Day care may boost immunity to asthma [US] [1]

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Source: Washington Post
Format: Article
Publication Date: 24 Aug 2000

AVAILABILITY
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EXCERPTS

Infants who go to day-care centers or who have older siblings are less likely than those who don't to develop asthma later in childhood, perhaps because they are exposed to more germs, researchers say.

The new findings provide strong support for the provocative but increasingly accepted theory that exposure to microbes early in life may help the immune system mature properly, lowering the risk of asthma and allergies.

Small families, good sanitation and widespread antibiotic use; all of which reduce childhood exposure to bacteria and viruses; may be part of the reason for the dramatic increase in asthma and allergies seen in the United States and other industrialized countries over the past three decades.

"I think it's a fascinating area. It's probably not just specific to asthma," said Robert A. Wood, an associate professor of pediatrics at Johns Hopkins University School of Medicine. In the future, he added, if additional research clarifies the link between early exposures and fine-tuning of the immune system, "it's extremely promising that you'd be able to expose a newborn to the right mix of safe bacteria and potentially turn the allergy system way down or completely off."

In the new study, babies who entered day care before the age of six months had only 40 percent the risk of asthma seen in those who were not exposed to day care or older siblings.

An estimated 17.3 million Americans suffer from asthma, a chronic and often progressive disorder in which small air passages in the lungs become temporarily blocked, causing difficulty breathing. The figure has more than doubled since 1980, when there were 6.7 million asthmatics. Asthma, which often develops during childhood, is one of the most common chronic illnesses in the United States, causing almost 500,000 hospitalizations and more than 5,000 deaths annually and costing an estimated $14.5 billion per year.

Asthma experts, who have been puzzled by the sharp rise in the disease's frequency, said the large, long-running study by Arizona researchers helps explain previous, seemingly discrepant findings about the effects of day care on the disorder. The new study found that infants who were exposed to other children had more wheezing episodes during their preschool years, chiefly because they suffered more colds and other infections. But they were less likely to develop asthma later on, perhaps because early experience with bacteria and viruses favorably influenced their immune systems. Wheezing is common in children before the age of 3, and most infants and toddlers who wheeze do not go on to become asthmatic.

Researchers at the University of Arizona's Respiratory Sciences Center studied 1,035 children from birth to age 13, collecting detailed information on the number of older siblings, day care exposure, frequency of wheezing, asthma episodes diagnosed by a doctor and other factors. The children received skin tests and blood tests for allergies at the ages of 6 and 11.

In addition to the reduced risk of asthma for babies who were in day care before the age of six months, the study found that those who entered day care in the second six months of life also had a somewhat lower risk, said pediatrician Thomas M. Ball, one of the authors. Starting day care after a child was 1 year old did not reduce the asthma risk, the researchers report in today's issue of the New England Journal of Medicine.

Having older siblings also appeared to be protective &em; and the more, the better. For instance, among children with two older siblings, the asthma risk was 70 percent of that seen in children with none; among those with three or more, it was 60 percent.

Researchers do not know what it is about having siblings or being in day care that reduces a baby's later risk of asthma, although they suspect that exposure to bacteria — possibly including common types that don't cause disease — may play a role. Other studies have found that living on a farm with animals or in a house with a dog reduces children's chances of developing asthma, said Sandra C. Christiansen of Scripps Research Institute in La Jolla, Calif., who wrote a commentary accompanying the study.

Exposure in the early months of life appears to be key, Christiansen added. Cells of the immune system called helper T cells come in two types, and type 2 has been implicated in asthma and allergies. All babies are born with an immune system that makes mainly type 2. Soon after birth, the system normally switches over to producing predominantly type 1. People whose immune systems don't make this change,

and who continue to produce mostly type 2 cells, appear to be more likely to develop asthma and allergies. Researchers theorize that being exposed to common microbes may prime an infant's immune system to make the switch.

The sharp increase in asthma has been fairly uniform throughout the U.S. population, although blacks and members of some Hispanic groups have slightly higher rates of the disorder than whites, said Stephen C. Redd of the federal Centers for Disease Control and Prevention. He said members of ethnic minorities have much higher rates of death and hospitalization from asthma than whites, probably reflecting poorer health care.

Factors such as air pollution and allergens (such as cockroaches and dust mites) don't explain the increase, although both can trigger attacks in people who have the disorder, said Anne L. Wright, a research professor of pediatrics at the University of Arizona and a co-author of the new study.

The study's implications seem to contradict the conventional wisdom that babies should be kept away from sick children who might infect them. Ball said that if he sees a healthy infant whose parents have a history of asthma or serious allergies, "I would inform them that they might be better served by exposing that child to other children early in life. It's up to them how they want to do that."

Hopkins' Wood disagreed. "In terms of going out and seeking a germ factory — a day-care center where everyone has a green nose — I'm not sure that's the right thing to do," he said. "But . . . reassurance that exposure to normal childhood illnesses is not a bad thing, and could even have some beneficial effects in the long run, is a good concept."

Although the number of children in day care has increased significantly in the United States in recent years, researchers speculate that it hasn't been enough to offset other factors. Only day care attendance in the first six months of life appears to be highly protective, and only about 7 percent of U.S. infants under a year old are in day care.

Christiansen, in her commentary, suggests that the study's results may help assuage the consciences of working parents. "For those of us who share the furtive guilt of having left marginally ill toddlers at day care," she wrote, "these findings . . . offer a sense of relief."

-Reprinted from The Washington Post

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