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DRUG-FREE WORKPLACE ADVISOR

AN ONGOING SERIES TO PROTECT YOUR COMPANY BY HELPING TO KEEP DRUGS OUT OF YOUR WORK-

Vaccines to Treat Addiction

Frustrated by the high relapse rate of traditional addiction treatments, scientists are working on a strategy that recruits the body's own defenses to help addicts kick drug habits. The new approach uses injected vaccines to block some addictive substances from reaching the brain. If a vaccinated addict on the path to recovery slips and indulges in a drug, such as tobacco or cocaine, no pleasure will result.

Some medications currently available to treat addictions typically work by mimicking a drug in the brain. For example, methadone stands in for heroin and the nicotine patch for cigarettes. Other medications block activity in the brain's reward system. Alkermes Inc.'s once-monthly Vivitrol injection does this for alcoholics and opioid addicts, while Pfizer Inc.'s Chantix pills block the brain's pleasure receptors activated when people smoke.

By contrast, addiction-treatment vaccines work in the bloodstream, not the brain. Clinical trials have so far revealed no significant side effects, though the vaccines would do nothing to combat cravings. They work by tricking the body to reject drugs as if they are foreign pathogens. Normally, tiny drug molecules wend their way through the bloodstream to the brain, unleashing a flood of chemicals involved with pleasure and gratification. The drug molecules are too small to goad the immune system into generating antibodies to fight them off.

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Scientists have figured out how to attach molecules similar to addictive drugs to much bigger antigens, such as deactivated versions of cholera or the common cold. When injected, these so-called conjugate vaccines spur the immune system to create antibodies to fight the tiny, addictive-drug molecules. These antibodies have in several studies glommed on to molecules of nicotine, cocaine and heroin ingested by lab animals and in some cases people, blocking them from triggering the pleasure centers in the brain.

It could be years, if ever, before any vaccines to treat addiction reach the market. Failures have so far outnumbered successes, and big pharmaceutical companies haven't lent their research muscle to vaccines for illegal drugs. "These vaccines have the potential to transform the way we treat drug addiction, but there are challenges," says Nora Volkow, the director of the National Institute on Drug Abuse.

A vaccine isn't viable for treating alcoholism—among the costliest of addictions—because alcohol molecules are far too small to trigger the immune system, says Thomas Kosten, a pioneer of addiction-vaccine research at Baylor College of Medicine in Houston. Most commercial vaccine-development efforts are focused on tobacco. Slightly more than a fifth of U.S. adults light up regularly.

One of the possible advantages of a vaccine, which would likely be used alongside psychological therapy and possibly other medications, is that it could require a once-a-month injection, as opposed to current anti-addiction medications that sometimes need to be taken several times a day.

"We give intravenous dosages of cocaine that's in excess of what humans take and it's like water to the mice" that have received the vaccine, says Ronald Crystal, the study's lead investigator and the chairman of genetic medicine at Weill Cornell. "They don't run around and get hyperactive." The researchers are now studying the vaccine in non-human primates.

Meanwhile, Dr. Kosten continues work on the TA-CD cocaine vaccine with a 300-subject, randomized, multi-site trial. Dr. Kosten says he hopes to report on the outcome of this trial sometime next year. .

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For more information, call American Drug Testing at 843-747-4111. For additional tips, see the "client area" at www.AmericanDrugTesting.net .

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