

INQUIRY INTO USE OF CANNABIS FOR MEDICAL PURPOSES

Organisation: University Centre for Rural Health, North Coast
Name: Dr Hudson Birden, PHD
Date received: 24/01/2013

UNIVERSITY CENTRE FOR RURAL HEALTH NORTH COAST

Excellence in education and research



21 January 2013

The Hon Amanda Fazio MLC
Labor Duty MLC for Ballina

I provide this submission for NSW Legislative Council Standing Committee No. 4, an inquiry into the uses of Cannabis for medical purposes. I write to provide a summary of the evidence regarding medicinal uses of cannabis. This review is meant to be representative, although not comprehensive. I have included only human studies.

Cannabis has been used for medicinal purposes throughout recorded history and across diverse cultures (1, 2). While the illegal status of cannabis has made formal study of the medical effects of the drug difficult (3), there is compelling evidence that cannabis has therapeutic benefit in treating many diseases (4-6). Specifically, cannabis has demonstrated therapeutic benefit in the treatment of multiple sclerosis (4-7), Chronic pain (8), glaucoma (4, 5, 9), mental illness (depression, Bipolar disorder) (10, 11), alleviating adverse side effects of chemotherapy and increasing appetite in people with cancer (4-6, 12, 13) and HIV/AIDS (14), and may have effectiveness in Huntington's disease (15). Cannabinoids contain potent anti-tumour agents, thus cannabis smoking may prevent cancer (6).

There is little evidence of potential harm in the medicinal use of cannabis. Smoking cannabis does not appear to have the same degree of impairment of lung function as tobacco smoking does (16). The 'gateway' theory, which posited that cannabis use leads to 'use of 'harder' drugs, has been discredited and disproven (17, 18). Cannabis is non-addictive (19), although there is evidence that users can develop a psychological dependence leading to social dysfunction (20). A validated tool exists to identify cannabis dependence (21).

The evidence regarding cannabis and psychosis or schizophrenia is not clear. While there is evidence that cannabis can cause deterioration in a person already prone to psychosis(22), cannabis also appears to have a role in treating schizophrenia (23, 24).

Use of cannabis should be discouraged in adolescents, as there is compelling evidence that heavy regular use interferes with brain development (25-29), as does alcohol, and may lead to a higher risk of depression in later life (30-33).



A collaboration between The University of Sydney, University of Western Sydney, University of Wollongong and Southern Cross University supported by the Australian Government Department of Health and Ageing and the Northern NSW Local Health District

PO Box 3074, Lismore NSW 2480

Phone: +61 2 6620 7570 Fax: +61 2 6620 7270 Email: ucrhref@ucrhref.edu.au

You will, of course, be aware that medical cannabis (called Marijuana there) programs have been operating in several U.S. states for some time now, with success (34-36). One study which examined effects of such state programs, both positive and negative, found that *"Legalization of medical marijuana is associated with increased use of marijuana among adults, but not among minors. In addition, legalization is associated with a nearly 9 percent decrease in traffic fatalities, most likely to due to its impact on alcohol consumption."* (37 p. 19).

U.S. States permitting medical cannabis have experienced a 9% decrease in suicide rates (38) and an increase in overall (non-medical) (39) but not adolescent (40) cannabis use in the general population.

In consideration of the benefits thus far identified, there would appear to be an ethical imperative (41) to approve medical cannabis use.

While you have invited submissions on "any other related issue", I will refrain from discussing the larger issue of drug law reform as regards cannabis, except to point out that there is a strong and healthy policy debate that is providing ever more light on the broader issues (42-46).

I would be pleased to provide any additional information that might be to the Committee's benefit.

Sincerely,

Hudson Birden, PhD
Senior Lecturer, Population Health and Clinical Leadership
University Centre for Rural Health, North Coast
Centre for Values, Ethics, and the Law in Medicine (VELiM), Sydney School of Public Health

References

1. Touw M. The religious and medicinal uses of Cannabis in China, India and Tibet. *Journal of Psychoactive Drugs*. 1981;13(1):23-34.
2. Russo EB. History of cannabis and its preparations in saga, science, and sobriquet. *Chemistry & biodiversity*. 2007;4(8):1614-48.
3. Doblin R, Kleiman MA. The medical use of marijuana: the case for clinical trials. *Journal of Addictive Diseases* 1995;14(1):5-14.
4. Alsasua del Valle A. Implication of cannabinoids in neurological diseases. *Cellular & Molecular Neurobiology*. 2006;26(4-6):579-91.
5. Gerra G, Zaimovic A, Gerra ML, Ciccocioppo R, Cippitelli A, Serpelloni G, et al. Pharmacology and toxicology of Cannabis derivatives and endocannabinoid agonists. *Recent Patents CNS Drug Discovery*. 2010;5(1):46-52.
6. Appendino G, Chianese G, Tagliatela-Scafati O. Cannabinoids: occurrence and medicinal chemistry. *Current Medicinal Chemistry*. 2011;18(7):1085-99.
7. Corey-Bloom J, Wolfson T, Gamst A, Jin S, Marcotte TD, Bentley H, et al. Smoked cannabis for spasticity in multiple sclerosis: a randomized, placebo-controlled trial. *Canadian Medical Association Journal*. 2012;184(10):1143-50.
8. Lucas P. Cannabis as an Adjunct to or Substitute for Opiates in the Treatment of Chronic Pain. *Journal of Psychoactive Drugs*. 2012;44(2):125-33.
9. Yazulla S. Endocannabinoids in the retina: from marijuana to neuroprotection. *Progress in Retinal & Eye Research*. 2008;27(5):501-26.
10. Zuardi A, Crippa J, Hallak J, Moreira F, Guimaraes F. Cannabidiol, a Cannabis sativa constituent, as an antipsychotic drug. *Brazilian Journal of Medical and Biological Research*. 2006;39(4):421-9.
11. Saito VM, Wotjak CT, Moreira FA. [Pharmacological exploitation of the endocannabinoid system: new perspectives for the treatment of depression and anxiety disorders?]. *Revista Brasileira de Psiquiatria*. 2010;32 Suppl 1:S7-14.
12. Parker LA, Rock EM, Limebeer CL. Regulation of nausea and vomiting by cannabinoids. *British Journal of Pharmacology*. 2011;163(7):1411-22.
13. Cotter J, editor. Efficacy of crude marijuana and synthetic delta-9-tetrahydrocannabinol as treatment for chemotherapy-induced nausea and vomiting: a systematic literature review. *Oncology nursing forum*; 2009: Oncology Nursing Society.
14. Riggs PK, Vaida F, Rossi SS, Sorkin LS, Gouaux B, Grant I, et al. A pilot study of the effects of cannabis on appetite hormones in HIV-infected adult men. *Brain Research*. 2012;1431:46-52.
15. Sagredo O, Pazos MR, Valdeolivas S, Fernandez-Ruiz J. Cannabinoids: novel medicines for the treatment of Huntington's disease. *Recent Patents CNS Drug Discovery*. 2012;7(1):41-8.
16. Pletcher MJ, Vittinghoff E, Kalhan R, Richman J, Safford M, Sidney S, et al. Association Between Marijuana Exposure and Pulmonary Function Over 20 Years. *JAMA: The Journal of the American Medical Association*. 2012;307(2):173-81.
17. Tarter RE, Kirisci L, Mezzich A, Ridenour T, Fishbein D, Horner M, et al. Does the "gateway" sequence increase prediction of cannabis use disorder development beyond

deviant socialization? Implications for prevention practice and policy. *Drug and Alcohol Dependence*. 2012;123s:s72-s8.

18. Nolin PC, Kenny C. Cannabis: Our Position for a Canadian Public Policy: Report of the Senate Special Committee on Illegal Drugs: Senate Canada; 2002.

19. Temple EC, Brown RF, Hine DW. The 'grass ceiling': limitations in the literature hinder our understanding of cannabis use and its consequences. *Addiction*. 2011;106(2):238-44.

20. Crean RD, Tapert SF, Minassian A, MacDonald K, Crane NA, Mason BJ, et al. Effects of chronic, heavy cannabis use on executive functions. *Journal of addiction medicine*. 2011;5(1):9.

21. Adamson SJ, Kay-Lambkin FJ, Baker AL, Lewin TJ, Thornton L, Kelly BJ, et al. An improved brief measure of cannabis misuse: the Cannabis Use Disorders Identification Test-Revised (CUDIT-R). *Drug and Alcohol Dependence*. 2010;110(1-2):137-43.

22. Leeson VC, Harrison I, Ron MA, Barnes TRE, Joyce EM. The effect of cannabis use and cognitive reserve on age at onset and psychosis outcomes in first-episode schizophrenia. *Schizophrenia bulletin*. 2012;38(4):873-80.

23. Fernández-Ruiz J, Hernández M, Ramos JA. Cannabinoid-dopamine interaction in the pathophysiology and treatment of CNS disorders. *CNS neuroscience & therapeutics*. 2010;16(3):e72-e91.

24. Schnell T, Kleiman A, Gouzoulis-Mayfrank E, Daumann J, Becker B. Increased gray matter density in patients with schizophrenia and cannabis use: A voxel-based morphometric study using DARTEL. *Schizophrenia research*. 2012.

25. Bava S, Tapert SF. Adolescent brain development and the risk for alcohol and other drug problems. *Neuropsychology review*. 2010;20(4):398-413.

26. Jacobus J, Bava S, Cohen-Zion M, Mahmood O, Tapert S. Functional consequences of marijuana use in adolescents. *Pharmacology, biochemistry, and behavior*. 2009;92(4):559.

27. Jager G, Block RI, Luijten M, Ramsey NF. Cannabis use and memory brain function in adolescent boys: a cross-sectional multicenter functional magnetic resonance imaging study. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2010;49(6):561-72. e3.

28. Hanson KL, Winward JL, Schweinsburg AD, Medina KL, Brown SA, Tapert SF. Longitudinal study of cognition among adolescent marijuana users over three weeks of abstinence. *Addictive behaviors*. 2010;35(11):970-6.

29. Casadio P, Fernandes C, Murray RM, Di Forti M. Cannabis use in young people: the risk for schizophrenia. *Neuroscience & Biobehavioral Reviews*. 2011;35(8):1779-87.

30. de Graaf R, Radovanovic M, van Laar M, Fairman B, Degenhardt L, Aguilar-Gaxiola S, et al. Early cannabis use and estimated risk of later onset of depression spells: Epidemiologic evidence from the population-based World Health Organization World Mental Health Survey Initiative. *American journal of Epidemiology*. 2010;172(2):149-59.

31. Marmorstein NR, Iacono WG. Explaining associations between cannabis use disorders in adolescence and later major depression: a test of the psychosocial failure model. *Addictive behaviors*. 2011;36(7):773-6.

32. Dakwar E, Nunes EV, Bisaga A, Carpenter KC, Mariani JP, Sullivan MA, et al. A comparison of independent depression and substance-induced depression in cannabis-, cocaine-, and opioid-dependent treatment seekers. *American Journal of Addiction*. 2011;20(5):441-6.

33. Fairman BJ, Anthony JC. Are early-onset cannabis smokers at an increased risk of depression spells? *J Affect Disord.* 2012;138(1-2):54-62.
34. Alexandre CR. The Rhode Island Medical Marijuana Program. *Policy, Politics, & Nursing Practice.* 2011;12(2):104-13.
35. Burns VJ, Nadine Mason M, Mackintosh S, Michael Osur M, Betancourt W, Fabricante G, editors. Establishing a medical marijuana identification card program: Riverside County, California. Annual Meeting; 2005: American Public Health Association.
36. Gieringer D, Rosenthal E. *Marijuana Medical Handbook: Practical Guide to Therapeutic Uses of Marijuana: Quick American Archives;* 2008.
37. Anderson DM, Rees DI. *Medical Marijuana Laws, Traffic Fatalities, and Alcohol Consumption.* Discussion Paper No. 6112. Bonn, Germany: Institute for the Study of Labor (IZA); 2011.
38. Anderson DM, Rees DI, Sabia JJ. *High on Life? Medical Marijuana Laws and Suicide.* Discussion Paper No. 6280. Bonn, Germany: Institute for the Study of Labor (IZA); 2012.
39. Cerdá M, Wall M, Keyes KM, Galea S, Hasin D. Medical marijuana laws in 50 states: Investigating the relationship between state legalization of medical marijuana and marijuana use, abuse and dependence. *Drug and Alcohol Dependence.* 2011.
40. Harper S, Strumpf EC, Kaufman JS. Do Medical Marijuana Laws Increase Marijuana Use? Replication Study and Extension. *Ann Epidemiol.* 2012;22(3):207-12.
41. Clark PA, Capuzzi K, Fick C. Medical marijuana: medical necessity versus political agenda. *Med Sci Monit.* 2011;17(12):RA249-61.
42. Room R. *Cannabis policy: moving beyond stalemate:* Oxford University Press, 2010.
43. Kleiman MAR, Caulkins JP, Hawken A. *Drugs and Drug Policy: What Everyone Needs to Know:* Oxford University Press, 2011.
44. Strang J, Babor T, Caulkins J, Fischer B, Foxcroft D, Humphreys K. Drug policy and the public good: evidence for effective interventions. *The Lancet.* 2012;379(9810):71-83.
45. Stevens A. *Drugs, crime and public health: the political economy of drug policy.* London: Routledge; 2011.
46. Wodak AD. The need and direction for drug law reform in Australia. *Medical Journal of Australia.* 2012;197(6):1-2.