



Medical Marijuana Program

165 Capitol Avenue, Room 145, Hartford, CT 06106-1630 • (860) 713-6066

E-mail:

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Petition to Add a Medical Condition, Medical Treatment or Disease to the List of Debilitating Conditions

INSTRUCTIONS: Please complete each section of this Petition and attach all supportive documents. All attachments must include a title referencing the Section letter to which it responds. Any Petition that is not fully or properly completed will not be submitted to the Board of Physicians.

Please Note: Any individually identifiable health information contained in a Petition shall be confidential and shall not be subject to disclosure under the Freedom of Information Act, as defined in section 1-200, Connecticut General Statutes.

Section A: Petitioner's Information

Name (First, Middle, Last):

Home Address (including Apartment or Suite #):

City:

State:

CT

Zip Code:

Telephone Number:

E-mail Address:

Section B: Medical Condition, Medical Treatment or Disease

Please specify the medical condition, medical treatment or disease that you are seeking to add to the list of debilitating medical conditions under the Act. Be as precise as possible in identifying the condition, treatment or disease.

Tourette Syndrome

Section C: Background

Provide information evidencing the extent to which the condition, treatment or disease is generally accepted by the medical community and other experts as a valid, existing medical condition, medical treatment or disease.

- Attach a comprehensive definition from a recognized medical source.
- Attach additional pages as needed.

See attached

Section D: Negative Effects of Current Treatment

If you claim a treatment, that has been prescribed for your condition causes you to suffer (i.e. severe or chronic pain, spasticity, etc.), provide information regarding the extent to which such treatment is generally accepted by the medical community and other experts as a valid treatment for your debilitating condition.

- Attach additional pages as necessary.
- If not applicable, please indicate N/A.

NA



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Section E: Negative Effects of Condition or Treatment

Provide information regarding the extent to which the condition or the treatments thereof cause severe or chronic pain, severe nausea, spasticity or otherwise substantially limits one or more major life activities.

- Attach additional pages as necessary.

see attached

Section F: Conventional Therapies

Provide information regarding the availability of conventional medical therapies, other than those that cause suffering, to alleviate suffering caused by the condition or the treatment thereof.

- Attach additional pages as necessary.

To my knowledge, there are no conventional medical therapies available.

Section G: General Evidence of Support for Medical Marijuana Treatment

Provide evidence, generally accepted among the medical community and other experts, that supports a finding that the use of marijuana alleviates suffering caused by the condition or the treatment thereof.

- Attach additional pages as necessary.

see article included "Tourette Syndrome - Medical Marijuana Research Overview"

Section H: Scientific Evidence of Support for Medical Marijuana Treatment

Provide any information or studies regarding any beneficial or adverse effects from the use of marijuana in patients with the condition, treatment or disease that is the subject of the petition.

- Supporting evidence needs to be from professionally recognized sources such as peer reviewed articles or professional journals.
- Attach complete copies of any article or reference, not abstracts.

Section I: Professional Recommendations for Medical Marijuana Treatment

Attach letters in support of your petition from physicians or other licensed health care professionals knowledgeable about the condition, treatment or disease at issue.



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Section J: Submission of Petition

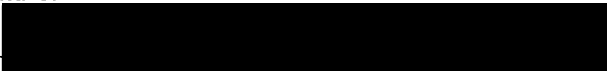
In the event you are unable to answer or provide the required documentation to any of the Sections above (excluding Section D); provide a detailed explanation indicating what you believe is "good cause" for not doing so.

- Attach additional pages as necessary.

I hereby certify that the above information is correct and complete.

My signature below attests that the information provided in this petition is true and that the attached documents are authentic. I formally request that the commissioner present my petition and all supporting evidence to the Board of Physicians for consideration.

Signature:



Date Signed:

April 8, 2018

Treatment of Tourette syndrome with cannabinoids

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Abstract. Cannabinoids have been used for hundred of years for medical purposes. To day, the cannabinoid delta-9-tetrahydrocannabinol (THC) and the cannabis extract nabiximols are approved for the treatment of nausea, anorexia and spasticity, respectively. In Tourette syndrome (TS) several anecdotal reports provided evidence that marijuana might be effective not only in the suppression of tics, but also in the treatment of associated behavioural problems. At the present time there are only two controlled trials available investigating the effect of THC in the treatment of TS. Using both self and examiner rating scales, in both studies a significant tic reduction could be observed after treatment with THC compared to placebo, without causing significant adverse effects. Available data about the effect of THC on obsessive-compulsive symptoms are inconsistent. According to a recent Cochrane review on the efficacy of cannabinoids in TS, definite conclusions cannot be drawn, because longer trials including a larger number of patients are missing. Notwithstanding this appraisal, by many experts THC is recommended for the treatment of TS in adult patients, when first line treatments failed to improve the tics. In treatment resistant adult patients, therefore, treatment with THC should be taken into consideration.

Keywords: Tourette syndrome, tics, cannabinoids, cannabis sativa, THC

1. Introduction

Although the therapeutic spectrum in the treatment of Tourette syndrome (TS) has expanded during the last years, there is still a substantial number of patients who is unsatisfied with well established treatment strategies either due to less efficacy or significant adverse effects. In addition, there is still no therapy known that is not only effective in the treatment of tics, but also improves associated behavioural disorders. In those patients who are impaired not only by their tics, but also by psychiatric comorbidities combined treatment with several drugs is often inevitable [1]. Therefore, new therapeutic strategies are desirable that are more effective, cause less adverse effects, and ideally improve not only tics, but also associated behavioural problems. Against this background, many patients with TS seek alternative or complementary medicine including special diets and nutritional supplements [2,3] as well as legal and illegal drugs such as nicotine, alcohol and cannabis sativa [4, 5].

2. Medical use of cannabinoids

Cannabis has been used for medical purposes in many cultures for hundreds of years, in particular, for the treatment of pain, spasms, asthma, insomnia, depression, and loss of appetite. In the first half of the 20th century, cannabis-based medication almost completely lost its acceptance, among other things, because it did not succeed to identify the chemical structure of the ingredients of *Cannabis sativa* L. This situation changed in the 1960s, after the exact chemical structure of delta-9-tetrahydrocannabinol (THC), the most psychoactive ingredient of cannabis sativa, could be determined. Research on the medical use of cannabinoids was further stimulated when it became clear that cannabinoids act through specific receptors: a predominantly in the central nervous system located CB1 receptor and a CB2 receptor that is expressed primarily by immune tissues. In 1992, the first specific ligand that binds to cannabinoid receptors could be identified. To date, five different endocannabi-

noids are known, among them the two most important anandamide (arachidonylethanolamide) and 2-arachidonoylglycerol (2-AG). There is substantial evidence that endocannabinoids affect the activity of excitatory neurotransmitters such as glutamate as well as inhibitory transmitters such as GABA and glycine, but also of several monoamines such as dopamine, serotonin, noradrenaline, acetylcholine, and neuropeptides (for review see [6]).

To day, in many countries the cannabinoid THC (dronabinol, nabilone) and the cannabis extract nabiximols (Sativex®) – containing THC:cannabidiol (CBD) = 1:1 – are approved for clinical use for the treatment of nausea and vomiting associated with cancer chemotherapy, anorexia in HIV/AIDS, and spasticity in multiple sclerosis, respectively. However, there is substantial evidence that cannabinoids are also effective in the treatment of other conditions such as neuropathic pain, spasms and movement disorders (for review see [7]).

3. Anecdotal reports

In 1988, it has been suggested for the first time that use of smoked marijuana might be effective in the treatment of tics and behavioural symptoms in patients with TS. In a case study, Sandyk and Awerbuch [8] reported on three 15–39-year-old male patients who experienced an improvement of their tics and premonitory urges when smoking 1/2 to 2 marijuana cigarettes per day. In addition, the patients felt an improvement of self-mutilatory behaviour, attention span, and hypersexuality. In 1993, Hemming and Yellowlees [9] described a single case of a 36-year-old man with TS who reported that he had been symptom free for more than one year when taking one “cone” of marijuana per night.

In 1998, Müller-Vahl et al. [10] used a standardized questionnaire to perform a survey about the use of cannabis sativa and its effects on tics and psychiatric comorbidities in a larger group of TS patients. Of 64 consecutive adults who were interviewed, 17 reported about prior use of marijuana. Of these, 14 (82%) patients experienced a reduction or complete remission of motor and vocal tics and an amelioration of premonitory urges, obsessive-compulsive behaviour (OCB), and attention deficit hyperactivity disorder (ADHD). None of these patients reported about serious adverse effects or a deterioration of symptoms while smoking marijuana.

4. Uncontrolled single case studies

Up to now, there are no controlled trials available investigating the effect of marijuana or a cannabis extract in TS. In Germany (and many other countries), until today the use of marijuana – even for medical purposes – is illegal. The cannabis extract nabiximols is available for medical use only for a few years. Thus, available clinical trials investigating the therapeutic effect of cannabinoids in TS used delta-9-tetrahydrocannabinol (THC), the most psychoactive ingredient of *cannabis sativa L.* However, it can be assumed that most clinical effects of cannabis sativa are caused by THC, although cannabis sativa contains more than 60 different cannabinoids.

In 1999, the effects of pure THC have been investigated in TS for the first time in a prospective open uncontrolled trial: a 25-year-old male patient was treated once with a single dose of 10 mg THC orally [11]. The patient reported that he had used marijuana (2–3 g per day) illegally for many years not only to reduce his tics, but also to improve behavioural problems including ADHD, OCB, anxiety, lack of impulse control, and self injurious behaviour, but stopped smoking marijuana 3 days before entering the study. Two hours after THC treatment the total tic severity score of the Tourette's Syndrome Global Scale (TSGS) [12] improved from 41 to 7 and coprolalia disappeared. No adverse effects occurred. Measuring cognitive functions neuropsychological tests showed improved signal detection, sustained attention, and reaction time after treatment. The patient felt not only a tic improvement of 70%, but also an amelioration in attention, impulse control, OCB, and premonitory urges.

In another open uncontrolled single case study investigating a 24-year-old female, a combined treatment with THC (10 mg/day) and amisulpride (1200 mg/day) was found superior compared to THC and amisulpride, respectively, alone [13]. Therefore, it can be speculated that THC augment anti-tic effects of dopamine receptor blocking drugs as suggested earlier by animal studies: In rats it has been demonstrating that haloperidol-induced hypokinesia significantly increases after co-administration of THC [14].

Brunnauer et al. [15] reported about a treatment resistant 42-year-old man whose tics decreased after treatment with 15 mg THC significantly (Yale Global Tic Severity Scale (YGTSS) [16] decreased from 89 to 22). Since he worked as a truck-driver, his driving ability was assessed using computerized tests to measure visual perception, reaction, concentration, and stress tol-

erance. Although the patient passed the test both in the drug-free phase and during THC treatment, his concentration and visual perception clearly improved after THC treatment. Thus, at least in patients with TS treatment with cannabinoids may result in improved driving ability.

A comparable observation has been made in a 28-year-old male suffering from ADHD (without tics) whose driving-related performance significantly improved after oral intake of THC [17]. The authors concluded that "... in persons with ADHD THC may have atypical and even performance-enhancing effects".

So far, there is only one single case report available describing the successful treatment of a 15-year-old boy with treatment refractory TS plus ADHD [18]. In this boy combined treatment with THC (up to 15 mg/day) plus aripiprazole (30 mg/day) and risperidone (3 mg/day) resulted not only in a marked tic reduction (YGTSS score decreased from 97 to 54), but also in an improvement in quality of life. No significant adverse effects occurred. Under THC treatment, for the first time, comedication with methylphenidate (30 mg/day) was well tolerated without tic exacerbation. Using transcranial magnetic stimulation (TMS), intracortical inhibition was found to be increased during THC treatment. The authors, therefore, suggested that THC might counteract deficits of intracortical inhibition in patients with TS and ADHD by modulating the release of several neurotransmitters including dopamine and F-aminobutyric acid.

5. Randomized controlled clinical trials

Until today, there are only two controlled trials available investigating the effects of orally administered pure THC in the treatment of TS. In a randomised double-blind placebo-controlled crossover single-dose trial 12 adult patients (11 men, 1 woman, mean age = 34 + 13 (SD) years, range, 18–66 years) were treated with 5, 7.5 or 10 mg THC (dosages were chosen according to patients' body weight, sex, age and prior use of marijuana) [19]. Patients were randomly assigned a single-dose of oral THC first or a single-dose of visually identical placebo first on two days separated by a 4-week washout phase. Using the self rating scale Tourette Syndrome Symptom List (TSSL) [20] a significant global tic improvement was found after THC compared with placebo ($p = 0.015$). In addition, a significant improvement of OCB ($p = 0.041$) could be assessed by TSSL. Using the examiner rating TSGS a

significant improvement ($p = 0.015$) could be demonstrated for the subscore for complex motor tics. Data became more robust when including only those patients who had received 7.5 or 10.0 mg THC ($n = 8$) suggesting that higher dosages are more effective. All in all, 10/12 patients experienced a global improvement after THC (mean of + 35% ± 28.0, range, 20–90%), but only 3/12 after placebo (mean of + 7% ± 13.7, range, 10–40%).

In addition, the Symptom Checklist 90-R (SCL-90-R) [21] was used to evaluate different psychological symptoms. No influence of THC could be detected on depression, somatization, interpersonal sensitivity, anxiety, anger-hostility, paranoid ideation, and psychoticism, but there was evidence for a deterioration of OCB. From other studies, however, an improvement of OCB is suggested after treatment with cannabinoids [10,11].

No serious adverse reactions occurred. Five patients reported transient mild side effects after THC lasting between 1–6 hours (including headache, nausea, dizziness, hot flush, tiredness, poor powers of concentration, and cheerfulness). One patient reported dizziness, anxiety, tremble, sensitivity to noise and light, dry mouth, and ataxia after a single dose of 10 mg THC lasting half an hour.

In addition, a randomised double-blind parallel group placebo-controlled study over six-weeks has been performed including 24 adult patients with TS (19 men, 5 women, mean age = 33 + 11 (SD) years, range, 18–68 years) [22]. Starting at 2.5 mg THC/day the dosage was increased by 2.5 mg every four days to the target dosage of 10 mg. If a patient was unable to tolerate the maximum dose, the medication was reduced by up to 5.0 mg/day until a tolerated dose was achieved. The study consisted of 6 visits (visit 1 = baseline, visits 2–4 during treatment, visits 5 and 6 after withdrawal). Using the Global Clinical Impression Scale (GCIS) [20], at visits 3 and 4, respectively, a significant difference ($p < 0.05$) was found between the THC and placebo groups. Using ANOVA, there was a trend towards an overall significant difference ($p = 0.079$). Using the Shapiro Tourette Syndrome Severity Scale (STSS) [23], a significant group difference could be demonstrated ($p = 0.033$) at visit 4. At the same visit, both the subscore "motor global scale" of the YGTSS ($p = 0.040$) as well as the Rush videotape-based rating scale [24] ($p = 0.030$) demonstrated a significant difference between both groups. The self rating TSSL demonstrated a significant difference ($p < 0.05$) between the placebo and THC group on 10 treat-

ment days (between day 16 and 41). Using ANOVA there was an overall significant difference between the two groups ($p = 0.037$). Several other measures, in addition, demonstrated a trend ($p < 0.1$).

Seven patients dropped out of the study, but only one due to adverse effects (anxiety and restlessness). No serious adverse effects occurred. Five patients in the THC and three in the placebo group reported mild side effects (tiredness, dry mouth, dizziness, muzziness, anxiety, and depression).

6. Effects of cannabinoids on neuropsychological performance

The above mentioned controlled trials aimed to investigate the effect of THC not only on tics and associated behavioural problems, but also on neuropsychological performance. In the single-dose cross-over study a variety of neuropsychological tests was performed, but no detrimental effects of THC could be detected on short-term verbal and visual memory, recognition, verbal learning, intelligence, information processing, vigilance, reaction time, sustained attention and divided attention [25].

In the six-week parallel group study the following tests were performed to investigate cognitive functions: German version of the Auditory Verbal Learning Test (VLMT) [26], Benton-Visual-Retention-Test (BVRT) [27], Divided Attention (TAP) [28], and Multiple choice vocabulary test (Mehrfachwahl-Wortschatztest, MWT-B) [29]. Altogether – neither during treatment nor after withdrawal – no detrimental effects were seen on learning curve, interference, recall and recognition of word lists, immediate visual memory span, and divided attention. Measuring immediate verbal memory span there was even a trend towards an improvement during and after treatment with THC [30].

These results are in line with the case report by Brunauer et al. [15] describing a truck-driver whose concentration and visual perception improved after THC treatment, but in contrast compared to data obtained from healthy cannabis users. In healthy users it has been demonstrated that cannabis use may cause cognitive impairment [31]. Since it can be speculated that the central cannabinoid system might be involved in the pathophysiology of TS, it is conceivable that treatment of THC in patients with TS may result in different effects on neuropsychological performance compared to healthy cannabis users.

7. Averse effects and contraindications

Based on available studies and case reports it can be assumed that adverse effects in patients with TS do not differ from adverse effects described in other groups of patients. It can be assumed that cannabis, cannabis extracts (such as nabiximols) and individual cannabinoid receptor agonists (such as dronabinol and nabilone) show very similar or even identical side effects. Cannabinoids are generally considered as well-tolerated. The American Institute of Medicine declared that “Marijuana is not a completely benign substance. It is a powerful drug with a variety of effects. However, except for the harms associated with smoking, the adverse effects of marijuana use are within the range of effects tolerated for other medications” [32]. The most common side effects are tiredness and dizziness (in more than 10% of patients), psychological effects and dry mouth. Most commonly reported psychological effects are relaxation, euphoria, dysphoria, unpleasant feelings, heightened sensory and altered time perception, anxiety and panic (but also reduction of anxiety), impairment of memory, reductions in psychomotor and cognitive performance, and disorientation. Tolerance to these side effects nearly always develops within a short time. Most of the adverse effects can be prevented by slow and individual titration. In children and adolescents (but not in adults) there is substantial evidence that regular cannabis use at high doses may cause not only long-term effects on cognitive performance, but also doubles to risk of psychosis in vulnerable individuals [33,34]. Beside dry mouth other physical effects may occur such as tachycardia, orthostatic hypotension, reduced lacrimation, muscle relaxation, and increased appetite. Withdrawal symptoms are hardly ever a problem in the therapeutic setting [7].

Cannabinoids are contraindicated in patients suffering from a psychotic illness. THC should be used with caution in patients with a history of substance abuse, pregnant and breast feeding women, children < 18 years, and patients with significant cardiac disorder and hepatitis C [7].

8. The role of the CB1 receptor system in the pathophysiology of TS

Based on the beneficial effect of cannabinoids in the treatment of tics, it can be speculated that the central CB1 receptor system might be involved in the pathophysiology of TS. This hypothesis is supported

by the fact that the highest density of CB₁ receptors is located in the basal ganglia, cerebellum, and hippocampus. In addition, there are several lines of evidence suggesting a complex interaction between the CB₁ receptor and the dopaminergic system. However, to date there is only one study available using the CB₁ antagonist [123I]AM281 (N-(Morpholin-4-yl)-1-(2,4-dichlorophenyl)-5-(4-[123I]iodophenyl)-4-methyl-1H-pyrazole-3-carboxamide) and single photon emission computed tomography (SPECT) to investigate central cannabinoid CB₁ receptors in six patients with TS before and after THC treatment [35]. Although a specific binding of [123I]AM281 to CB₁ receptors could be detected, due to lack of a control group, no statement could be given as to whether CB₁ receptor binding sites are pathologically changed in TS. There is no evidence suggesting that TS is caused by genetic variations of the central cannabinoid receptor (CNR1) gene [36].

9. Conclusion and practical aspects

Available data obtained from several single case studies and two small controlled trials consistently provide evidence for beneficial effects of cannabinoids in the treatment of tics in patients with TS. In addition, there is some weak evidence that cannabinoids may improve also associated behavioural problems such as OCB, attention span, impulsivity, and autoaggression. Since neuropsychological tests failed to demonstrate detrimental effects of THC on memory, reaction time, concentration, and attention [15,25,30], it can be assumed that beneficial effects in patients with TS are caused by specific effects rather than secondary mechanisms due to sedation or decreased general activity. Since CB₁ receptors are not only highly located in those brain regions that are thought to be involved in TS pathology, but also have a complex interaction with the dopaminergic system, it can be speculated that beneficial effects in TS are mediated directly through the central CB₁ receptor system.

Limitations of the available studies that have to be addressed are the small sample size, short treatment period, large number of multiple comparisons, fixed dose approach, and possible selection bias. The authors of a recent Cochrane review [37] argued that definite conclusions on the efficacy of cannabinoids in TS cannot be drawn, because longer trials including a large number of patients are missing. Notwithstanding this appraisal, by many experts [1,37] THC is recommended for the treatment of TS in adult patients, when first line

treatments failed to improve the tics. Thus, in treatment resistant adult patients therapy with THC should be taken into consideration.

Treatment with THC should be started at a low dose of 2.5 or 5 mg/day and slowly up titrated to a daily dose of 10–20 mg according to efficacy and tolerability. THC should be used twice or three times daily. From unpublished data, there is limited evidence that the cannabis extract nabiximols (Sativex®) – containing THC:CBD = 1:1 – can be used for the treatment of tics, too. Because costs for treatment with both THC and nabiximols are high and – at least in Europe – health insurances often refuse to cover these costs in patients with TS (due to lack of approval), in Germany patients can apply to the public authorities for a special approval for the use of medicinal cannabis [7]. From open uncontrolled case studies in a limited number of patients, it can be assumed that treatment with medicinal cannabis is also effective in TS, and in some patients even better tolerated than THC alone. Longer trials with larger numbers of patients are necessary to further establish the efficacy and safety of different cannabinoids in the treatment of TS.

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Section c Background



Tourette Syndrome

Health Information For Teens

Tourette Syndrome

Content

Playing ice hockey is Luke's favorite thing to do. But when Luke has a game someplace new, he often has to deal with stares and weird looks from strangers because he sometimes shouts unexpectedly or blinks his eyes hard. To people who don't know him, it looks like he's in pain or needs help. These tics are symptoms of Luke's Tourette syndrome.

What Is Tourette Syndrome?

Tourette syndrome (TS) is a disorder that affects the body's brain and nervous system by causing tics — sudden, repetitive movements or sounds that some people make, seemingly without realizing it. A person with Tourette syndrome has multiple **motor tics** and at least one **vocal tic**.

Tics are actually more common in teens than you might think. You may know someone who has either a motor tic (sudden, uncontrollable movements like exaggerated blinking of the eyes) or a vocal tic (sounds such as throat clearing, grunting, or humming).

Tourette syndrome is a genetic disorder, which means it's the result of a change in genes that's either inherited (passed on from parent to child) or happens during development in the womb. As with other genetic disorders, someone may have a tendency to develop TS. But that doesn't mean the person will definitely get it.

The exact cause of Tourette syndrome isn't known, but some research suggests that it happens when there's a problem with how nerves communicate in certain areas of the brain. An upset in the balance of neurotransmitters (chemicals in the brain that carry nerve signals from cell to cell) might play a role.

People with Tourette syndrome usually first notice symptoms while they're kids or teens. TS affects people of all races and backgrounds, although more guys than girls have the condition.

And, Tourette syndrome is not contagious. You can't catch it from someone who has it.

What Are the Signs and Symptoms?

The main symptoms of Tourette syndrome are tics — multiple motor tics and at least one vocal tic. Motor tics can be everything from eye blinking or grimacing to head jerking or foot stomping. Some examples of vocal tics are throat clearing, making clicking sounds, repeated sniffing, yelping, or shouting. In rare cases, people with TS might have a tic that makes them harm themselves, such as head banging.

At certain times, like when someone is under stress, the tics can become more severe, happen more often, or last longer. Or, the type of tic may change.

Some people may be able to suppress their tics for a short time. But tension builds, and it eventually has to be released

as a tic. And if a person is concentrating on controlling the tic, it may be hard to focus on anything else. This can make it hard for teens with Tourette syndrome to have a conversation or pay attention in class.

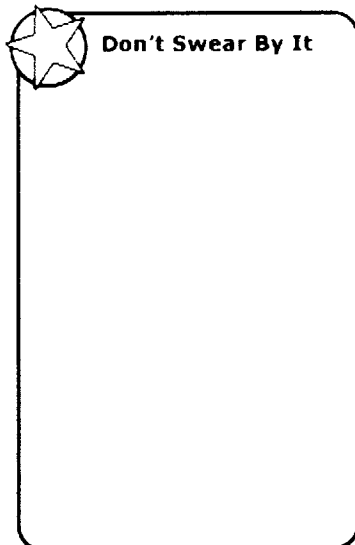
Many teens with Tourette syndrome also have other conditions like attention deficit hyperactivity disorder (ADHD), obsessive-compulsive disorder (OCD), learning disabilities, and anxiety.

What Do Doctors Do?

Tics should be checked out by a doctor. Some family doctors may refer a person with Tourette symptoms to neurologist (a doctor who specializes in problems with the nervous system). The neurologist may ask the person to keep track of the kinds of tics involved and how often they happen.

For a diagnosis of TS, a person must have several different types of tics — specifically, multiple motor tics and at least one vocal tic — for at least a year. They may happen every day or from time to time throughout the year.

There isn't a specific test for Tourette syndrome. Instead, the doctor looks at the family history, the medical history, and the person's symptoms to make a diagnosis. Sometimes, imaging tests like magnetic resonance imaging tests (MRIs), computerized tomography (CT) scans, electroencephalograms (EEGs), or blood tests can rule out other conditions that might cause symptoms similar to TS.



Just as Tourette syndrome is different for every person, treatment can be different, too. While there isn't a cure for Tourette syndrome, most tics don't get in the way of day-to-day life. If they do, doctors may suggest medicines to help control symptoms.

Tourette syndrome is not a psychological condition, but doctors sometimes refer teens to a psychologist or psychiatrist. Seeing a therapist won't stop their tics, but it can help to talk to someone about their problems, cope with stress better, and learn relaxation techniques. A therapist also can help them with any other problems, like ADHD, OCD, and/or anxiety.

Dealing With Tourette Syndrome

Many people don't understand what Tourette syndrome is or what causes it, so they might not know what to make of someone who has TS. And if people stare, it can feel embarrassing or frustrating. People with TS might have to explain their condition a lot or have to deal with people thinking they're strange.

Although it's not easy to have Tourette syndrome, there's good news — the tics usually get milder or go away during adulthood. In the meantime, it can help to focus on something else.

Things that teens with Tourette syndrome can do include:

- **Get involved.** Some people say that when they're focused on an activity, their tics are milder and less frequent. Sports, exercise, or hobbies are great ways to focus mental and physical energy. Some well-known athletes have Tourette syndrome.
- **Lend a helping hand.** Dealing with Tourette syndrome often makes people more understanding of other people's feelings, especially other teens with problems. Use that special sensitivity by volunteering.
- **Embrace creativity.** Creative activities such as writing, painting, or making music help focus the mind on other things.
- **Find support.** The Tourette Syndrome Association sponsors support groups with others who understand the challenges of Tourette syndrome.
- **Take control.** People with Tourette syndrome can feel more in control of their lives by researching, asking their doctors plenty of questions, and taking an active role in their treatment.

Each person with Tourette syndrome will cope differently with its physical, emotional, and social challenges. TS doesn't usually restrict activities, so people who have it can enjoy themselves and pursue their dreams and goals just as their friends do.

Medical Review

- **Last Reviewed:** October 1st, 2016
- **Reviewed By:** Shirin Hasan, MD

Translation

Resources

- **Tourette Syndrome Association (TSA)**

TSA is a volunteer organization working to find the cause of and cure for Tourette syndrome. It has books, pamphlets, and videos about the condition and related topics, and there are state chapters and local support groups for people with or affected by Tourette syndrome. Call: (718) 224-2999

Related Article

- **Tics**

A tic is a sudden, repetitive movement or sound that some people make, which can be difficult to control.

- **Obsessive-Compulsive Disorder**

Everyone feels anxiety, fear, or worry at some time – it's normal to worry about school, your friends, your appearance, and tons of other stuff. But for teens with obsessive-compulsive disorder (OCD), these feelings are taken to extremes.

- **Learning Disabilities**

Learning disabilities affect the brain's ability to receive, process, analyze, or store information. These problems can make it difficult for a student to learn as quickly as others – but they have nothing to do with a person's intelligence.

- **ADHD**

ADHD is a medical condition that affects how well someone can sit still, focus, and pay attention. Learn more in this article.

- **Understanding Dyslexia**

Dyslexia is a learning disability in which people have difficulty learning to read, even though they are smart enough and are motivated to learn. Learn more about dyslexia and how to deal with it.

- **The Basics on Genes and Genetic Disorders**

Genes play an important role in how we look and act, and even in whether we get sick. This article gives the lowdown on genes, genetic disorders, and new research into gene therapy.

Footer

Note: All information is for educational purposes only. For specific medical advice, diagnoses, and treatment, consult your doctor.

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Connecticut Children's Medical Center

Connecticut Children's Medical Center is the only hospital in Connecticut dedicated exclusively to the care of children. Connecticut Children's is a nationally recognized not-for-profit with a medical staff of more than 1,000 providing comprehensive, world-class health care in more than 30 pediatric specialties and subspecialties. Connecticut Children's Medical Center is the primary pediatric teaching hospital for the UConn School of Medicine, has a teaching partnership with the Frank H. Netter MD School of Medicine at Quinnipiac University and is a research partner of Jackson Laboratory. Connecticut Children's Office for Community Child Health is a national leader in community-based prevention and wellness programs. A 501(c)(3) Organization.

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APRIL 8, 2018

SECTION E

NEGATIVE EFFECTS OF CONDITION

PEOPLE WITH THE "TICS" ASSOCIATED WITH TOURETTE'S SYNDROME CANNOT FEEL COMFORTABLE PARTICIPATING IN MANY NORMAL EVERYDAY ACTIVITIES BECAUSE THEIR UNCONTROLLED MOVEMENTS AND NOISES ARE DISRUPTIVE TO OTHERS. MEDICAL MARIJUANA WOULD CALM THE SYMPTOMS AND OFFER A HAPPIER, FULLER LIFE TO THOSE WHO EXHIBIT THESE DEBILITATING "TICS" .

TICS CAN INCLUDE:

ARMS FLAILING

BODY TWITCHING

EYE BLINKING

LOUD THROAT CLEARING

SWEARING UNCONTROLLABLY

PEOPLE WITH TOURETTE'S CANNOT ATTEND OR ARE UNCOMFORTABLE IN:

CHURCH

MOVIE THEATERS

LIVE PRODUCTIONS

SCHOOL OR COLLEGE CLASSROOMS

RESTAURANTS

WORK ENVIRONMENT (THEY USUALLY LOOK FOR WORK WHERE THEY ARE BY THEMSELVES)



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37
Shares



Tourette syndrome is a nervous system disorder that affects 1 of every 360 children ages 6 through 17. Studies have shown marijuana safely reduces the frequency of tics associated with the syndrome.

OVERVIEW OF TOURETTE SYNDROME

Tourette syndrome is a condition of the nervous system that develops during childhood. The syndrome is characterized by tics, which tics are characterized as being motor, which means unusual repetitive movements of the body, or vocal, which are involuntary sounds made with the voice. For example, a person with Tourette's may repeatedly shrug their shoulders or uncontrollably blurt out grunting sounds. Tics are also classified as simple, which are sudden, brief, repetitive and involving a limited number of muscles, and complex, which are distinct and coordinated movements that involve several muscle groups.

According to the Centers for Disease Control and Prevention, the tics associated with Tourette syndrome typically begin between the ages of 5 and 10. The tics can grow in intensity and frequency when a child is stressed or excited. The tics commonly decrease throughout the teenage and adult years and in some cases can disappear entirely. Many with Tourette's, however, have tics worsen with age.

The cause of Tourette's remains unknown, but according to Mayo Clinic, theories include genetic mutations or brain abnormalities. While not life-threatening, Tourette's can still pose lifestyle difficulties for those who are diagnosed. The syndrome is often associated with other



TOP RESOURCES

Medical Marijuana

LATEST NEWS

**Washington Post,
Chicago Tribune,
Cannabist, and
Epicurious Highlight
Medical Marijuana, Inc.
Family of Companies**

**Medical Marijuana, Inc.
Celebrates Two-Year
Anniversary of Chief
Operating Officer Blake**

related conditions like attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, learning disabilities, depression, and sleep and anxiety disorders.

There is no cure for Tourette's, so focus of treatment is on managing the tics so that they don't cause pain or injury or adversely affect the quality of one's school, work or social life. No medications completely eliminate symptoms, but some can limit the frequency of tics. In addition, antidepressants and psychotherapy and behavior therapy are used to assist in symptom management.

FINDINGS: EFFECTS OF CANNABIS ON TOURETTE SYNDROME

Research has shown that cannabis can be effective in suppressing tics and also in the treatment of the syndrome's associated behavioral problems (Muller-Vahl, 2013) (Abi-Jaoude, et al., 2017). One study measuring the effects of a single cannabis treatment on adult Tourette's syndrome patients found a significant improvement of tics and obsessive-compulsive behavior compared to placebo (Muller-Vahl, et al., 2002).

Demonstrating cannabis potential longer-term benefits, another study discovered a significant difference in the reduction of tics compared to placebo in Tourette's patients after six weeks of cannabis administration (Muller-Vahl, et al., 2003). Another study, also involving six-weeks of cannabis treatments, reported a reduction tics in patients with Tourette's with no serious adverse effects or impairment on neuropsychological performance (Muller-Vahl, 2003).

Tourette syndrome patients being treated with cannabis have shown to experience no impairments in verbal and visual memory, reaction time, intelligence, sustained

N. Schroeder, Esq. and Company's Rapid Growth

Medical Marijuana, Inc. and Subsidiary Kannaway® Announce March 2018 as the Largest Revenue Sales Month in Company History

Leading Stock Website The Motley Fool Features Medical Marijuana, Inc. as the Only Potential Publicly-Traded Winner of Hemp Farming Act of 2018

Phyto Animal Health CEO Ian Quinn to Speak at Women Grow Event in Phoenix

attention, divided attention, vigilance or mood compared to placebo treatment (Muller-Vahl, et al., 2002). Therefore, regular cannabis use to manage the symptoms associated with Tourette's appears to have no acute or long-term cognitive effects (Muller-Vahl, et al., 2003).

STATES THAT HAVE APPROVED MEDICAL MARIJUANA FOR TOURETTE SYNDROME

Currently, *Arkansas, Illinois, Minnesota* and *Ohio* have approved medical marijuana specifically for the treatment of Tourette syndrome.

A number of other states will consider allowing medical marijuana to be used for the treatment of Tourette syndrome with the recommendation from a physician. These states include: *California* (any debilitating illness where the medical use of marijuana has been recommended by a physician), *Connecticut* (other medical conditions may be approved by the Department of Consumer Protection), *Massachusetts* (other conditions as determined in writing by a qualifying patient's physician), *Nevada* (other conditions subject to approval), *Oregon* (other conditions subject to approval), *Rhode Island* (other conditions subject to approval), and *Washington* (any "terminal or debilitating condition").

In *Washington, DC*, any condition can be approved for medical marijuana as long as a DC-licensed physician recommends the treatment.

Seventeen states have approved medical marijuana for the treatment of spasms (motor tics), which is a symptom commonly associated with Tourette's. These states include: *Arizona, Arkansas, California, Colorado, Delaware, Florida, Hawaii, Louisiana, Maryland, Michigan, Minnesota, Montana, Nevada, New Hampshire, Oregon*

Rhode Island and Washington

RECENT STUDIES ON CANNABIS' EFFECT ON TOURETTE SYNDROME

Six weeks of cannabis treatment reduced tics in patients with Tourette's with no serious adverse effects or impairment on neuropsychological performance.

Cannabinoids reduce symptoms of Tourette's syndrome.

(<http://www.tandfonline.com/doi/pdf/10.1577/14656566.4.10>)
1717? need
Access = true

A significant reduction in tics was seen in Tourette's syndrome patients after six weeks of cannabis treatment.

Delta 9-tetrahydrocannabinol (THC) is effective in the treatment of tics in Tourette syndrome: a 6-week randomized trial.

(<http://www.psychiatrist.com/jcp/article/Pages/2003/V64N04/V64N04/7.95pt>)

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0 Comments

APRIL 8, 2018

DEAR BOARD OF PHYSICIANS,

IT IS WITH GREAT GRATITUDE FOR THIS OPPORTUNITY THAT I WRITE THIS REQUEST FOR YOUR HELP TO INCLUDE TOURETTE SYNDROME TO YOUR LIST OF DEBILITATING CONDITIONS THAT CAN BE DRASTICALLY HELPED BY MEDICAL MARIJUANA.

I AM THE MOTHER TO A SON WHO DEVELOPED SIGNS OF TOURETTE SYNDROME WHEN HE WAS ABOUT 4 OR 5 YEARS OLD. HE IS NOW 45 AND STILL EXHIBITS FROM SOME OF THE TICS OF TOURETTE'S . HIS NAME IS

[REDACTED]

IT BREAKS MY HEART WHEN I THINK OF THE DEBILITATING EFFECTS THIS SYNDROME HAD ON HIM PHYSICALLY ,EMOTIONALLY ,AND SOCIALLY. THE FIRST INDICATION I HAD THAT SOMETHING MIGHT BE WRONG WAS WHEN HE WAS SITTING ON MY LAP AS A CHILD AND I COULD FEEL THAT HIS STOMACH MUSCLES WERE TIGHTENING, ALMOST WITH A SLIGHT JERKING MOTION. WHEN OUR FAMILY DOCTOR CHECKED HIM HE WAS UNABLE TO MAKE A DIAGNOSIS SO HE REFERRED US TO WHAT WAS THEN THE NEWINGTON CHILDREN'S HOSPITAL WHERE THEY DIAGNOSED HIM WITH TOURETTE SYNDROME. I HAD ABSOLUTELY NO IDEA WHAT THEY WERE TALKING ABOUT; NEVER HEARD OF TOURETTE SYNDROME. I WAS IN A STATE OF SHOCK; DIDN'T KNOW WHERE TO TURN FOR HELP—THERE WAS NO MEDICAL SOLUTION AND TO COMPOUND THE HEARTBREAK, BY THE TIME THAT DIAGNOSIS OCCURRED HIS SYMPTOMS HAD ALREADY ACCELERATED TO VERY VISIBLE SIGNS; HIS ARMS WOULD UNCONTROLLABLY FLAIL IN THE AIR,HIS EYES WERE CONSTANTLY BLINKING AND HE MADE FREQUENT THROAT GRUNTING SOUNDS AS IF HE WERE CLEARING HIS THROAT.

THE IMPACT OF THAT DIAGNOSIS AND THE KNOWLEDGE THAT THEY HAD NO HELP TO OFFER WAS DEVASTATING. MY HEART WAS CRYING FOR MY SON. THE IMPACT WAS SO POWERFUL THAT I CAN STILL SEE WHAT MY SON WAS WEARING THAT DAY! I NEEDED SOME TIME TO REGROUP AND THINK SO I LEFT THE HOSPITAL AND DROVE TO THE NEAREST MOVIE THEATER THAT WAS PLAYING "ET". MY THOUGHT PROCESS WAS THAT I WANTED HIM TO HAVE SOME FUN LIKE A "NORMAL" CHILD AND AT THAT TIME OF DAY THERE WOULD NOT HAVE BEEN MANY PEOPLE IN THE THEATER SO HIS "TICS" WOULD NOT DISTURB ANYONE . THAT WOULD ALSO GIVE ME SOME DESPERATELY NEEDED TIME TO PRAY AND DECIDE WHAT TO DO NEXT.

TRY TO IMAGINE YOURSELF OR YOUR PRECIOUS CHILD GOING TO FIRST GRADE WITH ALL OF THE SYMPTOMS I HAVE JUST DESCRIBED. IMAGINE HOW THE OTHER CHILDREN WOULD REACT WHEN THEY ARE ALL QUIETLY SITTING IN CLASS AND YOUR CHILD'S ARMS ARE FLAILING IN THE AIR , HE IS MAKING "THROAT NOISES" AND HIS EYES ARE CONSTANTLY BLINKING. ON TOP OF THAT, THE TEACHER HAS NO IDEA WHAT TOURETTE SYNDROME IS EITHER SO HE/SHE CONCLUDES THAT YOUR CHILD IS JUST ACTING OUT AND PURPOSELY BEING DISRUPTIVE.

I BROUGHT ██████ TO MEET A WELL KNOW NUTRITIONIST , ██████ WHO HAD PREVIOUSLY BEEN A PHARMACIST . HE PUT ██████ ON APPROXIMATELY 14 SUPPLEMENTS THAT WERE PRESCRIBED TO HEAL THE NERVE TRANSMITTERS . HE ALSO SAID THAT HE COULD NOT HAVE ANY SUGAR; NOT EVEN A GLASS OF MILK! SO ██████ SPENT HIS CHILDHOOD ON A VEY STRICK DIET AND TRAINED HIMSELF TO SWALLOW ALMOST ALL OF THOSE 14 HATED PILLS AT ONCE JUST TO "GET IT OVER WITH ".

I SPENT HOURS PRAYING FOR HIM . I WAS A TEACHER AT THAT TIME AND DURING MY PLANNING HOUR WHEN OTHER TEACHERS WOULD MEET IN THE TEACHER'S BREAK ROOM AND CORRECT PAPERS, I STAYED IN MY CLASSROOM AND PRAYED FOR HEALING OR A SOLUTION.

