1. Medical condition proposed: Please be specific.

Chronic Obstructive Pulmonary Disease (COPD)

2. Provide justification for why this medical condition should be included as a qualifying debilitating medical condition for the use of medical marihuana. Be specific as to why medical marihuana should be used for this condition.

The US Department Of Health and Human Services has determined through thorough medical research and analysis that the cannabinoids including THC and CBD specifically from the marijuana plant can be used safely to treat emphysema.

> A method of treating diseases caused by oxidative stress, comprising administering a therapeutically effective amount of a cannabinoid that has substantially no binding to the NMDA receptor to a subject who has a disease caused by oxidative stress.
>
> *Oxidative associated diseases include, without limitation*, free radical associated diseases, such as ischemia, ischemic reperfusion injury, inflammatory diseases, systemic lupus erythematosis, myocardial ischemia or infarction, cerebrovascular accidents (such as a thromboembolic or hemorrhagic stroke) that can lead to ischemia or an infarct in the brain, operative ischemia, traumatic hemorrhage (for example a hypovolemic stroke that can lead to CNS hypoxia or anoxia), spinal cord trauma, Down's syndrome, Crohn's disease, autoimmune diseases (e.g. rheumatoid arthritis or diabetes), cataract formation, uveitis, *emphysema*, gastric ulcers, oxygen toxicity, neoplasia, undesired cellular apoptosis, radiation sickness, and others.
>
> As used herein, a “cannabinoid” is a chemical compound (such as cannabinol, THC or cannabidiol) that is found in the plant species Cannabis sativa (marijuana)

http://www.google.com/patents/US6630507

Medications prescribed for COPD, emphysema and other lung diseases have serious side effects.

Oral steroids
For people who have a moderate or severe acute exacerbation, short courses (for example, five days) of oral corticosteroids prevent further worsening of COPD. However, long-term use of these medications can have serious side effects, such as weight gain, diabetes, osteoporosis, cataracts and an increased risk of infection.

Phosphodiesterase-4 inhibitors
A new type of medication approved for people with severe COPD and symptoms of chronic bronchitis is roflumilast (Daliresp), a phosphodiesterase-4 inhibitor. This drug decreases airway inflammation and relaxes the airways. Common side effects include diarrhea and weight loss.
Theophylline
This very inexpensive medication may help improve breathing and prevent exacerbations. Side effects may include nausea, headache, fast heartbeat and tremor. Side effects are dose related, and low doses are recommended.

http://www.mayoclinic.org/diseases-conditions/copd/diagnosis-treatment/treatment/txc-20204923

Marihuana has been used for centuries to increase airflow for people suffering from asthma and other lung diseases, including COPD.

All medical research done on marijuana has been on the negative effects of marijuana and smoking. All of that research points to marijuana having little to no risk at all of smoking, aside from the side effect of coughing.

Smoking a herbal cigarette seems analogous to the inhalation of ipratropium by aerosol for a local bronchodilator effect.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1430151/pdf/brjclinpharm00217-0078.pdf

Here is a newspaper ad from 1876 selling Grimault's Cannabis Indica cigarettes for treatment of Asthma.

http://chroniclingamerica.loc.gov/lccn/sn92053942/1876-08-19/ed-1/seq-3/print/image_681x648_from_1945%2C5227_to_2864%2C6103/

Marijuana has never stopped being a medicine since it was discovered thousands and thousands of years ago.

Treating Emphysema / COPD with Medical Cannabis – Medical marijuana patient and double lung transplant candidate Vey Linville discusses using marijuana to treat his severe emphysema.

https://www.youtube.com/watch?v=fNL3iquUlo0

A safety profile of Medical Marijuana can be found in the first year report of the Minnesota medical marijuana program. The Minnesota Department of Health surveyed 1500+ patients enrolled in the program.

> Adverse Side Effects: At this point, the safety profile of the medical cannabis products available through the Minnesota program seems quite favorable. Approximately 20-25% of enrolled patients report negative physical or mental side effects of some kind, with the majority – around 60% - reporting only one and 90% reporting three or fewer. The vast majority of adverse side effects, around 90%, are mild to moderate in severity. An assessment of the 30 patients reporting severe side effects, meaning “interrupts usual daily activities,” found no apparent pattern of patient age, medical condition, or type of medical cannabis used. The most common adverse side effects are dry mouth, drowsiness, and fatigue. Fortunately, up to the present no serious adverse events (life threatening or requiring hospitalization) have been reported.

http://www.health.state.mn.us/topics/cannabis/about/firstyearreport.html

Medical Marijuana's mild to moderate side effects of dry mouth, drowsiness and fatigue are easily tolerated by the vast majority of patients.

The Mayo Clinic website has assembled dosage information on Medical Marijuana.

http://www.mayoclinic.org/drugs-supplements/marijuana/dosing/hrb-20059701

> Drugs and Supplements
> Marijuana (Cannabis sativa)
>
> Dosing
>
> The below doses are based on scientific research, publications, traditional use, or expert opinion. Many herbs and supplements have not been thoroughly tested, and safety and effectiveness may not be proven. Brands may be made differently, with variable ingredients, even within the same brand. The below doses may not apply to all products.

You should read product labels, and discuss doses with a qualified healthcare provider before starting therapy.

Adults (18 years and older)

To treat amyotrophic lateral sclerosis (nerve cell disease), 10 milligrams of THC has been taken by mouth daily for two weeks.

To prevent nausea and vomiting caused by chemotherapy, five milligrams per meter squared of dronabinol (Marinol®) has been taken by mouth 1-3 hours before chemotherapy, then every 2-4 hours after chemotherapy, for a total of 4-6 doses daily. A dose of two milligrams of nabilone has been taken by mouth the night before chemotherapy, 1-3 hours before and after chemotherapy. A dose of 2-3 milligrams of nabilone has been taken by mouth 2-4 times daily. A dose of three milligrams of nabilone has been taken by mouth three times daily as a one-time dose, a four-day duration, and the duration of two cycles of chemotherapy. Cannabinoids have been taken by mouth over a 24-hour period as follows: 1-8 milligrams of nabilone daily as 1-4 milligrams daily, one milligram 3-5 times daily, or two milligrams 2-4 times daily or 24-50 milligrams per meter squared of dronabinol daily as 10 milligrams per meter squared 4-5 times daily, 12 milligrams per meter squared twice daily, or 15 milligrams twice daily. A dose of one milligram of nabilone has been taken by mouth 8-12 hours before chemotherapy, followed by 0.5-2 milligrams of nabilone 2-3 times daily after chemotherapy, depending on body weight. A dose of 10 milligrams per meter squared of THC has been taken by mouth two hours before and four, eight, 16, and 24 hours after chemotherapy. Cannabinoids have been injected into the muscle over the course of 24 hours in the form of 0.5-1 milligrams of levonantradol three times daily.

To treat atopic dermatitis (itchy, scaly skin rashes), hemp seed oil has been taken by mouth for 20 weeks.

To increase appetite in people with cancer, 2.5 milligrams of THC has been taken by mouth with or without one milligram of CBD for six weeks.

To treat chronic pain, cannabinoids have been taken by mouth in the form of capsules or sprayed into the mouth as THC, benzopyranoperidine (BPP), cannabidiol (CBD), nabilone, dronabinol, or synthetic nitrogen THC analogs (NIB), with doses of 2.5-20 milligrams for an average of 25 days. Cannabis-based medicines have been used for 1-6 weeks. Ajulemic acid has been used for one week. Doses of nabilone of 0.25-2 milligrams have been used daily for 4-6 weeks. Doses of smoked cannabis of 1-9.4 percent have been used for six hours to 14 days. Cannabis has been smoked 3-4 times daily for five days. Doses of dronabinol of 10-20 milligrams have been used daily for six hours to six weeks. In people with cancer, 5-20 milligrams of delta-9-THC has been taken by mouth daily, as have the following doses: 2-8 milligrams of nabilone by mouth

daily; 0.25-1 milligram of nabilone by mouth daily for four weeks; 1-2 milligrams of nabilone twice daily for a year; 1-2 milligrams of nabilone twice at an eight-hour interval; and 0.5 milligrams of nabilone twice daily for seven days, followed by two milligrams daily for three weeks. A dose of 0.5-1 milligrams of nabilone has been taken twice daily. A dose of 10 milligrams of THC has been taken by mouth, increasing to a maximum tolerated dose for six weeks. A mouth sprayhas been used in divided doses of 2.5-120 milligrams for two weeks. Doses of Sativex® have been sprayed into the mouth, up to 48 sprays daily, for 1-2 weeks, then 10-15 sprays daily, or 4-8 sprays, with eight being the maximum one-time dose or within a three-hour period.

To improve appetite in people with cystic fibrosis (mucus buildup in the organs), a dose of 2.5 milligrams of dronabinol has been taken by mouth, increasing to a maximum of 10 milligrams daily for 1-6 months.

To treat dementia, 2.5 milligrams of dronabinol has been taken by mouth twice daily for six weeks.

To treat eating disorders, 7.5-30 milligrams of THC has been taken by mouth daily for four weeks.

To treat epilepsy, 200-300 milligrams of CBD has been taken by mouth daily for up to 4.5 months.

To improve fatty acid status, hemp seed oil has been taken by mouth.

To treat movement problems caused by Huntington's disease, 1-2 milligrams of nabilone has been taken by mouth daily for five weeks. A dose of 10 milligrams per kilogram of CBD has been taken by mouth daily for six weeks.

To treat sleep disorders, 40-160 milligrams of CBD has been taken by mouth.

To treat multiple sclerosis symptoms, 2.5 milligrams of dronabinol (Marinol®) has been taken by mouth daily, increasing to a maximum of 10 milligrams daily for three weeks. A dose of 15-30 milligrams of cannabis extract capsules has been taken by mouth in five-milligram increments, based on tolerance, for 14 days. Cannabis extracts, including Cannador®, have been taken by mouth for 2-4 weeks. Cannabis plant extracts containing 2.5-120 milligrams of a THC-CBD combination have been taken by mouth daily for 2-15 weeks. A mouth spray (Sativex®, containing 2.7 milligrams of THC and 2.5 milligrams of CBD) has been used at a dose of 2.5-120 milligrams in divided doses for up to eight weeks. Eight sprays within any three hours, up to 48 sprays in a 24-hour period, have been used. Sativex® has been sprayed into the mouth for 6-14 weeks.

As a nutritional supplement, 15-30 milliliters of hemp oil has been taken by mouth daily.

To treat schizophrenia, 40-1,280 milligrams of CBD has been taken by mouth daily for up to four weeks.

To treat Tourette's syndrome, gelatin capsules containing 2.5-10 milligrams of THC have been taken by mouth as a single dose. A dose of 2.5 milligrams of THC has been taken by mouth daily, increasing to 10 milligrams daily in 2.5-milligram intervals over a four-day time period for six weeks.

To treat rheumatoid arthritis, up to six sprays of Sativex® have been used once daily 30 minutes before bed for five weeks.

As evidenced by the included medical marijuana patient surveys in other states and countries, adults are using medical marijuana to treat these diseases. Patients will continue to use medical marijuana to treat symptoms whether or not you approve these conditions. Approving these conditions to add them to the list of Qualifying Conditions in the MMMA has the only effect of protecting sick people from arrest or penalty, who are currently breaking the law by using a safe and non-toxic plant that they can grow themselves versus prescriptions that cost thousands of dollars per month.

LARA and the Medical Marihuana Review Panel are not the FDA.
LARA and the Medical Marihuana Review Panel are not tasked with “calling for more research”.
LARA and the Medical Marihuana Review Panel are not deciding “if marihuana is a medicine”, the people of Michigan already decided and declared that in 2008.

The director of LARA, in previous denials of petitions, stated that there are a “lack of studies” on using medical marijuana with the conditions presented. A fact that is true. That is the whole point of medical marijuana laws. The people of 29 states and the District of Columbia know there is a lack of research on medical marijuana, but they created laws to protect patients who are using medical marijuana anyway. BECAUSE MEDICAL MARIJUANA WORKS. Research on medical marijuana has been stymied by the US federal government (DEA and FDA denials on rescheduling marijuana for research purposes) and blocked by NIDA and the NIH (requiring researchers to have extreme hoops to jump through, these hoops are not required to study any other drug in the world).

Health professionals, Medical Marihuana Review Panel members and the Director of LARA have all called for more research. I fully agree more research is required and useful and beneficial for all.

How long must sick patients wait for research? Must they wait for more research until they die? All because the FDA wants a mono chemical therapy instead of a whole botanical plant medicine?

As an example for how long people have been waiting for “more research”, look at this study: “Chronic administration of cannabidiol to healthy volunteers and epileptic patients.” 1980. https://www.ncbi.nlm.nih.gov/pubmed/7413719
Epileptics have been waiting 37 years for CBD research and medication.
37 YEARS of waiting for a safe non-toxic plant chemical that reduces or eliminates seizures. Do you have any idea how many intractable epileptic patients have died in those 37 years? THOUSANDS of epileptics whose diseases were uncontrolled by prescription medications have died in those 37 years. Or millions of patients in the 100 years since cannabis was banned federally and globally for racist reasons.

That is 37 years from that single study. Historically, medical marijuana has been used for seizures for over 5000 years. Because it works.

If you deny this petition for “lack of research”, please detail how many years patients should continue to wait. Please detail exactly how many people you are accepting to die waiting just because you think there is some risk of medical marijuana use that will manifest itself. Even though there is 5000+ years of medical marijuana history in the entire world and at least 21 years since California started its medical marijuana law in 1996. Plus the US Federal Government IND program, started in 1978, which still currently sends 8 ounces of medical marijuana (300 cigarettes in a metal tin) to two people in the USA each month. That is 6+ pounds of medical marijuana each year for 35 years that Irv Rosenfeld has smoked, every day, to treat his bone tumor condition.

https://en.wikipedia.org/wiki/Compassionate_Investigational_New_Drug_program
There is a study on the IND patients and medical marijuana safety here: http://www.cannabis-med.org/jcant/russo_chronic_use.pdf

Further, if you deny this petition, please provide articles published in peer-reviewed scientific journals reporting the results of research on the effects of marihuana on the medical condition supporting why the condition should **not** be added to the list of debilitating medical conditions under the Michigan Medical Marihuana Act.

More research on asthma and marijuana:

Science and Research

1974 Smoked marijuana and oral delta-9-THC on specific airway conductance in asthmatic subjects.

1974 Marijuana and oral delta9-tetrahydrocannabinol on specific airway conductance.

1974 Acute effects of smoked marijuana and oral delta-9-tetrahydrocannabinol on specific airway conductance in asthmatic subjects.

1975 Effects of smoked marijuana in experimentally induced asthma.

1976 Bronchodilator effect of delta1-tetrahydrocannabinol administered by aerosol.

1978 Bronchial effects of aerosolized delta 9-tetrahydrocannabinol.

1983 Comparison of bronchial effects of nabilone and terbutaline.

1984 Acute and subacute bronchial effects of oral cannabinoids.

1986 Role of prostaglandins in marihuana-induced bronchodilation.

1988 ANALGESIC AND ANTIINFLAMMATORY ACTIVITY OF CONSTITUENTS OF CANNABIS SATIVA L.

1999 Cannabis and cannabinoids: pharmacology and rationale for clinical use.

2001 Therapeutic aspects of cannabis and cannabinoids.

2005 Endogenous cannabinoid receptor agonists inhibit neurogenic inflammations in guinea pig airways.

2006 The Cannabinergic System as a Target for Anti-inflammatory Therapies.

2007 Cannabinoid CB(2) receptor activation prevents bronchoconstriction and airway oedema in a model of gastro-oesophageal reflux.

2008 Activation of cannabinoid receptors prevents antigen-induced asthma-like reaction in guinea pigs.

2009 Cannabinoids as novel anti-inflammatory drugs.

2010 Cannabinoid-induced apoptosis in immune cells as a pathway to immunosuppression.

2010 Beneficial effects of cannabinoids (CB) in a murine model of allergen-induced airway inflammation: Role of CB(1)/CB(2) receptors.

2010 The cannabinoid receptor agonist WIN 55,212-2 inhibits antigen-induced plasma extravasation in guinea pig airways.

2011 Allergen Challenge Increases Anandamide in Bronchoalveolar Fluid of Patients With Allergic Asthma.

2012 The Role of Cannabinoids In Inflammatory Modulation of Allergic Respiratory Disorders, Inflammatory Pain and Ischemic Stroke.

2012 Cannabinoid Receptor Activity In The Tumour Necrosis Factor (tnf)−α-Induced Increased Contractility Of The Guinea-Pig Isolated Trachea.

NIDA finds it difficult to put the words together, but finally admits there is no gateway theory of marijuana use.

> These findings are consistent with the idea of marijuana as a "gateway drug." However, the majority of people who use marijuana do not go on to use other, "harder" substances.

https://www.drugabuse.gov/publications/research-reports/marijuana/marijuana-gateway-drug

NIDA also finds it very difficult to backtrack on the propaganda research they grant. When other researchers tried to duplicate the results of the first study on marijuana and IQ points, they were unable to find any IQ loss due to marijuana use. I hope that any knowledge you have on

marijuana is up to date, and that you are paying attention when NIDA's biased research grants backfire on them, over and over again.

> In a recent study sponsored by NIDA and the National Institute of Mental Health, teens who used marijuana lost IQ points relative to their non using peers. However, the drug appeared not to be the culprit. The new findings contribute to an ongoing scientific exploration of the drug's impact on users' cognition.

https://www.drugabuse.gov/news-events/nida-notes/2016/08/study-questions-role-marijuana-in-teen-users-iq-decline

3. Provide a summary of the evidence that the use of medical marihuana will provide palliative or therapeutic benefit for this medical condition or is a treatment for this condition.

1. https://www.ncbi.nlm.nih.gov/pubmed/1099949
After experimental induction of acute bronchospasm in 8 subjects with clinically stable bronchial asthma, effects of 500 mg of smoked marijuana (2.0 per cent delta9-tetrahydrocannabinol) on specific airway conductance and thoracic gas volume were compared with those of 500 mg of smoked placebo marijuana (0.0 per cent delta9-tetrahydrocannabinol), 0.25 ml of aerosolized saline, and 0.25 ml of aerosolized isoproterenol (1,250 mug). After exercise-induced bronchospasm, placebo marijuana and saline were followed by gradual recovery during 30 to 60 min, whereas 2.0 per cent marijuana and isoproterenol caused an immediate reversal of exercise-induced asthma and hyperinflation.

Our present findings and those previously reported demonstrated acute airway dilatation after smoked marijuana.

2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5072387/
Tobacco unequivocally causes chronic airflow obstruction and COPD but only in a minority of smokers. Cannabis smoking, however, produces an increase in FVC and the reason(s) for this are unclear and require elucidation.

3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2665947/
Smoking only marijuana was not associated with an increased risk of respiratory symptoms or COPD.

4. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2665954/
Marijuana smoking by itself probably does not lead to COPD.

5. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2516341/

Detailed written questionnaires, full pulmonary function tests (including pre- and post-bronchodilator flow volume loops) and atopy testing were completed in 749 people recruited from a random population sample.

6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC470248/
A trial of oral delta-1-(trans)-tetrahydrocannabinol in reversible airways obstruction.

This study used too small of a dose orally.

7. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5466201/
The study then demonstrates that current smokers are more likely to report recent symptoms of respiratory illness, but have little clinically significant associated changes in spirometry. Furthermore, it demonstrates that moderate cumulative lifetime marijuana use, up to 20 joint-years, is not associated with deleterious changes in spirometric measures of lung health. *Despite this characterization of marijuana smoke as a large airway irritant, our data did not show an association between increasing exposure in the prior month and deleterious change in spirometric values of small airways disease*. Rather, for each additional day of marijuana smoked in the previous month, there was no associated change in FEV1, with a 0.13% increase in predicted FVC.
Corroborating our lack of association with an FEV1 decline, in a study of nearly 400 Californians followed with serial spirometry, marijuana smokers did not show significant declines in FEV1 (27). Similarly, in a longitudinal cohort of over 1,000 young adults in New Zealand, cumulative exposure to marijuana smoke among non tobacco smokers was associated with increases in total lung capacity, but no changes in measurements of airflow. In the 779 with baseline spirometry in this study, cumulative marijuana exposure increased FVC, but had no effects on FEV1 or FEV1/FVC ratio when adjusting for tobacco exposure. Finally, a more recent analysis of a longitudinal cohort from four large U.S. metropolitan areas from 1984 to 2006 revealed that FEV1 and FVC, unadjusted for age, showed increases at low doses of chronic marijuana exposure that then trended downward for moderate and heavy smokers.
Overall, the data suggest that the decrease in FEV1/FVC seen in heavy marijuana smokers is distinctly different than that of heavy tobacco smokers, and may not necessarily represent obstructive lung disease. Although one may speculate that the preservation of FEV1 may be due to the aforementioned bronchodilator properties of THC, data from studies on the long-term use of bronchodilators has not shown that they alter airway remodeling (31, 32). Another hypothesis may be the fact that marijuana smoke does not seem to induce the same level of oxidant stress in the small airways as tobacco smoke, a mechanism postulated as a causative factor in the development of chronic obstructive pulmonary disease (5, 33).

8. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3805041/
Cannabis was associated with evidence of hyperinflation and increased large airway resistance, with little evidence of airflow obstruction or impairment of gas transfer, whereas tobacco was associated with airflow obstruction, gas trapping and lower transfer factors. These findings

suggest that smoking cannabis and tobacco have different physiological consequences for the lungs.

9. https://www.ncbi.nlm.nih.gov/pubmed/3097453
10.1249/00005768-198612000-00014
Marihuana-induced bronchodilation was still observed after exercise completion, i.e., from 38 to 50 minutes after the beginning of smoking. This agrees with previous studies where it was observed that marijuana-induced bronchodilation lasted for at least 60 minutes.

10. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5072387/
However, recent large studies have shown that, instead of reducing forced expiratory volume in 1s and forced vital capacity (FVC), marijuana smoking is associated with increased FVC. The cause of this is unclear, but acute bronchodilator and anti-inflammatory effects of cannabis may be relevant.

11. https://www.ncbi.nlm.nih.gov/pubmed/6690168
Acute and subacute bronchial effects of oral cannabinoids.
The bronchodilating activity of oral cannabinoids was evaluated in three double-blind experiments that involved the study of dose-response and interactive relationships and the potential development of tolerance. Data indicated that delta 8-tetrahydrocannabinol (delta 8-THC), cannabinol (CBN), and cannabidiol (CBD) in maximal doses of 75 mg, 1200 mg, and 1200 mg, respectively, did not induce significant dose-related physiologic effects in experienced marijuana smokers. delta 8-THC (75 mg) was, however, associated with bronchodilation, tachycardia, and peak highs less than that after delta 9-tetrahydrocannabinol (delta 9-THC). The combinations of CBN and CBD with low-dose delta 9-THC (5 mg) did not induce significant bronchodilation but did exert interactive effects on heart rate and "high". A 20-day study of daily delta 9-THC (20 mg), CBN (600 mg), and CBD (1200 mg) did not indicate tolerance or reverse tolerance to any drug. We conclude that delta 9-THC and, to a lesser extent, delta 8-THC, have acute bronchodilator activity but that CBN, CBD, and their combinations do not provide effective bronchodilation. The daily use of delta 9-THC was not associated with clinical tolerance.

12. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2720277/
No consistent association was found between long-term marijuana smoking and airflow obstruction measures. All 14 studies that assessed long-term marijuana smoking and respiratory complications noted an association with increased respiratory symptoms, including cough, phlegm, and wheeze (eg, odds ratio, 2.00; 95% confidence interval, 1.32–3.01, for the association between marijuana smoking and cough). Studies were variable in their overall quality (eg, controlling for confounders, including tobacco smoking).

13. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1429361/
Doses of THC which are large enough to cause bronchodilatation when taken orally are invariably associated with psychological effects, and direct bronchial administration of a smaller dose is, therefore, more appropriate. Smoking marihuana can cause bronchodilatation in

asthmatic patients and prevent experimentally induced bronchospasm but the dose is difficult to control, the smoke irritates the airways and long term use can impair lung function. More recently, therefore, aerosolized THC has been investigated. The smallest dose which has previously been shown to cause bronchodilatation when given by aerosol to asthmatic patients is 200ug. Other workers have found larger doses given in this way to be effective, but not without psychological or local irritant effects.
The present study has demonstrated that small doses of THC given by aerosol can cause bronchodilatation as measured by improvement in PEFR and FEV. These tests were used because they give acceptable measure of clinically useful bronchodilatation.

14. https://www.ncbi.nlm.nih.gov/pubmed/23802821
On the other hand, habitual use of marijuana alone does not appear to lead to significant abnormalities in lung function when assessed either cross-sectionally or longitudinally, except for possible increases in lung volumes and modest increases in airway resistance of unclear clinical significance.

15. https://www.ncbi.nlm.nih.gov/pubmed/24384575
A caution against regular heavy marijuana usage is prudent. *The medicinal use of marijuana is likely not harmful to lungs in low cumulative doses*, but the dose limit needs to be defined. Recreational use is not the same as medicinal use and should be discouraged.

16. 10.1177/1479972310391283
Cannabinoid effects on ventilation and breathlessness: A pilot study of efficacy and safety only 11 of 25 satisfactorily completed pre-test measurements. Of the 11, there were six normal and five COPD subjects; then one normal and one COPD subject dropped out.

17. http://erj.ersjournals.com/content/46/suppl_59/PA337
Although they had similar dyspnoea scores, the use of cannabis was associated with a worsening of health status (COPD Assessment Test score (25.4±4.6 vs 17.0±8.5, p=0.01).

While the study claims a correlation equals causation, the reality is that people with worse COPD are using marijuana to treat their conditions.

18. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2844275/
As a number of historians have suggested, such efforts to police popular consumption of these substances were not always successful, but it is likely that the gradual criminalization of smoking opium and cannabis also served to undermine clinical and popular support for smoking stramonium.

19. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5022003/
Eventually, cannabis based medicines will become available for serious pediatric conditions, such as nausea and vomiting with in chemotherapy and supportive oncology (Abrahamov and Mechoulam, 1995), primary treatment of cancer (Foroughi et al., 2011), cystic fibrosis (Fride,

2002), and severe neurologic impairment (Gottschling, 2011), and these concerns will require ongoing consideration.

20. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2544377/
Following the discovery of the cannabinoids and some of their molecular targets, it is now clear that in theory, at least, the diseases and illnesses that may be susceptible to treatment via modulation of cannabinoid system are many. This is evidenced by the recent proliferation of lengthy reviews on the clinical implications for cannabinoid therapeutics [38,79–86]. The list of conditions includes gastrointestinal disorders (including inflammatory bowel disease), obesity, asthma, glaucoma, cancer, Parkinson's disease, multiple sclerosis and other diseases of defective immunomodulation, cardiovascular disease, hypertension, cystic fibrosis, stress-related disorders, nausea, vomiting, drug addiction, and pain.

21. https://www.ncbi.nlm.nih.gov/pubmed/26317379
367 medical marijuana patients in Arizona were surveyed.
13 patients reported using medical marijuana for Asthma.
General relief from Asthma symptoms was 61.5%
Relief by medical marijuana compared to other medications was 50% for Asthma
Less frequent use of other medications was 80% for Asthma.

22. https://www.ncbi.nlm.nih.gov/pubmed/11210205
Cannabis was, however, also sometimes used in combination with drug treatments that respondents found helpful.
I'm a chronic asthmatic, So . . . I'm using it [cannabis] in combination with . . . Beclovent which is a long-term steroid and occasional use of Vento! in, an immediate release asthmatic drug, just for when you're in a crisis situation . . . and I find a little marijuana on the side does help. (male with chronic asthma).
Many reported benefits of cannabis were consistent with those reported elsewhere. Cannabis was typically used for its sedative, analgesic, antispasmodic, appetite stimulating, anticonvulsant and euphoric properties. These properties were well known in the past century when cannabis was used to treat conditions that required medications with these properties. Although scientific evidence in favor of medical cannabis is limited (Gurley, Aranow & Katz 1998), self-treatment with cannabis could become popular as more users publicize their own experiences. This is especially so if the everyday aches and pains and psychological problems are promoted as medical reasons for using cannabis.

23. https://www.ncbi.nlm.nih.gov/pubmed/24095000
11% of patients (67 patients) reported using medical cannabis for Respiratory symptoms.
Patients reported using cannabis to treat multiple symptoms, with sleep, pain, and anxiety being the most common. Cannabis was perceived to provide effective symptoms relief across medical

conditions. Patterns of use were also consistent across medical conditions. Notable differences were observed with regard to modes of access.

24. 10.1111/j.1742-1241.2004.00271.x
53 patients reported using medical marijuana to treat Asthma for 2-7 years.

Medicinal cannabis use was reported by patients with chronic pain(25%), multiple sclerosis and depression (22% each), arthritis (21%) and neuropathy (19%)
The mean age of the 2969 subjects was 52.7 years (SD 12.7), of whom 1805 (60.7%) were female. MS was the most common disease, reported by 1753 subjects (59%), while 1280 reported neuropathy (43%), 1125 reported chronic pain (33%) and 777 reported arthritis (26%). There was considerable overlap among these conditions.
Overall Effectiveness. Of 948 reported users, 648 (68%) reported that cannabis made their symptoms overall much better, 256 (27%) said a little better, 36 (4%) said no difference and eight subjects said a little worse (four subjects) or much worse (four subjects).
Effectiveness Compared to Other Medications. When asked how cannabis compared to other medications overall, 412 of 916 subjects (45%) said it worked much better than prescribed medications, 261 (28%) said it was somewhat better and 45 (5%) said it was about the same; only 27 subjects said that prescription medicines worked better than cannabis (18 somewhat better and nine much better). One hundred and seventy-one (19%) subjects said it was impossible to tell.
Side Effects Compared to other Medications. When asked to compare the undesirable effects of cannabis to those of prescribed medicines, 872 subjects responded, of whom six found that cannabis produced much worse side effects, 23 found somewhat worse side effects and 54 said the side effects were about the same. Two hundred and sixty-four (30%) subjects stated that side effects of prescribed medicines were somewhat worse and 294 (34%) said they were much worse. Two hundred and thirty-one (26%) stated that it was impossible to tell.
Effects on Other Medication Use. Of the 909 subjects responding to this question, 374 stated that their use of cannabis had changed their use of other medications, while 521 said it had not. Fourteen were not coded.
Return of Symptoms on Stopping. Of the 876 subjects

responding, 673 said their symptoms returned or got worse when they stopped using cannabis, and 203 denied any worsening on stopping cannabis.

4. Provide articles published in peer-reviewed scientific journals reporting the results of research on the effects of marihuana on the medical condition or treatment of the medical condition and supporting why the medical condition should be added to the list of debilitating medical conditions under the Medical Marihuana Act. Attach a copy of all articles that are discussed in this section. Please do not attach articles that are not discussed in this section.

See enclosed.