MARY LANIER* WAS STANDING IN THE BEDROOM WITH HER HUSBAND WHEN HE TOLD HER HE WANTED A DIVORCE. DAZED, SHE RETREATED TO THE BATHROOM, WHERE IN THE MIRROR SHE SAW A 43-YEAR-OLD WOMAN WHO A MINUTE BEFORE HAD FELT SECURELY MARRIED. "DAMN IT," SHE SAID, AND BROUGHT HER RIGHT ARM DOWN ON THE SINK. THE PAIN WAS IMMEDIATE AND EXCRUCIATING. An X-ray at the hospital showed she'd fractured her wrist. The doctor set it with a splint, assuring her it would heal in three to six weeks. But a second X-ray three weeks later revealed no sign of fresh calcium knitting bone to bone, so the doctor ordered a bone density test. And right then, Lanier—a small-framed executive who hates milk and manages to eat barely one meal a day—learned she has osteoporosis, a disease that leaves bones so weak they can snap as easily as twigs.

Osteoporosis. It afflicts 10 million Americans, 80 percent of them women. Another 18 million have osteopenia, or low bone density, a possible prelude to the full-blown disease. That means one of every two American women will at some time in her life suffer an osteoporosis-related bone fracture, most likely of a wrist, vertebra, or hip. And—scariest of all—24 percent of those over 50 who have hip fractures will die within the year, often of pneumonia or other complications. That's as many as are killed each year by breast cancer.

Unfortunately, some risk factors for the disease can't be eliminated. If you're a thin or small-framed woman, are Caucasian or Asian, have reached menopause, or have any close relatives who've been diagnosed with the disease, your likelihood of getting osteoporosis runs especially high.

You probably know the risks—unless, of course, you've been hibernating for years. And you surely know how to head them off: Get more calcium. Mary Lanier thought she knew the basics, too, yet she made a lot of mistakes as she set out to mend her bones. Chances are, you don't know how much calcium you really need, or which source is best, or what the right dose is, or when your body can use it most.

ADMIT YOU'RE FALLING SHORT

"Most women think they get more calcium than they actually do," says Connie Weaver, a nutrition professor at Purdue University in West Lafayette, Indiana. It's a nice round number—1,000 milligrams a day—experts say every adult woman under the age of 51 should be sure to hit. Those older need 1,200. Either way, not many do.

"Except for girls under 11, there is no female population in America that, on average, takes in as much calcium as we know is necessary to prevent osteoporosis," Weaver says. In other words, whether you're 18 or 80, it's likely you're in what experts call negative calcium balance—
Lots of foods, from beans to sardines, are rich in calcium. But few people eat enough to hit their daily goal.

that is, you excrete more calcium each day than you take in. Where does your body get the extra? Yup, from your bones.

WATCH WHAT YOU EAT AND DRINK
You can lower your risk by exercising regularly, of course, and by swearing off tobacco. And you can strengthen your skeleton if you eat wisely—though that’s easier said than done.

After her diagnosis, Lanier began eating two servings of cottage cheese a day. It was the only dairy food she liked, but little did she know it wasn’t doing her bones much good. It turns out that cottage cheese isn’t exactly a calcium blockbuster. What’s more, research shows that under some circumstances the high levels of salt and animal protein in foods like cottage cheese can actually force calcium out of bones.

Should we all give up cheese? Absolutely not, says Robert Heaney, a professor at the Osteoporosis Research Center at Creighton University in Omaha, Nebraska: “The negative effects on your bones from high intakes of salt and protein are only important at a low calcium intake.” In other words, says Heaney, who has also served on the government panel that sets recommended calcium doses, you don’t need to sweat that issue if you’re getting plenty of the mineral. (See “How Much Calcium

Do You Get?” page 137.)

In fact, recent scientific studies show that bone fracture risk may rise when you eat too little protein, says Bess Dawson-Hughes, a respected bone researcher at Tufts University. She also says the common claim that soft drinks rob your body of calcium is a myth. She does, however, urge women to drink no more than two cups of coffee a day. Downing a lot of caffeinated drinks—like imbibing more than four alcoholic beverages a day—can chip away at the calcium stores of women who are already running short.

DON’T THINK ONLY OF ANTACIDS
Okay, your goal is 1,000 milligrams of calcium a day—and you’ve figured out your meals furnish just 600. How do you make up the difference? Supplements, naturally. But which ones?

They aren’t exactly the same. Best known are the calcium-based antacids, made from calcium carbonate—chalk, essentially. Fewer people are familiar with the ones made of calcium citrate, yet recent research suggests it’s absorbed more readily, says Howard Heller, an assistant professor of internal medicine at the University of Texas Southwestern Medical Center at Dallas.

In a study published last year in the Journal of Clinical Pharmacology, Heller and his colleagues gave 25 women a breakfast dose of 500 mg of calcium carbonate, checking every hour to see how much of the mineral they hung on to. On another day, the women took the same amount of calcium in the form of citrate; on still another, they took a look-alike pill. The result: When they took citrate instead of carbonate, they absorbed, on average, 94 percent more calcium. A published review of 15 other studies found that citrate beat out carbonate by an average of 20 percent. “That doesn’t sound like much,” says Heller. “But if you have a negative calcium balance of only 27 milligrams a day, you lose one percent of your bone mass every year.”

Fine, says Heaney, but citrate’s superiority is far from proved. He insists calcium carbonate works beautifully, and you should feel free to stick with it. Others point out that it’s less bulky than citrate, so you can take fewer pills for the same dose of usable mineral (what scientists call elemental calcium), and it’s usually cheaper. Just swallow the pills at mealtime, when your stomach churns out the acid needed to dissolve them.

POP AROUND THE CLOCK
Your body can absorb only so much calcium at a time and excretes the rest. So whichever supplement you pick, take it in
YOU MAY THINK you’re getting a lot of calcium in your meals, but you’re probably not, says Connie Weaver, a bone expert at Purdue University. What’s your daily total? Here’s how to figure yours out.

FOOD mg
yogurt, low-fat (1 cup) 447
orange juice, calcium-fortified (1 cup) 350
sardines, canned (3 ounces) 325
milk, 1 percent (1 cup) 300
cheese, Swiss (1 slice) 272
spinach, cooked (1 cup) 245

IF YOU TYPICALLY EAT one of the above calcium superstars every day, figure you average 300 mg. If you rarely do, give yourself a zero. (Sorry, but all the other calcium greats—ricotta cheese, whole milk—are loaded with artery-clogging fat.) But cheer up a bit. Grant yourself another 300 mg if you generally eat several foods that are moderately rich in calcium every day. Some examples:

tofu, firm (½ cup) 204
white beans, cooked (1 cup) 161
figs, dried (½ cup, or about 5) 143
parmesan cheese (2 tablespoons) 138
frozen yogurt (½ cup) 103
breakfast cereal, calcium-fortified 100
English muffin, toasted 98
broccoli, cooked (1 cup) 72
almonds (1 ounce, or about 24 nuts) 70
green beans, boiled (1 cup) 58

TO SEE IF YOU’RE FALLING SHORT, subtract your total from your daily goal**—1,300 for girls aged 9 to 18, 1,000 mg for women aged 19 to 50, 1,200 for anyone older. If you can’t manage to make up the difference with foods, take a supplement every day.—B.S.

**Dietary Reference Intake set by the National Academy of Sciences.

divided doses. “Three doses a day are better than two, and two are better than one,” says Weaver. For example, she suggests, if you’re going for 600 mg of supplemental calcium a day, take 200 at breakfast, 200 at lunch, and 200 at dinner.

SKIP THE “BONE BUILDING” COMPLEXES
Some calcium supplements also include magnesium and boron, as well as vitamins D and K—all nutrients that research suggests aid in protecting bone. Are they helpful?

“Yes, the mineral magnesium is important for bone health,” says Michelle Seibel, a professor of gynecology and obstetrics at Boston University School of Medicine. “But calcium and magnesium compete with each other for absorption, so these combination products make no sense.”

“Women should take a calcium supplement with vitamin D in it,” he says, “since that nutrient is so important for the effective absorption of calcium.” Beyond that, experts say, get your other bone builders from fruits, vegetables, and whole grains.

TURN IT UP AT MENOPAUSE
Midlife, with its falling estrogen levels, is a critical time for bones. Estrogen acts as a “warden” that keeps calcium locked in the skeleton. When that hormone ebbs at menopause, the mineral escapes, and for five years bones rapidly lose density. (After that, for unknown reasons, the loss slows.) That’s why at age 51 the daily calcium goal climbs from 1,000 to 1,200 mg.

Dawson-Hughes cites a study in which women getting 1,200 mg a day retained higher bone mineral density and suffered fewer fractures than women who got 600 or less. “But calcium alone will not prevent bone loss that occurs as a result of dropping estrogen levels,” she says. Another study tracked groups of women who took estrogen, calcium, or both. “Estrogen and calcium together lowered fracture rates more than estrogen alone or calcium alone,” Dawson-Hughes says.

Even the rare person with a near-perfect diet will almost certainly need extra calcium after age 60. Women—and men—who can’t pump up the mineral in their meals should take daily supplements that include vitamin D (or calcium plus a multivitamin). Older Americans often run short on D, especially those living in northern states, where there’s too little sunshine in the long winters to power the skin’s vitamin D factory.

FORGET YOUR BONES—THINK ABOUT YOUR BUTT
Calcium’s benefits reach beyond your skeleton. Studies show the mineral can help cut your blood pressure, shield you from colon cancer, and ease or end PMS symptoms. What’s more, it can help keep you slim. In a recent study in the Journal of Clinical Endocrinology and Metabolism, Heaney and colleagues report that a low-calcium diet prompts your body to secrete hormones that slow your metabolic rate. In essence, Heaney explains, the body responds to the shortfall as if it’s starving and needs to conserve energy. This slowdown makes weight control just that much harder. Calcium may also keep your body from absorbing some of the fat in rich foods like chocolate.

“If you’re trying to lose weight, one of the worst things you can do is cut down on dairy products,” he says. “As long as they’re nonfat or one percent, they’ll help you shed pounds.”

AND REMEMBER WHAT’S MOST IMPORTANT
Yes, calcium is crucial, but it does next to nothing for skeletons that aren’t subjected to some heave and ho, some push and shove. Perhaps you’ve heard the term “weight-bearing exercise”? That includes walking, running, dancing, step aerobics, serious yard work, and strength training—either using hand weights and resistance machines or doing push-ups and other moves on your own. When your bones are asked to deal regularly with added stress, they fight back by bulking up, drawing on—right!—the calcium you take in. 

Bill Gottlieb is the author of Alternative Cures (Rodale, 2000).
Copyright of Health is the property of Time Inc. Health and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder’s express written permission. However, users may print, download, or email articles for individual use.