J. MICHAEL BOSTWICK: My name is Dr. J. Michael Bostwick. I'm professor of psychiatry here at the Mayo Clinic in Rochester, Minnesota. The title of my paper is Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana. This article will be appearing in the February 2012 issue of Mayo Clinic Proceedings.

My goal in writing this article is to try to reconcile two seemingly polar opposites-- the use of marijuana for medical purposes and the use of marijuana for recreational purposes. What I quickly discovered was that the boundary is very, very fuzzy between the two, and that the state of research is also very, very fuzzy. The reality is that marijuana has been used for almost 5,000 years, both medically and recreationally, so there's nothing new about it. It's also true that in the US, it was on the National Formulary for 100 years, until about 1942.

Between 1942 and 1970, it became more and more problematic, from the point of view of the federal government, until 1970, when it was made a Class 1 substance, which means that it has no medical value at all, and is simply a dangerous drug. This is fascinating to me, because at that point, in 1970, we knew very little about the endocannabinoid system in the body, on which marijuana works. We knew very little about the receptors, of which there are two. And all this research to clarify this system, which is as important as the opiate system in the body, happened over the next 25 years, with no change in the stance of the federal government towards marijuana.

In the '90s, California-- followed by, at this point, I believe, 16 states-- legalized marijuana's use. However, the state laws are in direct opposition to the federal law, which sets up all kinds of really problematic things. From a scientific point of view, the biggest problem is that the federal government has made it essentially impossible for research to occur in the US. And this is especially sad, because the basic science discoveries that have found the endocannabinoid system and the receptors can't be translated into potential clinical implications, which could affect everything from psychiatric drugs to gastrointestinal drugs. So we're kind of at a standstill.

Now, right now, at this moment, in fact, the federal government and the state of California are upping the ante, in terms of this discrepancy in the laws. The federal government has been conducting raids in California, and California is a state in which the use of medical marijuana is entrenched. Now, that is a state, as well, where there's a lot of discussion about whether the use of medical marijuana is actually giving people drugs for fun, which brings us back to the title of the article and the purpose of the article, which is the issue of blurring of boundaries and how do we sort that out so that we can get the most benefit from something which potentially could revolutionize therapeutics.

Well, I believe it relates to clinical practice in more than one way. Practically, given that patients seek care outside of states in which they reside, we now have patients who are showing up in states where the medicine is illegal, and they're taking it. Additionally, in states where it is legal, there's a struggle to figure out how to use it legitimately for medical problems, which can include everything from chronic pain to wasting disease with AIDS or with cancer.

From another therapeutic point of view, the fact that there has not been the possibility of fully developing the potential for this drug in the lab means that we cannot see if we can develop agents that would be very helpful in multiple different organ systems and in multiple different specialties. It means different things for different patients. From the point of view of patients who have problems that could benefit from medications that were derived from marijuana, it means they're not getting those medications. It also means that if they are using marijuana, they're using it in a crude form-- that is, smoked marijuana, which actually contains many cannabinoids, and we really don't understand very well how they all interact and whether there are other active agents besides tetrahydrocannabinol.

Another pair of important findings for marijuana and its use or non-use is this-- for people who have experience with using it recreationally, it often works very well for them when they're medically ill. So a baby boomer who experimented with marijuana in the '70s or the '60s and now has cancer, might very well be able to use it and not be bothered by the psychoactive effects. People who've never had any exposure to the recreational use of the drug find those side effects to be noxious. So you have an interesting situation where the psychoactivity, which people seek to get high, may be problematic and unpleasant in a medical setting.

From a psychiatric point of view, the situation is also rather complicated, because there's good evidence that while it does not cause psychotic illness such as schizophrenia, it does cause it to, perhaps, appear earlier in individuals who are susceptible. And in those who continue to use it, the course of a psychotic illness is rougher and more difficult, both for them and for their families and providers. I think the point, here, is there is not going to be a simple, easy answer to this medication or set of medications. But that should come as no surprise, the analogy being to several other classes of medications that we use that also are drugs of potential abuse.

One example would be morphine and all the products related to it. Heroin is a street drug. Morphine is a lifesaver, as are many of the other opiates. Likewise, we use stimulants for treating disorders like attention deficit disorder. Cocaine, in its pure form, is used in surgery for its vasoconstrictive qualities. So it's not as if marijuana is the first potentially abusable drug to come down the pike. We have many examples of other drugs that have their close cousins that are being used on the street.

My point being, this is not new. The paradigm for studying marijuana and making it usable medically, while also paying proper respect to its dangers as an addictive substance and as a recreational substance, we've done that before with other drugs and we're managing it right now.

The next step for this situation we find ourselves in is to actually find a way to permit research to happen. As I state in the paper, there are a handful of federal agencies that are involved in managing the situation with marijuana. There's the Federal Drug Administration. There is the Bureau of Drug Safety. There are agencies that are involved with medication management, but also agencies that are involved with drug interdiction.

And any one of them can veto an effort to get the very small amount of marijuana that is available for research. I use the term available advisedly, because very few investigators have been able to penetrate the federal bureaucracy to get the substance they need to study, legally.

I did observe that some of the research that has gone on is occurring in Canada and other parts of the world where the law is not preventing it from going forward. And actually, at this point, in Canada, there are several marijuana-related drugs that are available. And actually, ironically, there are a couple in the US, as well.

One thing to keep in mind is that we actually have had a cannabis-derived drug available in the US for almost two decades. This would be Marinol, which is used for intractable nausea, and it is available on the formularies of most institutions, simply for the doctor to write a prescription. Once again, it seems, to me, a little irrational and inconsistent to actually have drugs on the Formulary, but then say we can't have drugs studied. I'm not saying that quite right, but the point is that Marinol and the four drugs in use in Canada are the first of what could be a whole armada of drugs that are derived for various uses.

Again, the focus has been on the psychoactivity, but some of the most promising research occurs with relation to the autoimmune system and the gastrointestinal system. Another thing that's been learned is that there's one cannabinoid receptor which is involved in psychoactivity. There's another one that helps to modulate the psychoactivity that occurs and has effects that have nothing to do with psychoactivity. Again, I've already referenced that there are many CB2 receptors in the gut.

And what I hope you're taking from my comments is this is not simple. It's not easy, and there isn't going to be one answer to all of these questions that come up. But with many of our medications and many of our situations, medically, there's not one answer or a simple solution, and there's a risk benefit ratio that is always in play.