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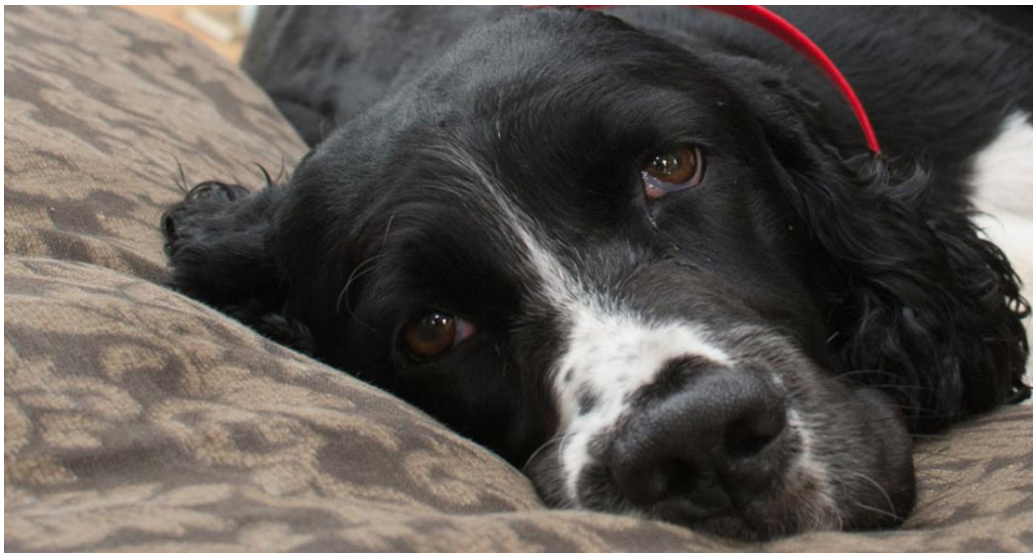
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Study equates sleepless nights with high-fat diet

A good night's sleep does more than help you feel rested. It also may help prevent insulin resistance, a condition that underlies most diabetes.



A study on dogs shows that one poor night of sleep can have the same effect on blood sugar as eating a high-fat diet for six months.

Scientists had known that lack of sleep inhibits the body's ability to use *glucose*. This sugar powers our cells. But the new study finds that low sleep has a similar effect on the body as a high-fat diet when it comes to using glucose. Both cause cells to begin ignoring the signals of *insulin*. This *hormone* tells cells that food (in the form of glucose) is available and then helps them use it. When cells start tuning out the hormone's presence, a condition known as insulin *resistance* develops. Glucose, also known as blood sugar, then begins to build up in the blood instead of feeding cells.

Over time, cells can become so resistant that they almost completely ignore insulin. This may eventually lead to a serious disease known as type 2 *diabetes*. Many people die from complications of diabetes each year.

Josiane Broussard works at Cedars-Sinai Medical Center. She wondered whether lack of sleep and a high-fat diet worked in the same way to harm the body. An expert on sleep and metabolism, she studies how the body responds to sleep loss. (Metabolism is the set of chemical reactions in our bodies that allows us to use energy and grow.)

To test her suspicions, Broussard and her team worked with eight male dogs. They started by depriving the dogs of sleep. The researchers kept them from dozing off by gently petting the animals all night long. The next morning, the scientists performed a blood test on each animal.

After injecting glucose into the dogs' veins, the scientists measured how much sugar was left in the blood at various times over the next three hours. This assay is known as a glucose tolerance test. When a dog's cells are working normally, they take up the glucose quickly, leaving only a little in the blood, Broussard explains.

The scientists then fed the dogs a high-fat diet for six months. At the end of this time, these animals were each given a glucose tolerance test. The now-overweight dogs were once more kept from sleeping all night long. The next morning, the team measured the dogs' ability to take up glucose.

Before starting the high-fat diet, lack of sleep caused a big change in the dogs' ability to use glucose. After just one sleepless night, their cells sucked up 33 percent less of this sugar than normal.

Six months later, the now overweight dogs took up 21 percent less sugar than normal. And that was when they were well rested. But perhaps surprisingly, losing a night's sleep didn't make the situation worse, Broussard notes. That may mean that both obesity and lack of sleep affect the body the same way, she says.

Broussard reported her group's results on November 5 at the Obesity Society's annual meeting in Los Angeles.

"We don't know how long the effects last," Broussard notes. But a recent study by scientists at the University of Colorado in Denver hints at the answer. In people, three nights of good sleep seemed to reset their ability to use blood sugar normally.

"The Broussard study highlights the need for sleep," says Caroline Apovian. She is an obesity researcher at Boston University in Massachusetts who was not involved with the new study. Sleep, she says, needs to be viewed as being "just as important — if not more important — than diet and exercise in maintaining health."

Children may suffer most from the ill effects of lack of sleep, she worries. Why? Lack of sleep in young people could lead to disease (such as diabetes) at a much earlier age.

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