

Position Statement: Use of Medical Marijuana for Neurologic Disorders

Background Information

The American Academy of Neurology (AAN) is a professional organization of over 28,000 practicing neurologists and neuroscientists with a deep and abiding interest in assuring the best possible care of patients with all types of neurologic disorders. With officials at state and federal levels adopting policies regarding the use of medical marijuana, it is important for the AAN to have an official position on the issue that can assist policymakers.

Description of the Issue

In this position statement, the term “marijuana-based products” refers both to marijuana and to products derived from it. The current medical marijuana legislation being passed by policymakers across the country, which promotes marijuana-based products as treatment options for various neurologic disorders, is not supported by high-level medical research. In addition, there is concern regarding the safety of marijuana-based products, especially for long term use in patients with disorders of the nervous system. The interaction of these compounds with prescription medications is also unknown. Therefore, further research is urgently needed to determine the safety and medical benefit of various forms of marijuana in neurologic disorders, especially those where anecdotal evidence is available. Anecdotal evidence may engender public support for the use of these products but such evidence must be substantiated by rigorous research, which will in turn inform legislative policy.

The AAN’s Position

The AAN supports all efforts to conduct rigorous research to evaluate the long-term safety and effectiveness of marijuana-based products. The AAN, for research purposes, requests the reclassification of marijuana-based products from their current Schedule 1 status so as to improve access for study of marijuana or cannabinoids under IRB-approved research protocols. The AAN does not advocate for the legalization of marijuana-based products for use in neurologic disorders at this time, as further research is needed to determine the benefits and safety of such products. This is of paramount importance when marijuana-based products are used in patients with underlying neurologic disorders, or in children whose developing brains may be more vulnerable to the toxic effects of marijuana.

The AAN recognizes that there may be potential use for these agents in the treatment of some neurologic disorders.¹ However, there is not sufficient evidence to make any definitive conclusions regarding the effectiveness of marijuana-based products for many neurologic conditions.² Many of the cannabis preparations used in studies are not available in the United States. It is not appropriate to extrapolate the results of trials of standardized preparations to other, non-standardized, non-regulated cannabis products

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which may be commercially available in states with laws supporting the use of medical marijuana. Effectiveness of a non-standardized product is not equal to that of standardized products that are studied in clinical trials. Additionally, most currently available marijuana-based products are not regulated by any agency and may not contain the products mentioned by labeling. Quality control is therefore impossible, raising further safety questions. Each product and formulation of cannabis should demonstrate safety and effectiveness via scientific study similar to the process required by the Food and Drug Administration (FDA).

Rationale

Currently, the federal government classifies marijuana products as a Schedule I drug, defined as having no currently accepted medical use and a high potential for abuse. Therefore, state law does not protect an individual who prescribes such products from federal prosecution unless the individual obtains a Schedule I license from the Drug Enforcement Agency (DEA). Some states have enacted bills allowing medical providers to prescribe marijuana-based products, but only if they contain non-psychoactive ingredients. Reclassification by the DEA will expedite future research on marijuana-based products as it will reduce barriers to study participation by investigators who do not possess a schedule I license.

History and Basic Science

Use of marijuana-based products to treat neurologic disorders dates back to the 1800s.² Marijuana is derived from the plant *Cannabis sativa*, which contains over 60 different pharmacologically active compounds referred to as cannabinoids.³ Delta-9-tetrahydrocannabinol (THC) is the major psychoactive compound which causes the euphoric effect. Other cannabinoid compounds such as cannabidiol and cannabidiol (CBD) are not known to have psychoactive properties. Cannabinoid compounds have the potential for therapeutic benefit in a number of neurologic diseases. However, the psychoactive effects can acutely alter a patient's cognition and inhibit normal functioning. Long-term effects on learning and memory may occur. Thus, from a safety perspective, the use of products with a high THC component is controversial. Research is necessary to develop marijuana-based compounds that have minimal psychoactive properties while retaining other desirable, therapeutic pharmacologic effects.

Laws and Regulations

Several agencies and organizations have provided position statements calling for more research on marijuana-based products.⁴⁻⁶ As of this writing, Minnesota and Colorado have funded studies to assess the efficacy of marijuana-based products. Several states also have passed legislation supporting decriminalization of marijuana based products when used for medical purposes. The legislation typically requires patients to possess a valid registration, based on letters from a physician stating that they have a debilitating medical condition. The legislation also provides for registration of centers to cultivate and sell marijuana products for medical use. The legislation does not usually specify what symptoms of the condition are expected to be improved by medical marijuana. Therefore, patients with one of the medical conditions listed may request letters from their physicians supporting their medical use of marijuana without clear information regarding what exactly is being treated. The legislation does not differentiate between different forms of marijuana, such as oral, smoked, or other marijuana-

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based products, which may have different effectiveness and safety profiles.

Available Studies

Case reports and limited studies have addressed the efficacy of marijuana-based products in treating various neurologic disorders.⁷⁻¹⁰ A recent evidence-based guideline by the AAN provided support for the use of specific oral and oromucosal forms of cannabis to improve some symptoms in patients with multiple sclerosis.¹ A subsequent AAN systematic review of medical marijuana for neurologic disorders concluded that oral cannabis extracts are probably ineffective for treating levodopa-induced abnormal involuntary movements in Parkinson's disease, but it did not find evidence for or against the use of oral cannabinoids for several other conditions.² These and other reviews emphasize the need for further research. Importantly, there is no evidence to support the use of smoked cannabis.

In clinical studies, side effects of cannabis have included nausea, dizziness, mood changes, hallucinations or suicidal ideation, feeling of intoxication, and increased weakness.² Seizures have been reported rarely.¹ The safety of long-term use remains uncertain. Addiction to recreationally used marijuana is controversial, but there is some evidence of tolerance and dependence related to long term heavy use.¹¹⁻¹³ Evidence also suggests that chronic recreational use of marijuana may cause impairment in memory, concentration, and executive functioning. It is unclear how long these effects persist after stopping marijuana use or whether there may be permanent nervous system toxicity.¹⁴⁻¹⁷ One study¹⁸ found that cannabis extracts were associated with memory and verbal learning deficits. The psychopathological and cognitive side effects of marijuana-based products are of concern in patients who may be more vulnerable because of their underlying neurologic disorders. Safety concerns are even greater when considered for use in children.

Position Statement History

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