

1. Is addiction a disease? What are the arguments for and against this notion?

People often disagree with the idea of calling addiction a disease in the same way we call conditions like diabetes a disease. The behavior of addicts is frustrating, ugly - even criminal. How can driving drunk be a symptom of a disease?

The best argument against calling addiction a disease states that addicts make the choice to use drugs and that their inability to stop is simply immature and irresponsible behavior. Diabetics, for instance, do not have a choice about whether or not to have a high blood sugar. These arguments make sense, and are often embraced for their intuitive appeal alone.

When doctors use the Disease Model of Illness to think about a disease, they think of a specific physical defect in some organ or physiologic system of the body. That defect, once discovered, provides a causal explanation for the patient's symptoms and points the way to treatment. With diseases like diabetes, the defect is easy to understand.

With *brain disorders* however, it is not that simple.

Our understanding of brain disorders has not kept pace with our understanding of other diseases - like diabetes. A big part of our difficulty in calling addiction a "disease" stems from the fact that no one could ever find the defect in the brain that caused addiction. Without a physical brain defect to point to, addiction never earned the status of "disease" like diabetes did. The addict's symptoms were assumed to be due to their intrinsic badness - their immaturity, their irresponsibility, or worse.

But guess what? In the last ten years we have learned a lot more about the brain. We know what the physical defect of addiction is and where in the brain it is. Addiction is a defect in the hedonic system, or the system that perceives pleasure, which is deep in the part of the brain that handles basic survival. Because of this defect, the addict unconsciously thinks of the drug as life itself. A beer is not just a beer anymore - the addict needs the beer to get through life and when the beer is unavailable they *crave* it.

While it is true that the addict may have a choice in whether or not to use drugs, they do not have the choice over whether or not to crave. If craving gets bad enough, even the strongest-willed, most mature and most responsible person will return to using drugs. No brain can ignore that survival imperative. One of the big reasons we have difficulty calling addiction a disease is our inability to grasp the true nature of craving. Craving is a very real mental suffering the addict endures when they come to the point in their addiction when they are using drugs even when they do not want to.

If you are in medical school and you write, "addiction is not a disease" on one of your exams - you will flunk. In medicine, we now know that the addict's brain really is different than normal brains, and from a physiologic standpoint we now know *how* it is different. This explains a lot of the symptoms we see in full-blown addiction and helps us develop better, more effective treatments to help the addict recover. It also means that addiction fits the Disease Model of illness as well - if not better - than many other diseases.

Like say, diabetes.

2. How far have we come with regards to recognizing and treating addictions compared to years past?

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For thirty years, research in neuroscience, psychology and pharmacology has been steadily building in the search for clues about addiction. Recently, this information has coalesced to the point that we now have a good working model of the physiology of addiction. Answers are starting to present themselves about the symptomology of addiction that in the past were perplexing. This more complete picture of addiction leads to better clinical tools to help addicts who in the past were branded as “unwilling” or “reluctant” to recover.

One crucial challenge remains: finding an objective test for the predisposition to develop addiction and for the presence of addiction already in progress. Currently, no such test exists to tell us who is an addict or who will become addicted, but the area of brain imaging holds some promising leads.

3. Is addiction a mental or physical disorder?

This is a truly loaded question. The *other* big reason, besides the mystery of craving, that we have trouble calling addiction a disease, as we would a clearly physical disease like diabetes, is our reliance on terms like “mental” and “physical” (or “mind” and “body”) and the assumption that the two are distinct entities without causal relation to one another.

This idea of a separation between the mental and the physical goes way back to the seventeenth century French philosopher Rene Descartes (1598-1650). In the *Philosophy of the Mind*, Descartes’ solution to the mind/body problem is that there is the mind (soul) and then there is the body (brain) – and never the twain shall meet, or causally affect one another. This solution is called Cartesian Dualism, and while dualism persists in our everyday thinking, made obvious by such terms as “mind” and “body”, it is considered an unsatisfactory explanation. Dualism is obviously at odds with our experience. I think about raising my arm and then I raise it, or I get a brain tumor and my personality changes. Clearly, the mental influences the physical and vice versa. Nevertheless, Cartesian Dualism has crippled our understanding of the nature of consciousness. We are still unable to take “mental” disorders as seriously as we do “physical” diseases. We have no trouble accepting that a physical disorder of the pancreas causes diabetes, but the idea of a physical disorder in the brain causing the very unpleasant behavior of addiction is still tough for us to swallow. It is easier to simply write off addictive behaviors as caused by a weak character or simply moral turpitude.

The consequences of Cartesian Dualism have hit addicts especially hard. If you told me that your daughter has cancer, I can muster some comforting comments about courageous surgical techniques or life-saving chemotherapy that leads to good cure rates. Conversely, if you come to me and tell me that your daughter has a crystal meth addiction, my heart goes in my throat. I cannot promise you she will not die in prison. These are the very real consequences of our inability to reconcile the “mental” and the “physical.”

The philosopher of the mind John R. Searle at U.C. Berkeley suggests a solution to the mind/body problem and thus a way out of Cartesian Dualism. Searle argues that consciousness is simply a feature of the physical organization of the brain. When we refer to the “mental,” we are really just describing the “physical” at another level in the same way we refer to the “physical interaction between water molecules” as “wetness” or the

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“arrangement of tree cellulose in this desk” as “hardness.” Thus, the mental and the physical are really just the same thing.

Once this solution is in place, the confusion about whether addiction is a “mental” disorder as opposed to a “physical” disorder clears up nicely, as does the skepticism of calling addiction a “disease”. Addiction is simply a defect in the brain’s ability to perceive pleasure that so severely influences the addict’s conscious experience of drug use that they form a pathological attachment to the drug. On one level, we are talking about the defective response to increases in dopamine in the cellular structures of the midbrain, and on another level we are talking about relapse to meth despite a judge’s promise to send the addict to prison.

4. What part(s) of the body or brain plays the greatest role in addiction?

All drugs of abuse work in the reward centers of the limbic brain. This is the part of the brain that handles immediate survival – not long-term planning or anticipation of consequences. In addiction, a defect in the limbic brain changes the addict’s perception of the drug’s survival salience. This is the first part of the mechanism of addiction – the part that is unconscious. Then, that misperception of the drug experience is sent to the frontal cortex where an emotional connection is made to the drug based on the misinformation received about the drug’s salience. This is the second part of the mechanism of addiction – the drug takes on a conscious meaning to the addict. They love it when it is there. They miss it when it is gone. The drug hijacks the same parts of the brain that handle survival and love.

This will have major consequences for behavior.

5. What needs to happen physically or chemically within the body for addiction to occur?

The best descriptive model of addiction attributes the disorder to a dysregulation of the hedonic, or pleasure, system in the brain and a change in the “pleasure threshold” – or the brain’s ability to perceive pleasure. Dr. George Koob of the Scripps Neuroscience Institute in San Diego, CA developed this model. His idea is that closely spaced and intense drug use can cause the release of dysphoric chemicals and stress hormones in an effort to maintain balance in the hedonic system subsequent to drug use. This may cause the drug user to counteract the body’s attempt to maintain the “balance of pleasure” by using more and more of the drug, which will result in greater and greater release of dysphoric chemicals. In essence, when the drug pushes, the body pushes back.

If the body is no longer able to maintain the homeostatic balance due to ever-increasing drug levels, it will give up on *homeostasis* and resort instead to *allostasis* in a compromise to maintain stability of the hedonic system. Whereas homeostasis is maintaining balance around a certain level, allostasis is an overall change in the entire level in order to keep the system stable overall. This is the point at which the “pleasure threshold” changes, and where the drug abuser crosses over into the diagnosis of substance dependence. Now the addict is not using the drug to feel good (positive reinforcement), rather he is using the drug just to feel *normal* (negative reinforcement).

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In thinking about Koob's theory, it struck me that it might be possible to have the dysphoric stress chemicals already present prior to actual drug use – say from some chronic, unmanaged stress that has accumulated to the point that the brain interprets the stress on the survival level. This alone may change the “pleasure threshold” resulting in *anhedonia* – a term in psychiatry that means the inability to derive pleasure from those things that used to be pleasurable. At this point, the old pleasures no longer work to make life worthwhile. The *pre-addict* may search for something to regain a normal feeling of pleasure. If at this point they should stumble across a drug, such as alcohol or crystal methamphetamine, the very high increase in dopamine concentration in the brain's pleasure centers will cause that drug to be tagged with survival coping value. The pre-addict will seek out that drug – in fact, their entire behavioral repertoire may narrow around the attainment and use of the drug. The pre-addict is now a full addict, using the drug as their primary means of coping.

6. Does stress contribute to addictions? If so, how?

Koob's theory, as discussed above, attributes the cause of hedonic dysregulation at the level of the drug use itself: stress hormones (Corticotropin Releasing Factor, Adrenocorticotrophic Hormone) are dysphoric and the addict accelerates drug use to counteract that dysphoria, resulting in greater release of dysphoric stress hormones, resulting in greater drug use.

I agree with this, but would also add that drug use itself may not be necessary for these dysphoric stress hormones to be present. The presence of the stress hormones may be to motivate the individual to find coping mechanisms for stress. For example, stress of hunger results in search for food and eating results in relief of stress. As such, they may be released in varying amounts all the time, but in situations of *severe* stress that are not promptly managed, these stress hormones may rise to levels that cause the hedonic system to dysregulate (war, emotional abandonment, physical illness, mental illness, sexual or physical assault, domestic violence). The individual is then motivated to seek relief of the stress. If the stress coping mechanism is healthy (church, friends, family, hobbies) then there will be no problem. If however, the stress coping mechanism is a drug, then addiction may form. The brain, subjected to chronic, *severe*, unmanaged stress is “fertile soil” for addiction. If a drug comes along at this time of severe stress, the effect and benefit that the drug has for continued survival, will not likely go unnoticed.

7. Tell me about the Hedonic threshold and its connection to addiction.

A big part of the brain's job is to keep the various physiologic systems of the body in balance. This is easy to understand for systems such as blood glucose level and body temperature, but it is harder to grasp that the body has a system for regulating something like pleasure. Nevertheless, such a system exists – it is called the Hedonic System. Normally, this balance, or “homeostasis,” is maintained around a hedonic “set point,” which could be considered a kind of “pleasure threshold.” Addiction is an inability to maintain the “balance of pleasure,” as it were.

When this hedonic set point is changed, such as in times of severe stress, the brain becomes *anhedonic*: it is unable to derive pleasure from things that were formerly

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pleasurable. In essence, the brain is “deaf” to pleasure. The only pleasures it can now sense are VERY “LOUD” pleasures – or those pleasures that cause large fluctuations in dopamine in the limbic structures of the brain. Usually, the things that cause these fluctuations are drugs. If this happens, the limbic (survival) brain is likely to attribute special salience to these drugs as coping mechanisms. Behavior may reorient itself around the drug until the stress is gone.

This may seem like a strange and abstract concept, but the brain has another example of a temporarily changed “set point” in order to cope with one kind of stress: a fever. Under the stress of an infection, the brain may reset the body temperature set point from 98.6 degrees F to 102 degrees F. This is because at that raised temperature, the body’s immune system is much better at fighting infections. When the infection is gone, the body temperature set point returns to normal, and the fever is over.

In the case of addiction, the change in hedonic set point gets “stuck” and will stay that way until a *real* coping mechanism (not a drug) is introduced to relieve the underlying stress.

8. *Is there any connection between drug and/or alcohol addiction and eating disorders such as bulimia? If so, what is it?*

When I read the research that revealed that all drugs of abuse cause the increase of dopamine concentration in the limbic reward structures of the brain, I wondered if *only drugs* could cause such an increase. If dopamine is the currency of pleasure and reward in the brain, and addiction is a defect in dopamine processing, then shouldn’t *anything* that is pleasurable cause such an increase in dopamine – and potentially be addictive, too?

It turns out, that is correct and it was known long before I thought of it. We see close relationships between *chemicals* that involve addiction and *behaviors* that involve addiction. This is especially true with eating disorders.

People with eating disorders value a high degree of control over their body weight. Major stimulants are excellent at helping them to do this – especially amphetamines. We see a high correlation between methamphetamine addiction and eating disorders like Bulimia Nervosa.

In the past, patients came to drug treatment and only their addiction to their drug of choice was addressed. Now we are realizing that we must address *both* the drug addiction and the behavioral addiction to fully help the patient overcome the back-and-forth synergistic effect between the two.

9. *How common is it for someone to have two separate addictions at the same time; in other words, they are addicted to both cocaine and sex?*

It is common enough that once I know the patient’s drug of choice, I immediately start looking for the secondary drug of choice – or *behavior* of choice – that might be paired with the core addiction and even contributing to it.

There are some drugs that I especially expect to be accompanied by a secondary addiction. I have a theory that *all* (well, let’s say 99%) stimulant abuse, cocaine and methamphetamine, in men is about one thing: *sex*. And that sex is about one thing: *anger*. If I am only addressing the drug in treatment, without dealing with other two, then I am

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not fully treating the patient. It is entirely likely that the addict in treatment – while abstinent from their drug of choice – continues to use the secondary drug/behavior to cope in the absence of the primary drug. If this occurs, relapse once the person is discharged is highly likely because, in essence, the addict really never stopped using while they were in treatment. The secondary drug/behavior will lead the patient back to their primary drug if not dealt with. In addition, if a patient is experiencing particularly bad cravings it may be the use of the secondary drug/behavior that is perturbing the hedonic system into seeking the primary drug.

In stimulant addicts, especially men, I expect to see compulsive use of sexual behaviors (masturbation, pornography, inappropriate liaisons) as part of the early recovery process. This should not be a source of shame – it is part of the common clinical picture. Classically, stimulant drugs are used to enhance sexual experiences. Recovery from stimulant drugs will have to include a change in the use of sexual behaviors. I also expect that work on anger issues will ameliorate much of the preoccupation with the drug and with sex.

This is, by the way, a good reason to segregate the genders in drug treatment centers. Stimulant addicts tend to hook up in treatment – not because they are promiscuous, but because they are suffering severe discomfort as a result of the removal of their drug from their coping armamentarium, and because they have learned that sex can be used in a pinch to cope. These relationships in treatment are often terribly likely to result in relapse, and are particularly destructive to the woman's recovery. For this reason, gender segregation will probably become the standard of practice in addiction treatment in the future. Men get sober with other men. Women get sober with other women. Only in the context of gender-specific treatment and twelve-step meetings are stimulant addicts likely to get to the more personal and loaded issues that drove their addiction.

10. Do you have any idea how common it is for doctors to develop addictions, whether we hear about it or not?

Most research indicates that doctors and other health care professionals do not have a higher prevalence of addiction than other professions. I think the cause for concern about addiction in healthcare professionals is the easy access to controlled medications along with the potential for disaster due to the high-risk nature of working on patients. State medical boards (led by a few pioneering physicians in addiction medicine) have been very successful in minimizing the risk of untoward outcomes for patient and physician alike by instituting diversion programs for impaired physicians. These programs have proven themselves to be so successful that other professions (aviation, legal, and managerial, for example) have duplicated them.

Professional organizations have found that they have a greater margin of safety if they have programs that allow the addict or alcoholic to self-refer themselves to treatment and ongoing monitoring of abstinence in the context of continued employment. Interestingly, these programs are based on those first developed by the U.S. military in the days prior to zero-tolerance. These programs allow for retention of personnel and training assets as well as providing a “vicarious learning” process for other individuals who may want to seek help for alcohol and drug problems. Professional programs for

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doctors, pharmacists, lawyers, dentists, nurses, pilots and others have enjoyed *astronomical* success rates for long-term recovery.

I do not see why other workers, besides professionals, could not benefit equally from similar programs. I would like to see self-referral addiction treatment and monitoring policies in place for all employed individuals at various levels throughout the nation's workforce. This would allow us to identify the patient's addiction at its earliest stages, initiate appropriate treatment and arrest the addiction before it could progress to a point where intervention is more difficult. I think if we thought of addiction medicine in terms of occupational medicine, the morbidity and mortality caused by addiction would diminish dramatically in this country.

11. Does it help for someone to have been through addiction himself/herself in order to effectively treat it in another person?

I look at the issue of addicts in recovery entering the field addiction medicine in the same way I look at male doctors entering the field of gynecology: some patients do not want a male gynecologist, some don't – but gender is not necessarily a bar to delivering competent, compassionate care. There are talented, helpful and sought out men working in gynecology in the same way there are talented, helpful and sought out non-addicts working in the field of addiction medicine for the simple reason that a past history of addiction is not a prerequisite for empathy for the addicted patient. So I would leave the choice up to the patient.

Interestingly, there is a strong current in addiction research that shows that the variable most predictive of treatment success is the interpersonal functioning of the professional delivering that treatment. Additionally, the act of *identification* of the professional with the addict (sympathy) has been shown to be detrimental to long-term sobriety. This speaks to the fact that the treatment professional's own experience (as well as the kind of treatment he or she delivers) has less influence on long-term sobriety than simply the degree of empathy shown toward the patient.

12. As someone at the forefront of addictions and treatment, can you tell me if you have seen any trends on either side?

Your question implies a division between trends in addictions and trends in addiction treatment. I will answer each in turn.

With regard to current and future trends in addictions themselves, there is still a strong emphasis these days on the use of M.D.M.A. ("ecstasy") and the controversy over whether or not the drug causes permanent damage to serotonergic neurons in the brain (possibly predisposing the user to Major Depression). I notice that most of the people I see presenting themselves for treatment for ecstasy addiction are sent by their parents or come due to a job or legal requirement. I do not see a lot of self-referral for ecstasy abuse or addiction, and I am not willing to speculate on what that means.

I am pleased to see a continuing emphasis on getting Oxycontin abusers and addicts into treatment. I think users of this narcotic preparation have a higher prognosis than the average heroin addict who presents to treatment (that is not to say that heroin addicts do not get sober all the time), so I am encouraged that Oxycontin users (and users

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of other prescription narcotic preparations) are seeking treatment prior to graduation to heroin.

Club drugs other than ecstasy (GHB, Rohypnol) get a tremendous amount of media attention but are a very small percentage of those coming to treatment.

Methamphetamine abuse and addiction continues to be strong in the western U.S. with increasing incidence in Rocky Mountain and Midwest states, although I hear that the quality of the meth has diminished markedly from the meth addicts coming to treatment. The usage of meth use has been moving eastward for some time, with the line currently about Ohio and Appalachia. There is concern that meth use will surge again as it reaches the eastern U.S. seaboard, especially since the current trendy drug there - cheap, high-grade heroin – may become scarce due to the war in Afghanistan.

With regard to trends in treatment, the shift away from “one size fits all” treatment continues in settings geared to middle class and upper-middle class patients. For low-income and fixed-income populations, access to treatment is still limited and the nature of the treatment that is available tends to be twelve-step, non-medical model and generally punitive. I continue to be optimistic that the general turn away from past punitive treatment tactics will continue as more medical/pharmacologic adjuncts become available such as bupropion and naltrexone treatments.

Lastly, the recognition of the needs of special populations (elderly, dual-diagnosis, battered women, gay and lesbian) who are entering addiction treatment is growing – a trend that I think will help patients who in the past were lost to treatment because of a lack of support groups for these patient populations.

13. What do you believe is the most effective method(s) for treating addiction?

Treatment should be tailored to the individual and his or her special needs. Some patients can go to outpatient treatment and get a good start at recovery. Other patients will need a higher level of care including inpatient treatment followed by a long-term sober living environment. Generally, the length of time spent in treatment correlates with long-term abstinence but the intensity of the treatment (inpatient vs. outpatient) may not be as crucial.

Of course, I have a strong personal prejudice against treatments that are more punitive, including behavior modification, therapeutic community model and social model treatment centers. Although there are patients who are appropriate for these modalities, and I would not want to deny them the opportunity, I do not believe these treatments should be the first line treatment choice *in any circumstance*. I believe Medical Model/Minnesota Model treatment approaches are the best first line treatment choice.

For those patients who are not yet willing to consider abstinence, there is a growing body of addiction professionals who will consider treatment methods that do not insist on immediate abstinence as a requirement for initiation of therapy. Modalities such as Motivational Interviewing and the Matrix Model are being embraced, albeit slowly, by professionals as a means of helping patients who in the past were barred from addiction treatment.

My standard recommendation for any severe addiction remains: thirty day detox/inpatient treatment, immediate transition to an outpatient day treatment center with

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a sober living environment for three to six months, subsequent weekly random urine testing, weekly consultation with a licensed therapist or attendance of group therapy, and monthly consultation with a certified addictionologist for the first one to two years sober, preferably two years. All of this should of course occur in the context of regular A.A./N.A. attendance and a good, working twelve-step program. I have not yet seen any unfavorable outcomes in those who have followed this regimen. This is consistent with my experience treating pilots with addiction and my belief that if addressed fully and quickly the first time around, the addiction goes into remission quite nicely.

14. Must one suffer in order to obtain sobriety? How important is punishment in the treatment process?

If suffering and/or punishment worked to fix addiction, even a little, than the U.S. should have the highest treatment success rates of any country in the world. I am not sure why a treatment center would *ever* consider it appropriate to use punishment in the treatment of *any* patient, but sadly I must confess to you - it happens. I am quite certain that punishment only serves to further *cement* the addiction into place. In fact, I spend a lot of my time trying to unscrew the mess a previous treatment professional has made by punishing the addict who now comes to me because the past punitive treatment did not work.

I think it comes down to whether or not the treatment professional believes that addiction is a disease or not. Unfortunately, sometimes everything that we *say* about addiction being a disease is undermined by the fact that everything we *do* shows that we do not really believe it ourselves. If we do not show some integrity in our beliefs by demonstrating them in our actions, why should we demand that the patient show it?

If addiction really is a disease (it is), then that means that addicts are patients just like any other patient who seeks treatment. That means that addiction has parity with every other disease – and if you cannot punish a diabetic in order to get their blood glucose down, that means you cannot punish an addict either. Why should we think that the disease of addiction would respond to punishment when other diseases do not? By definition, diseases do not respond to punishment.

Not only that, when addiction fit the disease model there were BIG implications ethically – that meant that the biomedical ethical principles that apply to the diabetic now also apply to the addict, and the addict has the same right to quality, compassionate, and effective care as the diabetic.

Most treatment professionals do not see the ethical follow-through to the statement that, “Addiction is a disease.” They believe that they *must* aggressively confront and punish the addict to break through their defense mechanisms. This is simply rubbish. Anytime one group of patients is parsed out from other groups of patients for suspension of ethical treatment, then all patients are in danger. The addiction treatment professional that tells me that they cannot see patients without these punitive tactics is really telling me that they cannot see patients *at all*. Not only is this reasoning clinically unsound but the law has also not supported such utilitarian logic - to the point of awarding large malpractice judgments against treatment professionals who do not get it. This is a good thing, as it will serve to improve the integrity of the field of addiction medicine.

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My belief is that treatment fails in the U.S. *because* it is punitive. Take out the punishment, and the treatment success rates will go through the roof. I draw support for this belief from the fact that diversion programs for doctors, dentists, lawyers and pilots – all of which are non-punitive – show extraordinarily high success rates. A fellow flight surgeon and I conservatively estimate that the U.S. Navy has a 97% return to flying status rate in its treated alcoholic pilots.

97%.

Not 3%, or 13% or whatever other dismal number most treatment centers give.

But 97%!

I want that 97% for *all* addicts. There is nothing so male, or white, or college educated about those Navy pilots that gets them sober and back into the plane faster than other people. The variable at work is the fact that the Navy does not punish them. There is nothing that the Navy gives to their pilots that we could not give to every American.

All it takes is a little courage not to punish sick people.