

## Ear infections now more widespread

Parents may remember their own childhood ear infections as excruciating experiences soothed with balm-soaked cotton. Yet middle-ear infections, or otitis media, are more of a problem now than they were in the past, due in part to the larger number of children in day care.

Two new studies show just how entrenched the problem is—but they differ on the extent to which black children are troubled by bouts of the illness.

A study by Bruce P. Lanphear and his colleagues at the University of Rochester (N.Y.) School of Medicine and Dentistry used an extensive database known as the National Health Interview Survey. The data, based on parents' accounts of illnesses in youngsters under age 6, disclosed 44 percent more cases of otitis media among children born in 1988 than in those born 7 years earlier.

This increase, the researchers found, affected children in "all racial and ethnic groups and all regions of the country." It translates into 1.8 million more ear infections "than we would have expected," Lanphear says. The findings, drawn from the most recent data, appear in the *MARCH PEDIATRICS ONLINE*.

The research indicates that ear infections are more common among children in day care and children with allergies. Like earlier studies, it also found fewer ear infections among black youngsters.

A study that focused more narrowly on 2,253 Pittsburgh infants revealed a different picture of the prevalence of otitis media among black children. Jack L. Paradise and his colleagues at the University of Pittsburgh School of Medicine showed that otitis media appears to be as common among black children age 2 and younger as among white children of similar socioeconomic status. The report appears in the *MARCH PEDIATRICS*.

Paradise says the racial differences measured elsewhere may stem from a grim reality of U.S. medicine—that fewer black children than white children have access to needed medical care. Their ear infections may therefore never be diagnosed.

"A number of studies going back 10 or 20 years suggest that this is an issue of access," says Jerome Klein of Boston University School of Medicine.

The Pittsburgh team treated the children with frequent courses of antibiotics—totaling, on average, 6 weeks in each of the first 2 years of life. "We've stopped treating some cases of otitis media due to the rising presence of drug-resistant *Streptococcus pneumoniae*," says Paradise. One of every 16 children with otitis media had at least one of his or her eardrums pierced and a tube inserted to drain it. —S. Sternberg

## Top 10 winners in top science contest

It's the other March Madness: the week-long judging of the annual Westinghouse Science Talent Search, the Super Bowl of high school science competitions. So it was only fitting when the smart and smartly dressed students huddled in embrace—or butted chests—after the winners were announced at the National Academy of Sciences in Washington, D.C., this week.

The first-place winner shot his arms up in triumph and hugged the nearest judge. Adam Ezra Cohen, 17, of Hunter College H.S. in New York, received a \$40,000 scholarship for developing a new method of photolithography, the means by which information-packed patterns are electrochemically etched onto microchips.

His high technology was homegrown. Working in his bedroom, the prospective physicist started experimenting on his mother's gold jewelry with parts from a \$1.49 speaker. He used Legos to build the housing for his "electrochemical paintbrush," a modified scanning tunneling microscope.

In contrast, second-place winner Carrie Shilyansky, 15, of San Marino (Calif.) H.S., worked in a university laboratory on her neurobiology project. She received a \$30,000 scholarship for her study of a neuronal pathway controlling habituation, a simple form of learning, in the sea hare *Aplysia*.

Third-place winner Nicholas Karl Eriksson, 18, of Sentinel H.S. in Missoula, Mont., used algebra and number theory to explore the partition function, which counts the ways a whole number can be split into other integers. He received a \$20,000 scholarship.

Davesh Maulik, 17, of Roslyn (N.Y.) H.S., also wrote a mathematics paper. His delved into symmetries of polynomial equations and took fourth place. Maulik received a \$15,000 award, as did Emily Beth Levy, 17, of North Miami Beach (Fla.) Senior H.S., and Dev Edward Kumar, 17, of the Texas Academy of Math & Science in Denton. For her fifth-place project, Levy devised a method to

improve reading comprehension in dyslexic children. In sixth place, Kumar invented an electronic monitor to measure the power efficiency of pagers and similar devices.

Ann Clair Seiferle-Valencia, 17, of Farmington (N.M.) H.S. and Dylan Micah Schwindt, 18, of Montezuma-Cortez H.S. in Cortez, Colo., took inspiration from their artifact-rich surroundings. Seiferle-Valencia reconstructed population trends of the Chacoan Anasazi. Schwindt analyzed trace elements in trees for a study of 13th-century Pueblo construction. They earned seventh and eighth places, respectively, and \$10,000 awards.

Also winning \$10,000 were Rose J. Payyapilli, 18, of Midwood H.S. at Brooklyn College in Brooklyn, N.Y., and Whitney Paige Bowe, 18, of Lawrence H.S. in Cedarhurst, N.Y. Payyapilli reached ninth place by identifying a factor affecting blood platelet aggregation. Bowe took tenth place with a study using jellyfish and algae to examine how symbiosis can be established.

The remaining 30 finalists of the original 1,652 entrants (*SN*: 2/1/97, p. 69) received \$1,000 each and this reminder from Princeton University astrophysicist J. Richard Gott, head of the judges' panel: Only one of the competition's five Nobel laureates also ranked in the top 10. "Not winning one of the top scholarships increases your chances of winning a Nobel," he quipped.

"To be in it is to win it," commented finalist Long Cai, 16, of Ward Melville H.S. in Setauket, N.Y. Many of the student projects will be turned into patent applications or publications. An article by Eriksson on the partition function has been accepted by the *INTERNATIONAL JOURNAL OF MATHEMATICS AND MATHEMATICAL SCIENCES*. Cohen, whom the students chose as their spokesperson before the awards ceremony, says his technique has already generated commercial interest.

The competition, now in its 56th year, is administered by Science Service, which publishes *SCIENCE NEWS*. —C. Mlot



Top three winners (from left): Adam Ezra Cohen, Carrie Shilyansky, and Nicholas Karl Eriksson.