

# Kids' ADHD Care Gets a Wake-up Call

A combination of carefully monitored stimulant use and intensive behavioral training reaps promising benefits for children diagnosed with attention-deficit hyperactivity disorder (ADHD), as well as for their parents, according to a much-anticipated study of how best to treat the problem.

However, the investigation also indicates that many kids with ADHD receive neither behavioral training nor careful dose calibrations for the stimulants that physicians prescribe.

"Standards of practice for ADHD treatment need to be improved," says psychologist Stephen P. Hinshaw of the University of California, Berkeley, one of the study's six principal investigators. "The level of care achieved in this project should be carefully considered by the medical community."

Investigators at 10 sites in the United States and Canada recruited 579 children ages 7 to 10 with ADHD, many already getting stimulants. None suffered from depression or other ailments that can cause ADHD-like symptoms. The sample included 114 girls and 163 blacks and Hispanics. Family incomes for the children ranged from welfare level to affluent.

The researchers randomly divided the children into four groups, giving them different treatments lasting up to 14 months. One group received behavioral therapy delivered by a specially trained psychotherapist, which included 35 weekly sessions to help parents deal with a child with ADHD; a summer camp designed to encourage kids' social and academic skills; and 10 to 16 meetings between a therapist and each child's teacher to plan classroom strategies.

A second group underwent a medication program consisting of careful adjustment of a child's dose of Ritalin or a related stimulant over 28 days, followed by monthly physician visits and regular physician reviews of teachers' behavior ratings. Children took medication in three daily doses.

A third group got both behavioral treatment and medication management.

Finally, a comparison group received neither treatment from the study team, which referred the participants to community mental health providers. These physicians prescribed stimulants or, in a few cases, other drugs to two-thirds of the youngsters. A small number of participants sought some form of psychotherapy.

Over 14 months, all four groups displayed marked reductions in ADHD symptoms, Hinshaw and his coworkers report in the December ARCHIVES OF GEN-

ERAL PSYCHIATRY. These consist of various signs of inattention, hyperactivity, and inability to control impulses.

Medication management alone and the combined treatment yielded the most symptom improvement, with neither clearly being the best. However, combined treatment proved more effective at quelling aggressive behavior and boosting teacher-rated social skills and reading achievement. Parents in this group also reported the best relations with their child. These findings held regardless of sex, race, or family income.

Further data analysis, set to appear in the JOURNAL OF ABNORMAL CHILD PSYCHOLOGY, indicates that school behavior improved most for kids in the combination group whose parents tempered their harsh disciplinary practices.

Kids receiving stimulants from community sources typically did not undergo

initial dose adjustments and took larger doses than those getting the study's medication-management or combination treatment.

About two-thirds of the children receiving behavioral treatment alone did well enough to stay off medication throughout the study. "Psychosocial interventions can profoundly affect ADHD, even if a genetic predisposition is involved," Hinshaw contends.

Further research needs to examine medication management and behavioral treatments in community settings, says psychologist Eric Taylor of the Institute of Psychiatry in London in a comment published in the same issue of ARCHIVES OF GENERAL PSYCHIATRY. Studies that modify exposure to behavioral treatment according to individual needs may yield steeper declines in ADHD symptoms, he proposes. —B. Bower

## Future for digital snapshots looks crisp

Although digital cameras provide both instant gratification and computer-ready images, conventional cameras still make sharper pictures. That crucial advantage of film cameras may, however, be going the way of flashcubes.

Dutch researchers have developed a prototype image sensor on a chip that produces a picture whose quality rivals that of 35-millimeter film, they say—at least for black-and-white. They packed 6.2 million sensing cells onto their device by shrinking each cell to 3 micrometers ( $\mu\text{m}$ ) on a side. The chip measures 11 mm on the diagonal, which is larger than typical commercial chips.

By decreasing cell size and increasing chip area, "we can obtain the quality of standard film," says Herman L. Peek of Philips Semiconductors Image Sensors in Eindhoven, who led the chip's development. The densest arrays now used in commercial digital cameras have 3.2 million light-sensing cells, each 3.5  $\mu\text{m}$  on a side, on a chip measuring 9 mm diagonally, he says.

Peek and his colleagues unveiled their new technology Dec. 8 at the International Electron Devices meeting of the Institute of Electrical and Electronic Engineers in Washington, D.C.

"To make pixels that size and to make 6 million of them, that's a pretty good feat," says Robert K. Reich of the Massachusetts Institute of Technology's Lincoln Laboratory in Lexington.

By adding minuscule filters and micro-lenses to the chip, the group intends to make the chip suitable for color photogra-

phy. However, tests at Hewlett-Packard Laboratories in Palo Alto, Calif., show that such modifications reduce resolution by about 25 percent, says Hewlett-Packard's Rick Baer. The Dutch researchers intend to regain that resolution through future improvements, Peek adds. For now, they compose color photographs by overlaying images shot through external filters.

Electronics designers usually show their prowess by putting more components into an ever-shrinking area. However, carpeting a larger chip with tiny components presents its own challenge, Reich says. A larger area can harbor more performance-wrecking defects. Over the years, the Dutch group has refined its fabrication methods, culminating in this imager, Reich says.

Jim Sturm of Princeton University predicts that the time is not far off "when we won't have to use old-fashioned film for very-high-resolution images." —P. Weiss



This photo taken with the new digital image sensor shows distinct black-and-white lines converging on the target, demonstrating unusually high resolution.