

## **Evaluating Cannabis Cessation Treatment to Address Cannabis Hyperemesis Syndrome Critically Appraised Topic (CAT)**

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### **Clinical Bottom Line:**

In individuals with Cannabinoid Hyperemesis Syndrome (CHS), cognitive behavioural therapy (CBT) in addition to Cannabis cessation motivational interviewing (MI) leads to reduction of cannabis use at short-term follow up visits (median follow up visit: 4 months) resulting in lower recurrent cycles of vomiting and nausea when compared with no intervention or CBT or MI alone. Individuals partaking in CBT + MI used cannabis the equivalent of 7.38 days less (95% confidence interval 3.18 to 11.57) than individuals in the inactive intervention control group. This effect is particularly noticeable if the CBT + MI intervention occurred more than 4 times over a period longer than 1 month.

### **Strength of Recommendation: A**

Strength of recommendation is “A” because the outcome is recommended based on patient-oriented evidence because it improves quality of life. Quality of life improvement is indicated because patients who effectively abstain from cannabis use break the cycle of nausea and vomiting that accompany CHS. This recommendation is based on consistent findings from a systematic review of 23 randomized trials involving 4,045 individuals with cannabis use disorder which compared CBT + MI intervention to a noninterventional control group or alternative treatment for cannabis use.

### **Clinical Scenario**

Patient X is a 22 yo female with type 1 diabetes mellitus who presents to clinic for a follow up from an emergency department visit for persistent nausea and vomiting accompanied by abdominal pain and an inability to maintain adequate hydration. For the past year, she has experienced persistent nausea and vomiting roughly every 6 weeks, resulting in recurrent Emergency Department visits for symptoms. Maintaining adequate hydration and electrolyte status is especially crucial for patient in question, as she is diabetic and persistent vomiting can lead to potassium imbalance and diabetic ketoacidosis. Emergency Department noted CHS as a likely cause. She smokes marijuana on a nightly basis to help her fall asleep.

### **Question**

P: Individuals with Cannabinoid Hyperemesis Syndrome (CHS)

I: Cognitive behavioural therapy in addition to Cannabis cessation motivational interviewing (CBT+ MI)

C: no intervention or CBT or MI alone

O: reduction of cannabis use at short term follow up visits and subsequent reduced cycles of vomiting and nausea

### **Search Strategy**

To begin, DynaMed was searched, yielding few results and prompting perusal of PubMed. Through PubMed, many articles many articles that covered aspects of the topic were found. However, with assistance from the BioMedical Library, a new search through DynaMed yielded a pertinent systematic review, which was chosen. Specifically, the portion referencing the article “Psychosocial interventions for cannabis use disorder” was analyzed.

## The Study

Gates, PJ, et al 2016 is a systemic review of 23 international studies which evaluate the efficacy of various Cannabis cessation techniques over a short term period (median 4 mo) in individuals over 18 years of age with Cannabis use disorder. The studies included were randomized control trials. This comprehensive review was conducted by the internationally recognized Australian National Cannabis Prevention and Information Centre (NCPIC), which was established in 2008 in response to a national health report concerning public cannabis use and education. However, NCPIC lost funding and closed in 2016 due to government spending cuts. Its successor is Cannabis Information and Support through the Australian Government.

The study searched the Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, PsycINFO, the Cumulative Index to Nursing and Allied Health Literature as well as reference lists from articles found through these databases. Articles meeting selection criteria and published before July 2015 were included in the study. To meet criteria, the article had to concern a randomized control study comparing psychosocial treatment for cannabis use disorder to a control group with no intervention, minimal intervention, or an alternative combination of interventions.

The review's primary goal is to ascertain the most effective treatment strategy to reduce cannabis use in individuals with Cannabis use disorder with the desired outcome being cannabis cessation. Further analyses of studies delved into details including the reduction of joints per day, the reduction of symptoms of dependence, the reduction of cannabis-related problems — including CHS, the intensity of intervention, the severity of patient cannabis use disorder, the completion of treatment, and participant motivation level\*. The authors conclude that the systematic review supports the evidence that CBT + MI — especially high-intensity CBT + MI — leads to reduction of cannabis use at short-term follow up visits (median follow up visit: 4 months) in individuals with Cannabis use disorder when compared to no intervention or CBT or MI alone.

*\*See analyses 1.1 to 3.10; pages 91 to 121 from article cited below for comprehensive analysis tables*

## The Evidence

All studies included in the meta-analysis demonstrated that psychosocial intervention of any kind is more effective than minimal treatment in reducing cannabis use frequency and dependence.

Specifically, the most effective intervention method to reduce cannabis use and mitigate negative cannabis effect, such as CHS, as demonstrated by a review of studies is CBT+ MI (MD 7.38, 95% CI 3.18 to 11.57, three studies, 398 participants). Furthermore, CBT + MI reduce the severity of cannabis dependence to the greatest extent (SMD 7.89, 95% CI 0.93 to 14.85, three studies, 573 participants) when compared to MI alone (SMD 4.07, 95% CI 1.97 to 6.17, two studies, 316 participants).

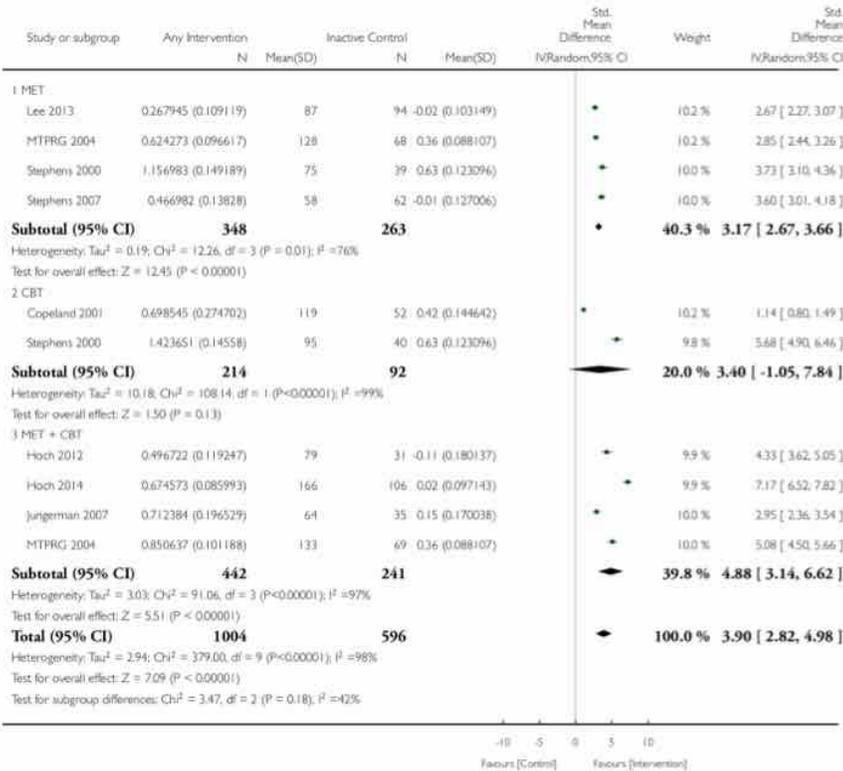
Some evidence shows that CBT alone is roughly as effective as CBT + MI in reducing average days of cannabis use du short-term follow up (MD 10.94, 95% CI 7.44 to 14.44, one study, 134 participants). However, only 1 study demonstrated this finding, leading to researchers supporting CBT + MI as more effective than CBT alone due to internal sample size and external number of studies available. Furthermore, none of the studies addressed the effect of CBT alone on severity of cannabis dependence. More research is necessary to obtain consistent and accurate results.

**Analysis 1.9. Comparison 1 Intervention versus inactive control, Outcome 9 Reduction in joints per day at short-term follow-up (intervention type).**

Review: Psychosocial interventions for cannabis use disorder

Comparison: 1 Intervention versus inactive control

Outcome: 9 Reduction in joints per day at short-term follow-up (intervention type)



**Analysis 1.9 forest plot:** CBT+MI and CBT alone favored intervention over no intervention when compared to MI alone or no intervention (see second paragraph of ‘Evidence’ section for information regarding CBT treatment alone).

MD: mean difference in days abstaining from cannabis use given intervention method than individuals in the inactive intervention control group.

CI: confidence interval

SMD: standardized mean difference

**Comments**

Strengths of the study include its large sample size due to being a systemic review of 23 individual studies. Because it included 23 studies, 4,045 individuals participated, which is a large sample size and asset to the systematic review. Another strength is that the methods of the trials included were designed to mitigate the effect of selection bias, attrition bias, and reporting bias. Given comparable treatment options, the rate of cannabis abstinence across studies was found to be comparable to the rate of cessation of other addicting substances, which could

indicate generalizability of findings. This is a strength as it could be an opportunity for future investigation with regard to treatment of substance use disorders.

General weaknesses of the study include a focus on short-term cannabis cessation as opposed to long-term cannabis cessation. In addition, researchers could not blind participants to the treatments they received due to the nature of CBT and MI. Furthermore, only 50% of the studies included confirmed self-reported cannabis use data through urinalysis or other verification process, so the systematic review is subject to performance bias. Lastly, CHS was mentioned as a consequence of cannabis use; however, it was not the central focus of the study. In the future, more research regarding the pathophysiology of CHS is crucial to developing effective, long-term solutions.

Other issues include Cannabis' status as a controlled substance in some states. This classification, as well as other regulations concerning Cannabis, lead to lack of clinical research regarding Cannabis and its consequences, including CHS. CHS is often misdiagnosed, as patients are reluctant to disclose their Cannabis use status to medical professionals. There is lack of clinical knowledge regarding CHS, which is another barrier to addressing the root cause of cyclical vomiting and nausea.

### **References:**

Gates, PJ, et al. "Psychosocial Interventions for Cannabis Use Disorder." PubMed, US National Library of Medicine, National Institute of Health, 5 May 2016. PMID: 27149547

### **Estimated Level of Evidence (LOE): Level 2 (Mid-level)**

The LOE is 2 not only the study is a systematic review of randomized control trials evaluating Cannabis cessation techniques with a consistent reference standard, but also because Dynamed directly states this level with regard to source content. This comprehensive study addresses clinical outcomes of Cannabis cessation with regard to CHS and demonstrates scientific investigation.