



The Role of the Brain in Substance Use



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There’s been a shift in thinking about addiction, to a new understanding that addiction is a chronic illness characterized by clinically significant health and social impairments—as opposed to a lack of willpower or unwillingness to stop. This new framework stems from decades of research investigating substance use and its effects on the brain. We now know that while the initial decision to use drugs is voluntary, drug addiction affects the brain in a way that compels an individual to become singularly obsessed with obtaining and abusing drugs despite harmful consequences.

Drug use changes both the structure and function of the brain. These changes can be long-lasting and lead to risky behaviors in the individuals who are using substances. Science has come a long way in helping us understand how drugs of abuse alter different brain networks. The disruption of these networks also disrupts a person’s ability to voluntarily choose not to use drugs, even when it means losing everything they once valued. Being unable to stop is the hallmark of addiction. When a person first uses drugs or alcohol, they perceive what seems to be positive effects, like increased relaxation, self-confidence, and sociability, for example. They believe they have control over their use. If use continues, increasingly larger amounts of alcohol or drugs are needed to achieve the same level of pleasure as before. Seeking out and taking drugs becomes a near constant activity, causing significant problems for them and their friends/family. At the same time, progressive changes occur in both the structure and function of the

Definitions

From the [2016 Surgeon General’s Report on Alcohol, Drugs, and Health](#):

Addiction: the most severe form of substance use disorder, associated with compulsive or uncontrolled use of one or more substances. Addiction is a chronic brain disease that has the potential for both recurrence (relapse) and recovery.

Substance use disorder: a medical illness caused by repeated misuse of a substance or substances. It is noted that a severe substance use disorder is often called an addiction.

Substances are often alcohol (beer, wine, liquor), illicit drugs (marijuana, cocaine, heroin, synthetic drugs, meth, hallucinogens, prescription drugs used for nonmedical purposes, etc.), and inhalants.

[See Role of the Brain Page 2](#)

In This Issue

The Role of the Brain in Substance Use	1
Student Corner: One Pain and Paternalism.....	4
The Family Refused Organ Donation for a Patient with an Organ Donor Designation on Her Driver’s License.....	6
WVNEC Advisory Committee Officer Election Results	8
Calendar of Events.....	9

Role of the Brain from Page 1

brain. These changes can drive the compulsive drug use that is the hallmark of addiction.

Research has identified a number of brain regions and networks that are key in the development and persistence of addiction. One key region, the basal ganglia (including the nucleus accumbens and striatum), is involved in feelings of reward, pleasure, and motivation.

Most drugs exert their effects on the pleasure and reward pathways of the brain. Two ways they can do this are: 1) by mimicking the brain's natural chemical messengers, and 2) by overstimulating the brain's reward circuits, both of which result in a flood of dopamine. Dopamine is a neurotransmitter, a chemical in the brain that aids in carrying signals from one brain cell (called a neuron) to the next. Pathways in the brain where dopamine is present are involved in many important functions, one of which is reward-motivated behavior. In the healthy brain, when we receive natural rewards such as food or sex, dopamine is released as a way of saying, "that was good". Overstimulating the system with drugs, however, produces euphoric effects, which strongly reinforce drug-using behavior. The individual, in an attempt to recreate that feeling, will continue to use drugs or alcohol and a dangerous cycle is initiated.

In the nucleus accumbens, which is part of the reward pathway, drugs release 2 to 10 times the amount of dopamine that is released by natural rewards. How much is released depends on the type of drug; amphetamines, for example, release more dopamine than cocaine. These effects can take place immediately, such as in cases where drugs are smoked or injected, and often last much longer than effects produced by natural rewards. As a result, the increased and sometimes constant influx of dopamine means feelings of reward, motivation, or pleasure is also increased. However, if substance use continues, the brain produces less dopamine and/or reduces the number of neuronal structures called receptors that bind dopamine. Thus, dopamine's impact on the reward network diminishes, along with the individual's

ability to experience pleasure. This explains why individuals who chronically abuse drugs or alcohol begin to appear lethargic, unmotivated, depressed, and report a lack of pleasure in things that were once pleasurable. To counter this, they increase their substance use in an attempt to feel the same pleasure they used to—which in essence is an attempt to elevate dopamine levels. This only exacerbates the problem, creating a cycle of needing to take the drug in order to regain dopamine levels, then later needing to increase the dose, and so on, an effect known as tolerance.

“Because addiction is typically a chronic disorder characterized by intermittent relapses, a short-term, one-time treatment is generally not sufficient. For many, treatment requires multiple interventions and regular monitoring.”

While short-term use may only produce small, transient effects in the brain, prolonged drug abuse changes the brain in fundamental ways that reinforces continued substance use, such as the strengthening of memory circuits associated with drug taking. Social, geographic, and physical cues become strongly associated with the drug, and these have a powerful impact on the brain—no matter if that person has been abstinent for 15 days or 15 years ago. The friends they used to drink with or the bar they used to get drunk in can trigger a craving and risk a relapse. If they injected drugs, just seeing a spoon could be all it takes. The neural changes induced by chronic drug or alcohol use can persist years after all use has ceased. This is why individuals who no longer use are at risk for relapse even after long periods of abstinence and despite the potentially devastating consequences that accompany a return to substance use. More importantly, this is why treatment depends on the type of drug and the individual characteristics of the patient.

See Role of the Brain Page 3

Role of the Brain from Page 2

Because addiction is typically a chronic disorder characterized by intermittent relapses, a short-term, one-time treatment is generally not sufficient. For many, treatment requires multiple interventions and regular monitoring. There are a variety of evidence-based approaches to treating addiction. Drug therapy can include treatment medications, such as methadone, buprenorphine, and naltrexone, which are available for individuals addicted to opioids.

Naltrexone is also used for those addicted to alcohol. Medications are useful for to treat different stages of the recovery process, such as reducing symptoms of withdrawal, assisting the brain with the absence of the drug, and relapse prevention. More information about treatment and the role of medications can be found [here](#).

It is important to note that not everyone who tries or uses substances will go on to become addicted. Addiction is a complex disorder, influenced by number of risk factors at the individual, community, and fam-

ily/caregiver level. As with any disease or disorder, level of vulnerability differs from person to person. No single risk factor is an absolute guarantee for developing addiction however, the more risk factors an individual has, the greater the risk. Protective factors, however, can reduce this risk. Risk and protective factors can be either environmental (such as conditions at home, at school, and in the neighborhood) or biological (for instance, a person's genetic make-up, their stage of development, or even their gender or ethnicity). You can read more about risk and protective factors on [this page](#) on National Institute on Drug Abuse website.

Understanding the brain's role in addiction can help reduce negative perceptions and attitudes of those struggling with substance use disorders. The National Institute on Drug Abuse website has a section called [NIDAMED](#), where medical and health professionals can find tools and resources on substance use. The [2016 Surgeon General's Report](#) On Alcohol, Drugs, and Health is also useful for learning more about substance use statistics, as well as substance use and the brain. Finally, the National Institute on Drug Abuse's [Science of Addiction](#) expands on the information presented here.

SAVE THE DATE!

Happy 30th Anniversary WVNEC!

May 17, 2017 - 30th Annual WVNEC May Symposium- Stonewall Resort in Roanoke, WV.

This symposium marks the 30th anniversary of WVNEC! Keynote speaker, Martin L. Smith, STD, director of one of the largest ethics consultation services in the country at the Cleveland Clinic, will provide a 30-year retrospective on ethics consultation in the US and point to its future. This future includes professionalization of ethics consultants with licensure or certification. Dr. Smith will discuss the impetus for this change and the likely processes by which this will occur. As in past WVNEC symposia, multiple speakers will present cases and approaches to increase participants' knowledge of and skills in ethics consultation. This symposium will also feature the ever popular opening case presentation with panel and audience participation and setting-specific breakout groups to discuss challenging cases.

A block of rooms for the night of May 16 has been reserved at the Stonewall Resort for conference participants under Center for Health Ethics and Law for \$135. To make reservations, contact the hotel directly at 304-269-7400. Room reservations must be made by April 16, 2017. Additional information on this program will be posted on our website as it becomes available.

On Pain and Paternalism

Gabriel R. Goudy

Medical Student
WVU School of Medicine



What is my idea of living “the good life?” Most of us spend a good portion, if not most, of our lives trying to answer this incredibly important question. We wish to live lives most likely to cultivate the best, happiest version of ourselves. Do I want to travel the world, create art, raise a loving family, or volunteer to help those in need? The burden of nearly endless possibilities may at times be a heavy one, but it is one that many of us are privileged to have the opportunity to carry. Maslow’s hierarchy would lead us to believe we likely would not concern ourselves with such abstractions as self-actualization and the eventual legacy of our lives, if our basic physical needs, such as health and safety were not met. (1) This, I believe, is directly applicable to the plight of those experiencing chronic pain. “How likely is it,” they may think, “for me to ever know what I wish to do with my life, much less accomplish all of it, if I am always in this much pain?” They may come to see opioids and painkillers as the only gateway to their pursuit of the good life. As healthcare providers, we must not acquiesce to this viewpoint. While opioids may be the “only” effective method of pain control for some patients, beneficence and nonmaleficence require us do good and reduce harm. Therefore, opioid prescribing should not be done without deliberate and well-informed consideration and a thorough exploration of less harmful alternative pain reduction methods, no matter how much we may sympathize with our patients.

It is difficult to define “pain” with terms other than synonyms for “bad.” In fact, the International Association for the Study of Pain’s definition for the word begins with the (perhaps appropriately vague) description: “an unpleasant sensory and emotional experience.” (2) Thus, there may be nothing more

rational for conscious beings than the avoidance of pain; it would be impossible to live a good life if one did not avoid unpleasant emotional experiences. It becomes problematic, therefore, that opioids and other medications have been termed “painkillers.” Who would advocate against the use of something that does away with suffering? For better or worse, much of medicine, and some medications, have become associated with just that. Furthermore, empathy with someone’s wishes to relieve their suffering is perfectly human, and usually helps providers better treat what ails them, but this is not always the case. It is an unfortunate reality that opioids are not among the safest of medications. In addition to side effects such as increased risk of fractures, sleep disordered breathing, and hormonal dysregulation, nearly a quarter of those prescribed opioids long-term describe difficulties with resultant addiction. (3, 4) One can easily imagine a patient who suffers from severe chronic back pain, has been evaluated by multiple specialists, told they were not a candidate for surgery, and finds relatively innocuous medications and physical therapy insufficient.

When a patient experiences chronic pain that medicine at-large has not been able to effectively handle, it is understandable for them to reach for anything that might provide relief. It is also understandable for physicians to be disappointed with this outcome. They may be left unsatisfied professionally, as providers, and personally, as empathic individuals. Physicians could also imagine being in the same position one day, and do not wish to think that they themselves would be left without sufficient options. In many instances when patients and providers accept pain as necessary, it is only with the implication that

See [Pain & Paternalism Page 5](#)

Pain & Paternalism from Page 4

a greater amount of pain will thereby be avoided; for example, one may receive a painful cortisone injection with the hope that their arthritic ache will be improved for some amount of time. It is an unfortunate reality that this is not always true. Suffering does not always precede respite. The CDC recently stated that “non-pharmacologic therapy and non-opioid pharmacologic therapy are preferred for chronic pain.” (5) If these approaches have not been attempted for a patient who is considered for opioid therapy, they obviously should be, but the difficult cases we must examine are not those that find such approaches particularly successful.

If non-opioid treatments such as these have failed the chronic pain patient, the physician is often faced with a difficult choice: prescribe opioids, perhaps as the patient has directly asked, or reject this possibility and continue to pursue other avenues. This decision, especially initially, is pivotal in determining the patient’s future, and must be considered with great care. Doctors are taught to consider the physician-patient relationship a shared decision making partnership, with the overarching goal being the welfare of the patient. In most circumstances, it is important to view it this way, rather than as mentor-mentee, parent-child, or producer-consumer, in order to best serve the patient’s desires and facilitate their pursuit of the good life. In some cases, however, the physician must acknowledge that they believe they know better. This is to say, they should assume a selectively-paternalistic role. (6)

When considering the prescription of opioids, the physician ought to adopt this viewpoint. Having a deep understanding of the both the patient specifically (their personality, idea of the good life, and clinical situation) and medicine generally (data-based approaches, current guidelines and suggestions, and treatment/pharmacological options) is necessary to be confident in one’s decision. But, when one does have this information, carefully examines their options, and comes to the decision that the use of opioids is not in the best interest of the patient, they should be steadfast in their resolve. On the other hand, if the physician feels that opiates should be

prescribed, great care must be taken. WVU Medicine recently released a statement concurring with the conclusions of the CDC that were mentioned previously, additionally advocating a wisely cautious “start low and go slow” principle. (7) They also recommended that, should opiate use be decided upon, it is necessary to state specific functional goals rather than merely pain reduction. It is important to know what is important to patients in order to set objectives that, were they reached, would make significant strides towards patients living their good life. It is not without reservation that the physician may come to either conclusion, but it is the responsibility of the physician and the ethicist to operate in areas of uncertainty. I trust and hope that my generation of physicians will be capable of dealing with the unique problems that appropriate opioid prescribing pose, and will be well enough prepared to be confident in their decisions.

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The Family Refused Organ Donation for a Patient with an Organ Donor Designation on Her Driver's License



Alvin Moss, MD

Executive Director, WVNEC

A 68 year-old woman was admitted after a non-survivable hemorrhagic stroke. She was brought by helicopter from a distance, so her family was a few hours behind. By phone, her husband—and medical power of attorney (MPOA) representative—of nearly 50 years asked that she be kept comfortable until he arrived, at which point he wanted life support withdrawn. In the interim, her wallet was found, and her driver's license designated her as an organ donor. Her family arrived and refused to talk of organ donation. Her husband said it could not be important to her as she had never mentioned it to him in 50 years' of marriage. The Center for Organ Recovery and Education (CORE) representative said he was legally required to move forward with evaluation for organ recovery as her driver's license functioned in this case as a living will, bypassing any medical power of attorney directives. This conflict between the husband and CORE led to some uncomfortable arguments from the family, who was trying to grieve while also dealing with CORE.

The CORE representative asked for any evidence that the patient was not brain dead, in which case he could step away and let the family proceed with extubation to comfort measures only. Fortunately for defusing the conflict, she had enough of a response to an atropine test to indicate that she was possibly not brain dead. The pulmonary physician on call was not sure what he would have done if the atropine test confirmed brain death.

Commentary by Alvin H. Moss, MD

This case raises some interesting ethical questions, "Should the hospital in conjunction with CORE have proceeded with organ recovery against the husband's wishes if the patient was determined to be brain dead? If the patient was not brain dead, should the hospital in conjunction with CORE have proceeded

against the husband's wishes with evaluation for donation after cardiac death (DCD)?"

Should the hospital in conjunction with CORE have proceeded with organ donation against the husband's wishes if the patient was determined to be brain dead?

The CORE representative is correct (see the relevant West Virginia law below) that West Virginia law obligates CORE to proceed with organ procurement if the patient is a suitable candidate for organ donation. The driver's license designation provides the authorization (consent) for CORE to recover the patient's organs if the patient is brain dead. Ethics committee members are familiar with how West Virginia law affects patient care in a similar situation. If a patient who has completed a West Virginia living will lacks decision-making capacity and is determined by a treating physician to be terminally ill (and there is consensus about the patient's terminal diagnosis), the treating physician is obligated to respect the living will and discontinue life support even if the medical power of attorney representative is requesting continuation of life support. The living will is an expressed directive that supersedes the MPOA (a proxy directive). West Virginia law states in §16-30-5(b) "If there is a conflict between the person's expressed directives, the physician orders for scope of treatment form and the decisions of the medical power of attorney representative or surrogate, the person's expressed directives shall be followed."

If the patient had been found to be brain dead, the CORE policy (personal communication from Brian Bricker, Director, Clinical Operations, CORE) in the event of a family conflict in this case is to involve

See [Organ Donation Page 7](#)

Organ Donation from Page 6

the hospital's legal department, ethics committee, and chaplaincy services to assist the MPOA representative in understanding that CORE is legally required to proceed with organ procurement. Mr. Bricker reports that persistent conflict and procurement of organs against the family's wishes "only occurs once every year or two" in about 0.5% of their cases. CORE always follows up with families after organ procurement with a phone call six weeks after the event. He reports that families are almost always reconciled to the donation by that time and often express appreciation that their loved one's organs were able to be used to benefit other people.

The conflict in this case was resolved because a response to the atropine test raised uncertainty about the diagnosis of brain death, and CORE did not feel they were obligated to proceed with organ recovery. The atropine test is no longer considered a standard part of the brain death protocol but was used in this case because of the conflict.

If the patient was not brain dead, should the hospital in conjunction with CORE have proceeded against the husband's wishes with evaluation for donation after cardiac death (DCD)?

The answer to this question hinges on the facts of the case. The patient's age of 68 makes her a poor candidate for DCD. There is concern about organ perfusion during the DCD procedure and if a patient is older than her mid-fifties, then the experience is that the older organs will not tolerate the low perfusion state of DCD and will function poorly, resulting in unsatisfactory outcomes with organ transplantation.

The process of ethical decision-making (see below) that WVNEC teaches includes identifying the ethical questions (step 1), gathering the facts and values (steps 2 and 3), and addressing how such conflicts could be avoided in the future (step 7). This case

highlights the importance of persons talking to their families about their organ donation wish in advance of completion of driver's license designations or organ donor gift cards. If the husband had known of his wife's wish and agreed to respect it as her medical power of attorney representative, the conflict in this case could have been avoided.

In the absence of brain death, CORE or any other organ procurement organization cannot force the MPOA representative or health care surrogate to agree to withdraw life support for the purpose of obtaining organs for transplantation through the process of DCD. If the family decides on their own to withdraw life support, then CORE will arrange if the patient is a suitable candidate and if a recovery team can be present at the time of the patient's death to proceed with organ recovery even if the family objects. Again their authorization is the patient's driver's license designation of the patient's wish to be an organ donor. In the last case of DCD which Mr. Bricker recalls in which the family objected to organ donation in a patient with a driver's license organ donation designation, the patient died in the intensive care unit, was declared dead, and then was transported to the operating room where the patient's kidneys were recovered for transplantation.

The goal in cases such as the ones described above is to respect the patient's wishes and follow the law while doing one's best to comfort the family on the death of their loved one. At times as these cases illustrate, there are conflicting obligations, and the help of an interdisciplinary team can be invaluable to attend to the needs of each person in the situation. Knowing what is ethical and legal can help ethics consultants sort through the issues and implement an appropriate course of action.

See [Organ Donation Page 8](#)

**West Virginia Code with a bearing on this case
§16-30-5. Applicability and resolving actual conflict between advance directives.**

(b) If there is a conflict between the person's expressed directives, the physician orders for scope of treatment form and the decisions of the medical power of attorney representative or surrogate, the person's expressed directives shall be followed.

§16-19-8. Preclusive effect of anatomical gift, amendment, or revocation.

(a) Except as otherwise provided in subsections (g) and (f) of this section, in the absence of an express, contrary indication by the donor who has made or amended an anatomical gift, a person other than the donor is barred from making, amending or revoking an anatomical gift of the donor's body or part.

§16-30-6. Private decision-making process; authority of living will, medical power of attorney representative and surrogate.

16-30-6 (f) If an incapacitated person previously expressed his or her wishes regarding autopsy, funeral arrangements or cremation, organ or tissue donation or the desire to make an anatomical gift by a written directive such as a living will, medical power of attorney, donor card, driver's license or other means, the medical power of attorney representative or surrogate shall follow the person's expressed wishes regarding autopsy, funeral arrangements or cremation, organ and tissue donation or anatomical gift. In the absence of any written directives, any decision regarding anatomical gifts shall be made pursuant to the provisions of article nineteen of this chapter.

WVNEC process of ethical decision-making in patient care

1. Identify the ethical question(s).
2. Gather the medical, social, and all other relevant facts of the case.
3. Identify all relevant guidelines and values. Be sure to consider any distinctive values of the patient, family, physician, nurse, other health care professionals, or the health care institution.
4. Determine if there is a solution that respects all the relevant guidelines and values in the case; if there is, use it. If not, proceed to step 5.
5. Propose possible solutions to resolve the conflict(s) in values, or in other words, answer the question, "What could you do?"
6. Evaluate the possible solutions for the particular case, determine which one is better, justify your choice, and respond to possible criticisms. In other words, answer the questions, "What should you do?" and "why?"
7. Determine what changes in policy, procedure, or practice could prevent such conflicts in the future.

WVNEC Election of Advisory Committee Officers

The West Virginia Network of Ethics Committees recently held an election for Advisory Committee Officers. The winners of the election are as follows:

- **President** - Michelle Hopkins, LGSW, MSW, MPA
- **Vice President** - Kenneth Wright, MD
- **Treasurer** - Kay Cottrill, LSW, NHA
- **Secretary** - Tiara Star Hill, LSW, NHA

Congratulations to our newly elected advisory committee officers!

SAVE THE DATE!

WVNEC Noon Webinar Series

“Live Mic: Present Your Ethics Case to WVNEC Colleagues” - March 29, 2017

“Going Back into the Closet: Life of Homosexual Patients Going into the Nursing Home” - July 19, 2017

May 17, 2017 - 30th Annual WVNEC May Symposium: Communication in Ethics Consultation - This annual one day program will once again be held at Stonewall Resort in Roanoke, WV. This symposium marks the 30th anniversary of WVNEC! Keynote speaker, Martin L. Smith, STD, director of one of the largest ethics consultation services in the country at the Cleveland Clinic, will provide a 30-year retrospective on ethics consultation in the US and point to its future. This future includes professionalization of ethics consultants with licensure or certification. Dr. Smith will discuss the impetus for this change and the likely processes by which this will occur. As in past WVNEC symposia, multiple speakers will present cases and approaches to increase participants' knowledge of and skills in ethics consultation. This symposium will also feature the ever popular opening case presentation with panel and audience participation and setting-specific breakout groups to discuss challenging cases. Additional information on this program will be posted on our website as it becomes available.

TWO NEW ONLINE CE COURSES NOW AVAILABLE

Advance Care Planning: Why, What and How - This program will provide 1) a sequence of steps for physicians and APPs to create an advance care plan, 2) video demonstrations of advance care planning conversations with patients in good health and those with advanced illness, and 3) information on how to bill for Medicare patients for advance care planning discussions. Cost: \$49.00 per person and includes CE credit.

WVNEC: Completing the POST Form - This program includes 1) a video demonstrating how to conduct a POST form conversation, 2) a checklist to assist with completion of sections A through C of the POST form, 3) sample documentation of advance care planning for the electronic health record, and 4) instructions on how to bill the advance care planning codes. Cost: \$25.00 per person and includes CE credit.

Visit our website at www.wvnec.org for the latest information on these and other future programs.



Mission Statement: The West Virginia Network of Ethics Committees assists hospitals, nursing homes, hospices, and home health care agencies to strengthen ethics committees; provides education regarding ethical and legal issues in health care to promote ethically sound decision-making; and helps patients and families to make their end-of-life wishes known.

This is a quarterly publication of the Center for Health Ethics and Law, Robert C. Byrd Health Sciences Center of WVU, for the West Virginia Network of Ethics Committees. Questions, comments, and ideas should be submitted to:

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For more information on these and other future programs, please take a look at “Upcoming Conferences” on our website, www.wvnec.org, or call Linda at 1-877-209-8086.