# <u>The Vomit Reflex,</u> by Dan Pendick

Turkey Day is coming and you don't want to make the same mistake Uncle Louie made last year: eating that seventh piece of pumpkin pie and washing it down with gravy and mashed potatoes. Just thinking about that combo is enough to send you racing for the bathroom.

Anyone who has ever done it knows that vomiting is no picnic. Bud you know that this "retched" reflex can save your life? That's the reason the vomit response evolved in the first place, scientists say.

"Nausea and vomiting are important to making sure you don't get sick or even die from what you eat," says Dr. Kenneth Koch of the Hershey Medical Center in Pennsylvania. Vomiting, he says, may be one of our most important *adaptive traits*.

Think about it: You've accidentally eaten rotten food or poison. What quicker way to get rid of it than to have your body automatically trigger the digestive eject button? Vomiting expels the offending substance **before** it can do any damage, says Koch. Plus, that sour-tasting explosion from within should remind you: Don't eat **that** again!

Surprisingly, your stomach is not the sole controller of the vomit reflex. "The brain is monitoring conditions of the stomach moment to moment," via a highway of nerves, Koch says.

### Physiologic



Metabolic Uremia Endocrine Imbalance Electrolyte Imbalance: - Hypercalcemia - Hyponatremia

#### **Treatment Related**

Chemotherapy Radiation Therapy (especially to brain or GI tract) Medications: Initial Opioid Therapy Antibiotics Aspirin/NSAIDS Carbamazepine Steroids Expectorants

Emotional/Spiritual/Psychological Anticipatory N&V (prior to chemotherapy) Meaning of Illness Loss of Personhood Role Change Suffering Anziety/Fear Fatigue

omiting Center of the Brain:

Lower Medula

When these nerves sense trouble in the gut, they alert various regions of the *brain stem*: "Hey, there's bad stuff down here." Nerves in the brain send a signal back: "get rid of it, will ya?"

"The vomiting reflex is like a computer program stored in the brain stem. When it fires off, it's hard to stop," says Koch. The stomach muscles relax. Then the *small intestine* – where food is normally absorbed into the bloodstream – "kicks into reverse and starts to push the acidic mush back into the stomach," Koch explains. Next, the stomach muscles contract and squeeze the mush into the *esophagus*, the flexible tube connecting your stomach to your mouth. *Peristalsis*, the rhythmic muscle contractions that normally push food "downward," shifts into reverse. The esophagus relaxes and opens a clear path to your mouth.

Though gross, this vomiting reflex is such a valuable lifesaver, says Koch, that many other animals, including dogs, cats, birds, frogs, and fish, have it too. Lucky for humans, our bodies usually offer us enough time to make it to the bathroom by sending us the warning signs of *nausea* – sweaty skin, a salivating mouth, and a wave of dizziness.

## LOSING YOUR LUNCH:

You might feel similar symptoms w hen you overdo it at mealtime, Koch says. Though losing your lunch won't save your life, it does tell you that something is wrong: By eating too much, you're overtaxing your digestive system.

> Usually, it's the "rich, fatty foods, things you can't or don't eat a lot of" that push you to the limit, Koch explains. These foods expand your stomach and slow digestion. Unable to churn and break down the food in the regular rhythm, the stomach signals the brain: **Enough**!

Of course, veterans of vomiting know that the reflex doesn't always relate to food. Soon after cars, boats, and airplanes were invented, *motion sickness* hit the scene. To keep your body on an even keel while moving, says Koch, "three systems have to work in synch": Your eyes; your inner ear, which houses the body's mechanism for balance; and the nerves in your feet, joints, and the seat of your pants, which keep track of how your body is positioned.

Say you're riding in the backseat of Dad's car, reading *Science World*. The fluid-filled canals of your inner ear tell your brain that you're moving. Your eyes, however, are focused on a fascinating article about trees; they don't notice the motion. And the nerves in your buttocks and feet are sitting still.

"There's a mismatch between what the various senses say is happening," says Koch. "As a result, you become disoriented, and then sick."



# DAD, STOP THE CAR!

Well, at least you're not alone. Almost everyone experiences motion sickness at some point. But how is *this* reflex a *lifesaver*?

It's not says scientist Robert Stern of Pennsylvania State University. The problem is that some poisons affect your senses in ways similar to unsteady motion. So the motions can trick your brain into thinking you've eaten poison, Stern explains. The brain sends signals to get rid of the "phantom" poison.

In the past, people attempted motion-sickness remedies that ranged from useless to outright disgusting. (One "cure": horseradish, rice, red herring, and sardines!) Today, a number of more reliable medications are available, including a stick-on patch. In general, these medications work by interfering with the nerve signals that trigger nausea and vomiting. Ask your doctor for details. Other details: Avoid reading in a moving vehicle. Instead, look ahead at the horizon, not at the fast-moving scenery. And this Thanksgiving, if Uncle Louie does overstuff himself, don't spin him around in his chair.



**CAUTION**: Scientists warn that regularly making yourself vomit – a symptom of bulimia, an eating disorder – can deplete your body of nutrients and could eventually kill you. For more information about eating disorders contact:

American Anorexia/Bulimia Association c/o Regent Hospital 425 East 61<sup>st</sup> St. New York, NY 10021



The three top tummy turners: eggs, needles and blood. Also nauseating: bus exhaust, day old grits, cigarette butts in coffee cups and cat hairballs.