (shown on brain imaging) and influence the threshold at which people experience abdominal pain or changes in intestinal motility (constipation, diarrhea). Early life trauma may also influence the extent to which a person experiences or holds on to sensations or pain in her body, is hypervigilant (or on the lookout for physical symptoms), perceives or expresses the severity of symptoms to others or copes with them as they occur. Traumatic stress that occurs later on in life can result in gut dysregulation as well through increased secretion of stress hormones, increased physiological arousal and the psychological stressors associated with having to return back to normal.

### How can trauma impact treatment?

We know that trauma can increase a woman's risk for the development of GI disorders, but it can also influence her motivation and ability to access and respond to appropriate treatment. Women who have experienced traumatic events:

- May have difficulty with trust and as a result, seek treatment or find the right doctor later than their non-traumatized counterparts.
- May be more sensitive to the effects of medication and therefore struggle to find a treatment whose side effects they can tolerate.
- May struggle with wider ranging or more severe symptoms or have trouble managing the emotions associated with chronic medical problems.
- May suffer for longer and receive unnecessary treatment or incorrect diagnoses due to their physicians' failure to identify trauma or its contribution to physical health.

As difficult as it may be to discuss, if you have suffered a traumatic event, it is important that the healthcare provider(s) treating your gastrointestinal symptoms and conditions be aware so that they may get the help you need.

*Author:*

*Dr. Laurie Keefer is an associate professor of medicine at Northwestern University Feinberg School of Medicine and the director of Northwestern's [Center for Psychosocial Research in GI \(CPRGI\)](#). Research at CPRGI is aimed at understanding health behaviors that directly interfere with the effectiveness of medical care. For more on research conducted at CPRGI and topics related to GI health and health behaviors, check out CPRGI's new [website](#) and [blog](#).*

*If you suffer from a chronic GI condition and are interested in participating in a research study, visit CPRGI's website to learn about [ongoing studies](#).*

*Sources:*

1. Chang, L. (2011). The role of stress on physiologic responses and clinical symptoms in irritable bowel syndrome. *Gastroenterology*, 140(3), 761-765.
2. Drossman, D. A. (2011). Abuse, trauma, and GI illness: is there a link? *Am J Gastroenterol*, 106(1), 14-25.
3. Graham, D. P., Savas, L., White, D., El-Serag, R., Laday-Smith, S., Tan, G., & El-Serag, H. B. (2010). Irritable bowel syndrome symptoms and health related quality of life in female veterans. *Aliment Pharmacol Ther*, 31(2), 261-273.

*Useful resources include:*

<http://www.pennmedicine.org/gi/services/women.html>

[http://my.clevelandclinic.org/disorders/gastrointestinal\\_tract\\_disorders/hic\\_gastrointestinal\\_disorders.aspx](http://my.clevelandclinic.org/disorders/gastrointestinal_tract_disorders/hic_gastrointestinal_disorders.aspx)

<http://www.iffgd.org/>

## Health Tip: Thinking Healthy

Sarah Kinsinger, PhD wrote recently on the connection between healthy thinking and healthy living. Research has found that it's not a incident itself, but how we think about a incident that determines how we feel. The connection between stress and digestive disorders is strong, so managing how we *think* about situations will improve our digestive health. Psychologists coined to this phenomenon as "cognitive restructuring," and it is a necessary stage in cognitive-behavioral therapy (CBT). CBT has consistently been shown to reduce digestive symptoms in many functional GI disorders.

So, when you find yourself worrying excessively, try out some cognitive restructuring skills and replace your negative thoughts with healthier alternatives!

Source: [Healthy Thinking for Digestive Wellness](#)

## INSTITUTE HAPPENINGS

**Menopause:** Should you take hormone therapy during menopause? What's the latest research about its safety? Are there non-hormonal alternatives for managing hot flashes and other symptoms? Menopause and its management just got a lot less confusing with the launch of a new website, [menopausenu.org](http://menopausenu.org), that offers women a personalized approach to managing their symptoms and the latest information based on authoritative research. Created by the Women's Health Research Institute (WHRI) at Northwestern University, it can be viewed on a computer, tablet or smart phone.

**Dr. Woodruff Nominated Head of Endocrine Society:** On June 19th, 2013 Teresa K. Woodruff, PhD, Founder and Director of the Women's Health Research Institute, took office as the President of The Endocrine Society during the Society's 95th annual meeting in San Francisco, CA. Dr. Woodruff brings a wealth of expertise to her new role having spent her career researching fertility preservation. She has also devoted herself to the advocacy of women's health within the clinical, public health and research communities. Goals for her term include introducing a new award program through the Society titled "Leap." The Leap awards will be used to secure global funding for "next-generation innovators." Dr. Woodruff will also work to redesign the Society's logo and branding with the end goal of developing more visibility and global recognition. Dr. Woodruff 's ascension to the presidency of The Endocrine Society also represents a continued presence of leadership within the Society from the Northwestern University reproductive science community.

**Successful Summer for the Women's Health Science Program:** The Women's Health Science Program at Northwestern's Women's Health Research Institute just completed its summer academies introducing 48 young women from Chicago Public Schools to careers in scientific research and medicine. The two academies, The Infectious Disease Summer Academy (IDSA) and the Oncofertility Summer Academy (OSA), each spent one week on the Northwestern Medical School Campus learning from current scientists, clinicians, graduate researchers, and medical students. To date, 180 students have participated in the Women's Health Science Program since its inception in 2007. WHSP students have a 100% high school graduation rate, and

all of our high school graduates have continued onto college, with 80% actively pursuing science majors. Please visit the WHSP [website](#) for more information.

## UPCOMING EVENTS

September 17, 2013, Monthly Forum, 12:00pm Restarting the Menopause Discussion: From Confusion to Clarity presented by Elena Kamel, MD.

October 2, 2013, Monthly Forum, 12:00pm Update on Breast Cancer Prevention and Treatment presented by Virginia Kaklamani, MD, DSc.

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