Sally Satel

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The Human Factor

Drug abuse causes hundreds of billions of dollars in economic losses and untold personal heartache. How to limit the damage? Sally Satel suggests we start by ditching the 'brain disease' model that's popular with scientists and focus on treating addicts as people with the power to reshape their own lives. Despite its own prejudices, an HBO series transmits just this message of responsibility and optimism.

For nearly a century, the United States government has been waging one unsuccessful anti-drug crusade after another. Today, more than 20 million Americans abuse drugs and alcohol. And while the users themselves pay a high price in stunted lives and heartache, the social and economic costs are staggering. The direct effects of addiction—homelessness, unemployment, and disease—and the costs of interdiction and incarceration are estimated at over $200 billion annually. The annual burden in lost productivity in the workplace, mainly from absenteeism and accidents, is another $129 billion, and employees' drug- and alcohol-related healthcare costs add $16 billion. In all, that's about 3 percent of our gross domestic product.

Addicts and their families—and the rest of us who help pick up the pieces—have it hard enough. The last thing we need is a confusing public health message about the nature of addiction. Yet that is exactly what was purveyed earlier in the year by an ambitious television series on HBO about substance abuse. While much of the series preached an ultra-medicalized philosophy of addiction—one I find woefully misleading—the broader message, paradoxically, was powerful and accurate: namely, that addicts are endowed with the ability to change their own lives.

Traditionally, efforts to cut drug abuse have been divided into two parts. Supply reduction tries to limit the availability of drugs. So far, despite enormous outlays of tax dollars and increased criminal penalties, results have been dismal. Meanwhile, demand reduction both tries to stop people from using drugs (prevention) and, if they start, tries to get them to stop (treatment). That's where I come in. I am a psychiatrist in a methadone clinic in Northeast Washington, D.C.

My job is to help addicts quit heroin and not go back to it in the future. If this is a challenge for the clinician, it's a monumental effort for the addict. Every so often a patient will ask me if I can "hypnotize" him out of his habit. One patient told me he wished there were an anti-addiction pill, "something

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to make me not want." Indeed, that is the timeless quest of troubled addicts everywhere: not to want. It comes as no news to them, however, that recovery is very much a project of the heart and mind. Nor is it news that recovery is attainable.

This is why I chafe at the conventional scientific wisdom about addiction: namely, that it is "a chronic and relapsing brain disease." This view is much heralded by the National Institute on Drug Abuse, or NIDA, part of the National Institutes of Health. NIDA is funded at slightly over $1 billion a year and carries enormous authority on Capitol Hill, among grant-seeking scientists, and in medical schools. The "brain disease" idea is promoted at major rehab institutions such as the Betty Ford Center and Hazelden; it is now a staple of antidrug education in high schools and in counselor education. And, of course, lawyers play fast and loose with the brain disease rhetoric in courtrooms.

The brain disease concept sends a perilous public health message. First, it suggests that an addict's condition is amenable to a medical cure (much as pneumonia is cleared with antibiotics). Second, it misappropriates language more properly used to describe conditions such as multiple sclerosis or schizophrenia—afflictions that are neither brought on by the sufferer himself nor modifiable by his desire to be well. Third, it carries a fatalistic theme, implying that users can never free themselves of their drug or alcohol problems.

The brain disease rhetoric also threatens to obscure the vast role of personal agency in perpetuating the cycle of use and relapse to drugs and alcohol. It sends a mixed message that undermines the rationale for therapies and policies that depend on recognizing the addict's potential for self-governance.

Despite its worrisome implications, the scientists who forged the brain disease concept in the mid-1990s had good intentions. By placing addiction on equal footing with more conventional medical disorders, they sought to create an image of the addict as a hapless victim of his own wayward neurochemistry. They hoped this would inspire companies and politicians to allocate more funding for treatment. Also, by emphasizing dramatic scientific advances, such as brain imaging techniques, and applying them to addiction, they hoped researchers might reap more financial support for their work. Finally, promoting the idea of addiction as a brain disease would rehabilitate the addict's public image from that of a criminal who deserves punishment into a sympathetic figure who deserves treatment.

Within clinical and research circles, the brain disease narrative quickly made a powerful impression. "The majority of the biomedical community now considers addiction, in its essence, to be a brain disease," says Alan Leshner, the former director of NIDA, who now heads the American Association for the Advancement of Science. To the public, however, the notion has largely been unknown.

Until now. This spring, the "chronic and relapsing brain disease" message got a big boost from HBO's series called "Addiction," which featured nine full-length segments plus a "supplementary series" that included interviews with medical experts and researchers about treatment and recovery. There was

also a "complementary series" that comprised intimate portraits of the lives of four people, plus an impressive educational website and a book entitled *Addiction: Why Can't They Just Stop?* Full-page ads with the tag line "Why can't they just stop?" were placed in major newspapers and magazines.

The series was produced in partnership with NIDA, the National Institute on Alcohol Abuse and Alcoholism, and the Robert Wood Johnson Foundation. Brain disease had center stage. As Nora Volkow, the neuroscientist who heads NIDA, explained in one episode, "Addiction is a disease of the brain that translates into abnormal behavior."

But what exactly does that assertion mean? It's no abstract question. The answer determines the extent to which we can and should hold addicts responsible for their actions—a matter which, in turn, determines to a significant degree our ability to reduce the effects of drug and alcohol abuse.

According to Volkow and other neuroscientists, "brain disease" refers to disruptions in the brain's motivational and reward circuitry that result from the cumulative effect of repeated use of certain substances. As these neural pathways become "hijacked," use that started as voluntary becomes less and less deliberate, harder and harder to control, and, in the most extreme cases, even automatic. The process unfolds through the action of a major neurotransmitter called dopamine, which, under normal circumstances, increases in the presence of any salient stimulus that is important or pleasurable, such as food, sex, or social bonding. It serves as a "learning signal." An organism, animal or human, comes to desire, again and again, any experience that causes dopamine's release.

When drugs, as opposed to food or sex, serve as the stimulus, the dopamine release is especially intense. Thus, each new infusion "teaches" the brain to desire drugs. Ultimately, the urge to use heroin or cocaine overrides a person's interest in once-enjoyable activities—let alone the basic chores of living, which now seem drab by comparison. After a while, however, many addicts report getting very little pleasure from drinking or using drugs. So why does the intense desire to consume persist? According to Volkow and her colleagues, persistent exposure to drugs and alcohol damages the parts of the brain that evaluate experiences and plan appropriate actions.

Addicts' brains, says Volkow, "have been modified by the drug in such a way that absence of the drug makes a signal to their brain that is equivalent to the signal of when you are starving. . . . [It is] as if the individual was in a state of deprivation, where taking the drug is indispensable for survival. It's as powerful as that."

What's so compelling about this model is that you can literally see it in action. Scientists use an imaging technique called positron emission tomography (PET) to produce a visual record of the brain on drugs. When a person is given a drug, or merely shown pictures of paraphernalia, a PET scan image will depict the brain's reward centers glowing red with a rush of dopamine-related metabolic activity.

Such PET scans are prominently featured in the HBO series, and they seem convincing. Biology, however, is not destiny. In fact, the brain of an addict who is experiencing a drug craving but fights it off also lights up like

a Christmas tree—as brightly as the brain of a person who planned to obtain drugs to quell the craving—because resistance activates additional inhibitory centers in the brain.

Nor can scans permit scientists to predict reliably whether a person with a desire-activated brain will act on that desire. Indeed, researchers have noted that self-reported craving does not necessarily correlate with a greater chance of actually using cocaine. In other words, scans cannot distinguish between an impulse that is irresistible and an impulse that can be resisted but is not. "You can examine pictures of brains all day," says philosopher Daniel Shapiro of West Virginia University, "but you'd never call anyone an addict unless he acted like one."

We tend to think of the cocaine addict in the throes of a days-long binge. He frantically gouges himself with needles, jams a new rock into his pipe every 15 minutes, or hungrily snorts lines of powder. Or we think of the heroin junkie either nodding off or doubled over in misery from withdrawal, so desperate for the next hit that he'll get the money any way he can. In the grip of such forces, an addict cannot be expected blithely to get up and walk away. These tumultuous states—with neuronal function severely disrupted—are the closest drug use comes to being beyond the user's restraint.

Yet addicts rarely spend all of their time in conditions of such intense neurochemical siege. In the days between binges, for example, cocaine addicts make many decisions that have nothing to do with drug-seeking. Should they clean the apartment? Try to find a different job? Kick that freeloading cousin off their couch for good? Heroin-dependent individuals often function quite well as long as they have regular access to some form of opiate drug in order to prevent withdrawal symptoms. Most of my own patients even hold jobs while pursuing their heroin habits, which typically entail use about every six to eight hours.

In other words, there is room for other choices. These addicts could go to a Narcotics Anonymous meeting, for example, or enter treatment if they have private insurance, or register at a public clinic if they don't. And yes, they could even stop cold turkey. I've interviewed scores of opiate addicts who have done it. They take lots of Valium-type drugs to handle withdrawal and suffer through a few days of vomiting, diarrhea, and cramping.

When Jamie Lee Curtis, who abused painkillers, appeared on a recent Larry King show that was devoted to addiction (and plugged the HBO series), guest host Maria Shriver asked her, "What made you get clean?" She responded, "Well, you know what, that turning point was a—was really a moment between me and God. I never went to treatment. I walked into the door of a 12-step program and I have not walked out since." Apparently, Ms. Curtis never got the memo that addiction is a brain disease.

It is simply a fact that many people do stop spontaneously. It is also a fact that a lot of them will start up again weeks, months, or years later. But in the interim, they have command over whether or not they do.

The "chronic and relapsing" element of the brain disease narrative suggests that relapse is an inherent and virtually inevitable property of addiction. Volkow sums it up: "Just as an asthma attack can be triggered by smoke,

or a person with diabetes can have a reaction if they eat too much sugar, a drug addict can be triggered to return to drug abuse." Scientists also explain the process in neurobiological terms. During the early phase of recovery, the brain's dopamine stores are still somewhat depleted from the recent period of heavy use, leading to feelings of apathy and "grayness," a state that can be temporarily reversed with more drugs.

What's more, according to this theory, the brain's dopamine-rich centers, even if they are less stoked than normal, remain hypersensitive, so that an encounter with an old drug buddy, say, or a whiff of whisky can provoke sharp craving, as Pavlov could have predicted.

Nonetheless, according to neuroscientist Steven Hyman, professor of neurobiology at Harvard Medical School, addicted individuals are not reduced to "zombies who are permanently controlled by external cues. As overvalued as drugs become, as potent as the effects of drug cues on behavior, other goals are not extirpated."

An important therapy for reducing the intensity of craving in newly abstinent patients is called "relapse prevention," a form of cognitive-behavioral therapy, a well-established and effective treatment for depression and other conditions. Patients are helped to identify cues that reliably trigger a burst of desire to use the drug. These cues are generally the "people, places, and things" that the addict associates with drug use, but some of the triggers are curiously idiosyncratic. For example, a teacher trying to recover from cocaine addiction might begin to think lovingly about cocaine, even tasting it in the back of his throat, when he sees the powdered residue of classroom chalk.

Internal cues, such as stress and boredom, can be powerful too. Patients rehearse strategies for avoiding the cues if they possibly can, and managing the craving when they cannot. They learn to observe themselves when they have an urge to use so they can buy enough time to talk themselves out of acting.

Perhaps one day we'll develop a medication to blunt craving—and I'm sure I would prescribe it—but the fact is that even intense urges need not be obeyed. And as a person begins to develop other sources of pleasure and interest, these will generate their own outpouring of dopamine, to put it in brain-speak. But an addict won't replace substances with more compelling preoccupations without a reason; something has to be at stake. Sometimes it's a threat that gets his attention—the risk of jail, of losing a job, a family, or a reputation. Sometimes it's the challenge of facing who he has become.

Author Jacob Sullum has interviewed many drug users who became aware that they were sliding down the path to full-blown addiction—and pulled themselves back. "It undermined their sense of themselves as individuals in control of their own destinies. And so they stopped," Sullum writes. "That doesn't mean that giving up cocaine might not be harder for different people in different circumstances, but it does show that the chemical does not neutralize free will."

Even among those who have not pulled themselves back from the brink, there is a broad range of behavior. Yes, some have held up gas stations to get money, but others have never stolen a cent. In fact, the shock of almost becoming a criminal, of stealing from a family member, or of sleeping through

an infant's screams of pain was just what brought them in to our clinic. "My God, I almost robbed my own sister," one exclaimed in self-disgust. "What kind of mother am I?" asked another, incredulous at her dereliction.

During the most intense and troubled phase of their use, these patients had a spasm of self-reproach and a sudden flash of self-awareness that moved them to do something to fix their problem. It is epiphanies like these that make me wonder about the matter-of-fact pronouncement of several of the HBO experts that, in addiction, "the judgment part of the brain becomes completely nonfunctional." Granted, not every addict has an "aha!" moment—many are arm-twisted into our clinic by spouses, children, or the courts. But for those who do, it would be fascinating to know what their brain scans looked like at the time of revelation. Probably just as afire as those of addicts using cocaine.

Indeed, for those in recovery at any phase, the path back to use is well marked by scores of red flags—small, deliberate choices, made many times a day: with whom to spend time, which neighborhoods to visit, whether to allow oneself to become bored. With each choice, the addict makes himself more vulnerable to continued use. These small decisions, then, are critical to relapse.

The process also indicates why we should not hesitate to hold actor Mel Gibson responsible for his alcohol-soaked anti-Semitic rant last year. And why Representative Patrick Kennedy was suffering from far more than a "brain disease" when he crashed his car on Capitol Hill last year. After all, a remorseful substance abuser almost always has substantial knowledge of how he behaves when under the influence, yet, in spite of this insight, sets anew the stage on which history will repeat itself.

Yes, it is true than an addict is not responsible for his inborn vulnerabilities, but once he knows he has them—a point made vividly clear by having lived firsthand through one or more harrowing episodes of reckless use—he is fully responsible for his actions.

"If the brain is the core of the problem," wrote former NIDA head Alan Leshner, "attending to the brain needs to be the core of the solution." In a seminal 1997 article in the journal *Science* entitled "Addiction Is a Brain Disease, and It Matters," Leshner goes on to explain how: by using "medications or behavioral treatments to reverse or compensate for brain changes."

Fortunately, I have never met a flesh-and-blood clinician who talks this way. Nor, apparently, has HBO. For all the brain scans and the focus on brain disease, the series presented savvy clinicians giving edifying tutorials on treatments—therapies aimed first and foremost at the *person,* not his physical organ. A poignant array of stories showed why it makes more sense to address the human factor than to set out to change the brain's chemistry.

Consider the HBO episode on a drug court in South Boston. Drug courts are jail-diversion programs that offer intensive, supervised substance-abuse treatment to addicts who have committed nonviolent, drug-related crimes. Eligible offenders who choose drug court over routine court processing are closely monitored by a judge for roughly a year. If they fail a drug test or violate some other expectation, the judge administers swift and reliable sanctions, such as community service or a night in jail. Subsequent violations elicit

more severe punishments, culminating in incarceration if the offender continues to flout the rules. The judge also rewards good behavior. A participant who does well for several months progresses to a new phase of treatment with less intense oversight.

Most patient-offenders respond well to this graduated behavioral approach. Swift response to infractions drives home the message that one's own actions are taken seriously—that the addict controls his fate. Dropout rates are significantly lower than in standard treatment, and criminal recidivism is reduced compared with standard court processing with probation. Contrary to conventional psychiatric wisdom, addicts don't have to want to change their lives for a treatment program to succeed. Gradually, they absorb the values of the program as they appreciate the benefits of drug-free living.

With the prospect of doing time hanging over his head, an offender is more likely to finish treatment. Leverage is crucial. "Drug court uses the power of the judge to get people to change their way of life," said the judge in the HBO documentary, Robert P. Ziemian. "The fact that [participants] have coercion keeps them facing their problems" in treatment. In short, the judge holds the person, not his brain, accountable for setbacks and progress.

Volumes of data attest to the fact that the longer addicts stay in treatment, the better their chances of turning their lives around. Holding people accountable for resuming use is not "blaming the victim," as the brain disease model implies. To the contrary, acknowledging their responsibility expresses faith in a human capacity for restraint and self-determination—a much more optimistic and realistic message than "young man, you have a chronic and relapsing brain disease."

By combining the moral and medical approaches to treatment—which work better together than either does alone—drug courts have proven an effective innovation. At the heart of drug courts (and there are now over 1,600 around the country) is a well-established practice called contingency management. A broad scientific literature shows that rewards and sanctions for behavior typically exert a dramatic effect on a person's drug use. By contrast, no amount of reinforcement or punishment can alter the course of a truly autonomous biological condition. Imagine bribing an Alzheimer's patient to keep her dementia from worsening, or threatening to impose a penalty on her if it did.

Another valuable intervention is self-help. An episode about Steamfitters Local Union 638 in Astoria, Queens, featured an employee-assistance program headed by a charismatic steamfitter, a recovering alcoholic who drove home the point that "we use brotherhood as a way of intervening." Borrowing from AA, the union program provided round-the-clock social support and a community of peers, some of whom have been sober for many years.

Unfortunately, the HBO series barely mentioned Alcoholics Anonymous itself, the most widely used and successful method for staying sober. "Well-done studies repeatedly find that AA is more effective in moving people to abstinence than any other form of outpatient treatment for alcoholism," says Keith Humphreys, professor of psychiatry at Stanford University and an expert in the field. "On additional measures, like reduced days missed at work,

improvement in depression, and better family life, AA is comparable to other treatment. And, what's more, the price is right: it's free."

The omission by HBO, however, was not altogether surprising. After all, the AA fellowship extols the idea that the alcoholic must enter into nothing less than a crucible of character change—must become more humble, honest, and morally reflective by working through the program's 12 steps. This is not a philosophy that meshes well with the biological version of addiction.

One of the most riveting HBO episodes was a full-length profile of Lisa, a 37-year-old woman living in a run-down hotel room in Toronto and working as a call girl. For most of the show, we see her sitting on the bed talking to the filmmaker behind the camera. She is animated, engaging, and witty. Flipping her shiny brown hair and inspecting her well-kept nails, she talks eagerly about how much she makes selling sex, how much she spends on drugs, and what cocaine feels like ("someone coming up behind you and hugging you . . . warm").

Lisa's cell phone rings about every ten minutes, and she flirts with the prospective johns. Then it is time to use. "Wanna see me get high?" she asks the filmmaker. She injects cocaine in a very deliberate manner, and when she hits a dud vein in her arm, which happens four times, she moves on to another one unfazed.

Lisa has been through many rehabs, we are told. When she was filmed, she was healthy and engaging; in other words, she looked and talked like someone who was recently abstinent but is back in the early stages of her next downward spiral. She has no interest in stopping things at this point. "Right now, I am in no position to go into recovery. [This way of life] is working for me. . . . I have money, drugs, business. I'm O.K."

To say Lisa's problem is the effect of cocaine on her brain is to miss the true threat to her well-being: Lisa herself. "I always use for a reason. It's repressing what needs to be repressed," she says. She yearns for "oblivion" through drugs and calls her use "complete selfishness."

Lisa's saga is a stunning illustration of the shortcomings of the medicalized view of addiction, which is silent on the fact that many people are drawn to drugs in the first place because the substances temporarily help quell all manner of pain they endured before ever becoming addicted: persistent self-loathing, anxiety, alienation, deep-seated intolerance of stress or boredom, pervasive loneliness. When Lisa says she seeks "oblivion," I am reminded of screenwriter Jerry Stahl and his potent memoir of addiction, *Permanent Midnight:* "The point is, everything, good or bad, boils back to the decade on the needle, and the years before that imbibing everything from cocaine to Romilar, pot to percs, LSD to liquid meth and a pharmacy in between: a lifetime spent altering the single niggling fact that to be alive means being conscious."

Cocaine, heroin, or alcohol may provide relief, but it is temporary, and when the addict finally does stop, the raw vulnerabilities that prompted his devotion to drugs in the first place are still there, throbbing like a fresh surgical incision as the painkillers wear off.

High-quality long-term rehabilitation takes the personal dimension of drug abuse seriously. Phoenix House, a nonprofit institution based in New York, is the national leader in this approach, and HBO featured one of its rehab

programs for adolescents. Phoenix Academy in Austin, Texas, provides up to 24 months of residential care with the underlying philosophy that the addict himself, not his drug or his brain, is the primary problem. Addiction is understood more as a symptom than a disease. The root pathology is the patient's failure to engage in purposeful activity and achievement, and to acquire a feeling of self-worth and a capacity for self-control. On top of this, a young person's heavy drug use derails him from completing the maturational tasks of adolescence. By age 18, he is lost when it comes to consolidating a personal identity, forming a concept of his future, or figuring out how to give his life meaning.

"Drugs cover up all your problems," says Ted, a teenager forced by his parents to attend the academy. "Here there are no drugs, so you are forced to deal with your problems. [It] makes you internalize wanting to have a schedule and needing to stay busy all the time."

All residents must work, get an education, or learn a skill. When patients are deterred from acting on every impulse, they can learn the basic psychological skills so many of us take for granted: how to delay gratification, develop relationships based on trust, devise internal strategies for coping, and accumulate the small successes that eventually coalesce into a sense of self-worth. They learn to live in cooperation with others and to accept authority and supervision—concepts essential to workplace success.

By the time I had finished watching episodes like the one on Phoenix Academy, I realized that the series had actually made most of the points I would want the public to know about addiction, potential treatments, and the dynamics of recovery. It showed the profound truth about drug abuse: that individuals have the power to shape their own lives. It was a notable conclusion that all of the featured scientists supported as well—even though the brain disease rhetoric would imply otherwise. To be sure, PET scans and tutorials on neurobiology have a part in any comprehensive examination of addiction but, in the end, it was hard to imagine that viewers could come away thinking that the addict's disembodied brain held the secrets to understanding or helping him. The human face of the series could not help but dispel such a narrow impression.

I am a clinician. I treat real-life patients. As a pragmatist, I can't see the advantage of conceptualizing addiction as a "chronic and relapsing brain disease." At the same time, no reasonable person would disagree that addiction is mediated through the dopamine system of the brain. Or that intense activation of the dopamine system makes it more difficult for users to quit. Or that genetic factors influence the intensity of the effect that users derive from substances, the rapidity with which they develop compulsive use, the potency of their cue-related craving, and the severity of withdrawal symptoms.

Nevertheless, I remain loyal to the more traditional understanding of the word "addiction," the one that I assume the general public holds: namely, that addiction is a condition in which people engage in damaging and compulsive use of mind-altering substances. To me, that definition casts *behavior* as the essence of the problem; it also stipulates that addicts themselves have the ability to change that behavior.

I prefer the language of self-agency because it is the one that translates best into efforts to prevent, treat, and overcome addiction. Perhaps one day discoveries unearthed by brain science will oblige me to reconsider, and talking about addiction in the idiom of neurobiology will be more fruitful in the clinical domain. But for now, people like me must engage a patient in a consideration of *himself*—his anxieties and aspirations—not his brain.