Petition to Add Opioid Use Disorder to the List of Medical Conditions for the New Mexico Medical Cannabis Program

Background:

This petition was submitted to the New Mexico Sec. of Health and presented to the Medical Advisory Board (MAB), a group of expert clinicians tasked with evaluating petitions. Board members overwhelmingly voted approval of the petition (5-1).

The Secretary rejected the MAB's recommendation and declined to add opioid use disorder to the list of qualifying conditions in June 2017. The petitioner plans to refile at the next opportunity.

Name of Person Filing Petition: Anita Briscoe

Names of Witnesses Providing Technical Evidence:

Steve Jenison, MD, Former Chair, Medical Cannabis Advisory Board

Pam Conry, APRN BC, Psychiatric Nurse Practitioner

Florian Birkmeyer, MD, Psychiatrist

Ramon H, patient

Michael V, patient

Lisa Chavez, Case Manager, UNM Forensic Psychiatry

Willie Ford, Director, R Greenleaf Dispensary

Jeffery Holland, Director, Endorphin Power Company

PETITION TO THE NM MEDICAL ADVISORY BOARD TO THE NEW MEXICO MEDICAL CANNABIS PROGRAM TO ADD OPIATE DEPENDENCE AS A QUALIFYING CONDITION

Anita Briscoe, MS, APRN-BC

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505-720-9495

My name is Anita Willard Briscoe and I am a native New Mexican from Espanola, living in Albuquerque. I have been a nurse for 40 years, a psych nurse practitioner for 12 years. I have been referring patients to the cannabis program for 7 years.

Over this past year I have observed that about 25% of my patients have stated *independently* that they were able to kick opiates with cannabis. They state it calms down their cravings, relaxes their craving anxiety and is helping them to keep off of opiates. if they are in pain, cannabis is helping relieve their pain, often to the point that they don't need opiates any more. I began researching the medical literature more deeply to determine what it is about cannabis that's helping.

I also started counting, and asking my cannabis prescribing colleagues what they're observing the same thing, and they are saying that their patients have been able to kick opiates with cannabis. Together we have approximately 400 patients who have been successful quitting opiates, using cannabis.

I am here today to petition you to add opioid dependence to the list of qualifying conditions for medical cannabis.

Attached is the research I did, a brief description of the studies that have been done both in the United States, and internationally. The cover page is a graphic reminder of how very serious and debilitating this disease is, as well as how our opiate overdose and abuse problem has been increasing over the last 13 years.

I have indexed the research according to condition: I started using studies that prove that cannabis helps relieve pain. After all, pain is usually the reason patients start getting addicted to opiates. You probably have heard the story: They start out with some pain pills for a condition, and get hooked. They then probably get cut off by their prescriber, and have to get pills off the street, which are very expensive. It is easier and cheaper to get heroin.

I have included five separate bodies of research: cannabis and pain relief, cannabis withdrawal, detox and maintenance, safety, and harm reduction, as well as the economics of how cannabis has reduced prescription costs.

I am writing this petition from my heart: I love my patients and feel very protective of them. The fact that people cannot get cannabis for their opiate addiction is a travesty. Just think if they had access to cannabis and were able to kick their habit, how our state would change. Crime would be down, health care costs would diminish, overdose deaths would fall, and it would help our economy to flourish. Without opiate abuse, New Mexico's children would be safer, families would be more stable.

As I mentioned, I'm from Espanola, the town with the dubious title "The Heroin Capital." I've seen firsthand how heroin has destroyed, decayed and desiccated my beloved home town. The patients that come to see me that are from Northern New Mexico describe a very dangerous environment in their communities with heroin. Indeed, when I was helping a physician prescribe Suboxone to my patient from Espanola, he was murdered for his Suboxone.

Patients are often very motivated to get off of heroin, but getting into medication assisted treatment is very difficult. One of my patients from Clovis has to drive to Albuquerque every week to get her Suboxone. Suboxone costs $1021 for 60 strips of 3 mg each. This is approximately 20 days' worth. There is a shortage of medication assisted treatment providers. Patients may stay on Suboxone for years. Our Medicaid program is paying for the majority of this cost. My colleagues and I are aware that medication assisted treatment (methadone and Suboxone) is the standard of care, and I am not looking to replace it with cannabis. But the research shows that cannabis works well as an adjunct to treatment. Having access to cannabis would be a great help to our patients.

This move would also be a rich opportunity to begin doing research in New Mexico, particularly prospective studies on opiate use, overdose and death reduction.

Why add opiate dependence as a qualifying condition? Here are some answers.

1. It has been proven by medical research to work.
2. The patients are using cannabis to treat their dependence anyway.
3. Arresting and imprisoning them for using cannabis to stop using opiates is expensive for NM.
4. Medication assisted treatment is difficult to get into, sometimes with very long waiting times to get into the program, as well as having to drive long distances.
5. Medication assisted treatment is expensive, and has worse side effects than cannabis treatment.
6. We owe this to our patients. A treatment that is within close reach is unattainable because it's illegal.
7. Some of the research views medical cannabis as legitimate harm reduction. Using this model, cannabis is much less dangerous to the patient and his/her community than the heroin that is now on the streets and is much more readily accessible and affordable.

8. Our state's program has often been a model that other states are following as they legalize medical cannabis. We are a leader in this effort. Let's continue to lead and be innovative, and use solutions that work.

While developing this petition, some questions came to mind that you might ask:

How do we know it's not just a pothead lying about opiate abuse so they can get a card to use cannabis for purely recreational use?

How are providers that refer going to monitor their patients and track their opiate use?

The answer to the first question is for providers to strictly adhere to the DSM 5 criteria for diagnosis of opiate abuse.

As far as monitoring the patients, I would build into the program the requirement that the provider must follow up by phone or face to face with the patient to track their opiate use, as well as educate the client about using cannabis to cut down on withdrawal symptoms. We would also have the patient keep a journal of their opiate use as their treatment cannabis is progressing.

You may be aware that Maine attempted to add opiate dependence to their list of qualifying conditions this summer, and failed, due to "lack of research". The bibliography I have developed shows beyond a shadow of a doubt that there is an abundance of robust research on the topic. New Mexico can and should lead the way in taking advantage of this opportunity to give opiate dependent patients access to medical marijuana.

I encourage the Medical Advisory Board to review this petition for inclusion of opiate addiction into the current list of qualifying conditions for the Medical Cannabis Program. The risks would surely be outweighed by the possibility improving lives and even saving one life. We have an opportunity to explore and lead the nation in researching what could be a revolutionary treatment for addiction.

In concluding, I ask that you as the Medical Advisory Board consider adding opiate dependence as a qualifying condition. I know there are forces out there such as the pharma industry, with what they're doing in Arizona (lobbying to keep cannabis illegal), as well as other strong anti-cannabis forces in this state that seem to be holding back progress for treatment. My colleagues, myself, and all our patients ask that you not buckle under these forces and do the right thing by allowing opiate dependence to be on the list of qualifying conditions for use of medical cannabis.

Thank you very much,

Anita Briscoe, MS, APRN-BC

BIBLIOGRAPHY

The bibliography is a list of articles cited from medical and scientific peer-reviewed journals as well as citations from popular media and websites. The title of the article is bolded, the citation is in standard text. A summary of the relevant findings from article is italicized.

The bibliography is divided into 4 sections:

1. Cannabis and Pain Reduction
2. Cannabis Detox Withdrawal and Maintenance
3. Safety and Harm Reduction
4. The Economics of how cannabis has reduced prescription costs.

CANNABIS AND PAIN REDUCTION

Medical Use of Cannabinoids
Grant I. Comment and response, Igor Grant MD
JAMA. 2015 Oct 27;314(16):1750-1. doi: 10.1001/jama.2015.11429
PMID: 26505602 [PubMed - indexed for MEDLINE

"The results of these 4 studies reinforce the likely efficacy of cannabis in neuropathic pain, but with an important added observation: benefit was noted at low THC concentrations. This has clinical importance, suggesting therapeutic benefit of cannabis with THC content that is less likely to produce adverse effects."

Clinical perspectives on medical marijuana (cannabis) for neurologic disorders
Fife TD, Moawad H, Moschonas C, Shepard K, Hammond N.
Neurol Clin Pract. 2015 Aug;5(4):344-351.
PMID: 26336632 [PubMed]

Several cannabinoids showed effectiveness or probable effectiveness for spasticity, central pain, and painful spasms in multiple sclerosis.

Medical Marijuana and Chronic Pain: A Review of Basic Science and Clinical Evidence
Jensen B, Chen J, Furnish T, Wallace M.
Curr Pain Headache Rep. 2015 Oct;19(10):50. doi: 10.1007/s11916-015-0524-x. Review.
PMID: 26325482 [PubMed - indexed for MEDLINE

Gold standard clinical trials are limited; however, some studies have thus far shown evidence to support the use of cannabinoids for some cancer, neuropathic, spasticity, acute pain, and chronic pain conditions.

Cannabinoids for Medical Use: A Systematic Review and Meta-analysis
Whiting PF, Wolff RF, Deshpande S, Di Nisio M, Duffy S, Hernandez AV, Keurentjes JC, Lang

S, Misso K, Ryder S, Schmidlkofer S, Westwood M, Kleijnen J
JAMA. 2015 Jun 23-30;313(24):2456-73. doi: 10.1001/jama.2015.6358. Review

There was moderate-quality evidence to support the use of cannabinoids for the treatment of chronic pain and spasticity

Veterans Health Administration Policy on Cannabis as an Adjunct to Pain Treatment with Opiates
Krawitz M.
AMA J Ethics. 2015 Jun 1;17(6):558-61. doi: 10.1001/journalofethics.2015.17.6.pfor2-1506. No abstract available.

The policy of forcing Veterans off of opiate treatment if they tested positive for THC was eliminated.

Is cannabis use associated with less opioid use among people who inject drugs?
Kral AH, Wenger L, Novak SP, Chu D, Corsi KF, Coffa D, Shapiro B, Bluthenthal RN.
Drug Alcohol Depend. 2015 Aug 1;153:236-41. doi: 10.1016/j.drugalcdep.2015.05.014. Epub 2015 May 22.

PMID: 26051162 [PubMed - indexed for MEDLINE]

There is a statistical association between recent cannabis use and lower frequency of nonmedical opioid use among PWID. This may suggest that PWID use cannabis to reduce their pain and/or nonmedical use of opioids.

Efficacy of Inhaled Cannabis on Painful Diabetic Neuropathy
Wallace MS, Marcotte TD, Umlauf A, Gouaux B, Atkinson JH.
J Pain. 2015 Jul;16(7):616-27. doi: 10.1016/j.jpain.2015.03.008. Epub 2015 Apr 3.
PMID: 25843054 [PubMed - indexed for MEDLINE]

This small, short-term, placebo-controlled trial of inhaled cannabis demonstrated a dose-dependent reduction in diabetic peripheral neuropathy pain in patients with treatment-refractory pain. This adds preliminary evidence to support further research on the efficacy of the cannabinoids in neuropathic pain.

The effectiveness of cannabinoids in the management of chronic nonmalignant neuropathic pain: a systematic review
Boychuk DG, Goddard G, Mauro G, Orellana MF.
J Oral Facial Pain Headache. 2015 Winter;29(1):7-14. doi: 10.11607/ofph.1274. Review.
PMID: 25635955 [PubMed - indexed for MEDLINE]

Cannabis-based medicinal extracts used in different populations of chronic nonmalignant neuropathic pain patients may provide effective analgesia in conditions that are refractory to other treatment

Re-branding cannabis: the next generation of chronic pain medicine?
Carter GT, Javaher SP, Nguyen MH, Garret S, Carlini BH.
Pain Manag. 2015;5(1):13-21. doi: 10.2217/pmt.14.49.
PMID: 25537695 [PubMed - indexed for MEDLINE]

Current literature indicates many chronic pain patients could be treated with cannabis alone or with lower doses of opioids.

Prescribing smoked cannabis for chronic noncancer pain: preliminary recommendations
Kahan M, Srivastava A, Spithoff S, Bromley L.
Can Fam Physician. 2014 Dec;60(12):1083-90. Review.

Smoked cannabis might be indicated for patients with severe neuropathic pain conditions who have not responded to adequate trials of pharmaceutical cannabinoids and standard analgesics (level II evidence).

The endocannabinoid system as a potential therapeutic target for pain modulation
Ulugöl A.
Balkan Med J. 2014 Jun;31(2):115-20. doi: 10.5152/balkanmedj.2014.13103. Epub 2014 Jun 1. Review.
PMID: 25207181 [PubMed]

"Special emphasis is given on multi-target analgesia compounds, where one of the targets is the endocannabinoid degrading enzyme. In this review, I provide an overview of the current understanding about the processes accounting for the biosynthesis, transport and metabolism of endocannabinoids, and pharmacological approaches and potential therapeutic applications in this area, regarding the use of drugs elevating endocannabinoid levels in pain conditions".

The pharmacokinetics, efficacy, safety, and ease of use of a novel portable metered-dose cannabis inhaler in patients with chronic neuropathic pain: a phase 1a study
Eisenberg E, Ogintz M, Almog S.
J Pain Palliat Care Pharmacother. 2014 Sep;28(3):216-25. doi: 10.3109/15360288.2014.941130. Epub 2014 Aug 13.
PMID: 25118789 [PubMed - indexed for MEDLINE]

A significant 45% reduction in pain intensity was noted 20 minute after inhalation (P = .001), turning back to baseline within 90 minutes.

Use of a synthetic cannabinoid in a correctional population for posttraumatic stress disorder-related insomnia and nightmares, chronic pain, harm reduction, and other indications: a retrospective evaluation
Cameron C, Watson D, Robinson J.
J Clin Psychopharmacol. 2014 Oct;34(5):559-64. doi: 10.1097/JCP.0000000000000180.
PMID: 24987795 [PubMed - indexed for MEDLINE]

Subjective improvement in chronic pain

Clinical endocannabinoid deficiency (CECD) revisited: can this concept explain the therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions?

Smith SC, Wagner MS.

Neuro Endocrinol Lett. 2014;35(3):198-201. Review.

Subsequent research has confirmed that underlying endocannabinoid deficiencies indeed play a role in migraine, fibromyalgia, irritable bowel syndrome and a growing list of other medical conditions. Clinical experience is bearing this out. Further research and especially, clinical trials will further demonstrate the usefulness of medical cannabis. As legal barriers fall and scientific bias fades this will become more apparent.

Cannabis for inflammatory bowel disease

Webb CW, Webb SM.

Hawaii J Med Public Health. 2014 Apr;73(4):109-11

PMID: 24765558 [PubMed - indexed for MEDLINE]

Average pain improvement on a 0-10 pain scale was 5.0 (from 7.8 to 2.8), which translates to a 64% relative decrease in average pain. These results suggest that Cannabis is an extremely safe and effective medication for many chronic pain patients. Cannabis appears to alleviate pain, insomnia, and may be helpful in relieving anxiety. Cannabis has shown extreme promise in the treatment of numerous medical problems and deserves to be released from the current Schedule I federal prohibition against research and prescription.

The pharmacologic and clinical effects of medical cannabis

Borgelt LM, Franson KL, Nussbaum AM, Wang GS.
Pharmacotherapy. 2013 Feb;33(2):195-209. doi: 10.1002/phar.1187. Review.
PMID: 23386598 [PubMed - indexed for MEDLINE]

Studies of medical cannabis show significant improvement in various types of pain and muscle spasticity. Reported adverse effects are typically not serious, with the most common being dizziness

Amygdala activity contributes to the dissociative effect of cannabis on pain perception

Lee MC, Ploner M, Wiech K, Bingel U, Wanigasekera V, Brooks J, Menon DK, Tracey I.
Pain. 2013 Jan;154(1):124-34. doi: 10.1016/j.pain.2012.09.017.
PMID: 23273106 [PubMed - indexed for MEDLINE]

THC reduced functional connectivity between the amygdala and primary sensorimotor areas during the ongoing-pain state. Critically, the reduction in sensory-limbic functional connectivity

was positively correlated with the difference in drug effects on the unpleasantness and the intensity of ongoing pain. Peripheral mechanisms alone cannot account for the dissociative effects of THC on the pain that was observed. Instead, the data reveal that amygdala activity contributes to individual response to cannabinoid analgesia, and suggest that dissociative effects of THC in the brain are relevant to pain relief in humans.

Low-dose vaporized cannabis significantly improves neuropathic pain
Wilsey B, Marcotte T, Deutsch R, Gouaux B, Sakai S, Donaghe H.
J Pain. 2013 Feb;14(2):136-48. doi: 10.1016/j.jpain.2012.10.009. Epub 2012 Dec 11.
PMID: 23237736 [PubMed - indexed for MEDLINE]

As these NNTs are comparable to those of traditional neuropathic pain medications, cannabis has analgesic efficacy with the low dose being as effective a pain reliever as the medium dose. Psychoactive effects were minimal and well tolerated, and neuropsychological effects were of limited duration and readily reversible within 1 to 2 hours. Vaporized cannabis, even at low doses, may present an effective option for patients with treatment-resistant neuropathic pain.

Cannabis as an adjunct to or substitute for opiates in the treatment of chronic pain
Lucas P.
J Psychoactive Drugs. 2012 Apr-Jun;44(2):125-33. Review.
PMID: 22880540 [PubMed - indexed for MEDLINE]

Despite a lack of regulatory oversight by federal governments in North America, community-based medical cannabis dispensaries have proven successful at supplying patients with a safe source of cannabis within an environment conducive to healing, and may be reducing the problematic use of pharmaceutical opiates and other potentially harmful substances in their communities.

An Exploratory Human Laboratory Experiment Evaluating Vaporized Cannabis in the Treatment of Neuropathic Pain From Spinal Cord Injury and Disease
Wilsey B, Marcotte TD, Deutsch R, Zhao H, Prasad H, Phan A.
J Pain. 2016 Jun 7. pii: S1526-5900(16)30072-4. doi: 10.1016/j.jpain.2016.05.010. [Epub ahead of print]
PMID: 27286745 [PubMed - as supplied by publisher]

The lower dose appears to offer the best risk-benefit ratio in patients with neuropathic pain associated with injury or disease of the spinal cord. A crossover, randomized, placebo-controlled human laboratory experiment involving administration of vaporized cannabis was performed in patients with neuropathic pain related to spinal cord injury and disease. This study supports consideration of future research that would include longer duration studies over weeks to months to evaluate the efficacy of medicinal cannabis in patients with central neuropathic pain.

Efficacy, tolerability and safety of cannabinoids in chronic pain associated with rheumatic diseases (fibromyalgia syndrome, back pain, osteoarthritis, rheumatoid arthritis): A systematic review of randomized controlled trials
Fitzcharles MA, Baerwald C, Ablin J, Häuser W.
Schmerz. 2016 Feb;30(1):47-61. doi: 10.1007/s00482-015-0084-3.
PMID: 26767993 [PubMed - in process]

Outcomes were reduction of pain, sleep problems, fatigue and limitations of quality of life for efficacy, dropout rates due to adverse events for tolerability, and serious adverse events for safety

The Role of the Endocannabinoid System in the Brain-Gut Axis
Sharkey KA, Wiley JW.
Gastroenterology. 2016 Aug;151(2):252-66. doi: 10.1053/j.gastro.2016.04.015. Epub 2016 Apr 29. Review.
PMID: 27133395 [PubMed - in process]

The ECS is also involved centrally in the manifestation of stress, and endocannabinoid signaling reduces the activity of hypothalamic-pituitary-adrenal pathways via actions in specific brain regions, notably the prefrontal cortex, amygdala, and hypothalamus. Agents that modulate the ECS are in early stages of development for treatment of gastrointestinal diseases. Increasing our understanding of the ECS will greatly advance our knowledge of interactions between the brain and gut and could lead to new treatments for gastrointestinal disorders.

Endocannabinoid System: A Multi-Facet Therapeutic Target
Kaur R, Ambwani SR, Singh S.
Curr Clin Pharmacol. 2016;11(2):110-7. Review.
PMID: 27086601 [PubMed - in process]

Several diseases like emesis, pain, inflammation, multiple sclerosis, anorexia, epilepsy, glaucoma, schizophrenia, cardiovascular disorders, cancer, obesity, metabolic syndrome related diseases, Parkinson's disease, Huntington's disease, Alzheimer's disease and Tourette's syndrome could possibly be treated by drugs modulating endocannabinoid system

Integrating cannabis into clinical cancer care
Abrams DI.
Curr Oncol. 2016 Mar;23(2):S8-S14. doi: 10.3747/co.23.3099. Epub 2016 Mar 16.
PMID: 27022315 [PubMed]

For the cancer patient, cannabis has a number of potential benefits, especially in the management of symptoms. Cannabis is useful in combatting anorexia, chemotherapy-induced nausea and vomiting, pain, insomnia, and depression.

Medical Cannabis Use Is Associated with Decreased Opiate Medication Use in a Retrospective Cross-Sectional Survey of Patients with Chronic Pain

Boehnke KF, Litinas E, Clauw DJ.
J Pain. 2016 Jun;17(6):739-44. doi: 10.1016/j.jpain.2016.03.002. Epub 2016 Mar 19.
PMID: 27001005 [PubMed - in process]

Among study participants, medical cannabis use was associated with a 64% decrease in opioid use (n = 118), decreased number and side effects of medications, and an improved quality of life (45%). This study suggests that many CP patients are essentially substituting medical cannabis for opioids and other medications for CP treatment, and finding the benefit and side effect profile of cannabis to be greater than these other classes of medications

The Effect of Medicinal Cannabis on Pain and Quality of Life Outcomes in Chronic Pain: A Prospective Open-label Study
Haroutounian S, Ratz Y, Ginosar Y, Furmanov K, Saifi F, Meidan R, Davidson E.
Clin J Pain. 2016 Feb 17. [Epub ahead of print]
PMID: 26889611 [PubMed - as supplied by publisher]

Opioid consumption at follow-up decreased by 44% (P<0.001) The treatment of chronic pain with medicinal cannabis in this open-label, prospective cohort resulted in improved pain and functional outcomes, and significant reduction in opioid use. The results suggest long-term benefit of cannabis treatment in this group of patients The treatment of chronic pain with medicinal cannabis in this open-label, prospective cohort resulted in improved pain and functional outcomes, and significant reduction in opioid use

Medical cannabis: considerations for the anesthesiologist and pain physician
Beaulieu P, Boulanger A, Desroches J, Clark AJ.
Can J Anaesth. 2016 May;63(5):608-24. doi: 10.1007/s12630-016-0598-x. Epub 2016 Feb 5.
PMID: 26850063 [PubMed - in process]

The recent literature indicates that currently available cannabinoids are modestly effective analgesics that provide a safe, reasonable therapeutic option for managing chronic non-cancer-related pain.

Efficacy, tolerability and safety of cannabinoids for chronic neuropathic pain: A systematic review of randomized controlled studies
Petzke F, Enax-Krumova EK, Häuser W.
Schmerz. 2016 Feb;30(1):62-88. doi: 10.1007/s00482-015-0089-y. German.
PMID: 26830780 [PubMed - in process]

Cannabinoids were marginally superior to placebo in terms of efficacy and inferior in terms of tolerability. Cannabinoids and placebo did not differ in terms of safety during the study period. Short-term and intermediate-term therapy with cannabinoids can be considered in selected patients with chronic neuropathic pain after failure of first-line and second-line therapies.

Cannabis for the Management of Pain: Assessment of Safety Study (COMPASS)
Ware MA, Wang T, Shapiro S, Collet JP; COMPASS study team.

J Pain. 2015 Dec;16(12):1233-42. doi: 10.1016/j.jpain.2015.07.014. Epub 2015 Sep 16.
PMID: 26385201 [PubMed - in process]

Quality-controlled herbal cannabis, when used by patients with experience of cannabis use as part of a monitored treatment program over 1 year, appears to have a reasonable safety profile

Prescribing marijuana for chronic pain
Ladouceur R.
Can Fam Physician. 2015 Aug;61(8):658. No abstract available.
PMID: 26273072 [PubMed - indexed for MEDLINE]

Using the example of neuropathic pain, we present and summarize the clinical evidence surrounding smoked or vaporized cannabis, including recent evidence pertaining to the effectiveness of cannabis in comparison to existing standard pharmacotherapies for neuropathy

Comprehensive Review of Medicinal Marijuana, Cannabinoids, and Therapeutic Implications in Medicine and Headache: What a Long Strange Trip It's Been ….
Baron EP.
Headache. 2015 Jun;55(6):885-916. doi: 10.1111/head.12570. Epub 2015 May 25. Review.
PMID: 26015168 [PubMed - indexed for MEDLINE]

The literature suggests that the medicinal use of cannabis may have a therapeutic role for a multitude of diseases, particularly chronic pain disorders including headache. Supporting literature suggests a role for medicinal cannabis and cannabinoids in several types of headache disorders including migraine and cluster headache, although it is primarily limited to case based, anecdotal, or laboratory-based scientific research.

Use of prescription pain medications among medical cannabis patients: comparisons of pain levels, functioning, and patterns of alcohol and other drug use
Perron BE, Bohnert K, Perone AK, Bonn-Miller MO, Ilgen M.
J Stud Alcohol Drugs. 2015 May;76(3):406-13.
PMID: 25978826 [PubMed - indexed for MEDLINE]

PPM users rated the efficacy of cannabis higher than PPM for pain management and indicated a strong desire to reduce PPM usage.

The role of the endocannabinoid system in pain
Woodhams SG, Sagar DR, Burston JJ, Chapman V.
Handb Exp Pharmacol. 2015;227:119-43. doi: 10.1007/978-3-662-46450-2_7. Review.
PMID: 25846617 [PubMed - indexed for MEDLINE

"In this chapter, we describe the general features of the EC system as related to pain and nociception and discuss the wealth of preclinical and clinical data involving targeting the EC system with focus on two areas of particular promise: modulation of 2-AG signaling via specific enzyme inhibitors and the role of spinal CB2 in chronic pain states."

Cannabis in cancer care
Abrams DI, Guzman M.
Clin Pharmacol Ther. 2015 Jun;97(6):575-86. doi: 10.1002/cpt.108. Epub 2015 Apr 17. Review.
PMID: 25777363 [PubMed - indexed for MEDLINE]

Cannabinoids may be of benefit in the treatment of cancer-related pain, possibly synergistic with opioid analgesics. Cannabinoids have been shown to be of benefit in the treatment of HIV-related peripheral neuropathy, suggesting that they may be worthy of study in patients with other neuropathic symptoms. Cannabinoids have a favorable drug safety profile, but their medical use is predominantly limited by their psychoactive effects and their limited bioavailability.

Re-branding cannabis: the next generation of chronic pain medicine?
Carter GT, Javaher SP, Nguyen MH, Garret S, Carlini BH.
Pain Manag. 2015;5(1):13-21. doi: 10.2217/pmt.14.49.
PMID: 25537695 [PubMed - indexed for MEDLINE]

Current literature indicates many chronic pain patients could be treated with cannabis alone or with lower doses of opioids. To make progress, cannabis needs to be re-branded as a legitimate medicine and rescheduled to a more pharmacologically justifiable class of compounds.

Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010
Bachhuber MA, Saloner B, Cunningham CO, Barry CL.
JAMA Intern Med. 2014 Oct;174(10):1668-73. doi:
10.1001/jamainternmed.2014.4005.Nov;174(11):1875.
PMID: 25154332 [PubMed - indexed for MEDLINE]

States with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate (95% CI, -37.5% to -9.5%; P=.003) compared with states without medical cannabis laws.

The pharmacokinetics, efficacy, safety, and ease of use of a novel portable metered-dose cannabis inhaler in patients with chronic neuropathic pain: a phase 1a study
Eisenberg E, Ogintz M, Almog S.
J Pain Palliat Care Pharmacother. 2014 Sep;28(3):216-25. doi:
10.3109/15360288.2014.941130. Epub 2014 Aug 13.
PMID: 25118789 [PubMed - indexed for MEDLINE]

A significant 45% reduction in pain intensity was noted 20 minutes post inhalation (P = .001), turning back to baseline within 90 minutes. Tolerable, lightheadedness, lasting 15-30 minutes and requiring no intervention, was the only reported adverse event.

Clinical endocannabinoid deficiency (CECD) revisited: can this concept explain the therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions?
Smith SC, Wagner MS.
Neuro Endocrinol Lett. 2014;35(3):198-201. Review.
PMID: 24977967 [PubMed - indexed for MEDLINE]

Investigation at that time suggested that cannabinoids can block spinal, peripheral and gastrointestinal mechanisms that promote pain in headache, fibromyalgia, irritable bowel syndrome and muscle spasm.

Patterns of use of medical cannabis among Israeli cancer patients: a single institution experience
Waissengrin B, Urban D, Leshem Y, Garty M, Wolf I.
J Pain Symptom Manage. 2015 Feb;49(2):223-30. doi: 10.1016/j.jpainsymman.2014.05.018. Epub 2014 Jun 14.
PMID: 24937161 [PubMed - indexed for MEDLINE

Improvement in pain, general well-being, appetite, and nausea were reported by 70%, 70%, 60%, and 50%, respectively. Side effects were mild and consisted mostly of fatigue and dizziness.

Therapeutic benefits of cannabis: a patient survey
Webb CW, Webb SM.
Hawaii J Med Public Health. 2014 Apr;73(4):109-11.
PMID: 24765558 [PubMed - indexed for MEDLINE]

Cannabis appears to alleviate pain, insomnia, and may be helpful in relieving anxiety. Cannabis has shown extreme promise in the treatment of numerous medical problems and deserves to be released from the current Schedule I federal prohibition against research and prescription.

Therapeutic satisfaction and subjective effects of different strains of pharmaceutical-grade cannabis
Brunt TM, van Genugten M, Höner-Snoeken K, van de Velde MJ, Niesink RJ.
J Clin Psychopharmacol. 2014 Jun;34(3):344-9. doi: 10.1097/JCP.0000000000000129.
PMID: 24747979 [PubMed - indexed for MEDLIN

Chronic pain (53%; n = 54) was the most common medical indication for using cannabis followed by multiple sclerosis (23%; n = 23), and 86% (n = 88) of patients (almost) always experienced therapeutic satisfaction when using pharmaceutical cannabis.

Management of cancer pain: 1. Wider implications of orthodox analgesics
Lee SK, Dawson J, Lee JA, Osman G, Levitin MO, Guzel RM, Djamgoz MB.
Int J Gen Med. 2014 Jan 7;7:49-58. doi: 10.2147/IJGM.S42187. eCollection 2014. Review.
PMID: 24470767 [PubMed]

It is concluded that analgesics currently prescribed for cancer pain can significantly affect the cancer process itself. More futuristically, several ion channels are being targeted with novel analgesics, but many of these are also involved in primary and/or secondary tumorigenesis.

(Re)introducing medicinal cannabis
Mather LE, Rauwendaal ER, Moxham-Hall VL, Wodak AD.
Med J Aust. 2013 Dec 16;199(11):759-61.
PMID: 24329652 [PubMed - indexed for MEDLINE

The evidence indicates that cannabis has genuine medicinal utility in patients with certain neuropathic conditions, with acceptable levels of risk from mostly mild side effects.

An Exploratory Human Laboratory Experiment Evaluating Vaporized Cannabis in the Treatment of Neuropathic Pain From Spinal Cord Injury and Disease
Wilsey B, Marcotte TD, Deutsch R, Zhao H, Prasad H, Phan A.
J Pain. 2016 Jun 7. pii: S1526-5900(16)30072-4. doi: 10.1016/j.jpain.2016.05.010. [Epub ahead of print]
PMID: 27286745 [PubMed - as supplied by publisher]

Showed a significant analgesic response for vaporized cannabis

Medical cannabis: considerations for the anesthesiologist and pain physician
Beaulieu P, Boulanger A, Desroches J, Clark AJ.
Can J Anaesth. 2016 May;63(5):608-24. doi: 10.1007/s12630-016-0598-x. Epub 2016 Feb 5.
PMID: 26850063 [PubMed - in process

The recent literature indicates that currently available cannabinoids are modestly effective analgesics that provide a safe, reasonable therapeutic option for managing chronic non-cancer-related pain.

Medical Marijuana for Treatment of Chronic Pain and Other Medical and Psychiatric Problems: A Clinical Review

Hill, KP. JAMA 2015 June 23-30 http://www.ncbi.nlm.nih.gov/pubmed

Use of marijuana for chronic pain, neuropathic pain, and spasticity due to multiple sclerosis is supported by high quality evidence. Several trials had positive results, suggesting that marijuana or cannabinoids may be efficacious

Patterns of use of medical cannabis among Israeli cancer patients: a single institution experience

Waissengrin B

J Pain Symptom Management Feb, 2015 http://www.ncbi.nlm.nih.gov/pubmed

Cannabis use is perceived as highly effective by some patients with advanced cancer and its administration can be regulated.

Therapeutic satisfaction and subjective effects of different strains of pharmaceutical-grade cannabis

Brunt, TM J Clin Psychopharmacol, Jun, 2014 http://www.ncbi.nlm.nih.gov/pubmed

Results show that patients report therapeutic satisfaction with pharmaceutical cannabis, mainly pain alleviation.

Medical Cannabis Use Is Associated with Decreased Opiate Medication Use in a Retrospective Cross-sectional Survey of Patients with Chronic Pain

Boehnke, KF

J Pain, March 2016 http:///www.jpain.org/article/

Cannabis use was associated with: 64% lower opioid use, better quality of life and fewer medication side effects and medications used in chronic pain patients.

Comparison of the analgesic effects of Dronabinol and smoked marijuana in daily marijuana smokers

Cooper, ZD et al

Neuropsychopharmacology 2013 http://www.cannabis-med.org/studies

THC (Dronabinalol) and smoked cannabis caused similar effects on pain sensitivity and tolerance

Cannabinoid-opioid interaction in chronic pain

Abrams, DI et al

Clin Pharmacol Ther, 2011 http://www.cannabis-med.org/studies

Pain was significantly decreased (95% confidence interval) after addition of vaporized cannabis

Smoked cannabis for chronic neuropathic pain: a randomized controlled trial

Ware, MA et al

CMAJ, Oct 2010 http://www.cannabis-med.org/studies

Cannabis significantly improved pain and sleep quality

Smoked medicinal cannabis for neuropathic pain in HIV: a randomized, crossover clinical trial

Ellis RJ et al

Neuropsychopharmacology 2009http://www.cannabis-med.org/studies

Significant pain relief with cannabis

Cannabinoid-induced effects on the nociceptive system: a neurophysiological study in patients with secondary progressive multiple sclerosis

Eur J Pain, May, 2009 http://www.cannabis-med.org/studies

The study provides objective neurophysiological evidence that cannabinoids modulate the nociceptive system

The subjective psychoactive effects of oral Dronabinol studied in a randomized, controlled crossover clinical trial for pain

Issa, MA et al

Clin J Pain, Jun, 2014 http://www.cannabis-med.org/studies

Oral THC had similar psychoactive effects to smoked marijuana ***Note: the cost of Dronabinol is $2,929.47 for 60 X 10 mg***

Oromucosal delta9-tetrahydrocannabinol/Cannabidiol for neuropathic pain associated with multiple sclerosis: an uncontrolled, open-label, 2-year extension trial

Rog DJ et al

Clin Ther Sep 2007 http://www.ncbi.nim.nih.gov/pubmed

THC/CBD was effective, with no evidence of tolerance, in patients with CNP and MS who completed approximately 2 years of treatment.

Multicenter, double-blind, randomized, placebo-controlled, parallel-group study of the efficacy, safety, and tolerability of THD:CBD extract and THC extract in patients with intractable cancer-related pain

Johnson, JR et al

J Pain Symptom Manage, Feb, 2010 http://www.cannabis-med.org/studies

This study shows that THD:CBD extract is efficacious for relief of pain in patients with advanced cancer pain not fully relieved by strong opioids.

Is cannabis better for chronic pain than opioids?

http://leafly.com

A Harvard-led systematic review of 28 studies examining the efficacy of exo-cannabinoids concluded, "Use of marijuana for chronic pain, neuropathic pain, and spasticity due to multiple sclerosis is supported by high quality evidence."

Study: 100% of those with migraines, fibromyalgia and IBS find reduction of pain with marijuana

Martinelli, A

The National Pain Report http://thejointblog.com

Study: Long term cannabis use mitigates pain, reduces opioid use

Martinelli, A

NORML http://thejointblog.com

Study of 176 patients resulted in improved pain, sleep, quality of life, as well as reduced opioid use.

America's Opiate Crisis: How Medical Cannabis Can Help By Dr. Dustin Sulak on July 25, 2016

Dr. Dustin Sulak on a neglected treatment for opioid addiction: medical cannabis

https://www.projectcbd.org/article/americas-opiate-crisis-how-medical-cannabis-can-help

Forty-four people die every day from prescription opioid overdose in America. Almost 7,000 people are treated in emergency rooms in the United States every day for misuse of a prescription opioid.

States with medical cannabis laws on average reduced opioid overdose deaths by 24.8 percent. And each year after the medical cannabis law was passed, the rate of opioid overdose deaths continued to decrease, according to a report in the Journal of the American Medical Association.

Prescription opioid abuse is actually worse than heroin abuse. In 2014, there were around 19,000 overdose deaths from opioid prescriptions and around 11,000 overdose deaths from heroin. Nearly 80 percent of heroin users in the United States reported using prescription opioids before initiating heroin use.

Extensive scientific, randomized controlled trials have shown that a cannabis oil extract can be an effective treatment for chronic neuropathic pain.

- *Cannabis improves the pain relief that opioids provide. Medical scientists have found that administering opioids and cannabis together results in a greater-than-additive anti-pain effect, a synergistic reduction of pain.*
- *Cannabis makes opioid therapy safer by widening the therapeutic index so that a patient needs less opioids to get a strong analgesic effect.*

- *Cannabis can prevent opioid tolerance building and the need for dose escalation.*
- *Cannabis can treat the symptoms of opioid withdrawal—nausea, vomiting, spasms, cramping, insomnia. Cannabis users experience decreased opioid withdrawal severity.*
- *Cannabis can replace and reduce the use of opioids and other substances. Many patients use cannabis as a substitute for prescription drugs, illicit drugs, or alcohol.*
- *Cannabis therapy is safer than the other harm reduction options.*

USING CANNABIS FOR OPIATE DEPENDENCE TREATMENT: WITHDRAWAL AND MAINTENENCE

Can Marijuana Treat Heroin Addiction?

Caregivers in Maine want to give medical marijuana a try.

https://www.merryjane.com/health/can-marijuana-treat-heroin-addic

Maine is the first state whose government is seriously considering opening up the medical marijuana program to opioid addicts, which would add to the dozen or so current qualifying medical conditions. The support is mounting as more recovering addicts turn to cannabis and share their stories online

Acute and short-term effects of CBD on cue-induced craving in drug-abstinent heroin-dependent humans

Hurd, Y et al

https://clinicaltrials.gov August, 2016

This study is currently recruiting participants. This research project focuses on the development of a novel compound, Cannabidiol to modulate opioid craving.

Endocannabinoid signaling system and brain reward: emphasis on dopamine

Gardner, EL

Pharmacol Biochem Behav, June, 2005

Cannabinoids activate brain reward processes and reward-related behaviors in similar fashion to other reward-enhancing drugs.

Anxiolyitc effect of Cannabidiol derivatives in the elevated plus-maze

Guimaraes,FS, Mechoulam, R et al

Gen Pharmacol, Jan, 1994

Results of this study confirm previous findings with CBD and indicate that its derivative HU-219 may possess a similar anxiolytic-like profile.

Cannabidiol is an allosteric modulator at mu- and delta-opioid receptors

Naunyn Schmiedebergs Arch Pharmacol, Feb, 2006

Kathmann M, et al

This study shows that Cannabidiol is an allosteric modulator at the mu and delta opioid receptors. This property is shared by THC

Cannabidiol inhibits the reward-facilitating effect of morphine: involvement of 5-HT1A receptors in the dorsal raphe nucleus

Katsidone, V, et al

Addict Biol, March 2013

Cannabidiol inhibited the reward-facilitating effect of morphine. Cannabidiol interferes with brain reward mechanisms responsible for the expression of the acute reinforcing properties of opioids, thus indicating that Cannabidiol may be clinically useful in attenuating the rewarding effects of opioids.

Differential effect of cannabinol and Cannabidiol on THC-induced responses during abstinence in morphine-dependent rats

Hine, B et al

Res Comun Chem Pathol Pharmacol, 1975

This study illustrates differences between psychoinactive cannabinoids in their interaction with delta 9 THC that might be relevant to possible clinical use of cannabis in narcotic detoxification

Effect of some cannabinoids on naloxone-precipitated abstinence in morphine-dependent mice

Bhargava, HN

Psychopharmacology (Berl) Sep, 1976

Signs of morphine abstinence were suppressed by cannabinoids. These data suggest that cannabinoids may be useful in facilitating narcotic detoxification

Cannabidiol, a nonpsychotropic component of cannabis, inhibits cue-induced heroin seeking and normalizes discrete mesolimbic neuronal disturbances

Ren, Y et al

J Neurosci, Nov, 2009

The findings of this study highlight the unique contributions of distinct cannabis constituents to addiction vulnerability and suggest that CBD may be a potential treatment for heroin craving and relapse

Cannabidiol for the treatment of cannabis withdrawal syndrome: a case report

Crippa, JA et al

J Clin Pharm Ther, Apr 2013

CBD can be effective for the treatment of cannabis withdrawal syndrome.

Adolescent exposure to chronic delta 9 THC blocks opiate dependence in maternally deprived rats

Morel, L et al

Neuropsychopharmacology, 2009

Results indicate that THC acts as a homeostatic modifier that would worsen the reward effects of morphine on naïve animals.

Impact of cannabis use during stabilization on methadone maintenance treatment

Scavone, JL et al

Am J Addict, Jul 2013

The findings point to novel interventions to be employed during treatment for opiate dependence that specifically target cannabinoid-opioid system interactions.

New study finds cannabis reduces the symptoms of opiate withdrawal

http://thejointblog.com July, 2013

Results suggest a potential role for cannabis in the reduction of withdrawal severity during methadone induction

Cannabidiol as an intervention for addictive behaviors: a systematic review of the evidence

Prud'homme, M et al

Subst Abuse May, 2015

** CBD has anxiolytic, antipsychotic, antidepressant and neuroprotective properties.*

** CBD modulates allosterically mu and delta opioid receptors.*

** CBD inhibits conditioned cue-induced heroin seeking behavior for up to 2 weeks.*

** CBD appears to have an impact on the intoxication phase of opioid addiction in animals by reducing the reward-facilitating effect of morphine.*

** CBD may be worth further investigation to prevent relapse*

Science recognizes cannabis reduces withdrawal symptoms, but state laws still don't

http://theweedblog June, 2012

Recent clinical studies have revealed the value of medical cannabis as a supplement for stronger opiate painkillers. An increase in supplementary marijuana prescriptions could reduce people's chances of developing opiate addictions.

Opioid addiction being treated with medical marijuana in Massachusetts

http://www.drugfree.org/news-service Jul, 2015

Dr. Gary Witman treated 80 patients who were addicted to opioids with cannabis through a one-month tapering program. More than three-quarters of the patients stopped taking harder drugs.

Weed can alleviate withdrawal symptoms with opiate addicts

http://www.thefix.com Sep, 2014

Access to states with medical marijuana is linked with significantly lower opioid overdose mortality rates.

Top three benefits of cannabis for opiate dependence

https://sensiseeds.com Jul, 2015

Use of cannabinoids can have effects on the dopaminergic system. The dopaminergic and endocannabinoid systems are fundamentally linked. Cannabinoids can help to activate the same receptors activated by opiate use, and that by doing so, the need to use opiates is reduced.

Advocates push to let patients use marijuana to treat opiate addiction

The Portland Press Herald Apr, 2016

Dr. Dustin Sulak states that cannabinoids prevent people from building up a tolerance to opioids, so they can take fewer strong painkillers. Marijuana is also an excellent treatment for opiate withdrawal, which causes symptoms like nausea, diarrhea, muscle spasms, insomnia, and anxiety.

Early phase in the development of Cannabidiol as a treatment for addiction: opioid relapse takes initial center stage

Hurd, Y

Neurotherapeutics Oct, 2015

CBD appears to have low reinforcing properties with limited abuse potential and to inhibit drug-seeking behavior.

Is weed the secret to beating opiate addiction?

Mitchell, T et al

The Daily Beast Sep, 2014

http://www.thedailybeast.com/articles/2014

The Substance Abuse and Mental Health Services Administration (SAMSHA) describes the side effects of marijuana as sleepiness, trouble concentrating, and decreased social inhibitions. These seem mild in comparison to the harsh side effects of replacement medications.

SAFETY AND HARM REDUCTION

A safer alternative: Cannabis substitution as harm reduction
Lau N, Sales P, Averill S, Murphy F, Sato SO, Murphy S.
Drug Alcohol Rev. 2015 Nov;34(6):654-9. doi: 10.1111/dar.12275. Epub 2015 Apr 28.
PMID: 25919477 [PubMed - indexed for MEDLINE]

Study participants described using cannabis as a safer alternative for alcohol, illicit drugs and pharmaceuticals based on their perceptions of less adverse side effects, low-risk for addiction and greater effectiveness at relieving symptoms, such as chronic pain.

Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010
Bachhuber MA, Saloner B, Cunningham CO, Barry CL.
JAMA Intern Med. 2014 Oct;174(10):1668-73. doi: 10.1001/jamainternmed.2014.4005. Erratum

in: JAMA Intern Med. 2014 Nov;174(11):1875.
PMID: 25154332 [PubMed - indexed for MEDLINE

Medical cannabis laws are associated with significantly lower state-level opioid overdose mortality rates.

Prescribing medical cannabis in Canada: Are we being too cautious?
Lake S, Kerr T, Montaner J.
Can J Public Health. 2015 Apr 30;106(5):e328-30. doi: 10.17269/cjph.106.4926.
PMID: 26451996 [PubMed - indexed for MEDLINE]

"If we prescribed marijuana for our patients, we could help to eradicate the black market and drug dealers."

Cannabis as a substitute for alcohol and other drugs

Reiman, AHarm Reduction Journal Dec, 2009

The substitution of one psychoactive substance for another with the goal of reducing negative outcomes can be included within the framework of harm reduction. Medical cannabis patients have been engaging in substation by using cannabis as an alternative to alcohol, prescription, and illicit drugs. Increasing access to medical cannabis may reduce the personal and social harms associated with addiction, particularly in relation to the use of opiates. Community-based dispensaries have proven successful at supplying patients with a safe source of cannabis within an environment conducive to healing.

Cannabis as a substitute for alcohol and other drugs: A dispensary-based survey of substitution effect in Canadian medical cannabis patients

Lucas, P et al

Addiction Res Theory, 2013

Dr. Sandra Welch has been studying the interaction of opioids and cannabinoids since 1997, with promising results in animal studies showing that the two have a synergistic effect. These findings were confirmed in a study which concluded that vaporized cannabis augments the analgesic effects of opioids without significantly altering plasma opioid levels. The combination may allow for opioid treatment at lower doses with fewer side effects.

Substituting cannabis for prescription drugs, alcohol and other substances among medical cannabis patients: The impact of contextual factors

Lucas, P et al
Drug and Alcohol Review, May, 2016

The finding that cannabis was substituted for all three classes of substances suggests that the medical use of cannabis may play a harm reduction role in the context of use of these substances and may have implications for abstinence-based substance use treatment approaches.

Confirming big pharma fears, study suggests medical marijuana laws decrease opioid use
McCauley, L

A study published in the American Journal of Public Health examined data on traffic fatalities in 18 states and analyzed the cases in which the presence of opioids was detected. In states that medical cannabis laws, Columbia University researchers found a significant reduction in opioid positivity for drivers aged 21 to 40 years.

Study: Medical cannabis access associated with reduced opioid abuse
http://norml.org/news/2015/07/16

Researchers from the RAND Corporation and University of California, Irvine assess the impact of medical marijuana laws on problematic opioid use, as measured by treatment admissions for opioid pain reliever addiction and by state-level opioid overdose deaths. Conclusion: States permitting medical marijuana dispensaries experience a relative decrease in both opioid addictions and opioid overdose deaths compared to states that do not.

Legal marijuana linked to fewer opioid prescriptions
Sifferlin, A
Health Medicine, Jul, 2016

States where medical marijuana is legal, prescriptions for drugs for conditions where pot could serve as an alternative have dropped significantly, according to recent report published in the journal Health Affairs.

Could medical cannabis break the painkiller epidemic?
Hsu, J,
Scientific American, Sep, 2016

States that permitted medical marijuana had an average of almost 25 percent fewer opioid overdose deaths each year than states where cannabis remained illegal.

Opioid addiction being treated with medical marijuana in Massachusetts
Join Together Staff
Partnership for Drug-Free Kids, Aug, 2016

Dr. Witman, who works in a Massachusetts Canna Care clinic, has treated 80 patients who were addicted to opioids, with cannabis through a one-month tapering program. More than three quarters of the patients stopped taking the opiates.

Study: Cannabis improves outcomes in opioid-dependent subjects undergoing treatment
Armentano, P
http://thejointblog.com/ Dec, 2015

Participants who smoked marijuana had less difficulty with sleep and anxiety and were more likely to remain in treatment as compared to those who were not using marijuana.

The great health experiment
Barcott, B et al

TIME MAGAZINE, Aug, 2016

At Yasmin Hurd's Upper East Side lab, the rats have begun to show that given heroin-addicted rats doses of CBD found that it decreased their willingness to work hard for more heroin, suggesting that parts of marijuana could help human drug addicts stay clean.

State medical marijuana laws and the prevalence of opioids detected among fatally injured drivers
Kim, J et al
American Journal of Public Health, Sep, 2016

Operational medical marijuana laws are associated with reductions in opioid positivity among 21-40-year-old fatally injured drivers and may reduce opioid use and overdose.

Do medical marijuana laws reduce addictions and deaths related to pain killers
National Bureau of Economic Research, Jul, 2015
Powell, D et al

Our findings suggest that providing broader access to medical marijuana may have the potential benefit of reducing abuse of highly addictive painkillers.

Lower opioid overdose death rates associated with state medical marijuana laws
JAMA, Aug, 2014

Enactment of laws to allow for use of medical cannabis may be advocated as part of a comprehensive package of policies to reduce the population risk of opioid analgesics.

How cannabis can be used for safe and effective opioid drug withdrawal
Fassa, P
Health Impact News, Aug 2016

Dr. Sulak prefers a gradual withdrawal from opioids by combining daily cannabis adnopioid use, taking each simultaneously. THC can reduce opioid use 50 to 80 percent within weeks among opioid addicted patients who have no history of cannabis use.

Could opiates actually be *causing* chronic pain? [Italics mine]
Granowicz, J
https://www.marijuanatimes.org Jun, 2016

Narcotic painkillers can end up having the opposite of the desired effect in the long run. Morphine and similar painkillers intensified the release of specific immune cells in the spinal cord, which in turn lead to prolonged pain. It created what they called a "cascade of actions", such as spinal cord inflammation.

Study links medical marijuana dispensaries to reduced mortality from opioid overdose
Sarlin, E et al

National Institute on Drug Abuse: Advancing Addiction Science, May, 2016
Legally protected marijuana dispensaries were associated with lower rates of dependence on prescription opioids, and deaths due to overdose.

Is cannabis better for chronic pain than opioids?
https://www.leafly.com/news/health/cannabis-for-chronic-pain-vs-opioids

Dr. Donald Abrams, a professor and Chief of Hematology/Oncology at San Francisco General Hospital, states, “Given the safety profile of cannabis compared to opioids, cannabis appears to be far safer.”

ECONOMICS

Medical marijuana laws reduce prescription medication use in Medicare Part D

Bradford, A et al

Health Affairs, Jul, 2016

The use of prescription drugs for which marijuana could serve as a clinical alternative fell significantly, once a medical marijuana law was implemented.