



THE SCIENCE OF ANGER

Most everything we do and feel affects our bodies and minds. In *GH*'s new series, "The Science of..." Elaine Chin, M.D., and Bill Howatt, Ph.D, explain some of life's most impactful experiences so we can be our healthiest and happiest. First up: this universal emotional force

THE BASICS

So what is anger, anyway?

Simply put, it is an emotion, but one with a purpose: to stop or start something. It might pop up, for instance, when you need to block a threat or take control of a situation. Most of the time, you get that *grrr* feeling after an interaction goes wonky—say, when a miscommunication results in your time being wasted or when someone violates your boundaries or takes something of yours. Anger

sets off our fight-or-flight response, which evolved back in our club-carrying days to help us survive.

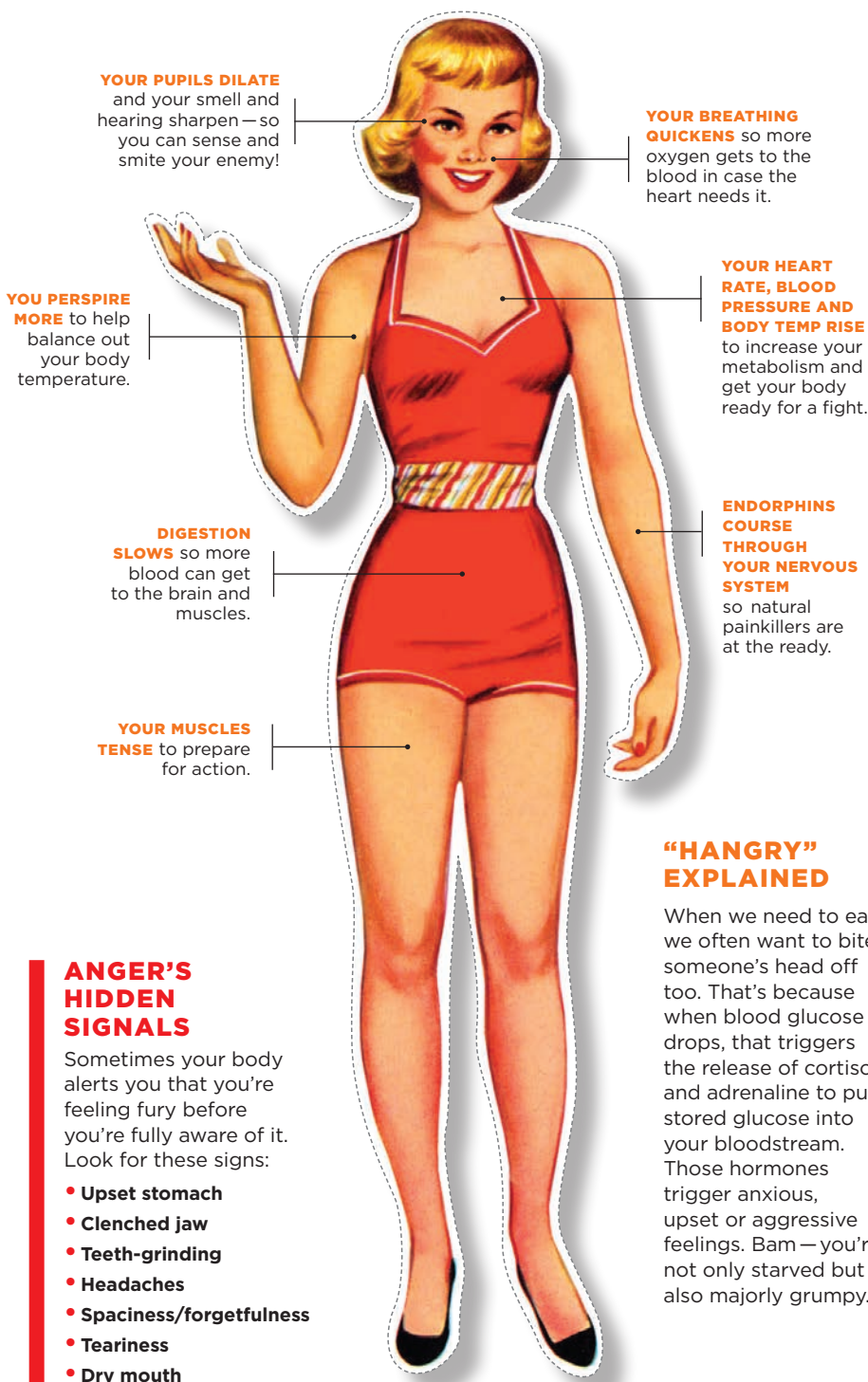
The problem is, what served us back then (the rage-fueled rush that protected the food supply from an invading clan) can be overblown in modern life. Of course, people learn to modulate anger: Consider how you tamp it back when you're annoyed at your boss versus how you rail at your teenager when he forgets to put away the milk...*again*.

There are times when anger is appropriate—when we need to protect ourselves or others. It lets others know a behavior won't be tolerated. But when your fury is chronic or outsize or you use it to hurt someone, it creates toxic stress that can damage your health. The best thing you can do is understand what sets you off and how it hurts your body—and learn ways to rein it in when your inner temperature starts to rise. To that end, read on! →

LET'S GET PHYSICAL

The Rage Effect

Even before you realize you're mad, your amygdala, the early-warning system in your brain, begins sending alerts. When these reach your adrenal gland, it ramps up its production of cortisol and adrenaline, which causes your body to react.



ANGER'S HIDDEN SIGNALS

Sometimes your body alerts you that you're feeling fury before you're fully aware of it. Look for these signs:

- Upset stomach
- Clenched jaw
- Teeth-grinding
- Headaches
- Spaciness/forgetfulness
- Teariness
- Dry mouth

"HANGRY" EXPLAINED

When we need to eat, we often want to bite someone's head off too. That's because when blood glucose drops, that triggers the release of cortisol and adrenaline to pull stored glucose into your bloodstream. Those hormones trigger anxious, upset or aggressive feelings. Bam—you're not only starved but also majorly grumpy.

PISSED OFF? PULL OVER

DRIVING UNDER THE INFLUENCE... OF ANGER

Getting behind the wheel while furious (or sad or teary) ups your chance of crashing almost tenfold, even if you're a terrific driver. Extra emotional demands steal your attention, decreasing your reaction time and increasing your risk of making a critical error.

HEALTH ALERT

How Anger Takes Its Toll

If you can let go of your irked feelings, your cortisol levels come back down. But if you often get angry, your cortisol levels can stay elevated. Eventually, this can dampen your body's production of the hormone, meaning it can't shoot up when it needs to. This can tax your body in several ways.

WEAKER IMMUNITY

Because that cortisol rise is needed for your immune system to fight off infection, your immune response slows, which can up your risk of disease.

LETHARGY Chronic stress leads to a slowing of your metabolism, so you get sluggish and feel your memory fog up.

WEIGHT GAIN

That's the slow metabolism again, and the added pounds can lead to a host of health problems.

LONGEVITY

How Anger Ages Us

Another reason it pays to deal with anger healthfully: On the ends of your chromosomes are little caps called telomeres (imagine the plastic tips on your shoelaces) that protect DNA from damage. The longer your telomeres are, the more likely you'll have a long life—and, more important, stay well. Having short telomeres increases your risk of developing heart disease, diabetes, cancer and dementia. What shortens them? Pollution; overeating; smoking and drinking; and—you guessed it—stress, such as long-term anger. But there's much you can do to soothe an angry soul—including lacing up those sneakers to go shoot some hoops. See more ideas on the next page.

**HEART HEALTH**

BEING TICKED OFF CAN HURT YOUR TICKER If anger is your constant companion, you're more at risk for heart problems and stroke than calmer people are, as decades of research have shown. Especially bad for you is the explosive, throw-something kind of fury: You're more than twice as likely to have a heart attack during the two hours following a blowup, because heart rate changes can translate into high blood pressure and clots. But suppressing feelings isn't healthy either—that can spike your blood pressure. The goal is to discover a healthy route for expressing your emotions as well as ways to regularly find your Zen.

**MAD IMPACT**

The Danger of Stockpiling Frustration

Someone steals your parking spot and you clench your teeth: That's an example of **reactive anger**, the primitive reaction to a perceived threat. Now meet **reservoir anger**, the kind you store up. Here's how it works.

Someone isn't giving you what you need. **FRUSTRATING!**



It happens enough that you stockpile this frustration, which builds and morphs into **ANGER**.



This feeling gets to be too much and, like a teakettle, either you let off steam at the frustrating person (but without resolving the anger) or you swallow it. (That's **COVERT ANGER**.)

Reservoir anger

causes its own set of problems: **headaches, dizziness, shaking or sweating**. And it puts you at increased risk of seeking other ways to feel better—like using alcohol or drugs to numb your emotions. Some reservoir anger can be almost as old as you are, which means you may need help taming this emotional beast (see “When to Speak to a Pro” on the next page).



HELPING YOURSELF

Anger Management

- **Prioritize zzz's.** Research validates what we all know: Being sleep-deprived leads to more anger, hostility and irritation.
- **Get your move on.** Regular exercise helps decrease anger and releases feel-good chemicals. (It aids in keeping those telomeres healthy too.)
- **Eat less junk food,** and don't skip meals, to avoid the "hangry" kind of mad.
- **Quiet your mind.** Take 15 to 30 minutes a day to do brain relaxation such as meditation—it calms your nervous system.
- **Own your emotions.** Think honestly about how often your fury pops up and what triggers it. You can't change something unless you acknowledge that it's there.
- **Breathe.** Deep, slow breathing really does calm the body. New research suggests that it keeps certain neurons in your brain from signaling your body's arousal center, so you avoid getting worked up.
- **Count to 10.** Fight-or-flight is fast; the rational mind moves much more slowly, so give it time to catch up. Cool-

ing the adrenaline response also lets your body release hormones that counter it, de-escalating the feeling.

□ **Distact yourself.** It's hard to feel two emotions simultaneously, so do something that's incompatible with anger: Cuddle your dog or watch something funny or *aww*-inspiring on YouTube.

□ **Channel your grrr.** If current events are fueling your feelings, show up at a town hall meeting or march, or volunteer to help—you'll be around like-minded people *and* help make a difference.

EXTRA SUPPORT

WHEN TO SPEAK TO A PRO If you regularly can't shake angry feelings, it may be useful to talk to a therapist—ask your GP for a referral. Give that person a call if you: • Regularly lose your temper with people you care about. • Lose sleep thinking about things that upset you. • Get intense and loud when you're angry and make blunt and hurtful comments. • Are told by others that your anger is getting in the way of your personal or work life.

THE SCIENCE OF... Experts On Call



ELAINE CHIN

Elaine Chin, M.D., M.B.A., is the founder and chief medical officer of Executive Health Centre, a personalized medicine practice in Toronto, Canada, and author of *Lifelines: Unlock the Secrets of Your Telomeres for a Longer, Healthier Life*.



BILL HOWATT

Bill Howatt, Ph.D., Ed.D., is chief research and development officer of workforce productivity at Morneau Shepell in Canada and creator of an online course called "Pathway to Coping."