

# DECODING DIABETES

**A**n estimated 11 percent of adults have diabetes. A quarter of them don't even know it. But that doesn't tell the whole story. Experts estimate that by 2050, one out of three adults will have the disease.

Among people over 65, one out of four already has diabetes. And another 35 percent of all adults (and half of those over 65) have prediabetes.

The good news: type 2 diabetes is almost entirely preventable.<sup>2</sup> "People who have a healthy weight and lifestyle have a 90 percent lower risk," says JoAnn Manson, professor of epidemiology at the Harvard School of Public Health.

## Diabetes 101

If your fasting blood sugar is higher than 125, you have diabetes. (If it's higher than 100, you have prediabetes.)

It's easy to see why blood sugar soars in people who have *type 1* diabetes. The beta-cells in their pancreas make no insulin, the hormone that acts like a key to admit blood sugar into cells, where it can be stored or burned for fuel. (One possible explanation: the body may destroy its own beta-cells in a misguided autoimmune attack.)

People who have *type 2* diabetes (which accounts for 90 to 95 percent of cases) often make plenty of insulin, but the insulin doesn't work well.

"Their cells are resistant to the insulin, so the body needs to pump out more of it," explains Varman Samuel, assistant professor of medicine at the Yale School of Medicine. "And for a while, the beta-cells can compensate," so blood sugar levels stay under control.

But in many people, the pancreas can't keep up with the demand for insulin. "When the beta-cells poop out, you tip over into diabetes," says Samuel. Insulin output falls short, and blood sugar climbs.

"It's as though you're listening to loud music but you have

wax in your ears," he suggests. "So you keep turning up the volume, but you still can't hear because the music isn't getting through. Then at some point, your speakers blow."

The question is: what sets off insulin resistance in the first place?

### Insulin Resistance

It's hard to miss the first clue that explains insulin resistance. Roughly 80 percent of people with type 2 diabetes are overweight or obese.

"Excess body weight is by far the stron-

gest risk factor for diabetes," says Harvard's JoAnn Manson, who heads the Division of Preventive Medicine at Brigham and Women's Hospital in Boston. And the "visceral" fat deep in your belly may boost the risk the most.

"If we could get people to a healthy weight, it could eliminate roughly half of all cases of diabetes," says Manson. "That's the big picture."

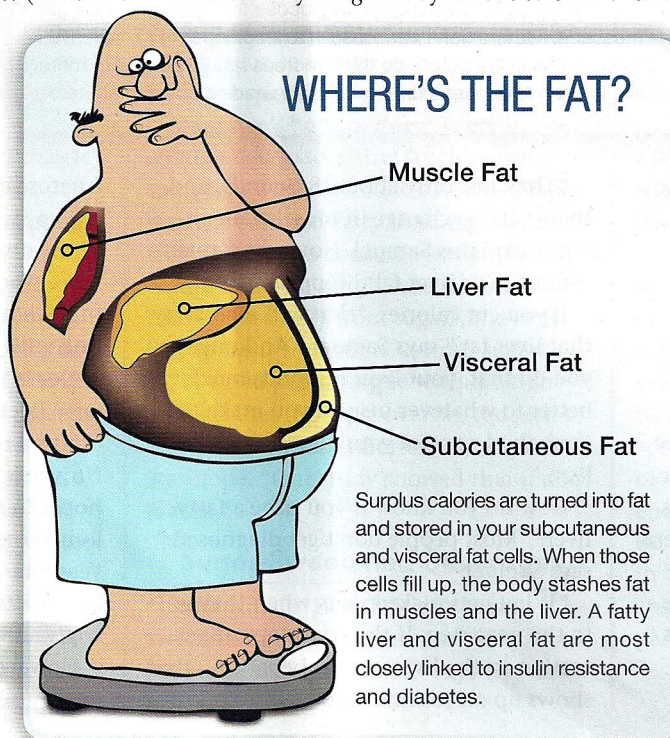
Obesity doesn't explain why we all—no matter how fat or thin—have a greater risk of diabetes as we get older. And genes, smoking, exercise, and diet also play a role. But for most people, the trouble starts when they eat too many calories, day after day.

"Any excess calories you eat are eventually turned into fat that needs to be stored," explains Kimber Stanhope, a molecular biologist at the University of California, Davis.

At first, the fat fits into your fat cells.

"Let's say your body is doing a good job of being able to store the fat," says Stanhope. "But once your fat cells get too large, they're less likely to continue to take up and retain more fat."

Some obese people may never become insulin resistant (or diabetic) because their bodies keep making new fat cells.



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