DRUG FREE AUSTRALIA

The ACT Medical Cannabis Conundrum

Why legislate an inferior product?

1. The Greens Bill is premised on an ignorance of the currently legal status of medical cannabis
2. The Greens 'medical' Bill has not been requested by the medical establishment
3. The Greens Bill ignores 74% of addicted teens in Colorado sourcing cannabis from medical marijuana patients
4. The Greens Bill does not recognise that it is legislating trafficable quantities of cannabis
5. The Greens Bill, perhaps unwittingly, aligns with drug legalisation strategies worldwide
6. The Greens Bill ignores the heavily evidenced harms of crude cannabis to users and their community
7. The Greens Bill will proliferate recreational cannabis use, which most Australians condemn

Central Issues
&
Compiled Evidence

DRUG FREE AUSTRALIA

Executive Summary - Seven Central Issues for ACT Legislators

1. **The Greens Bill is premised on an ignorance of the currently legal status of medical cannabis**

   'Medical Marijuana', (which is a misnomer) has been legally used in Australia since the mid-1990s, when the THC capsule developed in the US called Marinol was imported into Australia under TGA Special Access for 100 patients. Marinol can be imported today under the same arrangement. Alternatively, the whole-leaf extract of cannabis, called Sativex, was approved by the Australian TGA in 2012 for MS spasticity. Both medications are pharmaceutically standardised in terms of dosage, strength and purity, which crude cannabis products are not. Both medications can be used for maladies where clinical trials have previously shown promise – nausea, AIDS wasting, chronic pain and MS spasticity. A third pharmaceutical medicine which is high in CBD, Epidiolex, is currently being tested in the US and could be tested here under similar arrangements – CBD is the element within cannabis believed to be responsible for the relief of severe seizures in epilepsy-like syndromes for some sufferers, including children. There is consequently no need to legalise crude cannabis grow-sites in Australia.

   Further, Greens' concerns that patients will suffer stigma is nullified when accessing legally available medical cannabis, and patients have full rights to make their own decisions because of its legality. The only existing injustice for patients is the failure of the Australian media to inform them of current legally available options. The onus is on the Greens to demonstrate that raw cannabis oil or smoked cannabis is superior to these pharmaceutical medications – akin to demonstrating that raw opium is better than pharmaceutical morphine. Their submission fails to do this . . . nor could it.

2. **The Greens 'medical' Bill has not been requested by the medical establishment**

   It is not Australia's medical establishment that is asking for crude cannabis to be used here as medicine. The push for smoked marijuana, which is particularly by drug legalisation lobbyists who first publicly supported NSW media-showcase Dan Haslam's use of smoked cannabis for chemotherapy-induced nausea, militates against everything that calls itself 'medical'. The harms of smoking as a delivery system are self-evident – no medicine is ever smoked.

Cannabinoids are not a first-line drug for any medical condition. Other legally available drugs are better for each of the few conditions which cannabinoids have been found to alleviate

The cost of purchasing Marinol or Sativex via internet is precisely the same as purchasing cannabis from an Australian drug dealer, dose for dose – on average $500 per month. Alternatively, in the US the cost of purchasing commercially grown cannabis for patients is also $500 per month. Any thought of allowing patients to grow their own cannabis to cheapen costs must contend with the weighty issues of diversion of such cannabis for recreational use, as evidenced in those US States that have allowed home-grown cannabis

In the most extensive scientific review of 'medical marijuana' to date by the US Academies of Science's Institute of Medicine, 95% of 'medical marijuana' users in their US surveys were previously recreational cannabis users. Many of the patients who are brought along to parliamentary inquiries, and who offer public testimony of the wonderful effects of cannabis are actually speaking from a background of pre-existing cannabis dependency and addiction, where cannabis alleviates many of the very conditions it itself causes, often as part of a well-documented withdrawal syndrome. Further, many of the maladies cited by medical cannabis patients cannot be objectively verified by medical practitioners, relying only on the patient's own subjective word, opening medical cannabis use to mischief-making and unverifiable claims as with the Disability Support Pension. Therefore, the Greens proposal to allow cannabinoid use for 'Category 3' maladies which in clinical trials have *not* been evidenced as alleviated by medical cannabis should not at all be countenanced even if pharmaceuticals only are used

3. **The Greens Bill ignores 74% of addicted teens in Colorado sourcing cannabis from medical marijuana patients**

In one US State with 'medical marijuana' laws, 74% of young people entering treatment for cannabis addiction sourced their cannabis from people with 'medical marijuana' prescriptions, demonstrating that diversion to recreational users will always be a problem under such provisions. While it is unclear whether medical cannabis is the cause, US States that have legalised medical cannabis have higher rates of recreational use than other States.

4. **The Greens Bill does not recognise that it is legislating trafficable quantities of cannabis**

   Just one single cannabis plant, harvested up to five times a year, can yield 2,500 grams of cannabis per year, enough for 8,600 joints – far beyond the needs of any single patient. As such, even a single cannabis plant represents trafficable quantities of cannabis.

5. **The Greens Bill, perhaps unwittingly, aligns with drug legalisation strategies worldwide**

   Those working to legalise the recreational use of cannabis worldwide by seeking to destroy the United Nations' International Drug Conventions use 'medical marijuana' as a Trojan horse to introduce the full legalisation of cannabis for recreational use. Richard Cowan, the Director of cannabis legalisation organisation, NORML, said in 1993 "medical marijuana is our strongest suit. It is our point of leverage which will move us toward the legalisation of marijuana for personal use . . . ." While it is unclear whether medical cannabis is the cause, US States that have legalised medical cannabis have higher rates of recreational use than other States.

6. **The Greens Bill ignores the heavily evidenced harms of crude cannabis to users and their community**

   The harms of recreational cannabis use are so substantial and substantiated that giving any leeway to Trojan horse strategies of the drug legalisation lobby should never be contemplated. The Greens Bill, simply by proposing the availability of crude cannabis in any form, clearly ignores the damage done by cannabis to users and their community.

7. **The Greens Bill will proliferate recreational cannabis use, which most Australians condemn**

   According to the 2013 National Drug Strategy Household Survey, a survey of more than 24,000 Australians, 90% of Australians did not approve the recreational use of cannabis. While 69% of Australians support 'medical marijuana' in the same survey, Drug Free Australia contends that very few of these Australians would be able to specify the handful of medical indications attributed to cannabis, and would likely disapprove anything which would proliferate recreational cannabis use. Colorado laws and surveys of teens demonstrates that crude medical cannabis proliferates recreational use.

The evidence supporting each of the five central issues nominated here is found in the following pages.

Table of Contents

CENTRAL ISSUES FOR ACT LEGISLATORS - 1

The Greens Bill is premised on an ignorance of the currently legal status of medical cannabis

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Further, Greens' concerns that patients will suffer stigma is nullified when accessing legally available medical cannabis, and patients have full rights to make their own decisions because of its legality. The only existing injustice for patients is the failure of the Australian media to inform them of current legally available options. The onus is on the Greens to demonstrate that raw cannabis oil or smoked cannabis is superior to these pharmaceutical medications – akin to demonstrating that raw opium is better than pharmaceutical morphine. Their submission fails to do this . . . nor could it.

MARINOL (Dronabinol) legally used since mid-1990s

The following text is taken from page 32 of a paper in the NSW Parliamentary Library Research Service titled 'The Medical Use of Cannabis – Recent Developments' by Gareth Griffith and Marie Swain (1999) which accurately reflects the legal status of Marinol, a THC capsule developed more than 30 years ago in the United States:

> **The use of dronabinol in Australia:** A 1997 paper commented that, while cannabis is not currently registered as a therapeutic agent in Australia, the synthetic cannabinoid, Marinol (the trade name under which dronabinol is

marketed) is 'available to some 100 people in NSW and a register of prescribing doctors has been established through a **special access scheme'**. However, according to Dr Julian Gold, Director of the Albion St Clinic, Marinol is no longer used on a prescription basis in NSW, primarily because it proved too costly (around $2,500 - $3,000 per month).

MARINOL still legal in 2015 – Advice from the Australian TGA

In 2014 the advice from Australia's Therapeutic Goods Administration (TGA) regarding importation of online generic or brand Marinol medication is as follows:

From: [redacted] **On Behalf Of** EPS
Sent: Tuesday, 5 August 2014 10:38 AM
To: 'gxian@tpg.com.au'
Subject: Accessing Marinol - 5 Jul [SEC=UNCLASSIFIED]

Thank you for your phone call requesting information on importing Marinol into Australia, I apologise for the delay in my response

Marinol (dronabinol) does not appear on the Australian Register of Therapeutic Goods (ARTG) and so is not available for supply in Australia.

Australian residents and visitors to Australia can legally import certain therapeutic goods for personal use under the personal import exemption which exists under the *Therapeutic Goods Act 1989* and its associated regulations. This exemption does not allow the personal importation of either substances or drugs prohibited by Customs legislation, or, injectable drugs that contain material of human or animal origin (except insulin), unless an import permit has been obtained.

Marinol (Dronabinol) (& indeed all cannabinoids) appears in Schedule 4 of the *Customs (Prohibited Imports) Regulations* 1956 . Therefore, such substances cannot be imported without an import permit being issued beforehand.

Please note that an import permit is required prior to importing cannabinoids by post. For a permit to be issued:

1. An Australian registered medical practitioner will firstly need to obtain authority to prescribe this medication from the relevant State Health Department.

2. The Australian registered medical practitioner must then apply to the TGA for Special Access Scheme (SAS) approval to treat the patient with this medicine. The doctor must provide strong clinical justification for treating you with this product (over those medicines that are registered and available in Australia) as well as detailed evidence of it's efficacy and safety in regard to the disease being treated. SAS applications are assessed on a patient by patient basis to

reflect the needs of different patients. The major criteria for determining whether approval should be given relate to the patient, the product and the prescriber, there is no guarantee of approval. Most medical practitioners in Australia are aware of the SAS and it's workings and I have attached a link to our website which explains the SAS:

http://www.tga.gov.au/hp/access-sas.htm

3. If the application is approved, a letter of approval will be forwarded to the doctor, which may then be used to apply for a permit to import. Permits for these medicines are issued by the Office of Chemical Safety (tmu@health.gov.au):

http://www.health.gov.au/internet/main/publishing.nsf/Content/application-forms-and-guidelines

The permit must be presented to Australian Customs Service to import the medication into Australia. Please note that the import permit will be issued in your doctor's name. Please also note that a permit will only be issued if SAS approval is granted.

If you require further information on the subject of personal importation, may I direct you to our website. There is a TGA publication on bringing medicines into Australia which can be found at the following link:

http://www.health.gov.au/tga/docs/html/bringmed/intoaust.htm

I trust this information is of assistance to you.

Best regards,

[redacted]
BPharm(hons), MSHP
Pharmacist
Experimental Products
Office of Scientific Evaluation

SATIVEX TGA registered in 2012

Sativex is a pharmaceutical whole-leaf extract of cannabis of standardised dose, strength and purity containing both THC and CBD. As a pharmaceutical-grade oral spray it is quick acting and importantly is clearly separated from the recreational use of cannabis, as well as avoiding some specific harms that come from smoking cannabis. From the Australian PBS website:

Nabiximols, oral spray, 10 mL (90 actuations of 100 microlitres), Sativex® - July 2013

PDF printable version of this page (PDF 104 KB)

Public Summary Document

Product: Nabiximols, oral spray, 10 mL (90 actuations of 100 microlitres), Sativex®
Sponsor: Novartis Pharmaceuticals Australia Pty Ltd
Date of PBAC Consideration: July 2013

1. Purpose of Application

The submission sought an Authority required listing for the treatment of moderate to severe spas icity due to multiple sclerosis in a patient who is intolerant to anti-spasticity medication and/or has not adequately responded to anti-spas icity medication.

3. Registration Status

Nabiximols was TGA registered on 26 November 2012 as treatment for symptom improvement in patients with moderate to severe spasticity due to multiple sclerosis who have not responded adequately to other anti-spasticity medication and who demonstrate clinically significant improvement in spasticity related symptoms during an initial trial of therapy..

Greens proposal wrongly believes Sativex cannot be more generally used

The Greens proposal says:

> "Medicinal cannabis spray (a commercial pharmaceutical cannabinoid product called Sativex) is available for use in Australia but only for one specific condition – muscle spasticity arising from multiple sclerosis. In the absence of legal cannabis therapies such as Sativex for most conditions, the cannabis plant remains the most effective, or in some cases the only effective, treatment for some patients."

However Sativex is indeed available for other conditions under TGA regulations for which medical cannabis has been previously shown to be effective. Conditions such as nausea, AIDS wasting and chronic pain have been alleviated in clinical studies, giving a patient's GP a level of confidence to prescribe Sativex off-label for those conditions under TGA Special Access guidelines.

SATIVEX legal in 2015 – Advice from the Australian TGA

Advice from the TGA is as follows:

> **From:** [redacted] **On Behalf Of** EPS
> **Sent:** Monday, 22 September 2014 2:07 PM
> **To:** Gary Christian
> **Subject:** RE: Accessing Marinol - 5 Jul [SEC=UNCLASSIFIED]
>
> Thank you for your enquiry and apologies for the delay in response.
>
> The below information relates to Sativex, the product manufactured by GW Pharma, and not to any other extract of cannabis.
>
> For a therapeutic product to be supplied in Australia, it must firstly have been evaluated by the Therapeutic Goods Administration (TGA) for quality, safety and efficacy and be included in the Australian Register of Therapeutic Goods (ARTG). Currently, Sativex appears on

the ARTG and therefore is approved for supply in Australia. You can search the ARTG via the TGA website.

When a therapeutic good is included on the ARTG, only specific indications are approved for that particular entry. Prescribing a registered drug for indications other than the approved indications is what is commonly referred to as "off-label" prescribing. The TGA is aware that doctors undertake this practice on a frequent basis and it is a matter of medical practice that a doctor may prescribe any medication they think is suitable to treat a particular condition.

The practice of prescribing registered drugs outside of their approved indications is not regulated or controlled by the TGA, as it is at the discretion of the prescribing physician. In these circumstances, the TGA is unable to vouch for the quality, safety or efficacy of this unapproved product and its use is therefore regarded as experimental. It should also be realised that the Australian Government, the Secretary or a delegate of the Secretary cannot be rendered liable to a person in respect of loss, damage or injury of any kind suffered by the person as a result of, or arising out of the use of a therapeutic good for a non-approved indication.

However, in relation to Sativex, please note that nabiximols is currently listed in Schedule 8 and Appendix D of the Poisons Standard (SUSMP). Appendix D lists substances that are subject to additional controls on possession or supply. These additional controls on the prescribing and supply of Sativex would be applied under legislation of the states and territories.

Sativex is also captured under the *Customs (Prohibited Imports) Regulations 1956,* therefore an import permit would be required to import Sativex. An import permit may also specify conditions or requirements, with respect to the possession, safe custody, transportation, use or disposal or the drug, that would need to be complied with.

In addition, as Scheduling information was not included in the previous email regarding dronabinol, please note that dronabinol is also listed in Schedule 8 and Appendix D of the SUSMP. Therefore, in addition to the requirements outlined previously, dronabinol would also be subject to additional controls on possession or supply under legislation of the states and territories.

Kind Regards

[redacted]
Senior Pharmacist
Experimental Products
Office of Scientific Evaluation

Clearly, Sativex can be legally prescribed by Australian doctors 'off-label' for those conditions where they have some level of confidence in medical cannabis' demonstrated efficacy as per previous clinical trials.

EPIDIOLEX being trialled by US FDA for severe epilepsy seizures

Much publicity has been given to pediatric epilepsy syndromes where some, certainly not all, children respond positively to cannabis high in cannabidiol or CBD. GW Pharmaceuticals, which manufactures Sativex as described above, has developed Epidiolex, a pharmaceutical-quality formulation high in CBD. It is anticipated that Australia could make Epidiolex available to families of children with pediatric epilepsy syndromes on a similar basis as in the United States.

The GW Pharmaceuticals website describes FDA availability in the United States:

> Epidiolex is GW's proprietary product candidate that contains a liquid formulation of highly purified plant-derived cannabidiol (CBD) as its active ingredient in development as a treatment for various orphan pediatric epilepsy syndromes. Epidiolex has been granted Orphan Drug Designation by the FDA in the treatment of Dravet and Lennox-Gastaut syndromes, each of which are severe infantile-onset, drug-resistant epilepsy syndromes. The FDA has granted expanded access INDs to several independent investigators in the U.S. to allow treatment of pediatric epilepsy patients with Epidiolex. These patients suffer from Dravet syndrome, Lennox-Gastaut, and other pediatric epilepsy syndromes.

Crude cannabis not medical

Crude cannabis contains hundreds of chemicals and is an impure substance. After burning, as in smoking, the products of full and partial oxidation form thousands of chemicals, many of them highly toxic and carcinogenic including similar tars, polycyclic hydrocarbons and aromatic amines as those found in tobacco smoke. No regulatory authority in the world (e.g. FDA in USA or TGA in Australia) acknowledges any smoked preparation as a valid form of dosing of any medicine. The term 'medical cannabis' is therefore in strictly medical terms a misnomer which has been strategically designed to confuse and mislead people as part of the clever public relations marketing campaign of the big cannabis industrial developers (by analogy with big tobacco interests), as have now developed in California, Colorado, Oregon, Washington state and elsewhere.

DFA gives qualified support to use of pharmaceutical cannabinoids

With the availability of a variety of cannabinoids of pharmaceutical quality to Australians, there is clearly no need for legislators to consider the smoking of cannabis or use of other raw cannabis preparations, entailing grow-sites throughout Australia. Pharmaceutical treatments deriving from cannabis are clearly separated from the social use of cannabis, thereby avoiding the blurring of boundaries between medicine and recreational use of an illegal substance.

Despite the usefulness of pharmaceutical-quality cannabinoids, caution still needs to be expressed concerning the side-effect profiles and as yet not fully understood long-term effects of these medications. The use of cannabinoids for children with severe seizures from epilepsy has many unknowns, considering the effect of cannabis on adolescent brain development.

No stigma using legal pharmaceuticals

The Greens' discussion paper backing their bill states that raw cannabis products should be made available so that medical cannabis patients will suffer no stigma. Concerns about the rights of a patient to self-determine treatment is also voiced.

However, medical cannabis pharmaceuticals legally used in Australia cannot possibly suffer stigma due to the legality of their use and patients also have the right to self-determine their treatment without opening their community to the high risk of diverted cannabis, which leads to the greater uptake of recreational cannabis use, especially by minors.

ACT Legislative Assembly - suggested actions

TGA registration of doctors legally prescribing medical cannabis pharmaceuticals reportedly takes 2 days, making this part of the prescription process relatively quick. The ACT Legislative Assembly could assist patients in the following ways.

1. The ACT Legislative Assembly actively and vigorously correct the incorrect statements in the media saying that medical cannabis is illegal in Australia – it is not. To say it is illegal is misleading the public. Medical cannabis has been legally available to any Australian with an appropriate illness for almost 20 years now.

2. The ACT Legislative Assembly actively publicise through all available media that patients currently treating themselves with illegally sourced cannabis can alternately legally access available pharmaceutical cannabis in Australia, thus giving them a clear conscience regarding treatment and perhaps opening other patients to cannabinoid treatments that may genuinely assist them.

3. The ACT Legislative Assembly actively work with Australian Customs to speed import permit processes for GP prescribed patients currently accessing the currently legal pharmaceutical forms of medical cannabis, Marinol and Sativex, perhaps setting up a central point of contact and liaison in the ACT Government.

4. The ACT Legislative Assembly provide a service to ACT medical cannabis patients tracking which overseas websites offer the best prices on Sativex and generic Marinol, to assist patients with getting best value for money with their internet purchases.

CENTRAL ISSUES FOR ACT LEGISLATORS – 2

The Greens 'medical' Bill has not been requested by the medical establishment

It is not Australia's medical establishment that is asking for crude cannabis to be used here as medicine. The push for smoked marijuana, which is particularly by drug legalisation lobbyists who first publicly supported NSW media-showcase Dan Haslam's use of smoked cannabis for chemotherapy-induced nausea, militates against everything that calls itself 'medical'. The harms of smoking as a delivery system are self-evident – no medicine is ever smoked.

Cannabinoids are not a first-line drug for any medical condition. Other legally available drugs are better for each of the few conditions which cannabinoids have been found to alleviate

The cost of purchasing Marinol or Sativex via internet is precisely the same as purchasing cannabis from an Australian drug dealer, dose for dose – on average $500 per month. Alternatively, in the US the cost of purchasing commercially grown cannabis for patients is also $500 per month. Any thought of allowing patients to grow their own cannabis to cheapen costs must contend with the weighty issues of diversion of such cannabis for recreational use, as evidenced in those US States that have allowed home-grown cannabis

In the most extensive scientific review of 'medical marijuana' to date by the US Academies of Science's Institute of Medicine, 95% of 'medical marijuana' users in their US surveys were previously recreational cannabis users. Many of the patients who are brought along to parliamentary inquiries, and who offer public testimony of the wonderful effects of cannabis are actually speaking from a background of pre-existing cannabis dependency and addiction, where cannabis alleviates many of the very conditions it itself causes, often as part of a well-documented withdrawal syndrome. Further, many of the maladies cited by medical cannabis patients cannot be objectively verified by medical practitioners, relying only on the patient's own subjective word, opening medical cannabis use to mischief-making and unverifiable claims as with the Disability Support Pension. Therefore, the

Greens proposal to allow cannabinoid use for 'Category 3' maladies which in clinical trials have *not* been evidenced as alleviated by medical cannabis should not at all be countenanced even if pharmaceuticals only are used

Medical Associations not supportive of smoked marijuana

Dr Saxon Smith, for the **Australian Medical Association** said, 'The AMA's position on medical marijuana is one of caution in the space of needing some more information about the benefits and negatives of it.'
http://www.canberratimes.com.au/act-news/act-minister-shane-rattenbury-smokes-out-attitudes-to-medical-marijuana-20140724-zwdyo.html

From the **Epilepsy Action Australia** www.epilepsy.org.au

> Is it (marijuana) a useful antiepileptic medication?
>
> Research into the effects of marijuana on seizure activity is inconclusive. Some animal models and some uncontrolled clinical human studies do suggest that marijuana has antiepileptic effects in humans but this may be specific to certain seizure types. Overall, there is insufficient clinical data to conclude if recreational or regular use of marijuana has any influence on seizures. As the data remains limited, and in some cases conflicting, caution is needed if using cannabis and cannabinoids to control seizures.
>
> Marijuana use in Australia is not legal and therefore not recommended for use as an anti-epileptic agent.

Peak US organisations:

the *American Medical Association*
the *American College of Physicians*
the *American Nurses Association*
the *American Cancer Society*
the *American Glaucoma Foundation*
the *National Multiple Sclerosis Society*
the *American Academy of Pediatrics*
the *American Society of Addiction Medicine*

all support the US FDA approval process and have expressed either opposition to or concern over the use of smoked marijuana as a therapeutic product.

Australian Medical Association not endorsing Greens' approach

The Greens' discussion paper asserts that:

> A wide range of doctors, scientists, and community groups such as the Cancer Council,3 NSW Nurses and Midwives' Association (NSWMNA)4 and the Australian Medical Association5 support patients having access to cannabis in certain circumstances.

However, the AMA position statement makes no statement that can be construed as supporting the Greens approach of patients growing cannabis for their own use in non-pharmaceutical form.

> Cannabis extracts and synthetic formulations have been licensed for medicinal use in some countries, including Canada, the USA, Great Britain and Germany, for the treatment of severe spasticity in multiple sclerosis, nausea and vomiting due to cytotoxics, and loss of appetite and cachexia associated with AIDS. The synthetic cannabis product Nabiximols (Sativex), which is delivered as a buccal spray and so avoids the harms of cannabis smoke inhalation, is effective in the management of spasticity and pain associated with multiple sclerosis. The psycho-active effects of Nabiximols can also be managed through controlling dosage. In Australia, the synthetic cannabinoids nabilone and dronabinol are scheduled by authorities for medicinal use. Sativex is also being trialed in Australia for cancer and cannabis withdrawal. Canada has allowed the medical use of smoked cannabis if this is authorised and monitored by a doctor.[33]

Australia21 drug legalisation lobby backing smoked cannabis, not medicos

Australia21, a drug legalisation lobby pushing for the legalisation of all currently illicit drugs, has pushed in NSW for smoked marijuana via the publicity of media-showcase cancer victim, Dan Haslam, and his use of smoked cannabis. Australia21 lobby group members, Mick Palmer and Alex Wodak, who back Dan Haslam's smoking of cannabis, neither condemn his smoking of the substance nor reflect that this cancer victim has had legal access to Marinol and Sativex on prescription under Special Access arrangements with the Australian TGA.

See for instance:

http://www.dailytelegraph.com.au/news/tough-on-drugs-cop-allow-cannabis-for-the-ill/story-fni0cx4q-1226930222887

Australia21 seeks to legalise all currently illicit drugs, as indicated in citations from their two publications in 2012 making questionable all of their pronouncements on the benefits of smoked cannabis:

> The Australian group agreed with the Global Commission that the international and Australian prohibition of the use of certain "illicit" drugs has failed comprehensively. By making the supply and use of certain drugs criminal acts, governments everywhere have driven their production and consumption underground and have fostered the development of a criminal industry that is corrupting civil society and governments and killing our children. By defining the personal use and possession of certain psychoactive drugs as criminal acts, governments have also avoided any responsibility to regulate and control the quality of substances that are in widespread use. Some of these illicit drugs have demonstrable health benefits. Many are highly addictive and harmful when used repeatedly. In that respect they are comparable to alcohol and nicotine, which are legal in Australia and, as a result, are under society's control for quality, distribution, marketing and taxation. http://www.australia21.org.au/wp-content/uploads/2013/11/ASIllicitDrugsR1.pdf p 4

> Many participants in both Australia21 Roundtables expressedstrong support for a long-term policy of treating these currently illicit substances in the same way as we currently treat other pharmaceutically active agents.

This involves mechanisms of regulated production, distribution, marketing and taxation but with different approaches used for different drugs. Under the international treaties, as they are currently interpreted, such a course of action may not be presently practicable, but it is likely to become so in the future.
http://www.australia21.org.au/wp-content/uploads/2012/09/Alternatives-to-Prohibition-Final.pdf p 40

Almost every international review condemns smoking as a delivery system

All 6 international reviews by medical authorities in the last 15 years have failed to back smoking as a delivery system for cannabinoids. Only the non-medical 1998 British House of Lords review, which relied heavily on questionable anecdotal evidence and not scientific studies, recommended smoked 'medical marijuana.'

The international reviews were:

the Health Council of the Netherlands (1996)
the American Medical Association House of Delegates (1997)
the British Medical Association (1997)
the US National Institute of Health (1997)
the World Health Organization (1997)
the British House of Lords (1998)
the United States Institute of Medicine report (1999)

A summary of relevant conclusions from the five other medical reports were included in the Institute of Medicine's 1999 report, as is printed below. While all reports noted the benefits of clinical trials into possible medical uses for cannabinoids, only the British House of Lords report recommended loosely regulated use of smoked marijuana.

Smoked Marijuana and Use of Plants as Medicine

US Institute of Medicine

In deciding whether marijuana should be smoked as medicine, society must weigh the reality of this crude drug-delivery system against the benefits it might bestow. Chronic smoking of marijuana increases a person's chances of developing cancer, lung damage, and problems with pregnancies, including low birth weight. Therefore, it simply is not an acceptable long-term option. Smoking should be allowed only for short-term use among patients with debilitating symptoms, or who are terminally ill and do not respond well to approved medications.

Even in these cases, marijuana use should be limited to carefully controlled settings. Patients who are prescribed marijuana should be enrolled in short-term clinical trials that are approved by an oversight strategy such as institutional review boards, and involve only those patients most likely to benefit. They should be fully informed that they are experimental subjects and are using a harmful drug-delivery system, and their condition should be closely monitored and documented under medical supervision.

Health Council of the Netherlands

The committee believes that physicians cannot accept responsibility for a product of unknown composition that has not been subjected to quality control.

AMA House of Delegates

No specific recommendations made, but related issues are discussed in the general recommendation and drug development sections.

British Medical Association

Prescription formulations of cannabinoids or substances acting on the cannabinoid receptors should not include either cigarettes or herbal preparations with unknown concentrations of cannabinoids or other chemicals.

National Institutes of Health

Smoked marijuana should be held to standards equivalent to other medications for efficacy and safety considerations. There might be some patient populations for whom the inhalation route might offer advantages over the currently available capsule formulation. Smoking plant material poses difficulties in standardizing testing paradigms, and components of the smoke are hazardous, especially in the immunocompromised patient. Therefore, the experts generally favored the development of alternative dosage forms, including an inhaler dosage form into which a controlled unit dose of THC could be placed and volatilized.

World Health Organization

Not discussed in the context of medical use, although many health hazards associated with chronic marijuana smoking are noted.

Drug Development

Health Council of the Netherlands

Not discussed.

AMA House of Delegates

The National Institutes of Health should use its resources to support the development of a smoke-free inhaled delivery system for marijuana or THC to reduce the health hazards associated with the combustion and inhalation of marijuana.

British Medical Association

Pharmaceutical companies should undertake basic laboratory investigations and develop novel cannabinoid analogs that may lead to new clinical uses.

National Institutes of Health

NIH should use its resources and influence to rapidly develop a smoke-free inhaled delivery system for marijuana or THC. A recommendation was made for the development of insufflation/inhalation devices or dosage forms capable of delivering purer THC or cannabinoids to the lungs free of dangerous combustion byproducts.

World Health Organization

Not discussed.

Physiological Harms

Health Council of the Netherlands

No recommendations made.

AMA House of Delegates

No recommendations made.

British Medical Association

Further research is needed to establish the suitability of cannabinoids for immunocompromised patients, such as those undergoing cancer chemotherapy or those with HIV/AIDS.

National Institutes of Health

Risks associated with smoked marijuana must be considered not only in terms of immediate adverse effects but also long-term effects in patients with chronic diseases. The possibility that frequent and prolonged marijuana use might lead to clinically significant impairments of immune system function is great enough that relevant studies should be part of any marijuana medication development research.

Additional studies of long-term marijuana use are needed to determine if there are or are not important adverse pulmonary, central nervous system, or immune system problems.

World Health Organization

Further studies are needed on the fertility effects in cannabis users in view of the high rate of use during the early reproductive years. Further clinical and experimental research is required on the effects of cannabis on respiratory

function and respiratory diseases. More studies are needed to show whether cannabis affects the risk of lung malignancies and at what level of use that may occur. In addition, more studies are needed to clarify the rather different results of pulmonary histopathological studies in animals and man.

More clinical and experimental research is needed on the effects of cannabis on immunological function. More clarity should be sought concerning the molecular mechanisms responsible for immune effects, including both cannabinoid receptor and non-receptor events.

The possibility that chronic cannabis use has adverse effects on the cardiovascular system should have a priority in epidemiological research.

Research on chronic and residual cannabis effects is also needed. The pharmacokinetics of chronic cannabis use in humans are poorly described, and this lack of knowledge restricts the ability of researchers to relate drug concentrations in blood or other fluids and observed effects.

Crude cannabis not possibly a medicine

Criteria for the acceptance of a drug for medical use:

All active ingredients have to be identified and their chemistry determined. They have to be tested for purity with limits set for all impurities including pesticides, microbe & fungi and their products. These tests have to be validated and reproduced if necessary in an official laboratory.

The cannabis plant contains some 400 chemicals, a multiplicity of ingredients that vary with habitat – impossible to standardise and often contaminated with microbes, fungi or pesticides.[2]

Animal testing will include information on fertility, embryo toxicity, immuno-toxicity, mutagenic and carcinogenic potential. Risks to humans, especially pregnant women and lactating mothers, will be evaluated.

Cannabis has been shown to reduce sperm production.[3] Babies born to cannabis-using mothers are smaller, have learning and behavioural problems and are 10 times more likely to develop one form of leukaemia.[4] The immune system is impaired.[5] Smoking herbal cannabis results in the inhalation of four times as much tar as from a tobacco cigarette.[6]

Adequate safety and efficacy trials must be carried out. They must state the method of administration and report on the results from different groups, i.e. healthy volunteers, patients, special groups of the elderly, people with liver and kidney problems and pregnant women. Adverse drug reactions (ADR) have to be stated and include any effects on driving or operating machinery.

It is envisaged that cannabis would be smoked. No medicine prescribed today is smoked. Concentration, motor-co-ordination and memory are all badly affected.[7] Changes in the brain have been observed[8] and U.S.A. clinics are now coping with more cases of psychosis caused by cannabis than by any other drug.

It is essential to note that the content of THC (Tetrahydrocannabinol – the psychoactive ingredient in cannabis) is on average ten times higher than it was in the 1960s.[9] The fat-soluble THC lingers in the body for weeks[10] and the ability to drive safely is impaired for at least 24 hours after smoking cannabis.[11] Although ten times as many people use alcohol, cannabis is implicated in a similar number of road accidents.[12]

The drug must be accepted by qualified experts. Their detailed reports need to take account of all the relevant scientific literature and the potential of the drug to cause dependence.
There are numerous accounts of both psychological and physical dependencies in cannabis use.[13] Some 77,000 people are admitted annually to hospitals in U.S.A for cannabis dependence, 8,000 of them as emergencies.[14] To date there are over 12,000 scientific publications relating to cannabis.[15]

THC has already undergone all the medical tests. It is available on prescription in tablet form for the relief of nausea from chemotherapy and appetite stimulation in AIDS patients. However marinol (USA) and nabilone (UK), synthetic forms of THC and identical in action to it, are not the first drugs of choice among oncologists in Washington D.C. ranking only 9th in the treatment of mild nausea and 6th for more severe nausea.[16] The warning on nabilone reads:

"THC encourages both physical and psychological dependence and is highly abusable. It causes mood changes, loss of memory, psychoses, impairment of co-ordination and perception, and complicates pregnancy".

Other Cannabinoids: Cannabis contains around 60 cannabinoids that are unique to the plant. Some of these could be similarly extracted, purified and tested for safety and efficacy. In the report "Therapeutic Uses Of Cannabis" (BMA, 1997) the British Medical Association said:

"It is considered here that cannabis is unsuitable for medical use. Such use should be confined to known dosages of pure or synthetic cannabinoids given singly or sometimes in combination."

(Text taken from "One Cannot Vote for a Medicine – National Drug Prevention Alliance, UK – used with permission)

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'Medical Cannabis' – only a handful of demonstrated medical uses

Many of the claims made for cannabis regarding medical use have evaporated under the scrutiny of clinical trials.

Cannabis has some effect on:

Nausea and vomiting - with cancer chemotherapy can generally be controlled adequately with current methods. The drugs most commonly used and often effective are prochlorperazine and metaclopramide. Chief amongst the newer agents is the 5HT3 antagonists such as ondansetron, tropisetron and dolasetron, some of which can also be given as a sub-lingual wafer or by subcutaneous, intramuscular, or intravenous injection if needed so that vomiting itself does not preclude their administration. Similarly prochlorperazine can be given by suppository. These medications can all be given by many routes of administration. Other medications can also be used including steroids where required.

Chronic pain - pain clinics have numerous ingenious ways to control pain. Pain can also be induced by cannabis withdrawal, and cannabis use itself has been shown to be linked with chronic back pain, so beware the pain presenting in the cannabis addicted patient / advocate. Nevertheless many patients are left in difficult situations by their chronic non-cancer pain. This is an active area of research internationally, and one to which

Australian researchers, particularly at the University of Adelaide, are making major contributions. The recent demonstration that inflammatory activity in the brain and nerves is associated with pain generation and pain perceptual mechanisms has opened major investigative pathways for the development of several exciting new agents. This is a project upon which some of the top medicinal chemists in the world are actively engaged, some of whom work intramurally at the NIH and NIDA[1] itself.

AIDS wasting – as noted by Australia21 representative, Alex Wodak, in a paper sent to Parliamentarians in July 2014, this indication is disappearing due to the efficacy of the newer treatments for AIDS.

MS - there are other treatments for MS stiffness. In particular recent advances in immunology have meant that the treatment of MS itself has dramatically improved in recent times with several newer options including teriflunomide, dimethyl fumarate, fingolomod and dalfampridine. Benzodiazepines, Lioresal, several anticonvulsants and local Botox can all find application when spasm is a problem.

. . . and a confounding issue - it alleviates its own withdrawal symptoms

Cannabis has a well-recognized withdrawal syndrome associated with it, which can be experienced by up to 50% of people who are exposed to it on a daily basis, particularly when that exposure occurs in adolescence.[1] **Oft-cited maladies treated by cannabis are pain, muscle spasm, agitation, fits, convulsions and rheumatics all of which are recognized presentations of cannabis withdrawal.[2]**

Cannabis dependence and withdrawal is a well described medical condition acknowledged both in DSM-IV and DSM-V[3] of the APA[4]. Administration of cannabis to patients in such states will produce a short term relief of symptoms, albeit with an exacerbation of its many long term toxic effects, oncogenicity, and gateway effects in other drug use, and likely damage to adolescent brain development.[1-2] There is no intention in making this point to be humorous - **this is very important because it is clear that many of the patients who are brought along to parliamentary inquiries, and who offer public testimony of the wonderful effects of cannabis are actually speaking from a background of pre-existing cannabis dependency and addiction.** Legislators need to keep this key issue always in the forefront of their minds. As correctly identified by the US National Institute on Drug Abuse President Dr Volkow, who has written the leading article in the New England Journal of Medicine on June 4th 2014, cannabis can cause many illnesses, so the claim that cannabis relieves a pain in whose aetiology cannabis was implicated must be viewed with substantial circumspection by those charged with responsible decision making in our community. Legislators should note that these disorders include chronic back pain[5].

[1] National Institute of Drug Abuse
[2] See Epilepsy Action Australia - http://www.epilepsy.org.au/living-with-epilepsy/lifestyle-issues/alcohol-and-drugs
[3] Diagnostic and Statistical Manual IV and V respectively.
[4] American Psychiatric Association
[5] See Active Ingredients In Marijuana Found To Spread And Prolong Pain - http://www.sciencedaily.com/releases/2009/08/090813170848.htm

Side-effects limit its usefulness

Clinical reports of cannabis for medical use, as can be seen by the following tables from the comprehensive US Institutes of Medicine review of 1999, cite a very high rate of unacceptable side effects, which frequently precludes its clinical application. Such very elevated rates of discontinuation (often around 30-50%) of cannabis-based treatments are rare with other treatments in the conditions under discussion.

The risks of mental side effects from cannabis are not distant and remote as some supporters claim. Cannabis intoxication, dependence and tolerance in patients exposed to high levels of it – albeit for therapeutic purposes - are common, and entail anxiety, paranoia, forgetfulness and depression, and at times psychotic disturbances and hallucinations as being not unusual.

Drug Free Australia notes that Sativex is not directly marketed in Australia by GW Pharmaceuticals, despite it being registered for patients with MS, because of the lack of interest and sales in this country, very likely due to cannabis' side-effect profile

Tables of all scientific studies on 'medical cannabis' from the extensive IOM review

Below are tables of every rigorous scientific study on 'medical cannabis' listed in the 1999 Institute of Medicine review. We note that the only studies since the Institute of Medicine review which modify their conclusions, clearly printed at the end of the table for each medical indication, are in the area of MS spasticity where cannabis has been found to have some effectiveness.

Following the establishment of the Center for Medicinal Cannabis Research (CMCR) at the University of California in 1999, the number of research projects on smoked cannabis has increased. Several clinical studies have been published on neuropathic pain and experimentally induced pain. In general the results show a modest analgesic effect of smoked cannabis over placebo, the same findings as in the 1999 IOM review.

It is important to note that most of the subjects in these studies were cannabis experienced, so the results may not be able to be extrapolated to cannabis naïve patients. Moreover, because the subjects were cannabis-experienced, it is likely that blinding was compromised and hence the findings should be interpreted with this in mind.

We further note that many of these older cannabis studies were done when the THC concentration of cannabis was 3%. So the studies which found no ill effects in the 1970's - 1990's are likely out of date at this time. Dr Volkow from NIDA has noted that THC concentrations of cannabis are now reported in the USA commonly at 12%. Indeed one cannabis shop is said to be opening in Colorado reporting a choice for patrons from 17% - 20% THC in its product.

PAIN RELIEF

Experimentally Induced Acute Pain

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Clark WC, Janal MN, Zeidenberg P, Nahas GG. 1981. Effects of moderate and high doses of marihuana on thermal pain: A sensory decision theory analysis. *Journal of Clinical Pharmacology* 21:299S—310S.	THC		Thermal pain		Unsuccessful - *increase* in pain sensitivity		
Hill SY, Schwin R, Goodwin DW, Powell BJ. 1974. Marihuana and pain. *Journal of Pharmacology and Experimental Therapeutics* 188:415—418.	THC		Electrical stimulation		Unsuccessful - *increase* in pain sensitivity		
Libman E, Stern MH. 1985. The effects of delta-9-tetrahydrocannabinol	THC		Tourniquet pain		Unsuccessful - *increase* in pain sensitivity		

on cutaneous sensitivity and its relation to personality. *Personality, Individuality and Difference* 6:169—174							
Raft D, Gregg J, Ghia J, Harris L. 1977. Effects of intravenous tetrahydrocannabinol on experimental and surgical pain: Psychological correlates of the analgesic response. *Clinical Pharmacology and Therapeutics* 21:26—33.	Tetrahydro-cannabinol		surgical pain – tooth extraction		Unsuccessful - no analgesic effect	Poor - study suffered from several serious limitations: the tooth extraction included treatment with the local anesthetic lidocaine, the pain during the procedure was assessed 24 hours later, and there was no positive control. Levonantradol (a synthetic THC analogue) was tested in 56 patients who had moderate to severe postoperative or trauma pain. They were given intramuscular injections of levonantrodol or placebo 24 hours after surgery. To control for previous drug exposure, patients with a history of drug abuse or addiction and those who received an analgesic, antiinflammatory, tranquilizer, sedative, or anesthetic agent within 24 hours of the test drug were excluded from the study. On average, pain relief was significantly greater in the levonantradol-treated patients than in the placebo-treated patients. Because the authors did not report the number or percentage of people who responded, it is not clear whether the average represents consistent pain relief in all levonantradol-treated patients	

						or whether some people experienced great relief and a few experienced none.	
Animal studies - There is available data from animal studies indicate that cannabinoids could be useful analgesics. In general, cannabinoids seem to be mild to moderate analgesics. Opiates, such as morphine and codeine, are the most widely used drugs for the treatment of acute pain, but they are not consistently effective in chronic pain; they often induce nausea and sedation, and tolerance occurs in some patients. Recent research has made it clear that CB_1 receptor agonists act on pathways that partially overlap with those activated by opioids but through pharmacologically distinct mechanisms. Therefore, they would probably have a different side effect profile and perhaps additive or synergistic analgesic efficacy.							

Chronic Pain

Study	**Cannabinoid**	**Trial Type**	**Testing modality**	**Delivery system**	**Result**	**Study design**	**Side Effects**
Noyes Jr R, Brunk SF, Baram DA, Canter A. 1975a. Analgesic effect of delta-9-tetrahydrocannabinol. *Journal of Clinical Pharmacology* 15:139—143.	Oral doses of THC in pill form – 5mg, 10 mg, 15 mg, 20 mg	double-blind, placebo-controlled study of 10 subjects measuring both pain intensity and pain relief	Cancer pain	Oral pill	Successful - The 15- and 20-mg doses of THC produced significant analgesia. There were no reports of nausea or vomiting. At least half the patients reported increased appetite. Side effects should however be noted for these higher doses.	there were no positive controls--that is, other analgesics that could provide a better measure of the degree of analgesia produced by THC.	With a 20-mg dose of THC, patients were heavily sedated and exhibited "depersonalization," characterized by a state of dreamy immobility, a sense of unreality, and disconnected thoughts. Five of 36 patients exhibited adverse reactions (extreme anxiety) and were eliminated from the study. Only one patient experienced this effect at the 10-mg dose of THC.
Noyes R, Jr, Brunk SF, Avery DH, Canter A. 1975b.		single-dose study		Oral pill	Successful - the analgesic effect of 10 mg of THC was equivalent to that of 60 mg		Similar to study above, though THC was more sedating than codeine.

The analgesic properties of delta-9-tetrahydrocannabinol and codeine. *Clinical Pharmacology and Therapeutics* 18:84—89					of codeine; the effect of 20 mg of THC was equivalent to that of 120 mg of codeine. (Note that codeine is a relatively weak analgesic.) In a separate publication the same authors published data indicating that patients had improved mood, a sense of well-being, and less anxiety.		
Staquet M, Gantt C, Machin D. 1978. Effect of a nitrogen analog of tetrahydrocannabinol on cancer pain. *Clinical Pharmacology and Therapeutics* 23:397—401.	Nitrogen analogue of THC		Two trials: one compared this analogue with codeine in 30 patients, and a second compared it with placebo or secobarbital, a short-acting barbiturate.		Successful- for mild, moderate, and severe pain, the THC analogue was equivalent to 50 mg of codeine and superior to placebo and to 50 mg of secobarbital.		
Holdcroft A *et al*. *Pain relief with oral cannabinoids in familial Mediterranean fever*. Anaesthesia, 1997, 52, 483	Cannabis oil capsules, standardised for THC content	placebo-controlled trial of cannabis	A patient with severe chronic pain of gastro-intestinal origin (diagnosed as familial Mediterranean fever)		Provisional success due to being a single patient study - . the patient's demand for morphine was substantially lower during treatment with cannabis than during a period of placebo treatment	Single patient study	

Migraine headaches

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
El-Mallakh RS. 1987. Marijuana and migraine. *Headache* 27:442—443.	THC			Smoked	Unsuccessful - it presents three cases of cessation of daily marijuana smoking followed by migraine attacks--not convincing evidence that marijuana relieves migraine headaches.		

SUMMARY – PAIN RELIEF

1. There is not yet enough evidence from human studies.

2. There is solid evidence from preclinical research that cannabinoids reduce pain in animals.

3. There is no evidence that marijuana or cannabinoids relieve migraine headaches.

4. Research should be done to learn:

    a) if cannabinoids can enhance the pain-relieving effects of opiate drugs

    b) which cannabinoids might be useful pain medications.

NAUSEA AND VOMITING (emesis)

Note: Many of the reported clinical experiences with cannabinoids are not based on definitive experimental methods.

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Chang AE, Shiling DJ, Stillman RC, et al. 1979. Delta-9-tetrahydrocannabinol as an antiemetic in patients receiving high-dose methotrexate: A prospective, randomized evaluation. *Annals of Internal Medicine* 91:819—824.	THC		patients receiving methotrexate		Limited Success - THC was found to be superior to a placebo in patients receiving methotrexate, **an agent that is not a strong emetic.** However this study is moderated by the following study.	Small number of patients	
Chang AE, Shiling DJ, Stillman RC, Goldberg NH, Seipp CA, Barofsky I, Rosenberg SA. 1981. A prospective evaluation of delta-9-tetrahydrocannabinol as an antiemetic in patients receiving adriamycin and	THC		patients who were receiving a chemother-apeutic drug that is more likely to cause emesis than anthrax-cycline		Unsuccessful - the antiemetic effect was poor.	Small number of patients	

cytoxan chemotherapy. *Cancer* 47:1746—1751.							
Orr LE, McKernan JF, Bloome B. 1980. Antiemetic effect of tetrahydrocannabinol. Compared with placebo and prochlorperazine in chemotherapy-associated nausea and emesis. *Archives of Internal Medicine* 140:1431—1433.	THC		Comparison between THC and Compazine (prochlor-perazine – which in the 80's was one of the more effective anti-emetics		Very limited success - THC and prochlorperazine given orally showed similar degrees of efficacy. Even when administered in combination, THC and prochlorperazine failed to stop vomiting in two-thirds of patients.	These studies often used various chemotherapeutic agents.	
SE, Cronin CM, Zelen M, et al. 1980. Antiemetics in patients receiving chemotherapy for cancer: A randomized comparison of delta-9-tetrahydrocannabinol and prochlorperazine. *New England Journal of Medicine* 302:135—138.	THC		Comparison between THC and Compazine (prochlor-perazine – which in the 80's was one of the more effective anti-emetics		Very limited success - THC and prochlorperazine given orally showed similar degrees of efficacy. Even when administered in combination, THC and prochlorperazine failed to stop vomiting in two-thirds of patients.	These studies often used various chemotherapeutic agents.	

Gralla RJ, Tyson LB, Borden LB, et al. 1984. Antiemetic therapy: A review of recent studies and a report of a random assignment trial comparing metoclopramide with delta-9-tetrahydrocannabinol. *Cancer Treatment Reports* 68:163—172.	THC	carefully controlled double-blind study	Comparison between THC and antiemetic drug metoclo-pramide		Unsuccessful - complete control of emesis occurred in 47% of those treated with metoclopramide and 13% of those treated with THC. Major control (two or fewer episodes) occurred in 73% of the patients given metoclopramide compared to 27% of those given THC.	No patient had previously received chemotherapy therefore anticipatory emesis was not a factor. All patients received the same dose of cisplatin and were randomly assigned to the THC group or the metoclopramide group.	
Steele N, Gralla RJ, Braun Jr DW. 1980. Double-blind comparison of the antiemetic effects of nabilone and prochlorperazine on chemotherapy-induced emesis. *Cancer Treatments Report* 64:219—224.	Synthetic THC – nabilone and levonantradol		Comparison of the antiemetic effects of nabilone and prochlorper-azine on chemother-apy-induced emesis.		Very limited success - efficacy was observed in several trials, but no advantage emerged for these agents. Nabilone and levonantradol reduced emesis but not as well as other available agents in moderately to highly emetogenic settings.		
Tyson LB, Gralla RJ, Clark RA, et al. 1985. Phase I trial of levonantradol in chemotherapy-induced emesis. *American Journal of*	Synthetic THC – levonantradol		Trial of levonantra-dol in chemother-apy-induced emesis.		Very limited success - efficacy was observed in several trials, but no advantage emerged for these agents. Nabilone and levonantradol reduced emesis but not as well as		

Clinical Oncology 8:528—532.					other available agents in moderately to highly emetogenic settings.		

Chemotherapy-Induced Nausea

Note: Although many marijuana users have claimed that smoked marijuana is a more effective antiemetic than oral THC, no controlled studies have yet been published that analyse this in sufficient detail to estimate the extent to which this is the case.

Study	**Cannabinoid**	**Trial Type**	**Testing modality**	**Delivery system**	**Result**	**Study design**	**Side Effects**
Vinciguerra V, Moore T, Brennan E. 1988. Inhalation marijuana as an antiemetic for cancer chemotherapy. *New York State Journal of Medicine* 88:525—527.	Smoked marijuana	Open trial on 56 cancer patients who were unresponsive to conventional antiemetic agents	patients asked to rate the effectiveness of marijuana compared with results during prior chemotherapy cycles	Smoked	Moderately successful - 34% of patients rated marijuana as moderately or highly effective	The study's relative value was difficult to determine because no control group was used and the patients varied with respect to previous experiences, such as marijuana use and THC therapy. Did not report data on the time course of antiemetic control, possible advantages of self-titration with the smoked marijuana, or the degree to which patients were able to swallow the pills. Patients with severe vomiting would have	Inability of nearly one-fourth of the patients to tolerate the administration of marijuana by smoking

						been unlikely to be able to swallow or keep the pills down long enough for them to take effect	
Levitt M, Faiman C, Hawks R, et al. 1984. Randomized double-blind comparison of delta-9-THC and marijuana as chemotherapy antiemetics. *Proceedings of the American Society for Clinical Oncology* 3:91.	Smoked marijuana/ THC in pill form	double-blind, cross-over, placebo-controlled	study comparing smoked marijuana with THC in pill form in 20 patients who were receiving various chemother-apeutic drugs.	Smoked/THC pill	Limited success - only 25% of patients achieved complete control of emesis; 35% of the patients indicated a slight preference for the THC pills over marijuana, 20% preferred marijuana, and 45% expressed no preference	Did not report data on the time course of antiemetic control, possible advantages of self-titration with the smoked marijuana, or the degree to which patients were able to swallow the pills. Patients with severe vomiting would have been unlikely to be able to swallow or keep the pills down long enough for them to take effect	

SUMMARY – RELIEVING NAUSEA AND VOMITING

1. Neither smoked marijuana nor cannabinoids are as effective as current medicines that stop nausea and vomiting in cancer chemotherapy patients.

2. Cannabinoids, however, might be effective in:

    a) those few patients who respond poorly to current antiemetic (anti-nausea) drugs

    b) or more effective in combination with current antiemetics.

3. Research should be pursued for patients who do not respond completely to current antiemetics.

4. A safe (non-smoking) delivery system for cannabinoids should be developed.

5. Until then, the harmful effects of smoking marijuana for a limited period of time may be outweighed by marijuana 's antiemetic benefits for those few cancer patients for whom current antiemetics do not work.

6. Doctors should evaluate such patients on a case by case basis and provide marijuana to them under close medical supervision for a limited period.

WASTING SYNDROME & APPETITE STIMULATION

Malnutrition

Note: A major concern with marijuana smoking in HIV-infected patients is that they might be more vulnerable than other marijuana users to immunosuppressive effects of marijuana or to the exposure of infectious organisms associated marijuana plant material.

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Beal JE, Olson RLL, Morales JO, Bellman P, Yangco B, Lefkowitz L, Plasse TF, Shepard KV. 1995. Dronabinol as a treatment for anorexia associated with weight loss in patients with AIDS. *Journal of Pain and Symptom Management* 10:89—97. Beal JE, Olson R, Lefkowitz L, Laubenstein L, Bellman P, Yangco B, Morales JO, Murphy R, Powderly W, Plasse	Synthetic THC - Dronabinol (Marinol)	Short-term (six-week) and long-term (one-year) therapy		pill	Moderate success - associated with an increase in appetite and stable weight, and in a previous short-term (five-week) clinical trial in five patients, dronabinol was shown to increase body fat by 1%. However, megestrol acetate (Megace) is a synthetic derivative of progesterone that can stimulate appetite and cause substantial weight gain when given in high doses (320—640 mg/day) to AIDS patients. Megestrol acetate is more effective than dronabinol in stimulating weight gain, and dronabinol has no additive effect when used in combination with megestrol acetate		HIV/AIDS patients are the largest group of patients who use dronabinol. However, some reject it because of the intensity of neuropsychological effects, an inability to titrate the oral dose easily, and the delayed onset and prolonged duration of its action. Dizziness and lethargy reported

TF, Mosdell KW, Shepard KV. 1997. Long-term efficacy and safety of dronabinol for acquired immunodeficiency syndrome-associated anorexia. *Journal of Pain and Symptom Management* 14:7—14. Struwe M, Kaempfer SH, Geiger CJ, Pavia AT, Plasse TF, Shepard KV, Ries K, Evans TG. 1993. Effect of dronabinol on nutritional status in HIV infection. *Annals of Pharmacotherapy* 27:827—831.							

Malnutrition – Cancer Patients

Study	**Cannabinoid**	**Trial Type**	**Testing modality**	**Delivery system**	**Result**	**Study design**	**Side Effects**
Gorter R. 1991. Management of anorexia-cachexia associated with	Synthetic THC – Dronabinol (Marinol)			pill	Successful - has been shown to improve appetite and promote weight gain		Cannabinoids have also been shown to negatively affect the immune system and

cancer and HIV infection. *Oncology (Supplement)* 5:13—17.							this could be contraindicated in some cancer patients (both the chemotherapy and the cancer can be immunosuppressive). Dizziness and lethargy also reported

Anorexia Nervosa

Study	**Cannabinoid**	**Trial Type**	**Testing modality**	**Delivery system**	**Result**	**Study design**	**Side Effects**
Gross H, Egbert MH, Faden VB, Godberg SC, Kaye WH, Caine ED, Hawks R, Zinberg NE. 1983. A double-blind trial of delta-9-THC in primary anorexia nervosa. *Journal of Clinical Psychopharmacology* 3:165—171.	THC				Unsuccessful		Caused severe dysphoric reactions in three of 11 patients. Furthermore, such patients might have underlying psychiatric disorders, such as schizophrenia and depression, in which cannabinoids might be hazardous

SUMMARY – MALNUTRITION AND WASTING SYNDROME

1. No published research shows marijuana or cannabinoids are effective in treating malnutrition or wasting in AIDS patients.

2. A standard drug is more effective than THC in stimulating appetite in AIDS patients.

3. Cannabinoids modulate the immune system, which could be a problem in patients whose immune system is already compromised.

4. A major concern is that HIV-infected patients who smoke marijuana may be more vulnerable to the immunosuppressive effects of marijuana or to infectious organisms found in the plant material.

5. Cannabinoids, in combination with other drugs, might help increase appetite, help reduce nausea and vomiting caused by protease inhibitors, and help reduce the pain and anxiety associated with AIDS and cancer in late stages of these diseases.

6. There are medications that are more effective than marijuana for treating the nausea, appetite loss, pain, and anxiety associated with wasting, but these drugs are not equally effective for all patients.

7. A rapid onset form of THC should be developed and tested for these patients.

8. Smoking marijuana is not recommended. The long-term harms from smoking make it a poor delivery system for patients with chronic diseases.

9. For terminally ill patients who get relief from no other drugs, the medical benefits of smoking marijuana may outweigh the harms.

10. THC is ineffective in treating anorexia.

NEUROLOGICAL DISORDERS

Muscle Spasticity – Multiple Sclerosis

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Greenberg HS, Werness SA, Pugh JE, Andrus RO, Anderson DJ, Domino EF. 1994. Short-term effects of smoking marijuana on balance in patients with multiple sclerosis and normal volunteers. *Clinical Pharmacology and Therapeutics* 55:324—328.	Smoked marijuana	double-blind placebo-controlled	study of postural responses in 10 MS patients and 10 healthy volunteers	Smoked	Unsuccessful - marijuana smoking impaired posture and balance in both MS patients and the volunteers.	Survey data do not measure the degree of placebo effect, estimated to be as great as 30 percent in pain treatments. Furthermore, surveys do not separate the effects of marijuana or cannabinoids on mood and anxiety from the effects on spasticity.	The 10 MS patients felt that they were clinically improved. The subjective improvement, while intriguing, does not constitute unequivocal evidence that marijuana relieves spasticity
Clifford DB. 1983. Tetrahydrocannabinol for tremor in multiple sclerosis. *Annals of Neurology* 13:669—671. Petro D, Ellenberger Jr C. 1981. Treatment of human spasticity with delta 9-	THC	3 open clinical trials testing a total of 30 patients			Successful - spasticity was less severe after the THC treatment	Based on patient report or clinical exam by the investigator	THC was not effective in all patients and frequently caused unpleasant side effects

tetrahydrocannabinol. *Journal of Clinical Pharmacology* 21:413S—416S. Ungerleider JT, Andrysiak TA, Fairbanks L, Ellison GW, Myers LW. 1987. Delta-9-THC in the treatment of spasticity associated with multiple sclerosis. *Advances in Alcohol and Substance Abuse* 7:39—50.							
CN, Illis LS, Thom J. 1995. Nabilone in the treatment of multiple sclerosis [Letter]. *Lancet* 345:579.	Nabilone				Successful - spasticity was also reported to be less severe		
Animal studies - There are no supporting animal data to encourage clinical research in this area, but there also are no good animal models of the spasticity of MS. However, in an MS like disease iin mice (experimental autoimmune encephalomyelitis), low doses of cannabinoids alleviate the muscle tremor seen in such animals. Cannabinoids also suppress spinal cord reflexes in animals Basic animal studies have shown that cannabinoid receptors are particularly abundant in areas of the brain that control movement and that cannabinoids affect movement and posture in animals as well as humans. The observations are consistent with the possibility that cannabinoids have antispastic effects, but they do not offer any direct evidence that cannabinoids affect spasticity, even in animals.							

SUMMARY – MUSCLE SPASTICITY

1. There is little research evidence to support claims that marijuana reduces muscle spasticity in Multiple Sclerosis.

2. Research should be conducted to determine whether cannabinoids might relieve symptoms associated with MS.

3. Marijuana should not be smoked by patients with MS, a chronic disease.

SPINAL CORD INJURY

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Hanigan WC, Destree R, Truong XT. 1986. The effect of delta-9-THC on human spasticity. *Clinical Pharmacology and Therapeutics* 39:198. Maurer M, Henn V, Dittrich A, Hoffman A. 1990. Delta-9-tetrahydrocannabinol shows antispastic and analgesic effects in a single case double-blind trial. *European Archives of Psychiatry and Clinical Neuroscience* 240:1—4.	Oral THC	double-blind study	study of a paraplegic patient with painful spasms in both legs		Successful - suggested that oral THC was superior to codeine in reducing muscle spasms	Limitations of one patient	

SUMMARY – SPINAL CORD INJURY

1. Animals research indicates that areas of the brain that control movement contain abundant cannabinoid receptors.

2. Clinical trials testing the effects of cannabinoids on muscle spasticity in spinal cord injury should be considered.

3. If THC is proven to relieve spasticity, then a pill might be the preferred delivery route for nighttime use.

4. An inhaled form of THC, if found to be effective, might be appropriate to relief acute episodes of spasticity.

MOVEMENT DISORDERS

Dystonia

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Consroe P, Sandyk R, Snider SR. 1986. Open label evaluation of cannabidiol in dystonic movement disorders. *International Journal of Neuroscience* 30:277—282.	Cannabidiol (CBD)	preliminary open trial			Moderate success - suggested modest dose-related improvements in the five dystonic patients studied		

Huntington's Disease

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
P, Laguna J, Allender J, Snider S, Stern L, Sandyk R, Kennedy K, Schram K. 1991. Controlled clinical trial of cannabidiol in Huntington's disease. *Pharmacology,*	Cannabidiol (CBD)	double-blind crossover study (CBD and placebo) of 15 Huntington's disease patients			Unsuccessful - symptoms neither improved nor worsened with CBD treatment		

Biochemistry and Behavior (New York) 40:701—708. Sandyk R, Consroe P, Stern P, Biklen D. 1988. Preliminary trial of cannabidiol in Huntington's disease. Chesher G, Consroe P, Musty R., Editors, *Marijuana: An International Research Report.* Canberra: Australian Government Publishing Service.		who were not taking any antipsychotic drugs					
Animal studies suggest that cannabinoids have antichoreic activity, presumably because of stimulation of CB_1 receptors in the basal ganglia.							

Parkinson's Disease

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Frankel JP, Hughes A, Lees AJ, Stern GM. 1990. Marijuana for Parkinsonian tremor. *Journal of Neurology, Neurosurgery and Psychiatry* 53:436.	Smoked marijuana			Smoked	Unsuccessful - no improvement in tremor after the five patients smoked marijuana--whereas all subjects benefited from the administration of standard medications for Parkinson's disease (levodopa and apomorphine)		
Animal studies - Hyperactivity of the subthalamic neurons, observed in both Parkinson's patients and animal models of Parkinson's disease, is hypothesized to be a major factor in the debilitating							

bradykinesia associated with the disease Furthermore, although cannabinoids oppose the actions of dopamine in intact rats, they augment dopamine activation of movement in an animal model of Parkinson's disease. This suggests the potential for adjunctive therapy with cannabinoid agonists.

Tourette's Syndrome

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Hemming M, Yellowlees PM. 1993. Effective treatment of Tourette's syndrome with marijuana. *Journal of Psychopharmacology* 7:389—391. Sandyk R, Awerbuch G. 1988. Marijuana and Tourette's syndrome. *Journal of Clinical Psychopharmacology* 8:444—445.	marijuana	four case histories			Questionable Success - indicating that marijuana use can reduce tics in Tourette's patients. In three of the four cases the investigators suggest that beneficial effects of marijuana might have been due to anxiety-reducing properties of marijuana rather than to a specific antitic effect.		

SUMMARY – MOVEMENT DISORDERS

1. There is no research evidence that marijuana or cannabinoids are helpful in reducing symptoms that occur in movement disorders.

2. The anxiety-reducing aspects of marijuana and cannabinoids might be beneficial to some patients with movement disorders.

3. However, chronic marijuana smoking is a health risk for chronic conditions such as movement disorders.

4. Animal studies should be undertaken to determine if cannabinoids might play a role in movement disorders.

5. Clinical trials of isolated cannabinoids should be undertaken.

EPILEPSY

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Ng SKC, Brust JCM, Hauser WA, Susser M. 1990. Illicit drug use and the risk of new-onset seizures. *American Journal of Epidemiology* 132:47—57.	marijuana	case-controlled study			Inconclusive – see Study Design. Ng and co-workers concluded that marijuana is a protective factor for first-time seizures in men but not women	This was a weak study. It did not include measures of health status prior to hospital admissions for the patients' serious conditions, and differences in their health status might have influenced their drug use rather than--as suggested by the authors--that differences in their drug use influenced their health.	

SUMMARY - EPILEPSY

1. Neither marijuana nor cannabinoids are effective in treating epilepsy.

ALZHEIMER'S DISEASE

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Volicer L, Stelly M, Morris J, McLaughlin J, Volicer BJ. 1997. Effects of dronabinol on anorexia and disturbed behavior in patients with Alzheimer's disease. *International Journal of Geriatric Psychiatry* 12:913—919.	Dronabinol (Marinol)	Eleven Alzheimer's patients were treated for 12 weeks on an alternating schedule of dronabinol and placebo (six weeks of each treatment).		pill	Successful - treatment resulted in substantial weight gains and declines in disturbed behavior		No serious side effects were observed

SUMMARY – ALZHEIMER'S DISEASE

1. Further clinical research should be conducted to determine if cannabinoids have a role in stimulating appetite in Alzheimer's patients with severe dementia.

2. Because short-term memory loss is a common side-effect of THC, the effect of cannabinoids on memory in Alzheimer's patients who are less severely disturbed must be contemplated.

GLAUCOMA

Study	Cannabinoid	Trial Type	Testing modality	Delivery system	Result	Study design	Side Effects
Hepler RS, Frank IM, Petrus R. 1976. Ocular effects of marijuana smoking. In: Braude MC, Szara S, Editors, *The Pharmacology of Marijuana.* New York: Raven Press. Pp. 815—824. Jones RT, Benowitz NL, Herning RI. 1981. Clinical relevance of cannabis tolerance and dependence. *Journal of Clinical Pharmacology*	Marijuana			Eaten or in pill form	Successful - IOP was reduced by an average of 25%		

21:143S—152S.							
Alm A, Camras CB, Watson PG. 1997. Phase III latanoprost studies in Scandanavia, the United Kingdom and the United States. *Survey of Ophthalmology* 41:S105—S110. CB, Alm A, Watson P, Stjernschantz J. 1996. Latanoprost, a prostaglandin analog, for glaucoma therapy: Efficacy and safety after 1 year of treatment in 198 patients. Latanoprost Study Groups. *Ophthalmology* 103:1916—1924. Crawford WJ, Merritt JC. 1979. Effects of tetrahydrocannabinol on arterial and-intraocular hypertension. *International Journal of Clinical*	Smoked Marijuana with 2% THC			Smoked	Limited success as below - IOP was reduced by an average of 25% after smoking a marijuana cigarette that contained approximately 2% THC--a reduction as good as that observed with most other medications available today. But the effect lasts only about three to four hours. Elevated IOP is a chronic condition and must be controlled continuously.		

Pharmacology and Biopharmacy 17:191—196. Hepler RS, Frank IM, Petrus R. 1976. Ocular effects of marijuana smoking. In: Braude MC, Szara S, Editors, *The Pharmacology of Marijuana.* New York: Raven Press. Pp. 815—824. Hepler RS, Frank IR. 1971. Marihuana smoking and intraocular pressure. *Journal of the American Medical Association* 217(10):1392. Merritt JC, Crawford WJ, Alexander PC, Anduze AL, Gelbart SS. 1980. Effect of marihuana on intraocular and blood pressure in glaucoma. *Ophthalmology*							

87:222—228. Walters TR. 1996. Development and use of brimonidine in treating acute and chronic elevations of intraocular pressure: A review of safety, efficacy, dose response, and dosing studies. *Survey of Ophthalmology* 41(Suppl. 1):S19—S26.							

SUMMARY - GLAUCOMA

1. Both cannabinoids and marijuana lower intraocular pressure (IOP).

2. However, both also lower blood pressure, which might reduce the flow of blood through the optic nerve and actually increase the progression of glaucoma.

3. Many effective medications are available to treat glaucoma at a cost of about US$60 per month.

Cost of pharmaceutical cannabinoids identical to illegal cannabis in Australia

The cost of cultivated **crude** cannabis in the United States for medical cannabis patients is about $500 per month as is reflected by NORML in the US in its 2009 Recommendations to the Obama Administration on marijuana dispensaries:

> There is little doubt as to why cannabis dispensaries are multiplying at such a rate. The price of cannabis in dispensaries ranges from $12.50 to $25 per gram (28 grams per ounce). The average "medical" user with a chronic medical condition may consume from 1.5 to 3.0 grams per day.31 Therefore, the monthly cost to patients **ranges from $562 (1.5 grams/day at $12.50/gm) to $2,250 (3 grams/day at $25/gm).** Since the herbal cannabis, which is of varying strains and quality, has not received FDA approval, none of this expense is covered by a patient's health insurance, and there is no assurance of quality control or accurate dosage information.
> http://norml.org/pdf_files/Marijuana_Dispensaries_Recommendations.pdf

This presents the same cost to patients as purchasing illegal cannabis from a dealer, which is between $12.00 and $12.50 a gram in Australia.

By comparison, the generic version of Marinol, the THC capsule, **costs US$402 per 100 capsules for 2.5 mg, US$927 for 100 5mg capsules, or US$1,696 for 100 10mg capsules** online, taking one website as an example http://www.drugs.com/price-guide/dronabinol#oral-capsule-2-5-mg. Brand-name Marinol is more than twice the cost of the generic brand. Marinol, whether brand or generic, is longer acting than smoked cannabis.

Sativex, by further comparison, costs on average $500 per month for New Zealanders - see page 38 of the NSW General Purpose Standing Committee No. 4 Report – The Use of Cannabis for Medical Purposes.
http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/fdb7842246a5ab71ca257b6c0002f09b/$file/final%20report%20-%20the%20use%20of%20cannnabis%20for%20medical%20purposes.pdf

It is clear that any patient currently purchasing cannabis in Australia will pay no more than they are currently. Alternatively, cannabis grown by patients for their own personal use in the USA is heavily diverted, and a major source of cannabis for minors surveyed when presenting for rehabilitation from cannabis addiction.

Cost of pharmaceutical cannabinoids may need PBS subsidy

Where pharmaceutical cannabinoids are genuinely effective for patients within Australia, and where it can be demonstrated that there is a critical mass of prescribed medical need, PBS subsidies might well be sort to cheapen the cost to patients.

95% of 'medical cannabis' users surveyed were recreational users

The following text is from the 1999 US Institute of Medicine review on 'medical cannabis', finding that 95% of medical users were previously recreational users of the substance:

> There have been no comprehensive surveys of the demographics and medical conditions of 'medical marijuana' users, but a few reports provide some indication. In each case, survey results should be understood to reflect the situation in which they were conducted and are not necessarily characteristic of 'medical marijuana' users as a whole. Respondents to surveys reported to the IOM study team were all members of "buyers' clubs," organizations that provide their members with marijuana, although not necessarily through direct cash transactions. The atmosphere of the marijuana buyers' clubs ranges from that of the comparatively formal and closely regulated Oakland Cannabis Buyers' Cooperative to that of a "country club for the indigent," as Denis Peron described the San Francisco Cannabis Cultivators Club (SFCCC), which he directed.
>
> John Mendelson, an internist and pharmacologist at the University of California, San Francisco (UCSF) Pain Management Center, surveyed 100 members of the SFCCC who were using marijuana at least weekly. Most of the respondents were unemployed men in their forties. Subjects were paid $50 to participate in the survey; this might have encouraged a greater representation of unemployed subjects. All subjects were tested for drug use. About half tested positive for marijuana only; the other half tested positive for drugs in addition to marijuana (23% for cocaine and 13% for amphetamines). The predominant disorder was AIDS, followed by roughly equal numbers of members who reported chronic pain, mood disorders, and musculoskeletal disorders (Table 1.1).
>
> The membership profile of the San Francisco club was similar to that of the Los Angeles Cannabis Resource Center (LACRC), where 83% of the 739 patients were men, 45% were 36—45 years old, and 71% were HIV positive. Table 1.2 shows a distribution of conditions somewhat different from that in SFCCC respondents, probably because of a different membership profile. For example, cancer is generally a disease that occurs late in life; 34 (4.7%) of LACRC members were over 55 years old; only 2% of survey respondents in the SFCCC study were over 55 years old.
>
> Jeffrey Jones, executive director of the Oakland Cannabis Buyers' Cooperative, reported that its largest group of patients is HIV-positive men in their forties. The second-largest group is patients with chronic pain.
>
> Among the 42 people who spoke at the public workshops or wrote to the study team, only six identified themselves as members of marijuana buyers' clubs. Nonetheless, they presented a similar profile: HIV/AIDS was the predominant disorder, followed by chronic pain (Tables 1.3 and 1.4). All HIV/AIDS patients reported that marijuana relieved nausea and vomiting and improved their appetite. About half the patients who reported using marijuana for chronic pain also reported that it reduced nausea and vomiting.
>
> Note that the medical conditions referred to are only those reported to the study team or to interviewers; they cannot be assumed to represent complete or accurate diagnoses. Michael Rowbotham, a neurologist at the UCSF Pain Management Center, noted that many pain patients referred to that center arrive with incorrect diagnoses or with pain of unknown origin. At that center the

patients who report medical benefit from marijuana say that it does not reduce their pain but enables them to cope with it.

Most--not all--people who use marijuana to relieve medical conditions have previously used it recreationally. An estimated 95% of the LACRC members had used marijuana before joining the club. It is important to emphasize the absence of comprehensive information on marijuana use before its use for medical conditions. Frequency of prior use almost certainly depends on many factors, including membership in a buyers' club, membership in a population sector that uses marijuana more often than others (for example, men 20—30 years old), and the medical condition being treated with marijuana (for example, there are probably relatively fewer recreational marijuana users among cancer patients than among AIDS patients).

Patients who reported their experience with marijuana at the public workshops said that marijuana provided them with great relief from symptoms associated with disparate diseases and ailments, including AIDS wasting, spasticity from multiple sclerosis, depression, chronic pain, and nausea associated with chemotherapy. Their circumstances and symptoms were varied, and the IOM study team was not in a position to make medical evaluations or confirm diagnoses. Three representative cases presented to the IOM study team are presented in Box 1.1; the stories have been edited for brevity, but each case is presented in the patient's words and with the patient's permission.

The variety of stories presented left the study team with a clear view of people's beliefs about how marijuana had helped them. But this collection of anecdotal data, although useful, is limited. We heard many positive stories but no stories from people who had tried marijuana but found it ineffective. This is a fraction with an unknown denominator. For the numerator we have a sample of positive responses; for the denominator we have no idea of the total number of people who have tried marijuana for medical purposes. Hence, it is impossible to estimate the clinical value of marijuana or cannabinoids in the general population based on anecdotal reports. Marijuana clearly seems to relieve some symptoms for some people--even if only as a placebo effect. But what is the balance of harmful and beneficial effects? That is the essential medical question that can be answered only by careful analysis of data collected under controlled conditions.

TABLE 1.1 Self-Reported Disorders Treated with Marijuana by Members of San Francisco Cannabis Cultivators Club

HIV	60
Musculoskeletal disorders and arthritis	39
Psychiatric disorders (primarily depression)	27
Neurological disorders and nonmusculoskeletal pain syndromes	9
Gastrointestinal disorders (most often nausea)	7
Other disorders : Glaucoma, allergies, nephrolithiasis, and the skin manifestations of Reiter syndrome	7
Total disorders	149
Total number of respondents	100

TABLE 1.2 Self-Reported Disorders Treated with Marijuana by Members of Los Angeles Cannabis Resource Center (LACRC), According to Center Staff[a]

HIV[b]	528	71
Cancer	40	5.4
Terminal cancer	10	1.4
Mood disorders (depression)	4	0.5
Musculoskeletal (multiple sclerosis,		
arthritis)	30	4.1
Chronic pain and back pain	33	4.5
Gastrointestinal	7	2.3
Neurological disorders (epilepsy,		
Tourette syndrome, brain trauma)	7	0.9
Seizures or migraines[c]	13	1.8
Glaucoma	15	2.0
Miscellaneous	42	5.7
Total number	739	100

TABLE 1.3 Summary of Reports to IOM Study Team by 43 Individuals

Symptoms	Dominant Disease	Symptoms	Dominant Disease
Anorexia,	AIDS	Pain	Migraine
nausea,	AIDS		Injury
vomiting	AIDS		Injury
	AIDS		Epilepsy and postpolio syndrome
	AIDS		Trauma and epilepsy
	AIDS		Degenerative disk disease
	AIDS		Rheumatoid arthritis
	AIDS and cancer		Nail-patella syndrome
	Cancer		Reflex sympathetic dystrophy
	Testicular cancer		Gulf War chemical exposure
	Cancer and multiple sclerosis		Multiple congenital cartilaginous exostosis
	Thyroid condition[a]		Histiocytosis X
	Migraine		
	Wilson's disease	Muscle spasticity	Spasticity[a]
			Multiple sclerosis
Mood disorders	Depression		Multiple sclerosis
	Depression		Multiple sclerosis
	Depression and anxiety		Paralysis
	Depression and anxiety		Spinal-cord injury
	Manic depression		Spasmodic torticollis
	Manic depression	Intraocular pressure	Glaucoma
	Posttraumatic stress		
	Premenstrual syndrome		
		Diarrhea	Crohn's disease

[a]Not specified.

NOTE: This table lists the people who reported to the IOM study team during the public workshops, or through letters, that they use marijuana as medicine; it should not be interpreted as a representative sample of the full spectrum of people who use mar juana as medicine. Each dominant disease represents an individual report.

TABLE 1.4 Primary Symptoms of 43 Individuals Who Reported to IOM Study Team

	Symptom Frequency		Multiple Symptoms	
Primary Symptom	No. of Reports[a]	% of Total Symptoms Reported	No. Who Reported (primary) Additional Symptoms	% of Those Who Reported Primary Symptoms
Anorexia, nausea, vomiting	21	31	13	62
Diarrhea	4	6	3	75
Intraocular pressure	2	3	1	50
Mood disorders	12	18	7	58
Muscle spasticity	12	18	7	58
Pain	16	24	13	81
Total	67		44	66

[a]Forty-three persons reporting; 20 reported relief from more than one symptom.

Most uses of 'medical cannabis' are objectively unverifiable

In the US State of Nevada, the majority of marijuana is used for **generalised** conditions; for example, 53% for severe pain, 29% for muscle spasms, and 11% for severe nausea.[6] There is no straightforward way to assess each of these conditions objectively. The remaining 7% are for glaucoma, HIV+/AIDS, cancer and cachexia (wasting).
The demographic data and usage data reveal that most registrants have come from a background of recreational use and are smoking marijuana for conditions which cannot be easily objectively verified. This is not to necessarily argue that registrants do not have medical conditions which they believe may be treated by marijuana, but simply to note that this mode of drug delivery and means of treatment are not subject to the usual controls put in place for ensuring the good of the patient. There is also no straightforward way to assess whether someone might simply be seeking marijuana for 'recreational' use

[6] Raybuck T, Medical Marijuana, Nevada's Big Gamble. *The Journal of Global Drug Policy and Practice* 5(2), 2011

under the guise of medical treatment, and thereby exposing themselves to a litany of avoidable harms.

This lack of objective verification can lead to mischief-making on the part of recreational cannabis users who see medical cannabis as a pathway to getting legal availability and use of an otherwise illegal substance by citing an unverifiable illness, as has happened with many claiming the Australian Disability Support Pension. In light of this, the Greens proposal to allow 'Category 3' claims for medical cannabis, covering a whole range of maladies for which there is no clinical trial evidence supporting any effect from medical cannabis, and where many may be caused by recreational use in the first place, should be rejected even if only pharmaceutical medical cannabis is eventually allowed.

CENTRAL ISSUES FOR ACT LEGISLATORS – 3

The Greens Bill ignores 74% of addicted teens in Colorado sourcing cannabis from medical marijuana patients

In one US State with 'medical marijuana' laws, 74% of young people entering treatment for cannabis addiction sourced their cannabis from people with 'medical marijuana' prescriptions, demonstrating that diversion to recreational users will always be a problem under such provisions. While it is unclear whether medical cannabis is the cause, US States that have legalised medical cannabis have higher rates of recreational use than other States.

Diversion to minors for recreational use well documented

The Greens discussion paper asks the question, "*Will this legislation lead to an increase in the illegal supply of cannabis?* followed by this counter-evidence assertion:

> It is unlikely the proposed scheme will lead to a problem with illegal supply. The proposed legislation establishes a restrictive and highly regulated cultivation licensing scheme which will safeguard against abuse.

Drug Free Australia notes that in spite of Colorado having a system of medical cannabis permits and a central registry, similar to the ACT Greens' proposal, two separate surveys of teens entering rehabilitation indicate that 74% in the later survey reported that they sourced cannabis from medical cannabis patients. Such diversion to minors is unconscionable and almost practically unenforceable due to limits on policing resources.

1. 48.8% of rehab teens using diverted medical cannabis in 2011

Drug Alcohol Depend. 2011 November 1; 118(2-3): 489–492. doi:10.1016/j.drugalcdep.2011.03.031.

Medical marijuana diversion and associated problems in adolescent substance treatment*

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Abstract

Background—The prevalence of medical marijuana diversion among adolescents in substance treatment and the relationship between medical marijuana diversion and marijuana attitudes, availability, peer disapproval, frequency of use and substance-related problems are not known.

Methods—80 adolescents (15-19 years) in outpatient substance treatment in Denver, Colorado, completed an anonymous questionnaire developed for the study and the Drug Use Screening Inventory-Revised (DUSI-R). The proportion ever obtaining marijuana from someone with a medical marijuana license was calculated. Those ever obtaining marijuana from someone with a medical marijuana license were compared to those never obtaining medical marijuana with respect to marijuana attitudes, availability, peer disapproval, frequency of use, DUSI-R substance use problem and overall problem score using Chi-Square analyses and independent t-tests.

Results—39 (48.8%) reported ever obtaining marijuana from someone with a medical marijuana license. A significantly greater proportion of those reporting medical marijuana diversion, compared to those who did not, reported very easy marijuana availability, no friend disapproval of regular marijuana use and greater than 20 times of marijuana use per month over the last year. The diversion group compared to the no diversion group also reported more substance use problems and overall problems on the DUSI-R.

Conclusions—Diversion of medical marijuana is common among adolescents in substance treatment. These data support a relationship between medical marijuana exposure and marijuana availability, social norms, frequency of use, substance-related problems and general problems among teens in substance treatment. Adolescent substance treatment should address the impact of medical marijuana on treatment outcomes.

2. 74% of rehab teens using diverted medical cannabis by 2012

J Am Acad Child Adolesc Psychiatry. 2012 July ; 51(7): 694–702. doi:10.1016/j.jaac.2012.04.004.

Medical Marijuana Use among Adolescents in Substance Abuse Treatment

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Abstract

Objective—To assess the prevalence and frequency of medical marijuana diversion and use among adolescents in substance abuse treatment and to identify factors related to their medical marijuana use.

Method—This study calculated the prevalence and frequency of diverted medical marijuana use among adolescents (N = 164), ages 14–18 (x□ age = 16.09, SD = 1.12), in substance abuse treatment in the Denver metropolitan area. Bivariate and multivariate analyses were completed to determine factors related to adolescents' use of medical marijuana.

Results—Approximately 74% of the adolescents had used someone else's medical marijuana and they reported using diverted medical marijuana a median of 50 times. After adjusting for gender and race/ethnicity, adolescents who used medical marijuana had an earlier age of regular marijuana use, more marijuana abuse and dependence symptoms, and more conduct disorder symptoms compared to those who did not use medical marijuana.

Conclusions—Medical marijuana use among adolescent patients in substance abuse treatment is very common, implying substantial diversion from registered users. These results support the need for policy changes that protect against diversion of medical marijuana and reduce adolescent access to diverted medical marijuana. Future studies should examine patterns of medical marijuana diversion and use in general population adolescents.

17% of teens who start young addicted to cannabis

Contrary to common belief, marijuana is addictive. Estimates from research suggest that about 9 percent of users become addicted to marijuana; this number

increases among those who start young (to about 17 percent, or 1 in 6) and among people who use marijuana daily (to 25-50 percent).
http://www.drugabuse.gov/publications/drugfacts/marijuana

CENTRAL ISSUES FOR ACT LEGISLATORS - 4

1. **The Greens Bill does not recognise that it is legislating trafficable quantities of cannabis**

   Just one single cannabis plant, harvested up to five times a year, can yield 2,500 grams of cannabis per year, enough for 8,600 joints – far beyond the needs of any single patient. As such, even a single cannabis plant represents trafficable quantities of cannabis.

Massive, trafficable quantities recommended for medical use

The Greens draft legislation nominates the number of plants that can be grown as at the discretion of the ACT Chief Health Officer, which must not be a trafficable quantity as defined by the ACT Criminal Code – defined as 300 grams or 10 plants. Nine cannabis plants are between them capable of producing a massive, trafficable quantity of cannabis – up to 77,400 joints per year or 8,600 joints per plant per year, the estimate of the Police Association in 1996 (see below for yield details).

This well illustrates the naivety of the Greens proposal, which, if pegged to the ACT Criminal Code, could possibly put up to 77,400 joints per year (street-value of $270,000) into the hands of a single patient, whose strength of character in the face of substantial profit made from the plants in a setting where police resourcing could not possibly monitor every patient, is unknown. However we do indeed know what will happen overall due to the Colorado experience – enough of the cannabis will find its way into the black market such that most minors presenting at rehabs for cannabis addiction will have sourced cannabis from those patients who could not resist the allure of self-funding from their legalised crop. Drug Free Australia does indeed question how the police could regulate the non-distribution of such plant material when they already struggle to prohibit the recreational use of marijuana.

Given the possible yield of a single cannabis plant, even one single plant grown for a medical cannabis patients yields a trafficable quantity of cannabis, making any legislation that legalises medical cannabis by the number of plants grown entirely untenable, predisposing to a culture of diversion of medical cannabis for recreational use.

The Victorian Police Association disclosed one cannabis plant yields five crops a year of 500 grams per crop totalling 2500 grams. – *Letter, The Police Association to DJ Perrin, 26 April 1996 p 3*

The Woodward Royal Commission disclosed that a three month old cannabis plant will produce at least 500 grams of harvestable leaf or a crop of 2000 grams a year.

Just 25 grams of marijuana produces 86 joints with 3% of THC, so one plant can produce up to 8600 marijuana joints every year. *(Marijuana An Australian Crisis).*

CENTRAL ISSUES FOR ACT LEGISLATORS - 5

The Greens Bill, perhaps unwittingly, aligns with drug legalisation strategies worldwide

Those working to legalise the recreational use of cannabis worldwide by seeking to destroy the United Nations' International Drug Conventions use 'medical marijuana' as a Trojan horse to introduce the full legalisation of cannabis for recreational use. Richard Cowan, the Director of cannabis legalisation organisation, NORML, said in 1993 "medical marijuana is our strongest suit. It is our point of leverage which will move us toward the legalisation of marijuana for personal use . . . ." While it is unclear whether medical cannabis is the cause, US States that have legalised medical cannabis have higher rates of recreational use than other States.

Drug legalisation strategies

"The consensus here is that medical marijuana is our strongest suit. It is our point of leverage which will move us toward the legalisation of marijuana for personal use, and in that process we will break down the power of the narcocracy to wage a war of terror over things."
Richard Cowan – Director of NORML at the 50th anniversary of the discovery of LSD in San Francisco 1993

"I would establish a strictly controlled distribution network through which I would make most drugs, excluding the most dangerous ones like crack, legally available. Initially, I would keep prices low enough to destroy the drug trade. Once that objective was attained I would keep raising the prices, very much like the excise duty on cigarettes, but I would make an exception for registered addicts in order to discourage crime. I would use a portion of the income for prevention and treatment. And I would foster social opprobrium of drug use."
Soros on Soros: Staying Ahead of the Curve. New York: John Wiley & Sons, 1995 p 200 - George Soros is named in Time magazine as the most influential financial supporter of the drug legalization movement, providing $50,000,000 thus far for legalization efforts globally.

"Come up with an approach that emphasizes 'treatment and humanitarian endeavors,' he said, hire someone with the political savvy to sit down and negotiate with government officials, and target a few winnable issues, like medical marijuana and the repeal of mandatory minimums."
George Soros, quoted by Cynthia Cotts, "Smart Money," Rolling Stone, May 5, 1994.

"(I am sure you have read the recent reports linking cannabis to schizophrenia). As we have managed to reduce the prevalence of smoking (from 70% to 20% in males) and incidence of tobacco related health problems, and also reduced alcohol consumption by about 25% in the last 20 years as well as the number of alcohol related deaths by 20% in the last decade, why do we not tax and regulate cannabis as these controls have been so successful for the legal drugs."

Dr Alex Wodak, President of the Australian Drug Law Reform Foundation and Australia's highest profile advocate of drug legalization - on Drugtalk, 23 November 2002, 9.55 pm

A green light for public mischief

The assertion that all medical marijuana is headed for seriously ill patients is misleading. Statistics from the California Branch of the National Organization for the Reform of Marijuana Laws (NORML) shows that a survey of Californians reports the top three reported uses of medicinal marijuana:

40% Chronic Pain
22% AIDS-Related
15% Mood Disorders
(23% All other categories)

Local and state law enforcement counterparts cannot distinguish between illegal marijuana grows and grows that qualify as medical exemptions. Many self-designated 'medical marijuana' growers are, in fact, growing marijuana for illegal, "recreational" use.

Elected law enforcement officials, i.e. Sheriffs and District Attorneys in California have been targeted by the "marijuana lobby." Political action by groups such as NORML have endorsed and supported candidates favorable to medical marijuana. NORML tracks local elections and takes credit for the defeats of anti-marijuana candidates. Last year the DEA arrested a major marijuana trafficker in Humboldt County who was an undeclared candidate for sheriff.

The DEA and its local and state counterparts routinely report that large-scale drug traffickers hide behind and invoke Proposition 215, even when there is no evidence of any medical claim. In fact, many large-scale marijuana cultivators and traffickers escape state prosecution because of bogus medical marijuana claims. Prosecutors are reluctant to charge these individuals because of the state of confusion that exists in California. **Therefore, high-level traffickers posing as "care givers" are able to sell illegal drugs with impunity.**

The California NORML website lists federal defendants for the largest indoor marijuana cultivation operation in the U.S., which occurred in Northern California, as "green prisoners." While unscrupulously claiming to be "medical marijuana" defendants, in fact these two individuals were dangerous, armed fugitives believed to be responsible for drug-related murders and other violence.

DEA's San Francisco Field Division coordinates the statewide Domestic Cannabis Eradication/Suppression Program (DCE/SP). The number of plants eradicated and assets seized represent the largest totals in California history.

Source - DEA Information Sheet

Damning evidence against the drug legalisation lobby

Testimony of Barry R. Mccaffrey Director, Office of National Drug Control Policy (ONDCP) before the House Government Reform and Oversight Committee subcommittee on criminal justice, drug policy, and human resources - the drug legalization movement in America - June 16, 1999

Our nation's democratic system of government is founded upon free and open debate. Our nation holds no beliefs or icons above challenge and examination. We all must be willing to lay the facts and our analysis on the table of public scrutiny, and make the case for what we believe.

However, in the marketplace of ideas, just as in other marketplaces, there are people willing to use deceptive claims, half-truths and flawed logic to hawk ill-considered beliefs. Nowhere is this problem more clear than with respect to the drug legalization movement.

Proponents of legalization know that the policy choices they advocate are unacceptable to the American public. Because of this, many advocates of this approach have resorted to concealing their real intentions and seeking to sell the American public legalization by normalizing drugs through a process designed to erode societal disapproval.

For example, ONDCP has expressed reservations about the legalization of hemp as an agricultural product because of the potential for increasing marijuana growth and use. While legitimate hardworking farmers may want to grow the crop to support their families, many of the other proponents of hemp legalization have not been as honest about their goals. A leading hemp activist, is quoted in the San Francisco Examiner and on the Media Awareness Project's homepage (a group advocating drug policy reforms) as saying *he "can't support a movement or law that would lift restrictions from industrial hemp and keep them for marijuana."* Katherine Seligman, Legalization Sought for Cousin of Pot, San Francisco Examiner, May 9, 1999, C1 (quoting hemp activist Jack Herer). If legalizing hemp is solely about developing a new crop and not about eroding marijuana restrictions, why does this individual only support hemp deregulation if it is linked to the legalization of marijuana?

Similarly, when Ethan Nadelmann Director of the Lindesmith Center (a drug research institute), speaks to the mainstream media, he talks mainly about issues of compassion, like medical marijuana and the need to help patients dying of cancer. However, Mr. Nadelmann´s own words in other fora reveal his underlying agenda: legalizing drugs. Here is what he advocates:

"Personally, when I talk about legalization, I mean three things: the first is to make drugs such as marijuana, cocaine, and heroin legal..."
(Ethan Nadelmann, Should Some Drugs Be Legalized?, 6 Issues in Science and Technology 43-46 (1990).

"*I propose a mail order distribution system based on a right of access . . .*"
(Ethan Nadelmann, Thinking Seriously About Alternatives to Drug Prohibition, 121 Daedalus 87-132 (1992).

"*Any good non-prohibitionist drug policy has to contain three central ingredients. First, possession of small amounts of any drug for personal use has to be legal. Second, there have to be legal means by which adults can obtain drugs of certified quality, purity and quantity. These can vary from state to state and town to town, with the Food and Drug Administration playing a supervisory role in controlling quality, providing information and assuring truth in advertising. And third, citizens have to be empowered in their decisions about drugs. Doctors have a role in all this, but let's not give them all the power".*(Ethan Nadelmann and Jan Wenner, Toward a Sane National Drug Policy, Rolling Stone May 5, 1994, 24-26.)

"We can begin by testing low potency cocaine products -- coca-based chewing gum or lozenges, for example, or products like Mariani's wine and the Coca-Cola of the late 19th century -- which by all accounts were as safe as beer and probably not much worse than coffee. If some people want to distill those products into something more potent, let them".(Id.)

"But if there is a lot of PCP use in Washington, then the government comes in and regulates the sale". (Ethan Nadelmann, How to Legalize, interview with Emily Yoffe, Mother Jones, Feb./Mar. 1990, 18-19.)

Mr. Nadelmann's view that drugs, including heroin and other highly addictive and dangerous drugs, should be legalized are widely shared by this core group of like-minded individuals. For example, Mr. Arnold Trebach states:

"Under the legalization plan I propose here, addicts . . . would be able to purchase the heroin and needles they need at reasonable prices from a non-medical drugstore". (Arnold Trebach & James Inciardi, Legalize It? Debating American Drug Policy, 109-110 (1993).

International financier George Soros, who funds the Lindesmith Center, has advocated*: "If it were up to me, I would establish a strictly controlled distributor network through which I would make most drugs, excluding the most dangerous ones like crack, legally available*." (George Soros, 'Soros on Soros', p. 200 (1995).

William F. Buckley, Jr. has also called for the "*legalization of the sale of most drugs, except to minors"*. (William F. Buckley, The War on Drugs is Lost, National Review, Feb. 12, 1996, 35-48.)

Similarly, when the legalization community explains their theory of harm reduction -- the belief that illegal drug use cannot be controlled and, instead, that government should focus on reducing drug-related harms, such as overdoses -- the underlying goal of legalization is still present. For example, in a 1998 article in Foreign Affairs, Mr. Nadelmann expressed that the following were legitimate 'harm reduction' policies: allowing doctors to prescribe heroin for addicts; employing drug analysis units at large dance parties, known as raves, to test the quality of drugs; and decriminalizing possession and retail sale of cannabis and, in some cases, possession of 'hard drugs'. (See Ethan Nadelmann, Commonsense Drug Policy, 77 Foreign Affairs 111-126 (1998).

Legalization, whether it goes by the name harm reduction or some other trumped up moniker, is still legalization. For those who at heart believe in legalization, harm reduction. It should, however, be emphasized that not all

advocates of harm reduction support drug legalization. Nor, does harm reduction, by itself, requires legalization. In fact, aspects of the National Drug Control Strategy, such as methadone treatment, properly adopt harm reduction programs as part of a comprehensive, balanced approach to reducing drug use. Nevertheless, the fact remains that many who advocate harm reduction use it as a subterfuge for legalization. Is too often a linguistic ploy to confuse the public, cover their intentions and thereby quell legitimate public inquiry and debate. Changing the name of the plan doesn't constitute a new solution or alter the nature of the problem.

In many instances, these groups not only advocate public policies that promote drug use, they also provide people with information designed to encourage, aid and abet drug use. For example, from the Media Awareness Project (a not-for-profit organization whose self-declared mission is to encourage a re-evaluation of our drug policies) website a child can link to a site that states:

Overthrow the Government! Grow your own stone! It's easy! It's fun! Everybody's doing it! Growing marijuana: a fun hobby the whole family can enjoy! See www.cannabisculture.com/grow

The linked website goes on to provide the reader with all the information needed to grow marijuana, including a company located in Vancouver, Canada that will ship seeds or plants.

The Media Awareness Project website also includes links to instructions about how drug users can defeat drug tests. See www.mapinc.org ('drug links' 7 and 8 link to the following two websites: www.hightimes.com/ht/tow/tes/index.html and www.cannabisculture.com/usage/dtfaq.shtml). Similarly, the websites of both the Drug Policy Foundation, a self proclaimed drug policy reform group, and the Media Awareness Project, both provide links to a site that gives instructions for how to manufacture the drug 'ecstasy'. See www.mapinc.org which includes as part of its site www.mapsorg/news.html www.ecstasy.org/links/index.html/ which then includes www.hyperreal.org~lamont/pharm/faq/faq-mdma-synth.html

This same information is also found on www.lyceum.org/drugs/synth . ./mdma/synthesis/mdma.mda.synthesis

Careful examination of the words -- speeches, webpostings, and writings -- and actions of many who advocate policies to 'reduce the harm' associated with illegal drugs reveals a more radical intent. In reality, their drug policy reform proposals are far too often a thin veneer for drug legalization. See Richard Cowan, Building a New NORML, High Times, Jan. 1993, p. 67. Mr. Cowan has made clear how harm reduction policies fit into the legalization agenda as follows:

Based on our objective of 'Legalization by 97' we must begin by demanding: 1 -- immediate access to marijuana for the sick. 2 -- The immediate cessation of all attacks on users, growers and sellers of marijuana. 3 -- An immediate end to lying about marijuana and its users. 4 -- Recognition of the economic and environmental importance of hemp, and studies on how it can be best exploited by American agriculture and industry. (Id.)

What do drug 'legalizers' truly seek? They want drugs made legal -- even though this would dramatically increase drug use rates. They want drugs made widely available, in chewing gums and sodas, over the Internet and at the corner store - even though this would be tantamount to putting drugs in the hands of children. They want our society to no longer frown on drug use -- even though each year drug use contributes to 50,000 deaths CSR Inc., unpublished research prepared for ONDCP, 1999. and costs our society $110 billion in social costs. NIDA and NIAAA, The Economic Costs of Alcohol and Drug Abuse in the United States, 1992, NIDA/NIH pub. no. 98-4327, Sept. 1998. And, they want the government to play the role of facilitator, handing out drugs like heroin and LSD.

Let me emphasize, there is nothing wrong with advocating for change in public policy. From civil rights to universal suffrage, much of what makes our nation great has been the result of courageous reform efforts. Our nation benefits from the airing of dissent. However, we all have a responsibility to be honest in debate about our motives. We all have an obligation to be open with the American people about the risks inherent in what we advocate. To date, advocates of legalization have not been so forthcoming.

Elevated use in US medical cannabis States

In a recent study by Cerda and co-workers, it was found that states with 'medical marijuana' laws had higher rates of use, abuse and dependence.[7] The authors are careful not to assume a causal link, noting that those US States with higher initial recreational cannabis use may be more likely to be the first to implement medical cannabis laws. Drug Free Australia notes that in the absence of longitudinal studies of cannabis use in medical cannabis States before and after the implementation of medical cannabis laws, causality of increased recreational use due to medical cannabis laws certainly should not be dismissed.

'Medical cannabis' facilitating the avoidance of taxation in Colorado

It was estimated recently by official sources that Colorado will consume 130 tonnes of cannabis annually.[8] Selling at $220 per ounce[9] and with 35,274 ounces per tonne, this translates to $7,760,280 / tonne or $1,008,836,400 for the whole crop in that state alone. Unfortunately, whilst tax revenues were cited as a major reason for legalization in Colorado, the simple expedient of not buying it from one of the state's three registered recreational cannabis

[7] Cerda M *et al.,* Medical marijuana laws in 50 states: investigating the relationship between state legalization of medical marijuana and marijuana use, abuse and dependence, *Drug Alcohol Depend.* 120(1-3): 22-27, 2012
[8] Silva R "Colorado marijuana market consumes estimated 130 tonnes of the drug annually." HNGN 12th July 2014. http://www.hngn.com/articles/35958/20140711/colorado-marijuana-market-consumes-estimated-130-tonnes-of-the-drug-annually.htm Viewed 13th July 2014.
[9] Wyatt C., "Colorado Completed First Legal Pot Study." Associated Press. http://hosted.ap.org/dynamic/stories/U/US_RETHINKING_POT_DEMAND?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT Viewed 13th July 2014.

dispensaries which were more expensive than the medical pot shops, allowed taxation to be circumvented.[10] It is important to note that 67% of all the cannabis sold was used by the 22% of heaviest users, further confirming the addictive nature of the legally available weed.[11]

Road deaths - increased consequence of adding another legal drug

Cannabis is the drug most frequently implicated in car crashes after alcohol, and the most frequently implicated of all the illicit drugs in motor vehicle crashes. Legalising it and increasing its use would obviously exacerbate this by an amount at least proportional to the amount of its increased use. Because alcohol is already legal, legalising cannabis effectively legalises the highly dangerous cannabis–alcohol cocktail. This has been shown to be very dangerous in many studies.

A University of Colorado study which examined road deaths in Colorado from 1994 through to 2011 found that the percentage of marijuana-positive drivers in fatal car smashes doubled from 1994 to 2011, moving from 4.5% to 10%. Medical marijuana was legalized in 2009. Now that Colorado has legalised cannabis recreationally, not just for the 89,000 medical cannabis users, fatalities will be expected to further increase.
http://www.ucdenver.edu/academics/colleges/medicalschool/administration/news/ResearchNews/Pages/Pot-Related-Auto-Crashes-Increase.aspx

Cannabis patients and driving

Even if the ACT chooses to publicise the availability of pharmaceutical cannabis, the issue of drugged driving must be policed, with cannabis and driving being a fatal mix, as per advice from the Australian NCPIC -
https://ncpic.org.au/professionals/publications/factsheets/cannabis-and-driving/

> Cannabis-induced impairment of driving has been demonstrated in on-the-road driving tests where subjects were accompanied by licensed driving instructors in vehicles fitted with another set of controls to ensure safety at all times. These studies have also shown that when cannabis is consumed in combination with even a low dose of alcohol, the impairment is far more severe. An alternative method of studying the effects of cannabis on real life driving is to look at the relationship between cannabis use (known from blood or urine analysis or from self-report) and car crashes that have already happened. These studies have found higher rates of cannabis use among people who have been involved in car crashes than cannabis use rates in the general population. A recent study on fatal

[10] Wyatt C., "Colorado Completed First Legal Pot Study." Associated Press. http://hosted.ap.org/dynamic/stories/U/US_RETHINKING_POT_DEMAND?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT Viewed 13th July 2014.

[11] Light M.L., Orens A.;, Lewandowski B., Pickton T. "Market size and demand for marijuana in Colorado." Prepared for Colorado Dept of Revenue. http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline;+filename%3D"Market+Size+and+Demand+Study,+July+9,+2014.pdf"&blobheadervalue2=application/pdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1252008574534&ssbinary=true Viewed 13th July 2014.

driving crashes conducted a culpability (responsibility) analysis and concluded that cannabis users were significantly more culpable than non-cannabis users and the likelihood of being responsible for a crash increased with cannabis dose. Other studies that have asked people about cannabis use and their involvement in crashes have found that long-term cannabis use is associated with car crashes. However, there may be something about people who are involved in crashes that mean they are also more likely to be cannabis users (such as being young and male). Nevertheless overall, the results from studies in the field confirm that cannabis use can adversely affect driving performance.

The latest review of the evidence reports that driving under the influence of cannabis appears to increase the risk of motor vehicle crashes by a factor of two to three times. In addition, it is also important to remember that many people mix cannabis with alcohol. There is now good evidence to suggest that using cannabis and alcohol together, even at low doses, could have a worse effect on driving than either cannabis or alcohol alone.

Cannabis patients, because their medication with cannabinoids will most often be frequent and continual, must be warned that they cannot drive while using the substance as a medication – that there is no safe level of use, and they are subject to the same penalties as the rest of the population who test positive for cannabis. Regular users of cannabis or LSD who have discontinued use for a significant time can be prone to flashbacks, where the distortions experienced during a strong trip can cause hallucinations which reoccur without warning, often causing alarm.[12]

[12] See http://www.drugscope.org.uk/resources/drugsearch/drugsearchpages/flashbacks

CENTRAL ISSUES FOR ACT LEGISLATORS - 6

The Greens Bill ignores the heavily evidenced harms of crude cannabis to users and their community

The harms of recreational cannabis use are so substantial and substantiated that giving any leeway to Trojan horse strategies of the drug legalisation lobby should never be contemplated. The Greens Bill, simply by proposing the availability of crude cannabis in any form, clearly ignores the damage done by cannabis to users and their community.

Summary of harms

Printed in its entirety below is the Drug Free Australia publication enumerating the many harms of cannabis, demonstrating that adding another destructive drug to the current legal drugs, alcohol and tobacco, is societally irresponsible.

The harms listed below have been researched via literally thousands of studies on cannabis. These harms, in short, are as follows – for more detail read from the pages following this summary.

Harms

- 1500 toxic chemicals when burned
- ONDCP and NIDA note THC content is 2.5 times higher between 1983 & 2008, with UK Home Office finding a 15% average
- Gateway to other dangerous drugs, adding another gateway drug to two existing legal drugs.
- Cannabis users 50% more likely to develop alcohol use disorder
- Psychosis - 2.6 times higher chance
- Depression - 4 times higher chance
- Amotivational syndrome
- Suicide – 3 fold risk of ideation
- Immune system adversely affected
- VIOLENCE AND AGGRESSION as part of withdrawal
- Brain Function
    - Verbal learning adversely affected
    - Organisational skills adversely affected
    - Loss of Coordination
    - Memory loss which can become permanent
    - Attention problems
- Driving – 16 times more likely to hit obstacles
- Miscarriage elevated
- Fertility adversely affected
- Newborns adversely affected with appearance, weight, size. hormonal function, cognition and motor function adversely affected to adulthood
- COPD & bronchitis
- Cancers – respiratory tract, lung, breast

- Cardio-vascular – stroke, heart attack, myocardial infarction 5 times higher after one joint

Cannabis – suicide, schizophrenia and other ill-effects

A research paper on the consequences of acute and chronic cannabis use



A review prepared for Drug Free Australia
First Edition, March 2009

Published by Drug Free Australia Ltd
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This work has been supported by funding from the Australian Government Department of Health and Ageing

CONTENTS

ACKNOWLEDGEMENTS

This review of cannabis in Australia was written to provide up-to-date evidence to key researchers including those at the National Drug and Alcohol Research Centre (NDARC) and others involved in compiling the National Cannabis Strategy 2006-2009. It is intended that this research paper will provide useful information for future updates of the National Cannabis Strategy in Australia.

Drug Free Australia would like to acknowledge the following people for their assistance with the content of this review.

Heather Ashton DM, FRCP is Emeritus Professor of Clinical Psychopharmacology at the University of Newcastle upon Tyne, UK. Prof Ashton has done laboratory research on the effects of smoking THC on the brain and performance, and has carried out surveys on the extent of cannabis use in UK university students, including separate surveys on medical students, dentists and junior doctors. She has written extensively in professional journals on the adverse effects of cannabis use.

Gary Christian – Secretary, Drug Free Australia. Mr Christian was co-author of the research publication 'The Kings Cross Injecting Room – The Case for Closure' and co-writer of the 'Quit Now Stop Smoking Program, 1986-87'. In 1999 he was co-founder of the Cabramatta ADRAcare Centre for drug dependent and homeless people of the area and from 2000-2003, he was President of Hassela Australia's Teen Drug Rehabilitation program.

Herschel Mills Baker – President of Australian Parents for Drug Free Youth. Mr Baker was author of 'Suicide/Schizophrenia - Consequences of Acute and Chronic Cannabis Use' (1988 and 1996). He was responsible for updating the 'Drug Awareness' booklet for Lions International District 201.Q5 Zone 2 of Queensland, Australia. He also developed a drug prevention resource for parents entitled 'Drug Free Kids: A Parent's Guide' and developed a series of 'Parent Drug Education Courses' successfully used by Queensland TAFE and many organisations in Wide Bay Queensland such as the Lions Clubs, Quota Club and churches.

Craig Thompson, former Magistrate, NSW and Chair of Drug Free Australia. Mr Thompson was co-author of 'Drug Precipice', Board Member of the Ted Noffs Foundation for 7 years and Council Member of the Australian National Council on Drugs (ANCD).

Mary Brett BSc (Hons), Board Member of EURAD. Appreciation is expressed for her extensive international research in the areas of the impact of cannabis use and its damaging effects. Her contribution to this publication consists of substantial quotations especially in the sections on 'Pregnancy and Newborns', 'Cardiovascular Effects', 'Dependence and Cancer'. These excerpts were previously published by EURAD (Europe Against Drugs) in 'Cannabis - A General Survey of its Harmful Effects Submission to The Social Justice Policy Group' 2008), available at http://www.eurad.net/pdf/Cannabis%20combined%20document%20new.pdf

Dr Ivan Van Damme MD (Belgium), Member International Task Force on Strategic Drug Policy. Appreciation is expressed for peer-review of this publication, including substantial quotations in the sections describing Cannabis, the history of Cannabis prohibition, the effects of Cannabis on Australian Indigenous communities, Chronic Obstructive Pulmonary Disease, Cannabis and the Cardiovascular System and Cannabis – Effects on the Brain.

Josephine Baxter Executive Officer, Drug Free Australia. Ms Baxter was formerly Community Relations Manager at Odyssey House Victoria, National Director – Programs and Training at Life Education Australia NSW, Project Manager for Offshore Licensing (India & Bangladesh), Centre for International Education and Training. She is currently a Member of the Australian National Council on Drugs (ANCD).

Thanks and grateful appreciation also to the following people who provided useful and specific advice on issues covered in this paper, related to their jurisdictions:

Dr Craig Raeside, Forensic Psychiatrist, SA, Hon. Chris Foley, MP, Member for Maryborough, Queensland and Member Travel Safe Committee, Mrs. Nan Ott, Mrs. Debbie Mason and Ms Sharon Baker.

FOREWORD

This research paper gives a concise, clear, accurate and logical account of the main mental and physical risks of cannabis consumption, particularly for young users. The aim is to provide information and advice to politicians, decision-makers and researchers in order to ensure that the level of cannabis use in Australia is markedly reduced. The report provides practical recommendations towards this end and makes a valuable contribution to public knowledge and to the framing of government policies.

It is right that the emphasis is on young people since the age of first cannabis use is declining, and children and adolescents are the most vulnerable to the adverse effects. These include severe psychiatric disorders, cognitive impairment, and progression to other illegal drugs. It may be noted that the age of continuing cannabis use is also increasing and contributing to public risks, such as traffic and other accidents. These issues underline the importance of the addictive nature of cannabis, particularly in its increasingly more potent forms – unfortunately nurtured by burgeoning trafficking in hydroponically grown cannabis.

The widespread use of this pervasive and addictive drug demands urgent attention to the problem of quitting in people already cannabis dependent. None of the present methods, which rely mainly on psychological approaches, is highly effective. Further research, perhaps including the judicious use of cannabinoid antagonists combined with psychological therapies, needs to be explored, instigated and financed.

The report is written in a style easily accessible to the layman but is firmly based on hard scientific evidence, carefully selected from the vast amount of literature on cannabis that has accrued over the years. Policy makers would do well to heed its messages and recommendations.

Heather Ashton DM, FRCP

EXECUTIVE SUMMARY

Cannabis is the most commonly used illicit drug in Australia, with one in three aged 14 years and older using the drug in their lifetime[13]. With the age of first use declining and the potency and popularity of the drug increasing there is clear incentive to ensure we understand the ramifications of its use on our health and communities.

This paper seeks to provide an introduction to the available literature on cannabis and the issues arising from cannabis use today, including: a description of the drug and its use; the increased potency of cannabis in the market; cannabis as a "gateway" to harder drug use; the issues of dependence and withdrawal; the significant cannabis harms on mental health, brain function and development, and physical conditions such as cancer; and, the problems encountered when trying to quit cannabis and the generally poor outcomes today.

The paper also provides recommendations on how we can effectively answer the questions surrounding cannabis use in Australia.

Throughout, we return to the issue of age of first use. Overwhelming evidence exists to support the fact that the age of first cannabis use is an important predictor of progression to heavier drug use and need for treatment (for example, see Pope et al, 2003; Anthony et al, 1994; Warner et al, 1995; Kandel et al, 1997). Clearly, there is a significant problem when boys aged 9 and 10 are discovered with cannabis in Brisbane schools[14].

[13] 2004 National Drug Strategy Household Survey
[14] "Children caught with pot", Sunday Mail, October 26, 2003

SECTION ONE: CANNABIS USE

A DESCRIPTION OF THE DRUG

Cannabis is the term most frequently used to refer to the drug deriving from the plant *Cannabis sativa*, the most commonly used illicit drug in Australia.

Cannabis is generally found in three forms, all of which contain delta-9 tetrahydrocannabinol ("THC") as the main psychoactive ingredient. The most common and least potent of these forms is marijuana, a mix of the plant's dried leaves and flowers. Cannabis in the form of hashish, or dried cannabis resin, produces stronger effects through its higher concentration of THC. Hashish oil, a thick oily liquid, is the third and most powerful form of cannabis.

Of the active constituents of cannabis there have been over 60 cannabinoids identified; however, only a few, and primarily THC, have been studied intensely. The primary metabolite, 11-hydroxy-THC, is also psychoactive and even more potent and, as with all cannabinoids, acts on the endogenous receptors in the brain and body.

Cannabis is well absorbed through inhaling its smoke or its inclusion in cakes or cookies and is very slowly metabolised by the body as it becomes deeply absorbed and entrenched in the body's fatty tissues, with the brain a primary target. The complete elimination of a single dose from a user's system may take up to thirty days (Cabral, 1989) and its acute effects can last several hours. In the case of chronic and frequent use, cannabis concentrations accumulate and can cause a chronic intoxication and dependency.

Further, the endocannabinoid system moderates many of the body's vital functions, including motor control, cognition and memory, cardiovascular and endocrine activity, appetite, mood and immune responses. The endocannabinoid system's regulation of these functions is fundamental to the brain's normal performance and as such is central to understanding the pervasive effects of cannabis. THC overwhelms this system with long-lasting and extensive effects on both cannabinoid receptor type 1 (CB_1), in the brain, spinal cord and peripheral nerves; and cannabinoid receptor 2 (CB_2), in the body's immune tissues. Physically, this means a decrease in the release of neurotransmitters, decreased neural firing and transmission of nerve impulses. Of note is the fact that the body's natural substances which interact with CB_1 and CB_2 receptors are called anandamides, with these modulators being released locally in discrete brain areas, and in contrast to THC, are rapidly deactivated in minutes.

It has also been argued that 27% of the population carry a high risk genetic variant which produces a weaker Catechol-O-Methyl Transferase (COMT) enzyme which is responsible for the break down of dopamine in the brain. Henquet (2005) argues that the excessive amounts of dopamine released by cannabis use places those with the weaker COMT enzyme at 10 times greater risk of developing psychosis and, later in life, of developing schizophrenia (see Section 4: Cannabis Harms, Mental Health).

Over 1,500 toxic chemicals have been identified in the smoke of cannabis, including carbon monoxide, carcinogens and irritants. These all greatly affect the body's respiratory and cardiovascular systems, and in a similar manner to the known effects of smoking tobacco. Moir et al's 2007 study of marijuana smoke found ammonia at levels up to 20-fold greater than that found in tobacco, hydrogen cyanide at concentrations 3-5 times those in tobacco smoke, and confirmed the presence of known carcinogens and other chemicals implicated in respiratory diseases.

The Institute of Medicine of Washington DC[15] produced the table opposite, which shows a comprehensive comparison of the chemicals in cannabis and tobacco:

[15] Sources cited by the Institute of Medicine, Marijuana and Health, Washington DC: Hoffmann, D et al, 1975; Hoffman, D et al, 1976; Brunnemann, KD et al, 1976; Brunnemann KD et al, 1977.

Table 1 – Comparison of Chemicals – Cannabis and Tobacco

A. Cigarettes			
	Units	**Marijuana**	**Tobacco**
		(85mm)	(85mm)
Average Weight	(mg)	1115	1110
Moisture	(%)	10.3	11.1
Pressure Drop	cm	14.7	7.2
Static Burning rate	mg/s	0.88	0.80
Puff Number		10.7	11.1
B. Mainstream Smoke			
I. Gas Phase	**Units**	**Marijuana**	**Tobacco**
Carbon Monoxide	%	3.99	4.58
	mg	17.6	20.2
Carbon Dioxide	%	8.27	9.38
	mg	57.3	65.0
Ammonia	mcg	228	199
HCN	mcg	532	498
Cyanogen (CN)2	mcg	19	20
Isoprene	mcg	83	310
Acetaldehyde	mcg	1200	980
Acetone	mcg	443	578
Acrolein	mcg	92	85
Acetonitrilebenzene	mcg	132	123
Benzene	mcg	76	67
Toluene	mcg	112	108
Vinyl chloride	ng	5.4	12.4
Dimethylnitrosamine	ng	75	84
Methylethylnitrosamine	ng	27	30
pH, third puff		6.56	6.14
fifth puff		6.57	6.15
seventh puff		6.58	6.14
ninth puff		6.56	6.10
tenth puff		6.58	6.02
II. Particulate phase			
	Units	**Marijuana**	**Tobacco**
TI particulate - dry	mg	22.7	39.0
Phenol	mcg	76.8	138.5
o-Cresol	mcg	17.9	24
m- and p-Cresol	mcg	54.4	65
Dimethylphenol	mcg	6.8	14.4
Catechol	mcg	188	328
Cannbidiol	mcg	190	
D9 THC	mcg	820	
Cannabinol	mcg	400	
Nicotine	mcg		2850
N-Nitrosonornicotine	ng		390
Naphthalene	mcg	3.0	1.2
1-Methylnaphthalene	mcg	6.1	3.65
2-Methylnaphthalese	mcg	3.6	1.4
Benz(a)anthracene	ng	75	43

Benzo(a)pyrene	ng	31	21.1

INCREASED POTENCY

Of particular concern in recent years is the cultivation of high potency cannabis, often referred to as "skunk" or "super skunk"[16]. This increase in potency, which in real terms refers to increased THC concentrations, is in addition to the existing hybrid varieties of cannabis which are continuing to gain popularity in Australia. High potency cannabis, or cannabis containing high THC concentrations, is currently cultivated in all states of Australia, largely through the use of hydroponics cultivation, and is also brought into Australia from countries such as Papua New Guinea, India, Lebanon, Morocco, Holland and Canada.

The effects of THC in the cannabis user, including those which are negative, are dose-related – the higher the dose of THC, the greater the effects – hence, the significance of increased cannabis potency (Raemaekers, 2006).

It is important to note that some publications dated as recently as 2006, be treated with caution on this matter, as the evidence base has now substantially changed. For example, the Australian National Council on Drugs (ANCD's) position, outlines in the papers "*Cannabis: answers to your questions" (2006) and "Evidence-based answers to cannabis questions: a review of the literature"* (2006), is that in the past few decades Australia has only seen small increases in THC levels.

Of interest is the fact that, more than a decade ago, the Australian Bureau of Criminal Intelligence (1993) reported a THC content in cannabis plants of up to 30%, a substantial increase from the early 60's when the typical cannabis joint contained as little as 0.5%. One example of our concerns regarding the increase of potency of cannabis in Australia is that of 'Drug Kingpin', Alexander Malcolm Lane, who used drug mules, paying up to $30,000 a trip to travel to Amsterdam and bring back thousands of high-potency cannabis seeds.
The Courier-Mail August 17 2007. http://www.news.com.au/story/0.23599.22257426-2.00.html

In both the United States (US) and United Kingdom (UK) public offices have acknowledged THC potency increases. A joint report of the US's Office of National Drug Control Policy (NDCP) and the National Institute on Drug Abuse recently found that levels of THC in cannabis have reached the highest-ever levels since analysis of the drug began in the late 1970's. They found the average to have increased from just below 4% in 1983 to a new high of 9.6% in 2008, a doubling of potency. John Walters, Director of NDCP, states "Baby boomer parents who still think marijuana is a harmless substance need to look at the facts. Marijuana

[16] See Appendix A and Appendix B for media reports

potency has grown steeply over the past decade, with serious implications in particular for young people".

The UK's Home Office "Cannabis Potency Study 2008", while finding a lesser increase over time (from 13.98% to 15.0%), nevertheless presents a startling average percentage of THC content at 15% potency. These figures, while not based on Australian data, cannot be ignored. It would be imprudent to assume the increases in potency seen in overseas cannabis markets are not mirrored within Australia.

When it is considered that there is a well-demonstrated dose-response relationship between cannabis and its related drug-induced psychosis, where the greater the amount of cannabis consumed correlates to a higher degree of risk of psychosis, any three to fourfold increase in potency is of absolutely critical importance to any assessment of cannabis harms.

When it is further considered that changed usage patterns, whereby young users smoke only the multiple potent heads of the cannabis plant and also use a more concentrated mode of drug delivery via the use of bongs, the ANCD papers' dismissive approach to potency is of great concern. By over-emphasising their assessment of a narrow understanding of the thirty-fold claim, which makes three to fourfold increases pale into insignificance, the very significant conjuncture of these real and significant three to fourfold increases in cannabis potency, along with new usage patterns which deal significantly higher doses of cannabinoids, is downplayed for the Australian reader at the very time that the scientific community has expressed alarm at this very same conjuncture and its relationship to psychosis. Concluding their discussion in ANCD Research Paper (2006, p.11), the authors cite US figures which do in fact show increases in potency which have more than tripled:

> "*Between 1980 and 1997 THC content increased from 1.2 per cent to 4.2 per cent. Cannabis samples (excluding hash and hash oil) analysed between May and August 2003 had average THC levels of 6.37 per cent (see 1.2 for details on potency for different forms of cannabis). This finding suggests definite rises in cannabis THC content. However, over the last two decades, such increases are not consistent with claims of a thirty-fold increase. While Australia has not collected such comprehensive data, moderate changes as seen in the United States and New Zealand data are likely to be replicated in Australian trends given that, with isolated exceptions, the majority of THC levels in studies of cannabis seizures have remained under 5 per cent.*"

GATEWAY DRUG

The term "gateway drug" is used to illustrate the tendency of cannabis to introduce the user to other illicit drugs, and arguments for and against the hypothesis have a long history.

There are multiple studies that have reached a conclusion in support of the gateway hypothesis (see Kandel, 1992 and 1996; Clayton, 1992; Bailey, 1992; Poikolainen et al, 2001). Specifically, the Centre on Addiction and Substance Abuse (CASA) at Columbia University found that children who use drugs, including cannabis, are up to 266 times more likely to use cocaine than those who do not use any of the gateway drugs identified (cannabis, tobacco and alcohol).

There are critics of the gateway theory who argue that a clear link between cannabis use and other illicit drugs does not reflect a causal sequence, relying upon the presence of confounding factors such as a user's socio-economic status and family history (see Johnson, 1973; Hays et al, 1987).

In contrast, the US Office of National Drug Control Policy's "2008 Marijuana Sourcebook" clearly states that recent research supports the gateway hypothesis, specifically that "its use creates greater risk of abuse or dependency on other drugs, such as heroin and cocaine".

Further, a study on 311 sets of same-sex twins, in which only one twin smoked cannabis before age 17, found that early cannabis smokers were up to five times more likely than their twin to move on to harder drugs (Lynskey, 2003). Also, Hurd (2006) concluded that findings supported the gateway hypothesis when she conducted a study on rats. Hurd found that rats trained to self-administer heroin would administer greater doses if they had previously been exposed to THC. A further study of 75,000 adolescents and young adults found teenage cannabis smokers had a 50% higher risk of developing an alcohol-use disorder and specifically stated "Addictive drugs all act on a part of the brain that is described as the central reward circuitry. Once this system is exposed to one drug, the brain may become more sensitive to the effects of other drugs, as demonstrated by a number of rodent studies" (Gruzca, 2006).

In summary, as Kandel states (1992), very few try illicit drugs other than cannabis without prior use of cannabis.

DEPENDENCE

There is general consensus that cannabis is addictive and the addiction carries with it all the adverse affects of dependence, including symptoms of withdrawal (see Ramstrom, 2003, in *A Survey of Scientific Studies*).

In fact, in 1992 the World Health Organisation (WHO) identified cannabinoid dependence syndrome and described that dependence as existing where three or more of the following diagnostic guidelines were experienced or exhibited during a year:

a) a strong desire or sense of compulsion to take cannabinoid;
b) difficulties in controlling cannabinoid-taking behaviour in terms of its onset, termination or levels of use;
c) a physiological withdrawal state when cannabinoid use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for cannabinoid; or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
d) evidence of tolerance, such that increased doses of cannabinoid are required in order to achieve effects originally produced by lower doses;
e) progressive neglect of alternative pleasures or interests because of cannabinoid use, increased amount of time necessary to obtain or take the substance or to recover from its effects;
f) persisting with cannabinoid use despite clear evidence of overtly harmful consequences, such as depressive mood states consequent to periods of heavy substance abuse, or drug-related impairment of cognitive functioning; and
g) efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

Haney et al (1999) demonstrated withdrawal symptoms from pure THC delivered under laboratory conditions in humans and those symptoms such as anxiety and insomnia lead to difficulty in stopping cannabis use.

Budney et al (2004) reviewed the validity of cannabis withdrawal syndrome and concluded that the evidence of laboratory and clinical studies indicates that withdrawal syndrome reliably follows discontinuation of chronic cannabis use and further noted that the severity of withdrawal symptoms appeared substantial.

Later, in 2006, Budney & Hughes found evidence of a withdrawal syndrome in cannabis use and noted "demand for treatment of cannabis dependence has grown dramatically (and) the majority of people who enter treatment have difficulty in achieving and maintaining abstinence from cannabis". They found laboratory studies had established the reliability, validity and time course of a cannabis withdrawal syndrome and pointed to the discovery of an endogenous cannabinoid system, the identification of cannabinoid receptors and demonstrations of precipitated withdrawal with cannabinoid receptor antagonists as the neurological basis for cannabis withdrawal.

In a wide ranging appraisal of the literature, Gardner reviewed 224 scientific papers in 2003 and concluded "cannabinoids act on the brain reward processes and reward-related behaviours in strikingly similar fashion to other addictive drugs".

Budney (2006) also asked if specific dependence criteria were necessary for different substances in a report for *Addiction* and found that "cannabis dependence is much more similar to, than different from, other types of substance dependence, even with regard to withdrawal".

Vandrey (2008) more recently suggested withdrawal from cannabis use is similar to that experienced when quitting smoking tobacco, in a controlled comparison based on the self-reporting of twelve heavy users of both cannabis and tobacco. The participants' abstinence was confirmed objectively, procedures were identical during each abstinence period and abstinence periods occurred in a random order. The strength of this study is in the same participants reporting on withdrawal symptoms for tobacco and marijuana, eliminating the likelihood that results reflect physiological differences between subjects.

Vandrey found that "since tobacco withdrawal symptoms are well documented and included in the DSM-IV[17] and the ICD-10[18], we can infer from the results of this comparison that marijuana withdrawal is also clinically significant and should be included in these reference materials".

Also, Cambridge University Press recently published "Cannabis Dependence: Its Nature, Consequences and Treatment" (2006), a report on over 2,500 adult daily cannabis users where 1, 111 adults met the DSM-IV criteria for dependence and reported significant associated problems, such as depression and lower levels of motivation and satisfaction with life.

Coffey et al (2003) related dependence to a user's starting age and reported that weekly use of cannabis marks the threshold for an increased risk of later cannabis dependency, specifically amongst

[17] Diagnostic and Statistical Manual of Mental Disorders, 4th Edition
[18] International Classification of Diseases, 10th Edition

young users. Coffey et al reported "30% of teenagers smoking more than once a week became addicted by their early twenties, those between 14 and 17 were twenty times more likely".

Interestingly, dependent cannabis users reported compulsive and out-of-control use more frequently than dependent alcohol users, withdrawal to a similar extent and tolerance considerably less often.

Chambers' study (2003) supported the increased vulnerability of adolescent brains to addiction compared to adults. He suggested that drug addiction should be thought of as a development disorder in the brains of teenagers, in that the adolescents' changing brain circuitry leaves them especially vulnerable to the effects of addictive drugs.

Finally, *Science Threads of Addiction, Substance Use and Health* (STASH January 2007) looked at the transition from drug use to dependence in over 8,000 participants. They found the probability of drug initiation and developing dependence both peaked at 18. Interestingly, male users were found to be approximately twice as likely to develop dependence in the first two to five years as female users.

SECTION TWO: CANNABIS HARMS

INTRODUCTION TO THE ADVERSE HEALTH CONSEQUENCES OF CANNABIS

Sweden was the first country in the world to extensively research the evidence on the adverse health consequences of cannabis use and has since adopted a strategy of community wide information sharing regarding the health hazards posed by the drug. Renowned psychiatrist Jan Ramstrom has compiled extensive reviews for the Swedish National Board of Health Welfare (in 1998) and National Institute of Public Health (in 2003) on the health implications of cannabis use. A result of Ramstrom's reviews was the report "*Adverse Health Consequences of Cannabis Use*", which provides outlines of mental disorders, physical injury, psychological and psychosocial injury. More recently in the United Kingdom, Brett (2008) produced "*Cannabis – A General Survey of its Harmful Effects*" in a review of the ever-widening range of negative effects upon health caused by the substance, including childhood development, mental illness and cognitive functioning.

In this section we shall discuss only a limited portion of the available literature on adverse health consequences in three primary areas including mental health, brain function and physicality.

MENTAL HEALTH

The harms of cannabis use on the user's mental health have been well documented and include specific research into the onset of schizophrenia (see Boydell, 2006; Solowij, 2007; Fergusson, 2005; Ferdinand, 2005, Veling 2008) and other mood disorders including depression, bi-polar disorder and amotivational syndrome (see Bovasso, 2001; Hayatbakhsh, 2007; Corcoran 2008). Research has also explored the links to suicide, especially in young people (Dervaux, 2003; Greenblatt, 1998; Beautrais, 1999).

Firstly, severe mental disturbances, such as momentary short-term psychosis or the long-term illness of schizophrenia, have been linked to cannabis use and especially so when cannabis use begins in adolescence. As a stimulant of the dopamine system, cannabis offers the user a pleasurable 'high'; however, this 'high' can become dangerous when dopamine levels become excessive. Murray (2005) discusses the impact of early cannabis use on the developing adolescent brain and specifically dopamine receptors, indicating early cannabis use may damage these receptors permanently, leaving a young cannabis user at a much higher risk of developing schizophrenia or experiencing psychosis.

A significant study in Sweden (Andreasson, 1987) examined, over fifteen years, the link between heavy cannabis use and schizophrenia in 50,087 members of the Swedish Army and conclusively found schizophrenia occurred more frequently in heavy consumers of cannabis.

The results were re-analysed and replicated in additional studies (Zammit, 2002; Fergusson, 2003) with the British Medical Journal (BMJ) reporting in 2002 heavy consumers of cannabis at age 18 were over 600% more likely to be diagnosed with schizophrenia over the next fifteen years than those who did not use cannabis. The BMJ report also clarified that it was cannabis use and not other drugs that was associated with schizophrenia.

Moore et al concluded in 2007, that "there is now sufficient evidence to warn young people that using cannabis could increase their risk of developing a psychotic illness later in life". In fact, Moore et al found, in a review of 35 longitudinal studies that cannabis use increased the risk of developing a psychotic illness, such as schizophrenia, by 40%. This figure was doubled for frequent or heavy users. Reports by Hollis et al (2008); Henquet (2005) and Konings (2008) have found a significant positive association between cannabis use and mental health disturbance in young people who are genetically predisposed to mental health problems, such as schizophrenia.

Interestingly, Ramstrom (2003) demonstrated the association between adolescent cannabis use and adult psychosis persists even after controlling for many potential confounding variables, such as low IQ and education levels, unemployment, social integration, gender, age, ethnic group, tobacco smoking and previous psychotic symptoms. This finding was supported by recent studies of Finnish adolescents (Jouku et al, 2008) which showed an association between cannabis use and psychosis symptoms not caused by other drug use, family background or behavioural problems.

Further, researchers in Spain recently found a strong and independent link between cannabis use and the onset of psychosis at a young age, reporting that compared with nonusers, the age of psychotic onset was lowered by 7, 8.5 and 12 years among users, abusers and dependents respectively. These results are supported by multiple studies (Fergusson, 2005; Ferdinand, 2005; Solowij, 2007) and all highlight the notion of the younger the user, the worse the effects.

A second mental health issue frequently associated with cannabis use is depression and numerous studies support the connection.

For example, an Australian study of 3,239 young adults, from their birth to the age of 21, found a relationship between early initiation to and frequent use of cannabis and depression (Hayatbakhsh, 2007); a 16-year study of individuals not initially suffering from depression, but who then frequently used

cannabis, were found to be four times more likely to develop depression at follow up (Bovasso, 2001); and, Fergusson (2002) studied 1,265 children over a 21-year period and concluded that cannabis use, particularly heavy or regular use, was associated with a later increase in depression and suicide. Recent articles in *The Age* newspaper (September 29, 2008) discuss Australian statistics showing that cannabis' toll on mental health, expressly causing depression, is more prevalent than that caused by the well known impact of amphetamines.

Thirdly, cannabis use can induce amotivational syndrome, a mental state characterised by apathy, an inability to carry out plans, deal with frustration or concentrate for any length of time (Cohen, 1982). While equivocal, amotivational syndrome strikes a chord in that it aptly describes the 'personality' of a chronic cannabis smoker and is supported by numerous studies (Newcomb & Bentler, 1988; Tunving, 1987; Cohen, 1982). Musty & Kaback (1995) maintain that amotivational syndrome exists and is a manifestation of depression.

Finally, multiple studies have linked cannabis use with suicide[19]. A study by Beautrais et al (1999) examined and found a relationship between cannabis abuse and suicide. Greenblatt (1998) found that young people, aged 12 to 17, who smoke cannabis weekly are three times more likely than non-users to have thoughts about committing suicide, and this ratio was confirmed by Lynskey et al (2004). Dervaux (2003) examined the link between cannabis abuse and the suicide attempts of schizophrenics, finding a close correlation.

[19] See Appendix B for media articles on this issue

BRAIN FUNCTION

It is undeniable that cannabis affects the brain, and affects the brain's functioning adversely. Conclusive evidence shows that heavy marijuana use for five years or more may impair memory and slow cognitive function (Lambros, 2006; Ashtari, 2005; Robbe, 2006; Karila, 2005; Lundqvist, 2005; Fisk 2008; Solowij, 2008), with specific research completed on impaired driving ability (Kurathaler, 1999; Menetry, 2005; Drummer, 1994, 1998, with Gerostamoulos, 1999).

The short-term effects of cannabis use on brain function can include things such as problems with memory and learning, difficulty in thinking and problem solving, loss of coordination. Long-term effects include permanent memory impairment and overall slower cognitive function.

Importantly, Chambers (2003) and Pistis (2004) found the adolescent brain, while still under development, was particularly vulnerable to the ill effects of substance abuse, including cannabis. Researchers have concluded that repeated exposure to cannabis as an adolescent was related to abnormalities in the development of the specific fibres associated with higher aspects of language auditory functions (Ashtari, 2005). Giedd et al (1999) also discusses the development of the adolescent brain which does not reach physical maturity until the mid-twenties, and warned drug abuse could alter the normal course of brain growth. He later specifically looked at regions of the brain that control impulse and risky behaviours, reconfirming his previous findings that cannabis use on a developing adolescent brain can negatively affect overall and specific brain functions. In a study of brain abnormalities in schizophrenics as compared to the brain abnormalities presenting in adolescents frequently using cannabis, Kumra (2007) concluded the deficiencies were the same and in that part of the brain which develops during adolescence – emotional associations and other higher cognitive functions such as language, perception, creativity and problem solving.

Most recently, Medini et al (2008) confirmed the adverse brain impact of adolescent cannabis use in a study presented to the American Academy of Pediatrics. The research team found that the chronic use of cannabis during adolescence – a critical period of ongoing brain development – slowed psychomotor speed, led to poorer complex attention, verbal memory and also planning ability. Perhaps, most startlingly, these impacts continued after one month's abstinence from cannabis use.

Recent evidence on cannabis and cognitive functioning also comes from Greece (Messinis et al, 2006) where they found that those who smoked at least four joints per week for several years performed significantly worse than non-users in several areas, particularly verbal learning (the ability to remember previously learned words) and executive functioning (organising and coordinating simple tasks). Further,

Ranganathan (2006) reviewed the literature on the acute effects of cannabis on memory, concluding that cannabinoids impair all stages of memory (including encoding, consolidation and retrieval).

Solowij et al (2002) examined the effects of the duration of cannabis use on specific areas of cognitive functioning among users seeking treatment for cannabis dependence. Their results also confirmed that long-term heavy cannabis users show impairments in memory and attention, and in fact that endure beyond the period of intoxication and with increasing years of regular cannabis use. Bolla (2002) found a dose-response relationship in that the more cannabis used, the worse they performed in cognitive testing, especially memory. It is very clear that regular cannabis use is associated with impaired functioning – both by objective measures and by the admission of users themselves (Pope Jr, 2004).

Alternate studies (Niveau & Dang, 2003; Howard & Menkes, 2007) also looked at the effects of cannabis use upon neural mechanisms controlling impulse and found a connection with acts of violence and aggression. Additionally, the latest evidence of brain abnormalities in long-term, chronic cannabis users further confirms that heavy daily use exerts harmful effects on brain tissue (Yucel, 2008) and in similar ways to those seen after long-term abuse of other major drugs (de Fonseca, 1997).

Specific research on the impacts of cannabis on driving ability has increased of late. Drummer (1994; 1998; with Gerostamoulos, 1999) has done significant research on the issue and found road fatalities related to cannabis intoxication have steadily increased over the last ten years. Consistent with Drummer's findings, past research examining the effects of THC on driving ability indicate it impairs both car control (Moskowitz, 1985) and the driver's awareness of the vehicle's position in traffic (Ramaekers et al, 2000). Hansteen et al (1976) also found THC intoxication is more likely to result in collisions with obstacles on a driving course than when not intoxicated. Studies by Papfotiou (2001, 2005) found that driver errors occurred more frequently when the driver was under the influence of both cannabis and alcohol. Since the two are frequently taken together it is concerning to note that a 2005 study (Laumon et al) found the risk of accident when cannabis was combined with alcohol was 16 times higher than when using either drug alone.

These findings indicate that cannabis impairs driving ability and given the prevalence of cannabis use (upward of 300,000 Australians smoke it daily; 750,000 smoking it weekly[20]) this poses a significant risk on our roads.

[20] Australian Institute of Health and Welfare 2005. Statistics on drug use in Australia 2004. AIHW Cat. No. PHE 62. Canberra: AIHW (Drug Statistics Series No. 15). p 22

PHYSICAL HARMS

Cannabis smoke contains many of the same known carcinogens as tobacco smoke. In fact, studies have found the tar from cannabis contains 50% more of some of the carcinogens found in tobacco, notably benzopyrene, a potent carcinogen and key factor in the development of lung cancer (Hoffman et al, 1997; Tashkin et al, 1997; Novotny et al, 1976; Leuchtenberger et al, 1983), and so it should not be surprising to see cannabis use as a factor in a wide range of adverse physical conditions, including lung cancer, chronic obstructive pulmonary disease, increased risk of heart or stroke due to adverse impacts on the cardiovascular system, weakened immune system and birth defects. Cannabis cigarettes also have a higher combustion temperature than tobacco cigarettes.

There is research to support the connection between cannabis use and cancer of the digestive and respiratory tracts (Hall, 2002), lung cancer (Berthiller 2008), lung (Sridar, 1994) and breast (McKallip, 2005). Aldington (2007; et al, 2008) found that long term cannabis use specifically increased the risk of lung cancer in young adults, particularly in those who started smoking cannabis at a young age. Tashkin (2006) explains that cannabis smokers typically hold their breath four times longer than tobacco smokers, allowing more time for particles to be deposited in the lungs. In addition, cannabis is usually smoked without an adequate filter.

Researchers have interviewed lung cancer patients in seeking to identify the main risk for the disease, such as smoking habits, family history and occupation (Tetrault et al, 2007). The patients were questioned about cannabis consumption and results showed lung cancer risk rose by 5.7 times for patients who had smoked a joint a day for 10 years, or two joints a day for five years, and after adjusting for cigarette smoking.

A study in 2006 (Terris et al) reported that, of 52 men with transitional cell bladder cancer, 88.5% had a history of smoking cannabis and almost 31% were still using the drug. Terris et al found that cannabis metabolites have a half-life in urine about 5 times greater than tobacco metabolites, and warned smoking cannabis may be a more potent stimulant than tobacco smoking of malignant cell transformation, a hallmark of cancer.

In relation to chronic obstructive pulmonary disease (COPD), the period of cannabis use seems to play an important role, particularly in regard to lung emphysema and various other respiratory complications such as asthma, dyspnea, pharyngitis and chronic cough (Tetrault et al, 2007). Beshay (2007) researched emphysema in young adults and agreed the period of cannabis use was influential. A further study Tan (2007) on people aged 40 and over found that smokers were two and a half times as likely as

non-smokers to develop COPD and that adding cannabis to tobacco increased the risk again by one-third.

With regard to the body's cardiovascular system, the harms of cannabis use are again significant. At first, the intoxication produced by cannabis causes an increase in heart rate of between 20% and 50% (Huber et al, 1988; Jones, 1984) as THC increases the production of chemicals which stimulate the heart.

The increase in heart rate caused by cannabis is additive with the increased heart rate caused by nicotine in tobacco. THC is also found to have analgesic properties, lessening chest pain which Jones (1982, 1984) argues may delay the seeking of treatment, decrease the supply of oxygen to the heart and place it under greater strain. Maykut (1984) also found a rise in blood pressure if the person is sitting or lying, but upon standing drops drastically, in some cases causing the person to faint.

It must be added that tolerance can develop quickly to the acute cardiovascular effects of cannabis, with people receiving daily doses by mouth developing tolerance within 7 to 10 days, in a possible explanation of why effects can sometimes be missed (Benowitz & Jones, 1975; Nowlen & Cohen, 1977; Jones, 1984).

Supporting research as to the cardiovascular harms of cannabis use are found in Herning et al (2001), who used sound waves to measure cerebral artery blood flow resistance and found that prolonged cannabis use in 18 to 30 year olds increased the resistance in arteries and restricted blood flow to the brain; in Geller et al (2004) who detail an incident in which three teenagers, aged 15 to 17, "binge smoked" cannabis and suffered strokes from which two later died; and, in Mittleman (2001) who interviewed 3,882 patients of heart attacks and found the risk of myocardial infarction rose almost 5 times in the hour following the smoking of a joint.

We still do not know the long term effects of exposure to cannabis smoke on the cardiovascular system over extended periods, but experience with the problems of tobacco smoke should urge caution. Jones (1984) suggests "after years of repeated exposure, there may be lasting, perhaps even permanent alterations of the cardiovascular system function. There are enough similarities between THC and nicotine's cardiovascular effects to make the possibility plausible" and this is supported by a multitude of research (Mukamal et al, 2008; Lindsay, 2005; Fisher et al, 2005; Korantzopoulos, 2008).

There is also significant supporting research on the effects of cannabis use during pregnancy on newborns, with THC readily crossing the placenta (Bada, 2006; Cornelius, 1995; Bailey, 1987) – Bluhm (2006) discusses an increased risk of neuroblastoma; Robinson et al (1989) identified an eleven-fold

increase in leukaemia; and, there are multiple abnormalities in physical appearance, size, weight and hormonal functions discussed by Fried, 1980 and 1984; Zimmerman, 1991; Zuckerman, 1989; Barnett, 1983; El Marroun 2008; Mendelson, 1985 and 1986).

A paper by Klonoff-Cohen et al (2006) studied the effects of cannabis use on the outcomes of IVF and GIFT fertility treatments and concluded cannabis use lowered the prospects of successful treatments. They found females produced fewer eggs and the child once successfully conceived had a significantly lower birth weight.

The risk of miscarriage of ectopic pregnancy of women smoking cannabis in the early stages of pregnancy was highlighted in recent research by Day (2006). THC was found to mimic anandamide and its control over embryo development, disrupting the process and creating cell abnormalities in mice. Day also concluded that, "Prenatal exposure to marijuana, in addition to other factors, is a significant predictor of marijuana use at age 14".

A review by Huizink & Mulder (2006) came to the conclusion that pre-natal exposure to cannabis use is related to some common neuro-behavioural and cognitive outcomes, including symptoms of ADHD such as inattention and impulsivity, decreased general cognitive functioning and deficits in learning and memory tasks.

Barros and colleagues, writing in *The Journal of Paediatrics* in January 2007, found that marijuana-exposed infants born to adolescent mothers scored differently on measures of arousal, regulation and excitability compared to non-exposed infants, where they displayed subtle behaviour changes in the first few days of life, i.e. they cried more, startled more easily and were more jittery. The authors said this may also interfere with mother-child bonding.

Harkany et al. (2007) found that endocannabinoid signalling modulates central nervous system patterning, so that "pharmacological interference with endocannabinoid signals during foetal development leads to long-lasting modifications of synaptic structure and functioning. Marijuana abuse during pregnancy can impair social behaviours, cognition and motor functions in the offspring with the impact lasting into adulthood".

Another paper in May 2007 had similar findings. Endocannabinoids in the human body play a vital role in the development of a baby's brain in that they are responsible for controlling how the complex system of nerves develop in the embryonic brain. Dr Ann Rajnicek states "Smoking cannabis could interfere with the signals that are being used in the brain to wire it up correctly in the first place. As the brain develops further, there will be functional problems – potential brain damage" (Berghuis et al. 2007).

The reason for the late appearance of this damage is assumed to be that the functions involved are “executive” cognitive functions that are not taken into use until the child is four to six years old. Another long-term study shows similar associations between exposure during the foetal stage and relatively late (at age 6 and 10 respectively) behavioural disturbances (Ramstrom, 2003).

SECTION THREE: QUITTING CANNABIS

It is not only important to have strategies to help people quit cannabis but prevention must be the aim of the policy makers. Student drug testing is intended as prevention and as a deterrent. It offers young people a tool to refuse drugs among their peers. Student drug testing, which include anonymity, privacy, non-coercion, also encourages families to seek help for their children in need. (McKinney 2005, DuPont 2002, Ticker 1997, Goldberg 2007).

While it is acknowledged that it is far easier and less expensive to adopt preventative measures than invest in treatment, for those who are addicted to cannabis, it is important to provide the means to be able to stop – just as we have seen implemented with other common drugs such as tobacco and alcohol. This section discusses symptoms, the need for treatment, effective treatment techniques and the high incidence of relapse.

Contributors to "*Cannabis Dependence, Its Nature, Consequences and Treatment*" state the symptoms of cannabis withdrawal are "irritability, anger, nervousness, sleep difficulty, change in appetite, physical discomfort" (2006) and Kouri (1999) found previous reports of an abstinence syndrome associated with chronic marijuana use were confirmed and also suggested aggressive behaviour as a component. There is also research to suggest staying clean for cannabis addicts is as hard as for heroin addicts (Roffman, Stephens, Marlatt; 2006).

Extensive research has found a connection between early cannabis use and the likelihood of need for treatment (Kandel & Yamaguchi, 1985; Robins & Przybeck, 1985; Adams & Gfroerer, 1988; Glants & Pickens, 1992; Anthony & Petronis, 1995).

There is a need for effective treatment of cannabis misuse. Psychological therapies have been developed based on principles of motivational interviewing, cognitive-behavioural therapy and relapse prevention. The evidence base for these therapies is explored in a review by Maddock & Babbs (2006), and studies targeting both adult users and young people are considered. They also discuss new pharmacological treatments.

Increased recognition that marijuana can cause addiction and significant negative consequences in a subset of users has prompted the development of marijuana-specific interventions and treatment materials paralleling those for other substance use disorders. These advances have increased users' and caregivers' perceptions that it is acceptable to seek and provide treatment for cannabis use and

have contributed to an increase in the number of individuals requesting help (Budney, 2007). In light of the recognition that people smoke cannabis mainly for pleasure (euphoria/"high") it is noted that none of the available treatments are highly effective.

The Substance Abuse and Mental Health Services Administration (SAMHSA) released a treatment manual titled "Brief Counselling for Marijuana Dependence – a Manual for Treating Adults" and outlined procedures for individuals who use cannabis as their primary drug. The manual suggested chronic cannabis users tended not to seek treatment in traditional drug treatment settings, but that when given the opportunity would respond positively. Increasing evidence suggests that counselling for cannabis dependence is effective (Steinberg et al, 2002; SAMHSA, 2005).

Clients in treatment require a sense of hope and positive expectations are especially critical when facing a protracted period of withdrawal (Zweben & O'Connell, 1992). Programs designed to aid cessation should focus on the negative effects of marijuana and should offer alternative ways to relieve negative physical and psychological conditions such as stress (Weiner, 1999).

Professionals working with cannabis dependent people often see them relapse repeatedly. Relapse may involve the length of detoxification; ease of access to the substance; social pressures in schools, work, entertainment, social and family settings; persistent denial; or the high level of functioning many addicts have when they enter recovery. Marijuana addicts who have not previously shown extensive drinking histories often believe they can consume alcohol and this can lead to a cannabis relapse (Chacin, 1996). Budney et al (2002) found clinical trials evaluating treatment for cannabis dependence suggest that the withdrawal syndrome, like other substance dependence disorders, is responsive to intervention but the majority have difficulty achieving and maintaining abstinence.

In recent years, multiple sources have released suggested treatment programs, ranging from counselling treatments for adults (SAMHSA, 2005), intervention programs (Maddock & Babbs, 2006) and specific treatment programs developed for women (Chacin, 2006). The work of Roffman & Stephens (2006) and Budney et al (2007) also discuss treatment options and are recommended reading on the topic.

SECTION FOUR: RECOMMENDATIONS

The evidence is clear that the younger the age of initiation to cannabis use, the greater the risk of harmful effects to the individual. The following recommendations aim to provide advice and strategies to politicians, decision-makers and researchers to ensure that the level of cannabis use in Australia is markedly reduced, within the next few years.

Drug Free Australia's research recommends:

1. That all Australian Governments urgently implement effective preventative drug education in all States and Territories, focusing on education, in both primary and secondary schools that includes the latest scientific research into the harmful effects of cannabis on the developing brain, together with information on issues related to the risk of suicide, drug-induced psychosis, schizophrenia and depression.

2. That the Federal Government urgently implements a national media campaign, similar to the "Bloody Idiot" alcohol campaign, in order to inform the community of the harmful effects of cannabis use on all community members. This would be an appropriate response to the concerns of the Australian community, as measured in the Pfizer/NDARC report of 2007, in which 77% of Australians expected the government to run a public health campaign alerting the public to the harms of cannabis.

3. That clear cannabis prevention policies be issued by the Commonwealth Department of Health and Ageing, to be implemented in all schools and further, that these be regularly updated and reinforced.

4. That Federal, State and Territory police are resourced to implement NOAH (Narcotics, Opiates, Amphetamines, Hashish 1992) blitzes every three months for a two year period. This should target users and potential users; it should deal with plantation and hydroponically grown cannabis, trafficking, financing, and/or selling drugs to children. Further, that the Proceeds of Crime funds be used to continue a NOAH cannabis campaign after the two-year period.

5. That all professionals working in drug and alcohol fields be required to strongly discourage any cannabis use by those whom they counsel or to whom they provide treatment for drug related problems.

6. That the Federal and all States and Territory Governments resource and conduct a long-term cannabis QUIT campaign, to be organised and implemented along lines similar to the successful "QUIT Tobacco" campaign. Further, that the Cancer Council of Australia be encouraged to promote the message that cannabis has carcinogenic properties that cause the same adverse health consequences as tobacco.

7. That greater penalties be introduced to prosecute suppliers and traffickers of drugs to children while young offenders be directed toward compulsory treatment rather than jail.

8. That clear messages about the harmful effects of cannabis on the young body should be issued by the Commonwealth Department of Health and Ageing with the cooperation of the State and Territory Governments be used in all schools and be constantly reinforced.

9. That recommendation Number 70 of the report to the *Ampe Akelyernemane Meke Mekarle* "Little Children are Sacred" Inquiry be fully implemented. This recommends that government develop and implement a multi-faceted approach to address the abuse of illicit substances in Aboriginal communities, in particular cannabis. This approach to include strategies for prevention, intervention and enforcement strategies which:

    a) Recognise the geographic context of substance abuse, which occurs in both urban and remote locations, and its implications; and

    b) Are population-based, youth-focused and integrate substance abuse, mental health and other health and welfare concerns into youth programs.

10. That drug testing in schools be encouraged, giving a clear message that drug use including cannabis, is not permitted. Many youngsters do not see cannabis as a drug or that it will harm them.

11. That roadside testing be implemented to identify drug-driving and related safety issues, in all States and Territories.

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APPENDIX A: UNITED KINGDOM

An article by David Wilkes in the Daily Mail dated 5 September 2007 see link:
http://www.dailymail.co.uk/pages/live/articles/news/news.html?in_article_id=480162&in_page_id=1770
"Mother blames cannabis for suicide of promising violinist daughter"

Talented, bubbly and pretty, Laura Bower-McKnight had it all to live for. A gifted musician, the 22-year-old studied at the prestigious Royal Welsh College of Music and seemed destined for a career in the performing arts. But her life once so full of promise was prematurely ended when she killed herself after cannabis turned her into a shambling wreck and left her an depressed recluse terrified of going outdoors. She was found dead at her family's home last week after hanging herself from the end of her bed. Her heartbroken mother told how smoking a single joint of the potent "skunk" variety of the drug triggered a psychotic episode in her violinist daughter and set her on the road to her death.

Mrs. McKnight said: "People think nothing of cannabis nowadays. They just don't realise this drug can tip you over the edge. "A lot of people try it". With the government downgrading it, I think young people assume it is completely harmless." But it can destroy your mind."

Having returned to the family home in North Hykeham, troubled Laura, who had previously smoked normal cannabis with friends, tried a joint of skunk - and the experience proved devastating. Mrs. McKnight said: "It wasn't the real Laura, the always-on-the-go, lovely young woman, the musician, the passionate writer, the artist." It tipped her into psychosis. We lost our wonderful girl for a while. Her behaviour became completely erratic. She was doing very odd things. Mrs. McKnight said she and her husband Malcolm, Laura's stepfather, now only hoped their daughter's death would serve as a warning to others.

She said: "Laura would have wanted us to highlight these issues. We were so close. It's just a massive, irreplaceable loss from our lives. "There are a lot of young, vulnerable people. Expectations of them are so high. Drug use, depression and suicide among them is a growing problem." Mr. McKnight, 44, an engineer, added: "Different people have different limits with drugs. For some even the tiniest amount can be too much."

An article by Paul Britton in the Manchester Evening News on 17 April 2006 see link:
http://www.manchestereveningnews.co.uk/news/s/210/210885_parents_blame_cannabis_for_sons_suicide.html
'Parents blame cannabis for son's suicide"

A grieving family blames cannabis for causing the mental illness that drove their son to suicide. Lee Michael Wellock, 24, was found hanging from a tree with a note in his pocket indicating that he intended to kill himself. Lee had smoked the drug since he left Elton High school in Bury to work at a computer company. His parents, Michael and Denise, of Newington Drive in Bury, said it "took over and controlled" their son's life and ultimately led to his death. Lee, who did not drink alcohol, smoke cigarettes or take any other drugs, developed mental health problems at the age of 18 and was diagnosed with schizophrenia at 22, an inquest in Bury was told.

An article by Richards Edwards in the Telegraph Newspaper on the 25 September 2007 see link:
http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/09/25/nsuicide125.xml

"Suicide girl jumped to death at hospital"

The daughter of an aristocratic couple jumped to her death following an eight-year descent into mental illness triggered by cannabis, it has emerged. Genevieve Butler, 28, the daughter of Lord and Lady

Dunboyne, the Anglo-Irish family, threw herself from a balcony at a London hospital after breaking free from a nurse who was taking her for a cigarette break.

Her parents told of how their "clever, bright and quick-witted" daughter had been lost to them eight years ago when she was diagnosed with drug-induced -paranoia after using cannabis. *"Potent marijuana blamed for remote youth suicides"* reported in 'The Australian' on Wednesday 21 November 2007 highly potent marijuana is being blamed for youth suicides and psychotic episodes in a remote central Australian community, which is struggling to cope with increasing levels of drug use over the past 12 months. Susie Low the head of the Internationally-recognised substance abuse program at Mt Theo outstation said "In two out of the last three (suicides), the young men were under the influence of alcohol and marijuana". Ms Low's anecdotal concerns support the findings of two reports on marijuana use in the Territory, the most recent of which said 60 per cent of people in some Arnhem Land communities were cannabis users.

APPENDIX B: AUSTRALIA

Spencer Gear in a Letters to the Editor, Fraser Coast Chronicle Maryborough Queensland on the 15 March 2007 wrote. Sadly, I have conducted the funeral of a 27-year old who committed suicide. Her family told me that the doctor said that her psychosis was probably marijuana induced. Herschel Baker (FCC 31-3-07) is right in challenging Dr. Kees Nydam's incorrect statement that "finding a clear-cut association between marijuana and mental health was not easy." It is clear in the research literature.

"Potent marijuana blamed for remote youth suicides" reported in The Australian on Wednesday 21 November 2007 highly potent marijuana is being blamed for youth suicides and psychotic episodes in a remote central Australian community, which is struggling to cope with increasing levels of drug use over the past 12 months. Susie Low the head of the Internationally-recognised substance abuse program at Mt Theo outstation said "In two out of the last three (suicides), the young men were under the influence of alcohol and marijuana". Ms Low's anecdotal concerns support the findings of two reports on marijuana use in the Territory, the most recent of which said 60 per cent of people in some Arnhem land communities were cannabis users.

Cannabis may trigger psychosis: experts
The Sydney Morning Herald March 7, 2005 - 1:24AM www.SMH.com.au.
http://www.smh.com.au/news/Health/Cannabis-may-trigger-psychosis-experts/2005/03/07/1110044267823.html

Cannabis is not the harmless drug many people believe it to be, with new evidence showing today's genetically engineered crops are more potent and may trigger psychotic illnesses, Australian scientists say. One in five Australian teenagers smoke cannabis every week, some as young as 10, and 10 per cent of those become addicted. Psychologists, bioscientists and counsellors are seeing more young Australians developing psychoses, depression and anxiety disorders through cannabis use, the ABC's *Four Corners* program has been told. Professor Vaughan Carr, Scientific Director of the Neuroscience Institute, said he believed there were similarities between the effects of cannabis on the brain, and schizophrenia. "I think that the odds are better than 50-50 that cannabis use in sufficient quantities beginning early enough in life may produce some cases of schizophrenia in people who otherwise would not have developed it," he told *Four Corners*, which airs tonight. "But that's my gut feeling. Roughly one in five adolescents overall are cannabis users in reasonable quantities. "I would have to say that all of them are at risk, but the earlier the onset of cannabis use and the greater the frequency of use, the higher the risk."

Sydney psychologist Andrew Campbell said there was much debate about whether cannabis uncovered an existing psychosis, or caused it. "My view is that it is bringing on new cases of psychosis," he told the program. "I see a lot of people with long-standing psychosis and if I see one in 10 people in a day, seven of them will have used cannabis on a daily basis at the first time of onset of psychosis."

The experts also say new hydroponically grown crops have been engineered into a much more toxic drug than 30 years ago. Dr Campbell said the new variety grew only about a metre high with little leaf and a lot of heads. As a result, the main chemical, tetrahydrocannabinol, or THC, is much more concentrated. "So when you buy $25 worth of cannabis these days you're mainly getting heads. You don't get the leaf which is much lower in concentration of cannabis," Dr Campbell told the program. The experts also say that because new research has shown the brain is not fully wired until a person is in their early to mid-20s, teenage users are most at risk of developing mental illness.

Melbourne's Early Psychosis Prevention and Intervention Centre (EPPIC) director, Pat McGorry, said at least 70 per cent of young people who attended the centre had used cannabis. "The proportion of patients using it that we see has gone up. I would say it's doubled since the early '80s when we started to look at this group of patients," Professor McGorry said.

Convicted of manslaughter after relying on cannabis psychosis re diminished responsibility.
Daily Telegraph by Michele Tydd 3rd September 1991

In the Supreme Court at Wollongong on the 3rd September, 1991, a Bega man pleaded guilty to slashing his neighbour's throat and stabbing him in the stomach and anus, on the spur of the moment, in the victim's caravan at Burragate on 3rd September, 1991. He was a long term user of marijuana and a friend of the deceased. He raised diminished responsibility and was found to be suffering from a marijuana-induced psychosis. He was freed by the Judge after being held in custody for some two years.

"Skunk Sparks a stink" by Christopher Taylor The Sunday Mail 9 April 1994.

Drug Counsellors are concerned that skunk weed is 10 to 15 times more potent than normal cannabis strains and that is a conservative estimate. Experts say the strain has an almost hallucinogenic effect. Where marijuana gives the user a sense of euphoria, skunk can leave the user in a state that could easily be mistaken for mental in balance.

The user can become intensely paranoid even exhibiting extreme schizophrenic traits. Experts said the strain can create "users with retarded motivation and responses.

"**Video dream made me stab brother"** Daily Telegraph 9.November 1988.

A 19 year old who cut his brother's throat while he was asleep. He had seen the film Platoon and he believed he was am American soldier and his brother a member of the Vietcong. He had used 4 cones of marijuana and was said to be hallucinating, a psychiatrist gave evidence that he was suffering from a cannabis induced toxic psychosis. He was convicted of murder. The trial Justice, Justice Yeldham remarked "So much for those who would legalise marijuana".

"Debbie's alleged killer sobbed, say police" The Sydney Morning Herald September 15, 1987 www.SMH.com.au.

A 21-year-old man who is a heavy user of cannabis and lived with his family and nine-year old sister at Maitland in NSW, he was directed by voices (auditory hallucinations) to kill a member of his family and hence sexually assaulted and bashed his sister to death in their flat they both occupied. His plea of diminished responsibility as a result of cannabis induced psychosis was accepted. He was sentenced to three years imprisonment with a parole period of two years.

Innisfail Advocate of Saturday July 18, 1992.

"In the Townsville Bulletin newspaper on Thursday was the shocking story of two teenager facing committal proceedings for murder, who, after smoking 20 cones of marijuana, allegedly battered a man to death with a shifting spanner and a large lump of wood. Police asked the youth (about the marijuana): "How effective was it?" to which the youth answered: "Well, I can't remember much after it happened". The youth also allegedly told police: "I wish I'd never had that first cone of marijuana".

This horrifying, yet pathetic, story involving marijuana usage is not an isolated case of marijuana smoking leading to a shocking allegedly criminal act.

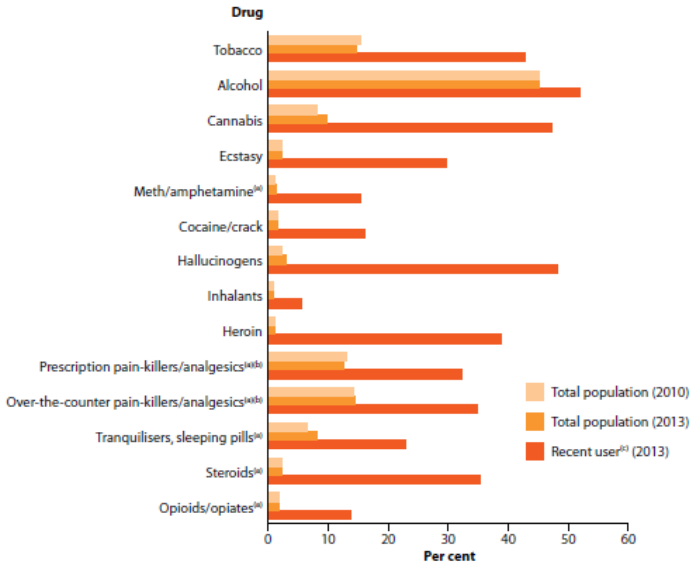
CENTRAL ISSUES FOR ACT LEGISLATORS - 7

The Greens Bill will proliferate recreational cannabis use, which most Australians condemn

According to the 2013 National Drug Strategy Household Survey, a survey of more than 24,000 Australians, 90% of Australians did not approve the recreational use of cannabis. While 69% of Australians support 'medical marijuana' in the same survey, Drug Free Australia contends that very few of these Australians would be able to specify the handful of medical indications attributed to cannabis, and would likely disapprove anything which would proliferate recreational cannabis use. Colorado laws and surveys of teens demonstrates that crude medical cannabis proliferates recreational use.

Cannabis use not acceptable to most Australians

Australians do not approve of cannabis use as per the National Drug Strategy Household Survey graph reproduced below. It logically follows that if legislating the use of smoked marijuana for medical purposes leads to diversion of cannabis for recreational use, then Australians would not approve of such legislation.



(a) Used for non-medical purposes.
(b) Use status refers to any pain-killer/analgesic.
(c) Used in the previous 12 months.
Note: Use status refers to the use of each drug specified.
Source: Online tables 9.4 and 9.6.

Figure 9.4: Personal approval of the regular use by an adult of selected drugs, people aged 14 or older and recent drug users, 2010 and 2013 (per cent)

DFA Conjecture – most Australians ignorant of 'medical cannabis' background

It may be conjecture on our part, but we firmly believe that few Australians know enough about 'medical marijuana' to form any opinions on its legality. 69% of those surveyed supported 'medical cannabis'. Informed?