

Marijuana and Adolescents: Truths and Consequences

Numerous states have legalized or are considering legalization of marijuana. The AAP recently published an evidence-based position paper and clinical report on marijuana, including medical use.

In this podcast, Dr. William Adelman, chief of Adolescent Medicine at Children's Mercy, discusses why adolescents are uniquely vulnerable to the neurotoxic effects of marijuana, the impact of legalization, and why physicians should unequivocally recommend pediatric and adolescent patients never use marijuana.



Featured Speaker:

William Adelman, MD

William P. Adelman, MD, is Division Director of Adolescent Medicine at Children's Mercy Kansas City and Associate Professor of Pediatrics at the University of Missouri-Kansas City. Dr. Adelman received his medical degree from Tufts University School of Medicine. He completed a residency in Pediatrics at National Capital Consortium, Bethesda, Maryland, and a Fellowship in Adolescent Medicine at John's Hopkins University in Baltimore. Dr. Adelman is a retired Army colonel and was chief of Adolescent and Young Adult Medicine at Walter Reed National Military Medical Center in Bethesda, Maryland.

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Transcription:

Dr. Michael Smith (Host): Our topic today, is Marijuana and Adolescents, Truths and Consequences. My guest is Dr. William Adelman. Dr. Adelman is the Division Director of Adolescent Medicine at Children's Mercy Kansas City and Associate Professor of Pediatrics at the University of Missouri, Kansas City School of Medicine. Dr. Adelman, welcome to the show.

Dr. William Adelman (Guest): Thank you, very much. It's a pleasure to be here.

Dr. Smith: Why don't we start off just – it is a little confusing out there because, at the state level, marijuana can be handled differently state-to-state. Just give us a summary of where we are – where we stand with medical marijuana and even recreational use of marijuana.

Dr. Adelman: Absolutely. Well, I think you've hit the nail on the head there that it is quite variable by state. The big picture is that currently, 59% of the US population currently lives in a state where marijuana has been legalized in one form or another. We have 29 states plus Washington DC that have medical marijuana laws. There are 19 states plus Washington DC that actually have operating marijuana dispensaries. Currently, eight states plus DC have recreational marijuana laws, and we have at least four active operating retail stores. Although it does vary by state, overall, the majority of Americans live somewhere and have access to legalized marijuana in one form or another.

Dr. Smith: And so this obviously now is becoming a concern for Pediatricians, right? As a matter of fact,

the AAP recently published a position paper – evidence-based position paper on marijuana. Can you tell us about the AAP’s position?

Dr. Adelman: Yes, I think the important thing to recognize is that the increasing prevalence of marijuana throughout the United States has really quite dramatic implications for health and safety of pediatric patients and adolescents in particular. The American Academy of Pediatrics evidence-based position on marijuana including marijuana was initially published in March of 2015 in the Journal of Pediatrics, “The Impact of Marijuana Policies on Youth: Clinical, Research, and Legal Update,” and it was published in association with the technical report, which really goes through all of the evidence that we have.

There are ten major recommendations from that position paper, but I think the most important recommendations really deal with the fact that the American Academy of Pediatrics opposes marijuana use in children between the ages of 0 and 21 due to the known neurotoxic effects on the brain. In addition, the American Academy of Pediatrics is against medical marijuana outside of the regulatory process of the US Food and Drug Administration meaning although they are in favor of FDA approved medications that are based on marijuana, for example, Marinol, they are opposed to the concept of medical marijuana dispensaries.

I think it’s also important to recognize that the American Academy of Pediatrics opposes legalization of marijuana because of the potential harms to children and adolescents with the increased availability of marijuana.

Dr. Smith: And when you really look at it too – and please, if my numbers are incorrect here, please correct me, Dr. Adelman – but even when you look at recreational use, one of the big concerns is the THC level, right? In some of the plants that are being grown and used, I read somewhere where some of the strains have as much as what, 12 to 20% -- in that range – of THC. That’s a big issue now, isn’t it?

Dr. Adelman: Oh, it’s a huge issue. THC, Tetrahydrocannabinol -- which is the psychoactive cannabinoid or molecule within the cannabis plant that is what has the most dramatic effects on the brain and is, of course, what makes you high from marijuana – can be completely manipulated. Once you’ve developed a system of private industry where the cannabis plant – the actual marijuana plant from which this comes from – can be hybridized and genetically engineered, you can create as much THC as you want. What we know is that on average, we’re seeing a much higher concentration of THC, the psychoactive component of marijuana, in the marijuana plants that are readily available as compared to even a decade or two ago.

Dr. Smith: Right.

Dr. Adelman: So, this is a big problem because the brain has THC receptors throughout all of it. When you smoke marijuana, that THC is not selective to one area or another of the brain. In fact, it impacts all of the brain, which leads to the significant neuro-toxicities, especially in the developing brain of the adolescent, which is what makes it so dangerous.

Dr. Smith: Right, right. Well Dr. Adelman, let’s talk a little bit more about that. What exactly is the neurotoxic effect in an adolescent brain with THC?

Dr. Adelman: Yes, so in general, what we find with adolescents is we have this perfect storm of a unique vulnerability to the toxic effects of marijuana. This is combined with the fact that adolescents have brains that are growing -- grey matter differentiation is continually occurring through the mid-twenties -- and most adolescents, when they first try marijuana, have this combination of a rewards center that is fully developed, so they get positive reinforcement from using something that gets you high. They do not yet have the availability of executive function and inhibitory control, which is why they have such difficulty delaying gratification and are impulsive as a general rule.

You have this impulsivity of trying this marijuana, and then the effects of it affect the entirety of the brain. Specifically, our THC receptors occur in really all parts of the brain with the exception perhaps, of the visual cortex in the brain. It affects movements, sensations, judgment, reward, memory, and coordination. And particularly, in the developing brain of the adolescent, where these connections are not fully developed yet, we see specific long-term consequences when marijuana use begins during the adolescent years.

Dr. Smith: Yeah, yeah. I might throw in there too, as well that if -- the overall addiction rate with marijuana is about 9% or something like that, but it's different if you start when you're an adolescent, when you go into adulthood there's like a 17% addiction rate. We know that that's even an issue if you start smoking marijuana or using in other ways, now as well, that's also an issue.

Dr. Adelman: You know, I would just add to that that in addition, it is directly related to how early you start, and so the younger you start, the higher the risk. And the risk may be as high 40% of developing a substance use disorder or becoming addicted, especially those who start younger than age 17 and the complications and ramifications are quite significant the younger you start.

Dr. Smith: Yeah, so you mentioned at the beginning of the interview, Dr. Adelman that what, something like 50 some odd percent of the US population is living in a place where recreational use is up, medical marijuana use is up. Obviously, over the next few years, that number is going to increase. I think we all know that and agree with that. How are you going to deal with this? How is the AAP going to deal with this increasing use of marijuana? Is there a plan? Is there an educational plan? What are we going to do?

Dr. Adelman: Right, and I think the first part of this really does deal with the education both of medical providers as well as with the population at large. I think, unfortunately, one of the biggest complications that we have from the increased legalization is that there is increasing acceptance, especially amongst adults of the potential medical benefits of marijuana, despite very limited evidence of that and known harms, specifically to adolescents.

What we're really trying to do is get that message out that adolescents are uniquely vulnerable to the neurotoxic effects of marijuana and that adolescents really should not use marijuana. The evidence base is tremendous recommending against it. The harms far outweigh any potential benefits, and so we're recommending directly to providers that they recognize adolescents as uniquely vulnerable to the neurotoxic effects of marijuana and to clearly and unequivocally recommend to pediatric and adolescent patients to not use marijuana or if they are using, to stop current use and to refer for assistance if they feel they need help in stopping marijuana the long-term consequences are so significant.

Dr. Smith: Dr. Adelman, let's end with this. What is it – in a few sentences, if you can – what would you like people to know about marijuana use in adolescents?

Dr. Adelman: Yeah, I do want to reinforce that point that adolescents are uniquely vulnerable to the neurotoxic effects of marijuana and that starting marijuana -- especially before age 21 -- has demonstrable negative effects later on both in a psychiatric point of view with increasing rates of things like depression and even psychosis, as well as from a functional point of view. Individuals who start marijuana use in adolescence do much more poorly in their vocational life, in their educational life, and in their success in life later on.

Dr. Smith: Dr. Adelman, I want to thank you for the work that you are doing at Children's Mercy Kansas City and also thank you, for coming on this show today. You're listening to Pediatrics in Practice with Children's Mercy Kansas City. For more information, you can go to ChildrensMercy.org, that's ChildrensMercy.org. I'm Dr. Michael Smith. Thanks for listening.

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