Children who take antibiotics gain weight faster than kids who don't

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Credit: Robert Kraft/public domain

Kids who receive antibiotics throughout the course of their childhoods gain weight significantly faster than those who do not, according to new Johns Hopkins Bloomberg School of Public Health research.

The findings, published online Oct. 21 in the *International Journal of*

Obesity, suggest that antibiotics may have a compounding effect throughout childhood on body mass index (BMI), a measure often used to determine whether someone is at a healthy weight.

"Your BMI may be forever altered by the antibiotics you take as a child," says study leader Brian S. Schwartz, MD, MS, a professor in the Department of Environmental Health Sciences at the Bloomberg School. "Our data suggest that every time we give an antibiotic to kids they gain weight faster over time."

For the study, Schwartz and his colleagues analyzed Geisinger Health System's electronic health records on 163,820 children between three and 18 years old from Jan. 2001 to Feb. 2012. They examined body weight and height (which are used to determine BMI) and antibiotic use in the previous year as well as any earlier years for which Geisinger had records for the children.

At age 15, children who had taken antibiotics seven or more times during childhood weighed about three pounds more than those who received no antibiotics, they found. Approximately 21 percent of the kids in the study, or almost 30,000 children, had received seven or more prescriptions during childhood. Schwartz says that the weight gain among those frequently prescribed antibiotics is likely an underestimate since the children did not stay with Geisinger throughout childhood so their lifetime antibiotic histories, including antibiotic use outside the health system, would not have been recorded and because the effect of certain antibiotic types was even stronger than the overall average.

"While the magnitude of the weight increase attributable to antibiotics may be modest by the end of childhood, our finding that the effects are cumulative raises the possibility that these effects continue and are compounded into adulthood," he says.

Scientists working with penicillin learned early on that its byproducts caused weight gain in animals. This led to the modern industrial farming techniques of including small quantities of antibiotics in daily animal feed to fatten up the animals in an accelerated time frame. So a connection with weight gain does make biological sense, Schwartz says.

In humans, meanwhile, there is growing evidence that antibiotics could lead to weight gain because of the effect that they have on what is known as the microbiota, or the microorganisms that inhabit the body. There are 10 times more bacterial cells in the human body than our own cells. Many of these bacteria do their work in the gastrointestinal tract, helping the body to digest food and absorb nutrients. Antibiotics kill off harmful bacteria but also those vital to gastrointestinal health. Research has shown that repeated antibiotics use can forever change the microbiota, altering the way it breaks down food and increasing the calories of nutrients absorbed. This, in turn, can increase weight gain.

Prior studies had suggested that use in the youngest children may cause weight gain, but this study shows that use at any age during childhood contributes to weight gain that accelerates with age.

Schwartz says he thinks that physicians are becoming more judicious in their antibiotic prescribing, but it can be a difficult task. Often parents demand antibiotics for apparent cold viruses and other ailments that will not be helped by them. There have long been concerns that excessive antibiotic use is leading to bacterial strains that are becoming resistant to these potentially lifesaving drugs. But this study suggests that antibiotics can have long-term effects in individual children, he says.

"Systematic antibiotics should be avoided except when strongly indicated," Schwartz says. "From everything we are learning, it is more important than ever for physicians to be the gatekeepers and keep their young patients from getting drugs that not only won't help them but may

hurt them in the long run."

More information: "Antibiotic Use and Childhood Body Mass Index Trajectory" www.nature.com/ijo/journal/vao … abs/ijo2015218a.html

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