

Dr. Nora Volkov

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Female: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter, a show where we speak to the top thought leaders in health innovation, health policy, care delivery, and the great minds who are shaping the health care of the future.

This week Mark and Margaret speak with Dr. Nora Volkow, Director of the National Institute on Drug Addiction at the National Institutes of Health, which just observed National Addiction Recovery Month. Dr. Volkow is one of the early brain imaging pioneers whose work has shown that addiction is a disorder of the brain. Their recent research has shown that those suffering from substance use disorder are more likely to become infected with COVID-19 and to have worse outcomes.

Lori Robertson also checks in, the Managing Editor of FactCheck.org, and looks at misstatements spoken about health policy in the public domain, separating the fake from the facts. We end with a bright idea that's improving health and well being in everyday lives. If you have comments, please email us at [chcradio@chc1.com](mailto:chcradio@chc1.com) or find us on Facebook, Twitter, or wherever you listen to podcast. You can also hear us by asking Alexa to play the program Conversations on Health Care. Now stay tuned for our interview with Dr. Nora Volkow here on Conversations on Health Care.

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Mark Masselli: We're speaking today with Dr. Nora Volkow, Director of the National Institute of Drug Abuse, NIDA, at the National Institute of Health, which supports most of the world's research on drug addiction. She has pioneered the use of brain imaging technology to gain greater insight into how addiction functions is a disorder of the brain.

Margaret Flinter: Dr. Volkow was Director of Nuclear Medicine and Medical Department Chair at the Department of Energy's Brookhaven Nuclear Laboratory. She has published nearly 800 peer reviewed articles, earned numerous awards and distinctions including Time Magazine's top 100 people who shape our world and Innovator of the Year by U.S. News & World Report. Dr. Volkow, welcome to Conversations on Health Care.

Dr. Nora Volkow: Thanks for having me.

Mark Masselli: Yeah, Dr. Volkow, we're in the midst of this pandemic. But it's also overshadowed another deadly epidemic America has been grappling with in substance use disorder and addiction. An overdoses mostly from opioids led to some 70,000 deaths last year in the US and at NIDA, you recently conducted research on the connection between those with substance abuse disorder and the susceptibility to COVID-

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19. You found a distinct correlation and worse outcomes, and I'm wondering if you could share with our audience and maybe put this in some perspective, how the addiction crisis is dealing with the backdrop of the pandemic, and what impact you were seeing.

Dr. Nora Volkow: Yeah, the origin for the story came about because of the concern that people that were taking drugs and certainly in the case of opioid use disorder, they will have many of the physiological abnormalities that have been recognized to increase the risk for adverse outcomes of COVID, such as pulmonary pathology, cardiovascular disease, metabolic syndrome. But the other one, being the structural aspects that relate to substance use disorder would make the persons much more likely to end up homeless, to end up in shelters, to end up in jail or prison or places where infection disseminates very, very rapidly. We wanted to see based on electronic health records, whether there was any day that would help us illuminate this. What the analysis showed was, indeed, individuals with substance use disorder have high risk of becoming infected with COVID, and if they got infected with COVID, they were much more likely to be hospitalized and to die.

Margaret Flinter: Well, Dr. Volkow, we've just marked National Recovery Month, September, and this is a very good time to stop and talk about this issue, because in addition to how addiction affects people being infected with COVID, I think we've also seen with this complete kind of uproar as you indicated in our social systems for isolation, the loss of social network has really lead to, I would think, a higher rate of relapse and perhaps even new onset addiction. Can you talk about that this collision of a pandemic and the already existing epidemic of drug abuse, how just the rates of addiction and substance use disorder are changing during this period?

Dr. Nora Volkow: Yeah, and it is a very worrisome situation because there are two elements that make these combination of the COVID pandemic and the opioid crisis so malignant. We recognize that one of the most powerful tools that we have to help people overcome the urges to take drugs and to cheap recovery is meaningful social interactions, and with a social distancing, that has become much harder to do. Also, many of the treatment programs that existed or community services that provide that social opportunity to be with others, to be actually feel that you have value of some level has been eroded. That's one element.

The other element that also makes it so dangerous is that one of the other factors that leads to drug taking is stress, and that is one of the main causes of relapse. Here we are, I mean, it's COVID with a lot of uncertainties with the loss of jobs, with the loss of loved ones, with our lifestyle completely changed and not knowing when it's going to come back. That level of uncertainty is making everyone anxious. I

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mean, to a greater or lesser extent, but one of the way that people cope is by taking more drugs, whether it's alcohol, whether it's smoking marijuana, whether it's vaping nicotine or by overeating. I mean, if you have a problem with a substance use disorder, that reaching out to take drugs can have very dire consequences.

Mark Masselli:

Dr. Volkow, it has long been believed that addiction is the result of moral failings. But it was your pioneering work in brain imaging of people under the influence of many drugs dramatically flipped that notion. Your early experiments and neuroimaging opened our eyes to the biochemical response at play. It's been first real window into the altered brain process at play. I wonder if you could help us understand what kind of breakthrough this has been for addiction science, leading to really huge leaps in understanding how these syndromes work in the brain.

Dr. Nora Volkow:

It was very useful to have information that related to, first of all, clear objective documentation that the brain of people that were addicted, differ in very specific ways from that of individuals that were not addicted. They delineated through imaging the biochemical abnormalities that happens in people that are addicted. It gave us insight about why is it that people that are addicted to drug make such poor choices, and why despite the catastrophic consequences that come from taking these drugs, are unable to inhibit their strong urges to take the drugs. Out of that research, it become clear that one of the systems in the brain that is most profoundly affected is the prefrontal cortical areas of the brain that are necessary for us not just to make a decision on what our actions are going to be, but very importantly, to carry them through. It's not enough to say for me, no I'm not going to do that. It is the subsequent step is my capacity to stay on in the goal that I'm trying to achieve. Those processes required a proper function of the prefrontal cortex and drugs erode them. This provided an insight, not just that addiction is a disorder of the brain, but also why is the presentation, the behavioral presentation of addiction.

Dr. Margaret Flinter:

I'd like to add if we could to our conversation about opioids and alcohol and nicotine, and that's food and food addiction, also a huge problem in this country, and a particular risk factor for consequences of COVID. We've certainly seen with obesity being implicated in that. Your brain imaging work has also helped us learn more about how the brain drives our response to food. I wonder if you could talk a little bit about the connection between brain activity or brain pathology and food addiction, which takes such a heavy toll in people across America. It's just shocking, the percent of the adult population that's now obese in states across the country. What's the relation there between brain addiction and a food addiction?

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Dr. Nora Volkow: The question that grows in my brain when we're doing all of these studies in addiction, and we were delineating common areas that were disrupted, regardless of whether it was alcohol or heroin or cocaine or methamphetamine. What it seem to indicate was that the disruption of those regions of the brain was associated with inability to exert self-regulation to inhibit its prepotent response to things that we desire. I was curious to know whether this was just a function of that chemical pharmacological effects of the drugs or whether other conditions had similar type of disruption. That's why we started to study whether in people that were morbidly obese, which could delineate their similar pathology. Definitely they are very significant overlap between the loss of control in someone that cannot stop eating and that in addiction. But overall, it does identify that the brain responds to very powerful reward in the same way.

Number one, it's the aspect about it being a powerful reward and drugs are very powerful reward [inaudible 00:10:24] food can be very powerful in the context of what other alternatives you have. If you don't have alternatives, that brain doesn't have much of a chance. You are much more likely to fall into a compulsive pattern that favors that behavior, and that in turn triggers the neuro adaptations that strengthen the links between what is salient and your actions, and it can become almost an automatic behavior. That is what that studies with in obesity revealed to us that were common with a process of addiction. Not everybody has choices and the level of stress varies for many of us. It's important to convey this to people that one of the ways that one may aim to escape to how to mitigate the state of anxiety, may be overeating, or over drinking alcohol, or as I mentioned, smoking marijuana. These are ways that we cope, that could be very harmful to your health.

Mark Masselli: That's a great observation. We're speaking today with Dr. Nora Volkow, Director of the National Institute on Drug Abuse or NIDA at the National Institute of Health. She's pioneered the use of brain imaging technology to gain insights into addiction as a disorder of the brain. Margaret, was just talking about the many addictions and obviously food, but also nicotine addiction has been looming large over many decades. But we've seen this dramatic drop in smoking in this country, and yet 15% of the population still smokes leading to nearly half a million preventable deaths each year.

We saw a great reduction in smoking for the youngest demographics until vaping products hit the market, really leading to this really dramatic rise in nicotine use in an addiction. The tobacco industry understands all too well how nicotine works on the brain. I'm wondering if you could talk about the work you're doing at NIDA to assess the impact of this unfortunate uptick in nicotine addiction due largely to vaping.

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Dr. Nora Volkow: Yeah, and I mean, I'm glad you're bringing it up, because it's again an example about how something that in principle appear to be so benign. Like I mean, vaping nicotine, in principle had advantages over using combustible tobacco because you were not burning tobacco, which has many of the chemicals responsible for its carcinogenesis. Then we have come to realize, first of all, is not so safe in terms of affecting negatively pulmonary function. But importantly, it's a fantastic delivery system for nicotine, or for cannabis, or for any drug that you can actually vaporize.

I mean, in terms of marketing the ability to put a nicotine mix with extraordinary diverse and appealing set of flavors in very slick devices, like the jewel, make it extraordinary appealing for adolescents and young people. We've seen an embracing of that technology like we have never seen increases in drug use from almost nothing into one out of four 12 graders having vape nicotine in the past month. Now many, almost half of all teenagers having been exposed to it. The concern also is that when you vape, you can concentrate the fluid that -- if you're vaping, nicotine has very, very high content. You can actually go from never having taking nicotine whatsoever into very high doses very rapidly, which is not what happens when you're smoking tobacco because the harshness of that tobacco can be very aversive. It takes several months to get that higher levels, and that's not what we're seeing with nicotine vaping. We're seeing people getting exposed to very, very high levels of nicotine very rapidly, which makes it even so much more addictive.

Also toxic, nicotine at high doses can be very toxic. We are very concerned that indeed, the uptick of nicotine vaping by teenagers and young people will increase, again, the vulnerability that they turn into combustible tobacco. Indeed there's data from prospective studies that have shown that, that if you are vaping nicotine and they follow you through, you're much more likely to then be as smoker of regular tobacco that if you have never initiated with nicotine vaping.

Among young people, there's another issue of concern and which is nicotine is in that respect, it's a scary drug because what it does is when you have nicotine on board, which by the way has a very short half life, it makes anything you're doing so much more salient. If you are working on a paper and you're vaping, it will be able to drive your interest so much more. If you have nicotine on board and you take another drug, it will make that drug so much more exciting. In that way, it's a substance that can enhance the reinforcing value of other drugs.

Mark Masselli: It's a force multiplier.

Dr. Nora Volkow: It's a force multiplier, that's a very good way of describing it. Then our greatest concern always goes with young people because their brain

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is so much more neuroplastic and changes much more rapidly. The transition from initiation of drug taking into loss of control and addiction is much faster.

Margaret Flinter: I wonder if we could expand on that to some of your work looking at the links between substance use disorder and other mental and behavioral health issues. Your research has been quite expansive, and you've looked at conditions such as schizophrenia, to ADHD, complex conditions that can be difficult sometimes to properly diagnose and to manage. What are we learning from your research in these other brain disorders, and hopefully finding better ways to treat them? Certainly, there's been lots of advances, what are we learning now? What's the most current?

Dr. Nora Volkow: We're expanding our knowledge very, very rapidly as we're actually generating these large databases of these disorders. One of the reasons why I basically not just limited the work on research in terms of addiction and obesity, is that since a lot of the work that I've done is focused very much on the brain dopaminergic system. The brain dopaminergic system is just brilliant. It actually is a solution by nature to actually motivate our actions, to do things that will keep us alive, but to prevent us from those things that would hurt us. By that very simple way of making something positively reinforcing and making it negatively reinforcing the things that are bad, nature can accommodate a widespread set of behaviors.

Definitively in terms of food requiring it tastes good, it feels good [inaudible 00:17:43] pain, you basically avoid it. And so that has worked. It also extent in our social interactions and our ability also to learn things. Learning is very reinforcing, understanding something is extraordinary pleasurable. That's why we have games and -- but there -- and that's where, for example, the question as it relates to ADHD. I mean kids or adults that have ADHD cannot sustain attention. It doesn't grab them unless what they are doing is very appealing to them. The issue being that to what extent the problem in their attention is in fact driven by a motivation deficit, so that you need to energize whatever action that that person has to do with ADHD in order to sustain the effort. That's what stimulant medications do. They enhance dopamine, but also it opens up the door on saying if a kid with severe ADHD can spend hours video gaming, why is it that we don't learn what video gaming is doing in order to apply to educational material, so it becomes more salient.

The dopaminergic system which is at the essence that creates habits with addiction is fundamental for our activities as humans, for many, many organisms, but for us it is crucial. Disruption of those system can set the balance in ways that can be very negative. For example, working with schizophrenias, what they have shown is that the

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saliency of the dopaminergic system is ascribed to delusional thinking, to hallucinations, and so that has a higher weight in your brain. The moment that you imprint a dopamine signal at the same time that you're exposed to something else that becomes salient. That's where the thinking has been going on. As we know very clearly the main type of medications that we use to treat psychosis of schizophrenia are drugs that interfere with dopaminergic signaling to the dopamine D2 receptor. This is how crucial the system is for our well-being and our survival and how important it is for mental illnesses and for neurological disorders.

Mark Masselli:

Well, Dr. Volkow that was a wonderful illumination of so many things, and thank you so much. You've said this so well, and you did in your well received TED Talk. Your testimony to Congress in regards to addiction is we know what to do, we're just not doing it. Policy plays such an important role in driving necessary public health interventions that will better treat addiction and hopefully prevent it, right? I'm wondering if you could talk about what you know works, and where you'd like to see policymakers, payers and health care institutions really focus their resources, and where is the greatest need, but also the greatest opportunity to make a meaningful impact on addiction?

Dr. Nora Volkow:

Well, we know many evidence based interventions that work for prevention, but in general terms I would say, again, that children and adolescents are at it's more plastic, and those -- it's not surprising that adverse events, whether it is stress, neglect, drug exposures, improper nutrition, have much worse consequences when they happen during childhood and on adolescence. Those doing interventions that can protect and buffer the situation, the environmental situations that put these children at greater risk is fundamental. There is, to me, and as you think about it, and says, well, how do you bring forward prevention that's going to be effective? What would be some of the elements that you want to be certain that you're working with?

One of them that is crucial is providing alternative for children to develop, providing alternative for children to educate, and providing alternative to children and, of course, young people to have meaningful social relationships. The moment that you curtail the opportunity to support a person, where that individuals feel that they don't have any mission that they are not appreciated, that is opening up the door for a much greater vulnerability for substance use disorders, mental disorders, and other behavioral conditions. As I see it one of the key components is education, providing quality education to every single child, a young person is one of the most effective prevention interventions that we can do while ensuring family support to those subpopulations that are very disenfranchised,

that don't have the resources to pay attention to the children, to give them that incentives and the belief that they actually are unique and create that self-confidence. Supporting families in order to be able for someone to take care of the child and not having to work two or three shifts every single day, so that the children aren't neglected.

One of the most adverse things that you can do to the human brain, on a child, is neglected. The brain is extraordinary complex, and it's building itself. If you do not provide with the challenges, guess what? It doesn't develop, and that puts that child at a terrible disadvantage. Creating a system that will buffer individuals that come from systems that are socioeconomically very stressed, that don't provide opportunities is probably one of the most important things that we can do for the next generation. When we do it for that next generation, guess what? That next generation, their children won't have to grapple with these problems. It's an investment that they see into the future. That's why sometimes it's so frustrating, I say we do know that it works and it has an enormous impact, but it's not immediate. That's I think, part of the problem, the challenges.

Our brain favors things that gives you an immediate gratification, whether it's individual or as a population. Those policies that can show a huge return into the future are dismissed on the basis of policies that can give you an immediate sort of result right away even though that effect will be very, very limited. I think that as a society we need to grapple that we have to change our priorities and recognize the need to invest into goals that are into the future, but with much greater payoffs, such as prevention for substance use disorders.

Margaret Flinter: Well, that is a great note to end on. We've been speaking today with Dr. Nora Volkow, Director of the National Institute on Drug Abuse at the National Institutes of Health. You can learn more about her vitally important work by going to [drugabuse.gov](http://drugabuse.gov) or follow her and her colleagues on twitter @NIDAnews or Facebook @NIDANIH. Dr. Volkow, we want to thank you for your incredible contributions to the field of neuroscience leading to a greater understanding of the complexities of addiction and other disorders of the brain and for your forward focus on making things better for the next generation. Thank you for joining us on Conversations on Health Care today.

Dr. Nora Volkow: Well, thanks very much for having me.

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Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award winning journalist and Managing Editor of [FactCheck.org](http://FactCheck.org), a nonpartisan, nonprofit consumer advocate

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for voters that aim to reduce the level of deception in US politics. Lori, what have you got for us this week?

Lori Robertson: At a CNN Town Hall in September, Democratic presidential nominee Joe Biden misleadingly claimed “The President of the United States said that no longer would we in fact provide masks for schools. Pay them to have the masks in school because it was not a national emergency.” One federal program to pay for masks ended but another aims to distribute up to 125 million masks for schools. NPR reported on September 1<sup>st</sup>, that the Federal Emergency Management Agency’s Assistant Administrator for Recovery told state and tribal emergency managers that FEMA would stop on September 15<sup>th</sup>, reimbursing states for cloth masks and other personal protective equipment for places that are deemed non-emergency locations, including schools. But that doesn't mean the federal government isn't providing any masks to schools.

The same NPR story noted the Department of Health and Human Services would provide up to 125 million masks to schools. HHS’s public health emergency webpage includes that information, saying HHS would provide the mask to states for distribution to schools. “The administration intends for these masks to support students, teachers and staff in public and private schools reopening with an emphasis on students who are low income or otherwise with high needs and school is providing in person instruction.” NPR also said states may stock up on such protective equipment before the FEMA policy went into effect. That's my fact check for this week. I'm Lori Robertson, Managing Editor of FactCheck.org.

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Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like checked, e-mail us at [www.chcradio.com](http://www.chcradio.com). We'll have FactCheck.org’s Lori Robertson check it out for you here on Conversations on Health Care

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Margaret Flinter: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Daniela Tudor had a revelation a few years ago waking up on the cold floor of a jail cell, she could ask for help for her drug and alcohol addiction or she could die. She chose the former. Tudor then launched not only on her own recovery journey, but on a broader quest to develop tools that can help all people grappling with addiction recovery to avoid relapse, which is so common, especially in the early days of sobriety. She realized that there needed to be more readily accessible tools for

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those in recovery to stay connected to their treatment goals beyond the 12 step meetings and the talk therapy sessions.

Daniela Tudor: I am in long term recovery. I went through a four week inpatient treatment program, where at the end of that four week program, all I received was a piece of paper that listed an enormous amount of things I'm supposed to do on a daily and weekly basis for the rest of my life to stay in recovery. I knew that building something on our cell phones that are with us 24/7, regardless of where you're from and who you are would be a way to bridge that gap and keep people accountable through an app to those activities.

Margaret Flinter: So she founded WEconnect a relapse prevention on the go mobile application that can be downloaded on a smartphone. The platform is designed to keep people engaged in their recovery plan using daily reminders and a reward system for when you perform the tasks that are essential to recovery.

Daniela Tudor: The individual along with the support of our certified peer recovery support specialists are able to input those activities into the app. When it comes time for that activity to start, you simply check into it. You see at the top of the app, how you're earning your incentives. By the way, this incentive program is based on evidence based research called contingency management. It's actually proven to show that it keeps people accountable to their recovery plans or their care plans. The way that we've digitized it and the immediacy of that incentive keeps people accountable to checking into those activities on the go.

Margaret Flinter: And the digital platform also allows everyone who's connected to the person's health care ecosystem to see in real time activities that are enhancing recovery, and also when one might be at higher risk for relapse.

Daniela Tudor: We have trained peer recovery support specialists all across the country. They get to leverage a tool that we developed called a data dashboard, where they can see in an instance if someone needs additional support or outreach, and that is built through the app with keeping them accountable to those activities and the peer having insights on how they're staying accountable to those activities in real time. It really allows for this connection of support 24/7 and visibility so that when someone needs that added support, not days or weeks go by which is without this program is what happens, but rather gives insight and gives the option for connection in real time.

Margaret Flinter: Since the pandemic hit, Tudor says the WEconnect platform has been a lifeline for those in recovery. Those now often cut off for meetings and in-person sessions during the shutdown.

Daniela Tudor: Actually, when the pandemic hit, immediately, my heart went out for,

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wow, none of us have support meetings to go to anymore in-person. We immediately stood up with a set of partners, these mutual aid meetings that are online that are led by certified peers. Within just a couple months, over 200,000 people joined from all states and several countries.

Margaret Flinter: WEconnect a downloadable app designed by people in recovery for people in recovery, to help maintain sobriety with a support system in the palm of their hand, keeping them on track with health goals, staying connected to a care team and avoiding relapse. Now that's a bright idea.

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Mark Masselli: You've been listening to Conversations on Health Care. I'm Mark Masselli.

Margaret Flinter: And I'm Margaret Flinter.

Mark Masselli: Peace and Health.

Female: Conversations on Health Care is recorded at WESU at Wesleyan University, streaming live at [www.chcradio.com](http://www.chcradio.com), iTunes, or wherever you listen to podcast. If you have comments, please e-mail us at [chcradio@chc1.com](mailto:chcradio@chc1.com), or find us on Facebook or Twitter. We love hearing from you. The show is brought to you by the Community Health Center.

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