

NIH News in Health

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Gut Troubles

Pain, Gassiness, Bloating, and More

Everyone has pain or discomfort in their gut occasionally. Maybe you ate something that didn't agree with you. Or you had an infection that made you sick to your stomach for a few days.

But if pain and other gut symptoms go on for weeks or longer, something more serious might be wrong. Digestive system diseases and disorders are very common. Around 60 to 70 million people in the U.S. live with a digestive disease.

It's important not to ignore symptoms in your gut. Many digestive disorders are easiest to treat when they first develop.

Potential Causes • One of the most serious gut disorders is inflammatory bowel disease (IBD), although it's not very common. IBD occurs when **immune system** cells in the gut overreact to a perceived threat to your body. Often, that "threat" is the normal bugs that make up the microbiome—the microscopic creatures like bacteria, fungi, and viruses—that live in your gut. This



overreaction can damage the digestive (gastrointestinal or GI) tract.

The two main types of IBD are ulcerative colitis and Crohn's disease. "Crohn's can occur anywhere in the digestive tract, from the mouth to the anus," says Dr. Judy Cho, an IBD expert at Mount Sinai. Ulcerative colitis happens only in the large intestine.

These two diseases also differ in how deeply they can damage tissue. "Ulcerative colitis causes damage in the gut lining," explains Dr. Dermot McGovern, who studies IBD at Cedars-Sinai. "Crohn's disease can go all the way through the gut." Severe cases of Crohn's can lead to narrowing of the intestines and even holes in the gut.

Other conditions can harm the lining of the stomach and lead to a type of **inflammation** called gastritis. The most common cause of gastritis is infection with bacteria called *Helicobacter pylori*. Other causes

include the long-term use of some pain medications. If left untreated, gastritis can lead to painful ulcers.

Twelve percent of people in the U.S. have irritable bowel syndrome (IBS). "This is a very common disorder. It's characterized by abdominal pain, bloating, and changes in bowel habits," says Dr. Anthony Lembo, an IBS researcher at Beth Israel Deaconess Medical Center.

Researchers don't understand exactly what causes IBS. It may have different causes in different people. Sometimes it involves problems with how the brain and gut work together.

Other things that can cause pain and discomfort in the GI tract are acid reflux or food sensitivities.

Pinpointing the Problem • It can be tricky to diagnose a digestive disease because they share a lot of symptoms, explains Cho. Symptoms of many gut conditions include pain, gassiness, bloating, and diarrhea.

"But for IBD, there are several red-flag symptoms," she says. These are blood in the stool, weight loss, and signs of inflammation found in a blood test. A sign of IBD in children

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Definitions

Immune System

The body's defense against germs and foreign substances.

Inflammation

Heat, swelling, and redness caused by the body's protective response to injury or infection.

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is failure to grow, Cho adds.

IBS can give some people diarrhea and others constipation. Some people go back and forth between the two.

Gastritis and food sensitivities can also cause long-term gut discomfort. To figure out what's causing gut troubles, doctors may need to run a variety of tests. These can include blood tests and a stool test to look for infection.

Some people may have an imaging test, such as a CT scan. Others may need to have an endoscopy. Endoscopy uses a long, flexible tube with a tiny camera on the end to look in the intestines or stomach.

Treating Pain and Discomfort •

While symptoms for different gut disorders can be similar, treatments vary widely. For gastritis caused by bacterial infection, antibiotics are used to kill the germs. If medications are causing gastritis, switching to a different kind of drug will usually allow the stomach to heal.

Food sensitivities can be managed by changing your diet. A nutritionist can help you figure out what foods might be irritating your gut. Acid

reflux can also often be improved by changes in your diet and medication.

Treatment isn't one-size-fits-all for IBS, Lembo explains, because it can have different causes. Some people can get some relief by adjusting their diet. (See the Wise Choices box for foods that can trigger gut symptoms.)

"We also tell patients to eat two to three meals a day, maybe have a snack or two. But don't eat all day long. Give your gut a chance to rest," he says.

And while stress doesn't cause IBS, it can trigger flare-ups of symptoms in many people, says Lembo. Stress reduction strategies and cognitive behavior therapy—a type of talk therapy—can help some people manage symptoms of IBS.

IBD is harder to treat than most gut disorders. "It's impossible to cure IBD right now," says Cho. Treatments focus on stopping inflammation long enough to allow the gut tissue to heal, she explains.

Some medications used for IBD control inflammation. Other newer drugs suppress the immune system. But these newer drugs can have serious side effects and are usually only used when others don't work.

"Research has discovered that the earlier you use these medications, the more likely you are to respond," says McGovern. So, people with high-risk disease may get these drugs first now, he explains.

Looking for Better Treatments •

Researchers are searching for new ways to prevent and manage gut disorders. Lembo, for example, is testing whether peppermint oil can help the gut muscles relax in people with IBS.

Existing treatments for IBD only work for about a third of people who try them. And even then, McGovern says, they may lose their effects over time.



Wise Choices Gut Trigger Foods

Not all people with gut disorders have problems with the same foods. But some foods that commonly cause gut discomfort include:

- Dairy products
- Caffeine
- Carbonated drinks
- Sugar, candy, and junk food
- Fruit juices
- Beans
- Cruciferous vegetables, like broccoli and cauliflower

Both Cho and McGovern are working to understand the genetics of IBD. This information could be used at all stages of the disease, explains Cho. For example, if a test could identify children at higher risk of developing IBD later in life, "theoretically it could be prevented," she says. Strategies could include giving anti-inflammatory drugs before IBD develops or changing the gut microbiome to prevent an immune attack.

"And what we're all interested in is: Can we use some of these genetic signatures to identify new drug targets for IBD?" adds McGovern. That could also eventually help predict who would most likely benefit from a drug, he says.

One of the newest drugs being tested for IBD was based on a genetic discovery, Cho explains. "There's increasing precision in treatment," she says. "Using genetic knowledge to help choose therapies for IBD is something that I think is doable in the next five to 10 years."

For now, talk with your doctor if gut discomfort or pain are impacting your quality of life. Available treatments can help most people get their insides back in order again. ■

NIH News in Health

ISSN 2375-6993 (Print) ISSN 1556-3898 (Online)

Editor Harrison Wein, Ph.D.

Managing Editor Tianna Hicklin, Ph.D.

Graphics Alan Defibaugh (illustrations),
Bryan Ewsichek (design)

Contributors Erin Bryant and Sharon Reynolds

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National Institutes of Health
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Office of Communications & Public Liaison
Building 31, Room 5B52
Bethesda, MD 20892-2094
email: nihnnewsinhealth@od.nih.gov
phone: 301-451-8224



Web
Links

For more about gut problems, see "Links" in the online article: newsinhealth.nih.gov/2020/02/gut-troubles

Disrupted Speech

Why Do We Stutter?

Stuttering affects more people than you might think. Roughly 3 million Americans have this speech disorder that makes speaking smoothly difficult. Scientists are learning about what causes people to stutter, and **genes** tell a big part of the story.

“People with stuttering know exactly what they want to say. They’re just unable to say it at the rate they would like,” says Dr. Dennis Drayna, an NIH expert on the genetics of communication disorders.

Stuttering often involves speech sounds that are repeated or held for too long—often when starting words or sentences. It affects about 1 in 20 children. Most will outgrow the disorder on their own or with the help of a professional called a speech-language pathologist.

“However, about 20–25% of children who stutter will continue into adulthood,” says Drayna. This condition is known as persistent developmental stuttering. Overall, about 1% of adults stutter, and it’s much more common in men than women.



Wise Choices

Does Your Child Stutter?

- Be patient and focus on what he or she is saying.
- Listen attentively when your child speaks and wait for him or her to say the intended word. Try not to finish sentences or fill in words.
- Avoid telling your child to “relax” or “slow down.”
- Speak at a relaxed pace with your child and pause often. This can help reduce time pressures the child may be experiencing.
- Set aside some time each day to talk with your child when he or she has your undivided attention.
- Contact a speech pathologist if stuttering lasts over six months.

For those who stutter, communicating with others can be difficult. It can cause anxiety about speaking and lead them to avoid talking. This, in turn, can affect relationships, self-esteem, and quality of life.

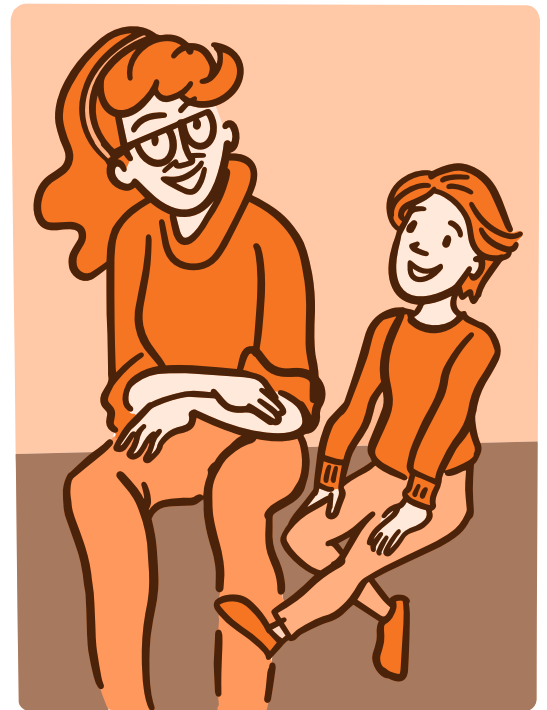
It’s common for people who stutter to be able to speak without stuttering when in a low-stress environment. They may have no problem speaking fluently with a pet or baby, for example. Singing or speaking together in a group can also lessen stuttering. But stuttering often gets worse if they’re feeling tired or anxious.

Researchers are still working to fully understand what causes stuttering. But they do know that it often runs in families. “It’s 15 times more likely that a sibling of a person who stutters will stutter than a random person in the population,” explains Drayna.

By studying families with multiple people who stutter, Drayna has identified several genes that can cause stuttering. **Mutations** in these genes have now been found in people around the world who stutter. These studies suggest that genes likely play a role for many people who stutter.

All the genes identified so far are involved in a process inside the cell called intracellular trafficking. This process helps direct things in the cell to their proper locations. Problems with intracellular trafficking have recently been recognized in other neurological disorders, like Parkinson’s and Alzheimer’s disease. But more research is needed to understand how it impacts speech and stuttering.

Scientists are also using brain imaging scans to better understand brain activity in people who stutter.



This may help show why some children outgrow stuttering and hopefully lead to better treatments one day.

For now, treatment for stuttering involves therapy with a speech-language pathologist. Many of the current therapies aim to make speech smoother. Some work to change the thoughts that can bring on or worsen stuttering. Electronic devices are also available to help those who stutter manage their speech.

While stuttering can be an obstacle, there are many resources to help overcome it. See the Wise Choices box for tips on helping your child. ■



Definitions

Genes

Stretches of DNA, a substance you inherit from your parents, that define characteristics such as how likely you are to get certain diseases.

Mutations

Changes in a DNA sequence.



Web Links

For more about stuttering, see “Links” in the online article: newsinhealth.nih.gov/2020/02/disrupted-speech



Health Capsules

For links to more information, please visit our website and see these stories online.

Blood Proteins Change Across the Lifespan

Proteins are one of the main building blocks of the body. They hold skin, muscles, and bone together. They also perform many functions in cells. And when released into blood, they help cells communicate. In a new study, scientists found that certain proteins in the blood can predict a person's age and give insight into their health and wellness.

Researchers collected blood plasma samples from more than 4,000 volunteers between the ages of 18 and 95. They compared the

levels of nearly 3,000 proteins. They found that a set of about 375 select proteins could predict people's age within a few years. Those predicted by these proteins to be younger than they were also performed better in mental and physical tests.

The researchers found that proteins in the blood changed mostly in three waves—around the ages of 34, 60, and 78. Some of the proteins that changed are linked to age-related diseases. For example, proteins associated with heart disease and

Alzheimer's disease were found at 60 and 78 years of age. The findings suggest it may one day be possible to identify people at greater risk of age-related disease with a blood test.

"We've known for a long time that measuring certain proteins in the blood can give you information about a person's health status," says Dr. Tony Wyss-Coray of Stanford University. "But it hasn't been appreciated that so many different proteins' levels ... change markedly with advancing age." ■

Teens Taking Charge of Their Health

Becoming a teen means taking more responsibility for decisions about your body and health. It's important to understand how your body works and what it needs. That way, you can make smart choices about what you eat and how you keep active. Start by creating healthy habits now.

Eating a good diet is an important place to start. By choosing healthy foods and drinks, you can give your body the nutrients it needs. Nutritionists recommend filling half of your plate with fruits and vegeta-

bles. Teens need more of certain nutrients like calcium (found in milk, yogurt, and cheese) and vitamin D (found in dairy, fortified cereals, and tuna). It's a good idea to reduce added sugar from foods like cookies, candy, and soda.

Staying at a healthy weight is important, too. But extreme dieting isn't the answer to extra weight. Cutting out whole food groups or skipping meals can be unhealthy and may make it difficult to maintain long-term weight loss. Unhealthy dieting can also affect

your mood and how you grow. Instead, try to make small changes you can stick to. NIH has online resources to help you reach and stay at a healthy weight.

Regular exercise is also key. Experts recommend teens get 60 minutes of physical activity each day. Three of those days should include a vigorous exercise like jogging or biking.

To learn more, visit www.niddk.nih.gov/health-information/weight-management/take-charge-health-guide-teenagers. ■



Featured Website

Moms' Mental Health Matters

www.nichd.nih.gov/ncmhpep/initiatives/moms-mental-health-matters

Many women experience anxiety and depression during pregnancy and after giving birth. Learn how to spot the signs of anxiety and

depression around pregnancy.

You can also find tips on supporting a loved one and finding treatment.



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