

# Meth's Cognitive Effects May Short-Circuit Therapy

BY TIMOTHY F. KIRN  
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SAN DIEGO — Methamphetamine abuse may injure the brain, according to new evidence and the experience of clinicians who treat recovering users.

For some, the damage could be permanent. For many, there is an impairment that may be temporary but that interferes with their ability to attend to the short-term treatment most drug abusers get.

"They're just in a fog," said Dr. Jerome D. Dirkers, medical director of the Montana Chemical Dependency Center, Butte, in an interview at the annual conference of the American Society of Addiction Medicine. "When you try to engage them in treatment, you find they just can't comprehend. If [the user's brain] is not fried, it is at least par-boiled."

In Montana, methamphetamine is the illicit drug most commonly abused by persons coming into treatment, and has been for some time. But Dr. Dirkers has also practiced in South Carolina, where cocaine abuse is more prevalent.

"This [impairment] is something fairly unique to the methamphetamine abuser," he said.

When the mental fog is temporary, it appears to last about 3-4 months, said Frank J. Vocci Jr., Ph.D., director of the division of pharmacotherapies and medical consequences of drug abuse at the National Institute on Drug Abuse.

"I call it a temporal mismatch, because just when they need their mental faculties—during treatment—they don't have them," he said in an interview.

A laboratory study of rats given amphetamine three times per week for 5 weeks has shown that amphetamine can induce cognitive deficits. And that study suggested that one of the specific deficits is an inability to make extradimensional set shifts, a cognitive deficit that is also seen in schizophrenia, Dr. Vocci said.

One researcher who has most prominently begun to investigate the effects of methamphetamine abuse on the human brain is Sara L. Simon, Ph.D., a researcher at the integrated substance abuse program (ISAP) of the Neu-

ropsychiatric Institute at the University of California, Los Angeles.

In one of her early studies, Dr. Simon administered a battery of cognitive function tests to recently abstinent abusers and compared them with controls. She reported that there were measurable deficits in the abusers, but that they were specific and perhaps subtle.

In her report, she noted that before her investigation, human studies had looked only at the administration of amphetamine and cognitive functioning, not at its long-term use.

Those studies found, not surprisingly, that amphetamine improved function—probably by increasing focus and concentration—and therefore the notion that amphetamine actually abetted mental function tended to prevail.

Dr. Simon described several of the deficits seen—including problems with word recall and some kinds of abstract reasoning—as being similar to those seen in normal aging (*Am. J. Addict.* 2000;9:222-31).

Dr. Dirkers noted that methamphetamine abusers in treatment do often seem to function mentally as if they are older than their years.

"They look as though they ought to be functionally well because they are young," he said. "But they have deficits you would see in someone in their 80s."

In another of Dr. Simon's studies, PET and structural MRI showed that long-term abusers had severe gray-matter deficits in specific cortical regions, had white-matter hypertrophy that was somewhat greater in the right hemisphere, and had on average 8% less volume in the hippocampus than did controls (*J. Neurosci.* 2004;24:6028-36).

In a subsequent study using the same technology and complicated functional testing, she reported that abstinent, former abusers have trouble with cognitive vigilance and sustained attention.

Finally, Dr. Simon has compared episodic memory function in abusers who had gone through a drug treatment program and had relapsed, remained abstinent, or continued to use the whole time. Those who relapsed had worse memory than did those who were abstinent, and significantly worse memory than did those who had con-

tinued using (*J. Subst. Abuse Treat.* 2004;27:59-66).

According to a poster presented at the conference, at least some former methamphetamine abusers appear to be aware that their mental faculties are impaired or diminished.

The poster detailed a study reviewing the records of 422 abusers who were followed for 3-5 years after treatment.

Of these abusers, 38% reported having memory, thinking, or concentration problems at some time. Of those who reported such problems, 67% said they were currently experiencing them, said Maureen Hillhouse, Ph.D., who is also a researcher at ISAP.

It is not clear whether this apparent impairment reported by methamphetamine abusers definitely affects treatment outcome. Although some researchers have suggested that methamphetamine abusers have a higher treatment drop-out rate and a higher relapse rate, compared with those who abuse primarily other drugs, other observers have not found evidence of worse outcomes.

A 2004 report from the state of Colorado looked at treatment outcomes from methamphetamine abusers compared with abusers of alcohol and other drugs, and found that on several measures, methamphetamine abusers tended to do about as well as everyone else.

Nevertheless, all the experts interviewed at the meeting said they were convinced that this was an issue that needed to be addressed in treatment.

"Treatment really needs to be designed to accommodate these cognitive deficits we see in meth users," Dr. Hillhouse said.

Dr. Vocci suggested that some form of pharmacotherapy might be helpful. Some candidate agents have been suggested, including modafinil, the wakefulness drug, which some studies have reported improves the very types of cognition apparently affected by methamphetamine abuse, he noted.

"I would say that the cognitive impairment [in methamphetamine abusers] is universal," Dr. Dirkers said. "That's why it is such a bad drug. The effects are malignant." ■

## Physician Programs Inspiring Substance Abuse Treatment Efforts

BY TIMOTHY F. KIRN  
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SAN DIEGO — Drug abuse treatment has a fairly dismal success rate among most groups, with one notable exception: physicians.

Now, a group of experts wants to find out what it is about doctors or the assistance they receive that is so helpful so that the lessons learned can be applied to treatment for others.

"It's easy to say that physicians are different from other addicts, but our [theoretical] model is that this is a biological disease," said Dr. Robert L. DuPont at a presentation made by this group of experts at the annual conference of the American Society of Addiction Medicine.

The trigger for this study effort was an article published in the *Journal of the American Medical Association* last year. The article reported on a study that looked at relapse in 292 physicians in Washington state who had successfully gone through drug or alcohol treatment and were involved in a physician monitoring program.

The aim of the study was to see whether it was true that physicians who abused opiates—especially anesthesiologists—relapsed more often than did physi-

cians who abused primarily other drugs or alcohol.

The study found that opiate abusers did not relapse more frequently, except when they also had a coexisting psychiatric disorder. But the relevant part of the study for the expert group was that only 25% of the physicians had any relapse, said Dr. DuPont, a former director of the National Institute on Drug Abuse who is now in private practice in Rockville, Md.

In contrast, most nonphysicians receive treatment for relapse in the first year after initial treatment.

Some reports suggest physician success rates may be even higher than 70%-75%, the experts said. The experts suspect that one of the obvious reasons that physicians tend to do well is because they have a lot of "recovery capital," that is, they are educated and have a lot to lose. Another probable reason is that their families tend to be strongly involved in the process.

But it is also true that physicians tend to get enrolled in physician health monitoring programs that last a long time, insist

on complete abstinence, conduct drug testing, and do not ignore early warning signs of an impending relapse, such as when the individual begins to opt out of continued counseling or attendance at Alcoholics Anonymous meetings.

The length of the programs may be almost as important as the fact that they can be punitive, because studies suggest that recovery from drug addiction and alcoholism is not really stable for 5 years, said William White, a senior research consultant with Chestnut Health Systems, Bloomington, Ill.

Treatment for the general population tends to be done on an "ER model," with the active phase of treatment being only a few months or less, Mr. White said.

Some of the experts suggested that major problems in the alcohol/drug abuse treatment industry are being illuminated.

Eighty percent of drug/alcohol treatment programs in this country receive almost all their recompense from the government, and get less than 12% of their revenues from private insurance. Govern-

**Experts think that one reason physicians tend to do well in drug abuse treatment is because they are educated and have a lot to lose.**

ment funding "has taken market forces out of the field," said A. Thomas McLellan, Ph.D., a professor in the department of psychiatry at the University of Pennsylvania, and director of the Treatment Research Institute, Philadelphia.

He sees many problems in the field, including the fact that most programs have nothing to offer but group therapy and do not take an evidence-based approach. "If this was another industry, things would change," he said.

In a survey of 175 programs, 12% closed over 13 months, Dr. McLellan said. Moreover, counselor turnover in all of the programs was roughly 50% a year, and many of the directors—17% of whom had no college education—had less than 1 year on the job. Fifty-four percent of the programs had no physician on staff.

The expert group so far has received a \$100,000 grant from the Robert Wood Johnson Foundation, money it has been spending to get organized and obtain information from the state physician health programs about how they manage their recovering doctors.

"What we're after right now is evidence" of what is done and how it works, Dr. DuPont said. "We are optimistic that this effort is going to be helpful." ■