



Home Office

CANNABIS: CLASSIFICATION AND PUBLIC HEALTH

*Advisory Council
on the Misuse of Drugs*

ACMD

Advisory Council on the Misuse of Drugs

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Rt Hon Jacqui Smith MP
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Dear Home Secretary

In July 2007 you asked the Advisory Council on the Misuse of Drugs to review the classification of cannabis in the light of real public concern about the potential mental health effects of cannabis use and, in particular, the use of stronger strains of the drug. I have pleasure in enclosing the Council's report.

You will note that, after a most careful scrutiny of the totality of the available evidence, the majority of the Council's members consider – based on its harmfulness to individuals and society – that cannabis should remain a Class C substance. It is judged that the harmfulness of cannabis more closely equates with other Class C substances than with those currently classified as Class B.

In providing this advice, however, the Council wishes to emphasise that the use of cannabis is a significant public health issue. Cannabis can unquestionably cause harm to individuals and society. The Council therefore advises that strategies designed to minimise its use and adverse effects must be predominantly public health ones. Criminal justice measures – irrespective of classification – will have only a limited effect on usage. We therefore urge you to invite the UK's Chief Medical Officers to develop, on behalf of the government, a public health strategy that will meet our shared goals. Anything less will prejudice the health of future generations.

The report also includes various research recommendations which we believe to be important to commission. We are confident that the government, with the Research Councils and the National Institute for Health Research, will wish to consider these very carefully.

In producing this report, the Council has had an extraordinary amount of valued help from various organisations as well as from members of the public. The Council is also very grateful to the clinicians and scientists who gave written and oral evidence. Some of them travelled a long way to do so.

Yours sincerely



Professor Sir Michael Rawlins FMedSci
Chairman

Contents

1.	Background	3
2.	Introduction	4
3.	Epidemiology of cannabis use	6
4.	Physical harms	9
5.	Short-term harms to mental health	11
6.	Dependency	13
7.	Effects in individuals with established schizophrenia	15
8.	Long-term psychotic illnesses (including schizophrenia)	16
9.	Societal harms	21
10.	Potency	23
11.	Public attitudes to cannabis	26
12.	Discussion	29
13.	Conclusions and Recommendations	33
14.	Research Recommendations	37
15.	Recommendations	39
	References	41
	Annex A: Members of the Advisory Council on the Misuse of Drugs	45
	Annex B: Co-opted experts attending meetings of the Advisory Council on the Misuse of Drugs	47
	Annex C: Oral evidence given to the Advisory Council on the Misuse of Drugs at its meetings in February and April 2008	48
	Annex D: Organisations submitting written evidence to the Advisory Council on the Misuse of Drugs	49
	Annex E: Other evidence considered by the Advisory Council on the Misuse of Drugs (in addition to the items cited under References)	50
	Annex F: Glossary of Terms	53

1. Background

- 1.1** The Advisory Council on the Misuse of Drugs (the Council) is established under the Misuse of Drugs Act 1971. The Council's current membership is shown in Annex A. Additional experts also attended the Council's meetings to assist in the preparation of this report (Annex B).
- 1.2** The Council is required under the Misuse of Drugs Act "*to keep under review the situation in the United Kingdom with respect to drugs which are being or appear to them likely to be misused and of which the misuse is having or appears to them capable of having harmful effects sufficient to constitute a social problem*".
- 1.3** Substances that are controlled under the Misuse of Drugs Act are grouped, on the basis of their harmfulness, into one of three classes:
- Class A** (the most harmful) includes cocaine, diamorphine (heroin), 3,4-methylenedioxymethamphetamine (ecstasy), lysergic acid diethylamide (LSD) and methamphetamine.
- Class B** (an intermediate category) includes amphetamine, barbiturates, codeine and methylphenidate.
- Class C** (less harmful) includes benzodiazepines, anabolic steroids, gamma-hydroxybutyrate (GHB) and cannabis.
- 1.4** This system of classification serves to determine the penalties for the possession and supply of controlled substances. The current maximum penalties are as follows:
- Class A drugs:** for possession – 7 years' imprisonment and/or an unlimited fine; for supply – life imprisonment and/or fine.
- Class B drugs:** for possession – 5 years' imprisonment and/or an unlimited fine; for supply – 14 years, imprisonment and/or fine.
- Class C drugs:** for possession – 2 years' imprisonment and/or an unlimited fine; for supply – 14 years, imprisonment and/or fine.
- 1.5** At the time the Misuse of Drugs Act was introduced, cannabis preparations (apart from cannabinol and certain derivatives of cannabinol) were placed in Class B. In 2002 the Council recommended [1] that all cannabis products be reclassified to Class C. The Home Secretary accepted the Council's advice and the legislative changes came into force on 29 January 2004.
- 1.6** In 2005 the Council, at the request of the Home Secretary, reconsidered the classification of cannabis products but advised that they should remain Class C [2]. The Home Secretary accepted the Council's advice.
- 1.7** In July 2007 the Home Secretary requested, in the light of "*real public concern about the potential mental health effects of cannabis use, in particular the use of stronger forms of the drug, commonly known as skunk*", that the Council re-assess the classification of cannabis. This report represents the Council's response to the Home Secretary's request.

2. Introduction

2.1 Three products of the plant *Cannabis sativa* (also known as hemp) are commonly available in the UK:

- cannabis resin (hash);
- traditional herbal cannabis (marijuana); and
- sinsemilla (including skunk¹).

2.1.1 Cannabis resin is prepared from the flowering and other parts of the cannabis plant that contain many glandular trichomes. The material is processed and compressed into hard blocks before importation into the UK, mainly from North Africa. Users cut or crumble the resin into small pieces and either roll it with tobacco and smoke it as a “joint” or vaporise it in a smoking device such as a “bong”. Cannabis may also be eaten.

2.1.2 Traditional herbal cannabis is a dried plant preparation of floral and folia material imported from the Caribbean, Africa or Asia. Like cannabis resin, it is either rolled with tobacco and smoked as a “joint” or vaporised in a smoking device.

2.1.3 Sinsemilla is composed of the flowering tops of unfertilised female cannabis plants produced by intensive indoor cultivation methods. Although some is imported, much is now grown in the UK. As with other forms of cannabis, it is either rolled with tobacco or vaporised in a smoking device.

2.2 The effect of cannabis that is desired by users appears to be mediated by the chemical component Δ^9 -tetrahydrocannabinol (THC). THC acts on specific proteins (“cannabinoid receptors”) situated on the surface of cells in the brain, as well as elsewhere in the body, and mimics the action of several naturally occurring neurotransmitter substances known as endocannabinoids.

2.3 THC, however, is only one of around 60 “cannabinoids” present in preparations of cannabis. The pharmacological properties of most of these are unknown. One particular cannabinoid that has attracted recent attention is cannabidiol (CBD), which, in animals, has been shown to have effects similar to antipsychotic drugs through an as yet undetermined mechanism [3].

2.3.1 There are few human data on the effects of CBD but, at its meeting in February 2008, the Council was presented with a study where it had been given intravenously to two healthy subjects and found to reduce, substantially, the psychomimetic actions of intravenous THC [4].

2.3.2 A recently published survey of ketamine users, who also used cannabis, found that those who had both CBD and THC present in hair samples exhibited a lower rating of psychosis-like symptoms than those in whom only THC was found [5].

¹ A form of sinsemilla with a characteristic odour. It is often of high potency.

2.4 This report is based on a review of the literature, with particular attention to material published since 2005. The Council also had the opportunity to consider oral and written evidence (Annexes C and D respectively) submitted by organisations and individuals with a special interest in cannabis. The Council is particularly grateful to those who gave evidence at its extraordinary meetings in February and April 2008.

3. Epidemiology of cannabis use

- 3.1** Because it is unlawful to possess, cultivate or supply cannabis, it is difficult to obtain precise estimates about the extent of its use. Estimates of self-reported use in England and Wales are available from data obtained by the British Crime Survey (BCS). The BCS is based on a nationally representative sample of adults aged 16 to 59 living in private households. It does not, however, include the homeless, prisoners, residents in communal establishments such as students in halls of residence, or problematic drug users whose lives are so busy or chaotic that they are hardly ever at home or are unable to take part in an interview [6]. Nor does the survey include young people under 16 years of age. As a result, the BCS is likely to underestimate the overall use of cannabis [6].
- 3.1.1** Estimates of self-reported use in Scotland are available from the Scottish Crime and Victimisation Survey (SCVS). The SCVS has similar limitations to the BCS [7]. In addition, in 2006 the SCVS changed the methodology by which information is collected, from being a paper-based survey to computer-assisted personal interviewing (CAPI). This resulted in higher reported levels of drug misuse in 2006 compared with previous years because it is considered that using CAPI leads to more honest and complete responses [7]. Consequently, it is difficult to make meaningful comparisons between the 2006 data and drug use reported in previous years. By contrast, the BCS has used CAPI since 1994; comparisons of use between 1994 and 2006/07 are therefore more reliable.
- 3.1.2** The most recent BCS report [6] indicates that 2.6 million people aged between 16 and 59 years in England and Wales reported using cannabis in 2006/07; 1.5 million of these admitted use in the month preceding the survey. These represent 8.2% and 4.8% (respectively) of the total population of England and Wales. The most recent (2006) SCVS report [7] indicates that 11.0% of people aged 16 to 59 years admitted using cannabis in the past year and 6.8% in the past month.
- 3.1.3** The use of cannabis is predominantly among younger people (Table 1), with prevalence rates higher for males than females. The data are also compatible with the suggestion that, at least in the past, most young cannabis users had stopped by their mid-thirties. The Council does not have reliable longitudinal data to determine if this is true, or whether the pattern of use 20 years ago was different.

Table 1
Proportion (%) of 16 to 59 year olds reporting cannabis use ever, in the past year, or in the past month (2006/07) [6]

Age group (years)	Use ever	Use in the past year	Use in the past month
16–19	31.7	20.3	11.8
20–24	46.0	31.5	12.1
25–29	46.5	13.1	8.1
30–34	41.0	8.5	4.8
35–44	29.5	4.5	2.7
45–54	18.5	2.2	1.2
55–59	12.8	1.1	0.6

- 3.1.4** Despite the high prevalence of cannabis use, particularly among young people, the BCS [6] also shows that use appears to have declined by around 20% to 25% over the past five years (Table 2) in all age groups. Similar findings have been reported from a national survey of English secondary schools [8].

Table 2
Proportion (%) of 16 to 59 year olds reporting cannabis use in the past year or in the past month, between 1996 and 2006/07 [6]

Year	16 to 59 years old		16 to 24 years old	
	Past year	Past month	Past year	Past month
1996	9.5	5.5	26.0	16.1
1998	10.3	6.1	28.2	18.0
2000 ²	10.5	6.4	27.0	17.4
2001/02	10.6	6.6	27.3	17.6
2002/03	10.9	6.7	26.2	16.6
2003/04	10.8	6.5	25.3	15.8
2004/05	9.7	5.6	23.6	14.1
2005/06	8.7	5.2	21.4	13.0
2006/07	8.2	4.8	20.9	12.0

- 3.2** Estimates of the prevalence of cannabis use among those under 16 years of age are sparse, and the data that are available are based on small numbers. The data [9] suggest that, in 2005, the prevalence of “ever” cannabis use among 11 to 12 year olds was around 1% to 2%, rising to 13% in those aged 13 to 14 years. This same source also reports that cannabis use among these age groups has fallen by about 1 percentage point since 1995, though uncertainties in measurement mean that we cannot be sure if this represents a real reduction.
- 3.3** In a separate survey [10], 182 young people, aged 11 to 19 years, and who had used cannabis and/or been involved with cannabis transactions in recent months, were interviewed. On average they first used cannabis when 13 years old. This provides some independent corroboration of a trend for the early introduction of many young people to cannabis.
- 3.4** There has recently been an attempt, in the Netherlands, to characterise the use of cannabis among regular users [11]. The study suggested that users might be divided into three groups (so-called “clusters”):

² The fall in use over the period 2000 to 2006/07 is statistically significant.

Cluster I: This group tended to be young males (mean age 22.7 years) whose cannabis use was frequent and who were in pursuit of high levels of intoxication.

Cluster II: These were older people (mean age 27.7 years) of both sexes who sought moderate levels of intoxication. They adjusted their smoking behaviour in response to the potency of the cannabis they were using.

Cluster III: This group consisted of mature cannabis smokers (mean age 37.5 years) whose consumption was consistently high and whose pattern of use was little affected by the strength of the product.

- 3.4.1** The participants in this study were all recruited from cannabis coffee shops in five Dutch cities. Whether they reflect the pattern of cannabis use in the UK is unclear. Nevertheless, these data suggest that the pattern of cannabis consumption is not straightforward among users; and that there may at least be a tendency for young cannabis users to seek high levels of intoxication (analogous to “binge drinking”), with older users adjusting (titrating) their intake to achieve more moderate and consistent levels of intoxication. However, we do not yet know if the use of cannabis in the UK shows similar profiles of consumption; nor whether there are changes in the pattern of use over time.

4. Physical harms

- 4.1** As discussed in our previous reports [1, 2], cannabis can produce both immediate and longer-term harm to physical health.

Effects on the circulation

- 4.2** Cannabis causes dilatation of some blood vessels but constriction of others.
- 4.2.1** The characteristic redness of the eye, shortly after exposure, is due to dilatation of the conjunctival blood vessels. Constriction of blood vessels in other organs, however, causes a rise in blood pressure. Paradoxically, cannabis can disrupt the control of blood pressure, leading to a lower standing blood pressure and an increased risk of fainting when standing up.
- 4.2.2** Cannabis produces an increase in heart rate which is maximal within 15 to 30 minutes of inhalation and remains elevated for about two hours.
- 4.2.3** The effects of cannabis on the heart and blood vessels are similar to the effects of moderate exercise and do not constitute a risk in healthy adolescents or adults. Furthermore, tolerance occurs with repeated use. Cannabis may, however, be dangerous for people with diseases of the circulatory system, particularly those with coronary artery disease, irregularities of heart rhythm or raised blood pressure or those at an increased risk of stroke.

Effects on the respiratory system

- 4.3** Unlike sedative intoxicants such as diamorphine and barbiturates, cannabis does not cause respiratory depression or suppress the gag reflex even during extreme intoxication.
- 4.3.1** Cannabis has been reported to produce short-term modest dilatation of the normal airways but – paradoxically – it can worsen asthma.
- 4.3.2** Smoking cannabis is associated with longer-term damage to the respiratory tract and the lungs, with an increased risk of chronic bronchitis. There is also a potential long-term risk of lung cancer. Severe cases of lung damage (bullae formation) have been reported in young heavy cannabis users. The extent to which these longer-term effects are causally related to cannabis use is uncertain: such changes also occur in people who use tobacco over long periods of time. In Britain, cannabis is commonly smoked with tobacco. Due to the nature of cannabis use, fewer joints are smoked by an individual over long periods compared with cigarettes. The Council therefore considers that smoking cannabis, even when mixed with tobacco, is less likely to harm lungs than if tobacco is used alone.

Effects on the reproductive system and reproduction

- 4.4** Cannabis use may have adverse effects on the reproductive system and reproduction.
- 4.4.1** The effects of cannabis on fertility are uncertain. However, chronic use of cannabis has been alleged to decrease sperm counts and sperm motility in men and to suppress ovulation in women.
- 4.4.2** A small number of women use cannabis during pregnancy. Use is associated with low birth weight babies and there have been suggestions of an increase in minor birth defects. In addition, there is some evidence that cannabis use during pregnancy may produce subtle alterations in the neuropsychological performance of the child. All these effects are seen in women who use tobacco during pregnancy and it is not possible to be certain that cannabis itself causes additional harm. Nevertheless, pregnant women should be warned to avoid both cannabis and tobacco.

5. Short-term harms to mental health

- 5.1** Cannabis can produce both immediate and longer-term harms to mental health.

Acute psychological reactions

- 5.2** Cannabis use usually gives rise to pleasurable feelings of relaxation and euphoria. In some people, however, acute intoxication leads to panic attacks, paranoia and confused feelings that drive users to seek medical help. These effects are generally short-lived and usually respond to reassurance or the administration of a minor tranquilliser. In some instances, acute cannabis intoxication appears to precipitate a psychotic state that may continue for some time and require treatment with antipsychotic drugs. This is similar to the psychotic states following intoxication with cocaine or amphetamine but less severe than for smokable forms of crack cocaine (“crack”) and methylamphetamine (“ice”). A Danish study [12] has shown that about half of people with a diagnosis of cannabis-induced psychosis experience further psychotic episodes over the following three years, although whether this relates to continuing cannabis use is not known.

- 5.2.1** The prevalence of these acute psychological reactions to cannabis is uncertain. Nevertheless, unpublished data from the National Poisons Information Service [13] show a decrease in the proportion of enquiries relating to the acute toxic effects of cannabis between 2004 and 2007, from around 0.4% to under 0.3%. Although these data are related to enquiries – rather than confirmed diagnoses – they do not suggest that there has been a recent increase in acute poisoning from cannabis with the availability of higher-potency products. The Hospital Episode Statistics data (for England) on cannabis poisoning for the same time period show a similar downward trend [13].

Effects on psychomotor performance

- 5.3** As well as the pleasurable effects of relaxation and euphoria, the short-term actions of cannabis may also include altered perceptions of space and time, impaired learning and memory, difficulty in problem-solving and loss of co-ordination [2].
- 5.3.1** Simulated driving studies indicate a dose-dependent impairment of performance after cannabis use [14]. Moreover, such studies have shown that this impairment of driving ability is more pronounced in the presence of alcohol at blood levels around half the current legal limit [14, 15].
- 5.3.2** Epidemiological studies in the UK and elsewhere have shown that cannabis is the most common illicit drug found in the body fluids of those having motor vehicle injuries [14]. The interpretation of these findings is complicated by the frequent concomitant presence of alcohol and by the long persistence of THC metabolites (three to four weeks) in body fluids after cannabis use (and well after its psychomotor-impairing effects would have dissipated).

- 5.3.3** A recent case-control study [16], conducted in France, has investigated the relative contributions of cannabis, alcohol, opiates and cocaine to fatal road accidents. A positive test for cannabis was linked to an increased risk of responsibility for the accident (taking account of factors including alcohol). Moreover, a significant dose-related effect was observed. At least 2.5% of fatal traffic accidents were thought to be due to cannabis use, compared with 28.6% for alcohol³. This study also confirmed the existence of an interaction between alcohol and cannabis.
- 5.3.4** There continues to be clear evidence to support the Council's previous warnings [1, 2] against the use of cannabis by drivers, aircraft pilots and those operating heavy machinery, as well as military, health and emergency personnel.

³ The adjusted odds ratio (taking account of factors including alcohol) for the presence of any THC in blood was 2.37 (95% confidence interval 1.89 to 2.97) with a positive concentration response. By comparison, the adjusted odds ratio for the presence of any alcohol was 9.50 (95% confidence interval 8.04 to 11.2). In this case the odds ratio is the ratio of the probability of having an accident in a population with cannabis or alcohol detected in the blood and the probability of having an accident in a population without any drug being detected.

6. Dependency

- 6.1** Drug dependence is a process whereby repeated use leads to an increasing difficulty in stopping. It is a complex phenomenon and its nature differs from drug to drug, but is also dependent on the duration and quantity that is used as well as characteristics of the user [1, 2]. Dependence is also related to the pleasure that a drug gives: the more immediate pleasure a user experiences, the more likely it is to cause dependence. It is reflected in an increasing reliance on the drug and by symptoms of withdrawal when users reduce their consumption or attempt to stop.
- 6.2** Dependence on cannabis alone is, unquestionably, a real phenomenon [1, 2]. Studies among cannabis users have revealed that when they stop they experience physical withdrawal as part of a dependence syndrome characterised by decreased appetite, weight loss, lethargy, irritability, mood changes, tremor, muscle pain, sweating and insomnia. There is also a psychological craving for the substance. Reinstating the drug terminates these symptoms. It has also been shown that cannabis dependence is associated with an altered function of cannabinoid receptors; and that withdrawal can be precipitated by a cannabinoid receptor antagonist.
- 6.3** Data on the extent of cannabis dependence in the UK, from a study carried out in 1999, is shown in Table 3 [17]. It should be noted that the threshold for dependence used in this study was low; and that individuals who were frequent users (i.e. daily users for a fortnight or more), or who had developed tolerance for the drug so required more to get the same effect, were assessed as dependent. These data therefore almost certainly overestimate numbers requiring professional help in stopping. They nevertheless provide some indication of the scale of the problem.

Table 3
Prevalence of cannabis dependence alone [17]

Age group (years)	Prevalence (percentage of the population)	
	Males	Females
16–19	7.7	1.8
20–24	12.7	7.6
25–29	9.2	2.7
30–34	4.8	1.6
35–39	1.9	1.4
40–44	1.4	1.0
45–49	2.9	3.0
All (16–74)	3.7	1.4

- 6.4** The numbers of individuals reported [18] by the National Drug Treatment Monitoring System (NDTMS) presenting for treatment in relation to cannabis use for the years 2004/05 to 2007/08 [18] (projected) are shown in Table 4. Changes to the data collection procedures do not permit direct comparisons with earlier years. Data for those under 18 years old is only included from 2005/06 as the NDTMS was not operational in most young people's treatment providers until then.

Table 4
New presentations for treatment with cannabis as the main problem [18]

Year	Under 18 years old	Over 18 years old
2004/05	–	6,890
2005/06	7,308	8,192
2006/07	7,603	8,041
2007/08 ⁴	8,200	8,450

6.4.1 The young people’s treatment system provides services to those in whom drug use is part of a pattern of behaviour including offending, truancy and relationship difficulties with families. The level of cannabis use that the intervention addresses is usually much less severe than in older persons: it rarely involves dependency and the nature of the intervention is very different [18]. The data in Table 4 therefore provide little indication as to the true prevalence of cannabis-dependency in young people.

⁴ Projected (based on data to the end of 2007). Note: the increase may in part reflect the growth of treatment service places over the time period. As a proportion of the total treatments given those for cannabis dependence have probably fallen.

7. Effects in individuals with established schizophrenia

7.1 As discussed in our previous reports [1, 2], there is clear evidence that the use of cannabis may worsen the symptoms of schizophrenia and lead to relapse [19, 20]. The high prevalence of cannabis use, as well as the use of other controlled substances among those with schizophrenia or psychotic disorder [21, 22], is not well understood. Nevertheless, there are clear and obvious harms associated with the use of cannabis by people with psychotic disorders, and recent studies [23, 24] confirm this. The Council's clinical experts report, anecdotally, that dealing with cannabis use (including dependence) is now a major element in the clinical management of many young men with established psychotic illnesses.

8. Long-term psychotic illnesses (including schizophrenia)

Definitions and analysis

- 8.1** Psychotic symptoms are classically defined as disordered thinking, delusions (abnormal beliefs) and hallucinations (abnormal perceptual experiences). Many people – possibly up to 20% of the population – experience psychotic symptoms at some period of their lives. To meet the criteria for a “psychotic illness”, these symptoms generally need to meet a threshold of severity, last for a significant period of time, and have an adverse impact on the person’s social functioning [2].
- 8.1.1** The term “schizophreniform disorder” is used to describe a condition in which psychotic symptoms that are characteristic of schizophrenia are present but only for a relatively short period [2]. For some it is a transient condition from which they make a complete recovery.
- 8.1.2** Schizophrenia [25] is a serious mental illness affecting about 0.5% of the UK population over the course of their lives. In addition to psychotic symptoms (which are usually prominent), patients with schizophrenia have other problems including loss of motivation, disturbances of behaviour and cognitive defects. These symptoms tend to be enduring and disabling and, in a proportion of those affected, are life-long [2].
- 8.2** There has been growing concern over the past few years as to whether cannabis use might precipitate chronic, or enduring, psychotic illnesses including schizophrenia. In view of the ability of cannabis to precipitate relapse in individuals with established schizophrenia, it is clearly a biologically plausible hypothesis.
- 8.3** As discussed in our previous report [2], there are very considerable difficulties in establishing a “cause and effect” relationship between the use of cannabis and the subsequent development of a psychotic illness.
- 8.3.1** An association between cannabis use and the subsequent development of a psychotic illness does not necessarily indicate a causal relationship in either individuals or populations. The onset of schizophrenia usually occurs in the late teens or early twenties; and it is at this age that cannabis use is most prevalent. A temporal association – which may not necessarily be a causal one – is therefore almost inevitable [2].
- 8.3.2** Because schizophrenia is relatively uncommon, most studies examining the effects of cannabis on mental health have used the presence of psychotic symptoms to examine its effects. As already discussed in Section 8.1.1 above, conditions described as psychotic symptoms or schizophreniform disorders do not necessarily lead to the long-term disability that is so common in schizophrenia.

- 8.4** Studies have, inevitably, been observational rather than experimental. These observational studies have been necessarily controlled by obtaining information about cannabis use from individuals without psychotic symptoms and the results expressed as an “odds ratio”⁵ or “relative risk”.
- 8.5** The interpretation of these studies, which have attempted to examine the association between the use of cannabis and the development of schizophrenia, is made very difficult for several reasons.
- 8.5.1** Studies, generally, have relied on the self-reported use of cannabis, which may either overestimate or underestimate actual consumption. In addition, studies have not necessarily sought information about the use of other drugs of misuse such as amphetamines, which can also provoke psychotic symptoms. Even where they have done so, there may be significant discrepancies [26] between self-reported use and the results of objective tests of consumption.
- 8.5.2** Studies have varied in the methods used to detect psychotic symptoms. Only one study [26] has had the statistical power to assess whether cannabis use precedes the onset of an illness that meets the full diagnostic criteria for schizophrenia.
- 8.6** There are also factors that complicate the interpretation of any observed association between schizophrenia and cannabis misuse. There is some evidence that the use of cannabis, in some individuals, may be the consequence of an emerging psychotic illness (sometimes called reverse causality). The distinction between psychotic symptoms occurring as a result of acute intoxication from cannabis rather than as part of an enduring psychotic illness may not necessarily be clear. Studies have therefore reported the adjusted estimates of the “crude” odds ratios to take account of these, and other, factors that might affect the association or relationship.
- 8.7** A recently published, high-quality, systematic review [27] has synthesised the totality of the available published evidence. This review has also attempted to take account of various sources of bias and confounding factors in estimating the risks of a psychotic outcome associated with the use of cannabis.
- 8.7.1** The adjusted odds ratios [27] in the pooled analyses of “ever” users of cannabis were:
- 1.41 (95% CI⁶ 1.20 to 1.65) for any psychotic outcomes; and

5 The odds ratio is a measure of association between a condition and a possible risk factor. An odds ratio around 1.0 suggests no association; an odds ratio of <1.0 suggests an association that is beneficial; and an odds ratio of >1.0 suggests a harmful association. The size of an odds ratio is an important factor in judging whether an association may indicate a causal relationship. For example, the odds ratio linking smoking and lung cancer is about 20 (representing a 20-fold increase in the likelihood of smokers developing lung cancer). An odds ratio of this size indicates that smoking plays a crucial, though not necessarily sole, role in causing lung cancer. The odds ratio for developing schizophrenia in someone with a first-degree relative (i.e. parent, sibling or offspring) with the condition – compared with someone who has not – is about 10 (in the absence of cannabis use). In this instance, the size of the odds ratio strongly suggests a causal role for genetic factors.

6 Confidence interval.

- 2.58 (95% CI 1.08 to 6.13) for psychotic disorders (including schizophrenia, schizophreniform disorder and other psychoses requiring treatment).

8.7.2 In a pooled analysis of the six studies that sought to identify a dose-response relationship from information about the frequency of use, there was an increased risk of a psychotic outcome in individuals who used cannabis most frequently [27], with an adjusted odds ratio (compared with non-users) of 2.09 (95% CI 1.54 to 2.84).

8.7.3 It is striking that, in these studies, adjustments to their odds ratios to take account of reverse causality and intoxication effects reduced them by anything from 15% to 80% [27]. This raises the possibility that there may be other, unidentified, factors that would further reduce the magnitude of the association between cannabis use and the development of a psychotic illness.

8.8 Cannabis use has increased, very substantially, in the UK and other countries over the past 35 years. If there is a causal link between cannabis use in adolescence and the development of schizophrenia, this might be reflected in temporal changes in the incidence and prevalence of the disorder.

8.8.1 In an Australian study [28], the relationship between cannabis consumption and the prevalence of schizophrenia was examined in cohorts of people born between 1940 and 1979. Despite a steep rise in the prevalence of cannabis use, and a corresponding decrease in the age of initiation of use, there was no evidence of a significant increase in the incidence of schizophrenia.

8.8.2 There is no UK national register of those for whom a diagnosis of schizophrenia has been made. At the request of the Council, Frisher and Crome [29] examined the prevalence and annual incidence of diagnosed schizophrenia and psychoses among cohorts of over 900,000 patients attending 183 general practices in the UK between 1996 and 2005. They observed that both the prevalence and annual incidence of schizophrenia and the prevalence of psychoses have decreased over the period of observation.

8.9 The association between the development of schizophrenia and the use of cannabis has been modelled [30] using national survey data on cannabis consumption between 1970 and 2002 and the estimated national incidence of schizophrenia that was derived from a survey conducted in 1999. The authors concluded that the shift in cannabis consumption to more prolonged use, initiated at an earlier age, is relatively recent; and that its full impact may not yet be apparent. If there is a causal relationship this should be seen within the next five years.

8.10 The Council concluded that the evidence supports a causal association between the use of cannabis, in adolescence, and the later development of schizophrenia; although the evidence for this relationship is clearly more complicated than when it considered this previously. The Council also considered that the evidence supporting a dose-response relationship was more persuasive than previously. The Council remains uncertain about whether early cannabis use, before the age of 15 years,

is associated with an additional increased risk. Nevertheless, the magnitude of the effect of cannabis use on the subsequent development of schizophrenia does not appear to be substantial, in the population as a whole, with the cannabis preparations used during the late 1990s.

8.10.1 The peak incidence of schizophrenia in males (aged 20 to 24 years) is approximately 15.9 per 100,000 person years, and in females (where the peak incidence is at age 25 to 29 years) the peak incidence is 7.5 per 100,000 person years [31]. Assuming that heavy users of cannabis have a two-fold increased risk of developing schizophrenia, based on the model discussed earlier [30], it can be estimated that the increase in annual risk:

- for males (aged 20 to 24 years) would be 1 in 3,100 to 1 in 1,900; and
- for females (aged 25 to 29 years) would be 1 in 9,900 to 1 in 5,300.

Based on these figures, this means that to prevent one case of schizophrenia in men aged 20 to 24, about 5,000 men would have to be prevented from ever smoking cannabis [32].

8.11 It is evident that the majority of young cannabis users do not develop psychotic illnesses. Those who do so must have one or more predisposing factors. As discussed in our earlier report [2], the existence of a functional polymorphism of the catechol-O-methyltransferase gene (COMT) [33] has been described; which was with an odds ratio for schizophreniform disorder of 10.9 (95% CI 2.2 to 54.1). This association, however, has not been confirmed in a more recent study [34]. COMT status also has an impact on tobacco dependence and so may be a factor in dependence on smoked cannabis. COMT therefore could be a common mediating factor of both cannabis use/dependence and psychotic outcomes.

Anxiety and depression

8.12 Associations between the use of cannabis and the subsequent development of affective outcomes (depression, bipolar disorder and anxiety) have been examined in a number of studies [2]. The interpretation of these associations, however, is even more problematic than those between cannabis use and schizophrenia and psychoses [2, 27].

8.13 The systematic review [27] referred to previously undertook a synthesis of the published studies examining the associations between cannabis use and the development of affective disorders. Overall, the evidence for associations between cannabis use and these affective disorders was less strong than for psychotic outcomes, with confounding factors likely to explain the reported associations.

8.13.1 A pooled analysis [27] of studies investigating an association between frequent cannabis use and depression revealed an adjusted odds ratio of 1.49 (95% CI 1.15 to 1.94). The data on associations between cannabis use and either bipolar disorder or anxiety were considered to be inappropriate for meta-analysis.

The gateway theory

- 8.14** The “gateway theory” is the term that describes the possibility that use of cannabis leads to use of more dangerous drugs such as opiates and cocaine [1]. It arises from the observation that users of the most harmful (Class A) drugs have generally used cannabis first. The interpretation of these studies is extraordinarily difficult because of the confounding effects of alcohol, tobacco, solvents, stimulants and psychedelic drugs, whose use frequently precedes that of Class A drugs. Moreover, although there is no evidence that there are physiological mechanisms leading to more harmful drugs, the social milieu of drug use may result in some users trying them. The shared market for cannabis and other drugs would increase the potential for escalation.
- 8.15** In 2002, the Council concluded that it was not possible to state, with certainty, whether or not cannabis use predisposes users to dependency on Class A drugs [1]. Nevertheless, it considered the risks to be small and certainly less than those associated with the use of alcohol and tobacco. No further convincing evidence has been identified by the Council to alter this conclusion.

9. Societal harms

Effects on performance

- 9.1** Smoking cannabis generally produces feelings of relaxation sometimes accompanied with social withdrawal; but, unlike alcohol, it does not appear to cause disinhibition, an increase in risk-taking behaviour or aggression [2]. Psychometric laboratory studies confirm that, in recreational users, cannabis has dose-dependent effects on motor control, executive functioning and motor impulsivity but no action on risk-taking [35].
- 9.2** Cannabis thus impairs the performance of tasks that require sustained attention and motor control such as driving, operating heavy machinery and flying aircraft (Section 5). In these circumstances, cannabis can be dangerous to the individual and to others (especially when taken with alcohol). Recent use of cannabis would also be expected to impair learning at school or college, as well as having an adverse effect on those whose employment requires cognitive skills. As well as the personal costs to individuals, there are unquantified, but real, economic costs to society.

Criminal and anti-social behaviour

- 9.3.** A study among 11 to 19-year-old cannabis users showed that cannabis transactions among young people were social rather than commercial [8]; and that they were not overtly linked to criminal markets.
- 9.3.1** Buying with friends – “chipping in” – was the most common way of purchasing cannabis because it allowed young people access even when they had only small amounts of money. Most purchases were from friends, friends of friends, or family members. Only 6% had bought cannabis from an “unknown seller”.
- 9.3.2** The median expenditure on cannabis of these respondents was £20 per week. Almost half of them funded this with money from parents or other family members; and one third from their wages. Very few stated that they funded their use through criminal activity such as theft or selling cannabis.
- 9.4** In interviews with 61 young people, McSweeney [36] noted that the majority funded their use of cannabis through pocket money and work income.
- 9.5** A survey [37] of 100 young people aged between 16 and 24 years who spent between £40 and £100+ per week on cannabis indicated that the use of cannabis enabled them to relax, relieve boredom and enhance otherwise mundane, everyday activities. Nevertheless, young people also identified negative personal and social impacts, including lower academic attainment, poorer relationships with their parents and the possibility of getting a criminal record. Less than half the respondents stated that they had engaged in any activity they would regard as anti-social after smoking cannabis, and few suggested there was a causal link.

Cultivation of cannabis

- 9.6** Cannabis – as cannabis resin or the traditional herbal product – was, until relatively recently, mainly imported from Morocco or the Middle East. Over the past few years an increasing number of domestic cannabis farms have appeared in England and Wales [38]. These farms use hydroponic techniques and growth acceleration methods that allow farmers to grow three to four crops per year. The profits from such farms have been estimated to range from £90,000 to £480,000 per year [38]. The product of these farms is almost entirely sinsemilla; and UK-sourced material now appears to supply the majority of cannabis users in the UK.
- 9.6.1** A significant factor in the domestic production of cannabis in the UK has been the emergence of cannabis farms and the activities of criminal groups, some using illegal Vietnamese immigrants (some as young as 13) as “gardeners” to attend to the crops [38]. The criminal gangs, some with connections to Vietnam and China, provide the initial financial outlay and give advice on the setting up of farms (including the bypassing of electricity meters to provide power), as well as the method and timing of the collection of harvests.
- 9.6.2** A survey conducted by the Association of Chief Police Officers (ACPO) in late 2007 asked forces across England and Wales to provide data on the numbers of cannabis farms seized during the year [38]. The 19 responders had, between them, discovered 1,564 farms over the previous 12 months. The cannabis farms were not confined to rural areas. The Metropolitan Police, over the past two years, has been discovering farms in domestic properties at the rate of about 10 per week in London.
- 9.6.3** ACPO and the Association of Chief Police Officers in Scotland (ACPOS) are also concerned that the proceeds of cannabis farms will be used to diversify into other areas of crime, with the attendant risks to safety and public confidence.
- 9.6.4** ACPOS has documented a significant increase in the number of industrial-scale cannabis farms discovered in Scotland from single figures in 2005/06 to more than 70 in 2006/07.

10. Potency

- 10.1** As discussed earlier (see Section 2.2), the main psychoactive constituent of cannabis is THC, although other constituents may play a role. In particular CBD has been shown to antagonise the effects of THC in animal models, so changes in the relative amounts of this and THC might alter the effects of cannabis, though there is little evidence for this in humans at present [3, 4].
- 10.2** The Council noted, in its previous report [2], that scientific studies of the potency of cannabis products pose technical and practical problems.
- 10.2.1** The estimation of cannabis potency is based on material seized by the law enforcement agencies. This may not be representative of the cannabis used by consumers.
- 10.2.2** The analysis of the THC content of cannabis products is difficult [2]. THC is not distributed homogeneously in cannabis plants; extraction of THC from plant material for chemical analysis may be uncertain; and the precision of the measurement techniques varies with the method used.
- 10.3** There has, for many years, been a wide (ten-fold) variation in the THC content of samples of both traditional imported cannabis and sinsemilla. Sampling error, when only small numbers of seizures have been submitted for analysis, may therefore be considerable.
- 10.4** Data on the THC content [39] of material examined by the Forensic Science Service, since 1995 are shown in Table 5. There has been no consistent change in the THC content of resin and traditional herbal cannabis over this time period. There was a clear increase in the THC content of sinsemilla between 1995 and 2000 but this appears to have remained broadly constant from 2000 to 2007.
- 10.4.1** A separate study [40], based on material (n = 452) provided by five English police forces and obtained during 2005, showed that the median THC content of cannabis resin and traditional herbal cannabis was 3.5% and 2.1% respectively (Table 6). This is consistent with the data in Table 5. The median THC content of sinsemilla was 13.9%, which is again consistent with the data in Table 5. As with previous studies, a wide range in THC content was noted for all three cannabis preparations. Comparable results have been reported from a smaller UK study [41] and similar increases in the THC content of cannabis products have been observed elsewhere in Europe [42, 43].

Table 5
Mean THC content (%) of cannabis products, 1995–2007 [39]

Year	Sinsemilla	Resin	Traditional imported herbal cannabis
1995	5.8	No data	3.9
1996	8.0	No data	5.0
1997	9.4	No data	4.0
1998	10.5	6.1	3.9
1999	10.6	4.4	5.0
2000	12.2	4.2	8.5
2001	12.3	6.7	No data
2002	12.3	3.2	No data
2003	12.0	4.6	No data
2004	12.7	1.6	No data
2005	13.7	5.5	1.9
2006	10.8	2.7	2.1
2007	10.4	4.5	2.6

10.4.2 The study by Potter (2005), however, also reported [40] the results of analyses of other cannabinoids, including CBD (Table 6). This showed that, unlike resin, traditional herbal cannabis and sinsemilla appear to have little or no CBD (at least in these samples) but with wide ranges between samples.

Table 6
Median THC and CBD content (%) in material seized in 2005 [40]

Cannabinoid	Sinsemilla (range)	Resin (range)	Traditional imported herbal cannabis (range)
THC	13.98 (1.15–23.17)	3.54 (0.44–10.76)	2.14 (0.28–11.81)
CBD	<0.10 (<0.10–0.56)	4.17 (0.36–6.97)	<0.10 (<0.10–1.97)

10.5 A very recent (unpublished) study [44] has reported the results from samples (n = 1,756) confiscated by police officers in England and Wales⁷ when issuing warnings for possession. None of these samples were obtained for the purposes of criminal proceedings under the Misuse of Drugs Act.

10.5.1 The THC and CBD content of these samples are shown in Table 7 and are comparable with the findings shown in Table 6.

⁷ The Council does not have comparable data available for the other devolved administrations but there is no reason to believe that the situation in Tables 5 and 6 is substantially different.

Table 7
Apparent market share (%) and mean THC and CBD content (%) of
cannabis products⁸ [44]

Market share/ cannabinoid	Sinsemilla	Resin	Traditional imported herbal cannabis
Market share	80.8	14.6	2.1
THC content (range)	16.1 (4.1–46.0)	5.9 (1.3–27.8)	8.3 (0.3–22.0)
CBD content	~0.1	3.5	~0.1

10.6 The available evidence therefore confirms that sinsemilla now appears to dominate the cannabis market and to have a substantially higher THC content than cannabis resin or traditional herbal cannabis and minimal quantities of CBD. Whether THC content of cannabis resin, traditional herbal cannabis or sinsemilla has changed since our previous report [2] is less clear because the results of the analyses in Tables 6 and 7 represent results from heterogeneous samples.

10.7 It remains unclear as to how much THC is smoked in a typical joint. Some of the material shown in Table 6 was obtained from joints (and mixed with tobacco) but some was in the natural form. Moreover, there is some evidence – though not from the UK – that some cannabis smokers seek the maximum effects while others inhale only a sufficient quantity of THC to obtain a particular degree of intoxication (Section 3.4).

10.7.1 A parallel can be drawn between the use of high-strength cannabis and the consumption of alcohol. The public health consequences of alcohol use are not a simple function of the strength of the beverage. Rather, at a population level, it is the total quantity of alcohol that is consumed.

10.7.2 If the parallel with alcohol is taken further, the propensity for some young people to “binge drink” alcohol becomes analogous to the Dutch findings that some young people “binge smoke” cannabis.

8 Some 2.6% of samples did not appear to comprise cannabis.

11. Public attitudes to cannabis

11.1 The Council's responsibility in advising on the control of drugs is concerned solely with assessing their harmfulness to individuals and to society. Nevertheless, the Council is aware of the public's anxieties about the nature and extent of substance misuse generally and of cannabis in particular.

11.2 In July 2007, the government launched a wide-ranging consultation on its proposals for a new drug strategy. This included two questions specifically related to cannabis:

Q39a – The Prime Minister announced on 18 July that he will ask the Advisory Council on the Misuse of Drugs to look at whether cannabis should be reclassified from a Class C drug to the more serious Class B. This is because of concerns about stronger strains of the drug, particularly skunk, and the potential mental health effects they can have. Do you think cannabis should be reclassified and, if so, why?

Q39b – Are there any other changes that you would wish to see and, if so, why?

11.2.1 Of the 639 individuals and organisations responding to these questions, 44% wished cannabis to remain Class C; 19% wished it to become a Class B substance; and 19% wished it to be legalised. One hundred and sixteen respondents were undecided.

11.2.2 The Council considered that, although these findings represent the responses of groups and individuals with a particular interest in, or concern for, the classification of cannabis, they did not necessarily reflect the views of the wider public.

11.3 The Council is aware of numerous claims that the public, generally, is confused about the legal status of cannabis as well as its degree of control under the Misuse of Drugs Act. The Council therefore commissioned an opinion poll [45] to investigate the views of the wider public on the classification of cannabis. The polling was carried out between 11 and 13 January 2008 and involved 1,003 respondents [45].

11.3.1 Of those polled, 80% were aware that cannabis was an illegal drug, 4% thought it was legal and 16% "did not know". Of those who knew that cannabis was illegal, 12% thought it was in Class A, 31% in Class B and 52% in Class C.

11.3.2 Responses to questions about the harmfulness of cannabis to individuals and society are shown in Table 8.

Table 8
Responses (%) to questions on harmfulness of cannabis to individuals and society [45]

Question	Strongly agree	Tend to agree	Neutral	Tend to disagree	Strongly disagree	Don't know
Cannabis does not give rise to physical health problems (e.g. cancer)	10	15	13	20	29	12
Cannabis has associated mental health risks for users	50	30	9	3	3	6
Strains of cannabis have become stronger within the past 10 years	39	22	13	2	1	23
Cannabis use contributes to social disorder (e.g. anti-social behaviour)	43	24	9	13	6	5
Cannabis use contributes to an increase in criminal activity	42	24	12	12	6	3

11.3.3 When asked about in what class cannabis ought to be, 32% considered that it should be in Class A, 26% Class B and 18% Class C, while 13% stated that they “did not know”. However, when they were asked to consider what penalties ought to be applied for possession, 11% considered seven years’ imprisonment (equivalent to Class A), 13% five years (equivalent to Class B) and 41% two years (equivalent to Class C), and 27% considered that there should be no penalty [45].

11.3.4 Assuming that the results of this poll can be generalised to the population as a whole (and there is no evidence to the contrary), it is clear that the majority of the public are aware that cannabis is an illegal substance even if they are unclear about its precise classification under the Misuse of Drugs Act. The public also accepts that cannabis is a hazard to mental health. The results of the survey indicate that the public considers cannabis to be responsible for social harms (anti-social and criminal behaviour).

11.3.5 Although a majority of respondents wished for cannabis to be reclassified as a Class A or B substance, there seems little desire for the penalties for possession to increase. The sole legal consequence of reclassifying cannabis to Class B would, of course, be to increase the penalty for possession from two to five years and there is, therefore, some inconsistency in the responses with respect to the classification system.

11.4 A number of non-governmental organisations with interest in, and concern for, the classification of cannabis made written and/or oral representations to the Council. Some, particularly those representing sufferers of the perceived mental health effects of cannabis, were strongly in favour of reclassification largely because of the signal this would send to the public about the dangers of this substance. Others wrote, or spoke, with equal passion claiming that the reclassification of cannabis would serve no useful purpose and that it would lead to greater criminalisation of young people; and challenging the claim that it would send a useful public health message. A number of written representations in favour of legalisation were also received by the Council.

- 11.5** The Council also learned of international experience on changes to the classification of cannabis [46] where removal of criminal sanctions for personal use, as for example in several Australian states, had been seen as a success in reducing criminalisation of users and improving the likelihood that those with dependency would seek treatment.

12. Discussion

Epidemiology of cannabis use

- 12.1** There is consistent evidence, from different sources (Section 3), that the use of cannabis appears to have diminished by around 20% to 25% over the past five years. Nevertheless, use is still widespread, particularly among young people. Cannabis use is of particular concern to the Council because of the risks of precipitating relapse in those with schizophrenia (Section 7) and of enduring psychotic illnesses (Section 8). Vigorous steps should therefore be taken to minimise the supply of cannabis in the vicinity of psychiatric institutions and prisons, as well as educational establishments and extra-curricular and non-school facilities provided for young people, such as youth clubs.
- 12.2** Emerging evidence suggests that some cannabis users may titrate their doses of THC to achieve a particular intensity of effect (Section 3.4). Other users, however, may attempt to obtain the maximum intensity of effect. This evidence of “binge smoking”, albeit in the Netherlands (Section 3.4), is of special concern in the light of the data indicating the greater use of cannabis products with higher THC content (Section 10) and the risks to long-term mental health (Section 8).

Physical harms

- 12.3** Although cannabis causes physical harm to individuals (Section 4), the Council is unaware of significant new evidence since its last report. It continues to consider that the physical harms of cannabis are no greater than those associated with the use of other Class C substances such as benzodiazepines or gamma-hydroxybutyrate GHB. Nevertheless, there are people at particular risk, including asthmatics, those with heart or circulatory complaints, men and women seeking to have children and pregnant women. Special efforts should be made to discourage use in these groups of people.

Short-term harms to mental health

- 12.4** The short-term effects of cannabis include acute intoxication reactions and adverse effects on psychological and psychomotor performance (Section 5).
- 12.4.1** The symptoms and signs of acute intoxication with THC are well established and can generally be managed by reassurance and the use of a minor tranquilliser. These symptoms and signs are substantially less than those associated with Class B drugs such as amphetamine or barbiturates. Although the available data (Section 5.2.1) are imperfect, there is no evidence that there has been any increase in the incidence of acute intoxication in the UK since the Council’s last report [2].
- 12.4.2** The effects of cannabis on psychomotor performance (Section 5.3), including the results of studies in fatal road accidents (Section 5.3.3), confirm the Council’s previous warnings against the use of cannabis by drivers, aircraft pilots and those operating heavy machinery as well as military, health and emergency personnel. In the Council’s judgement, however, these adverse effects – and associated warnings – are not dissimilar to other Class C drugs such as benzodiazepines.

Dependence

- 12.5** There is clear evidence that cannabis can produce dependency as do Class C drugs such as benzodiazepines (Section 6). The potential for dependency does not, however, appear to be as great or florid as with drugs such as diamorphine and cocaine or, indeed, amphetamines or barbiturates [1, 2].
- 12.6** Despite the considerable limitations in the data on the need for service provision in the treatment of cannabis dependency (Section 6.3), the available information suggests that few dependent users are – for whatever reason – accessing services. More needs to be done to identify, and treat, those who are dependent on cannabis.

Effects in individuals with established schizophrenia

- 12.7** As discussed in the Council's previous reports [1, 2], there is unequivocal evidence that the use of cannabis by people with schizophrenia increases the likelihood of relapse, manifested by a worsening of symptoms and often accompanied by a refusal to continue treatment (Section 7). The Council was concerned by anecdotal reports of the apparent ease with which inpatients in psychiatric hospitals can obtain cannabis from dealers. Efforts to discourage the use of cannabis by those with schizophrenia should be coupled with attempts to ensure that dealers are denied access to the vicinity of psychiatric institutions.

Long-term psychotic illness (including schizophrenia)

- 12.8** The evidence to support an association between the use of cannabis by young people and the development of a psychotic illness (including schizophrenia) is not entirely consistent (Section 8). There is a significant increase in the risk of the development of a psychotic illness (including schizophrenia) in controlled observational studies (Section 8.7), but this does not appear to have been accompanied by an increase in the incidence of psychotic illness or schizophrenia at a population level (Sections 8.9 and 8.10). This may reflect a weak and complex causal link, or some other factor(s) such as a common predisposition to schizophrenia and also to cannabis use. Miller and colleagues [47] reported that individuals at high risk, because of a family history of schizophrenia, appeared to be susceptible to cannabis-related illnesses if they had a history of certain behavioural problems between the ages of 13 and 16 years.
- 12.9** On balance, the Council considers that the evidence points to a probable, but weak, causal link between psychotic illness and cannabis use. Whether such a causal link will become stronger with the wider use of higher potency cannabis products remains uncertain.
- 12.9.1** Only a minority of young people who use cannabis will develop a psychotic illness. Hickman and colleagues [33] estimate that around 5,000 young men, or 20,000 young women, would need to be prevented from using cannabis to avoid one person developing schizophrenia. (Section 8.10.1)

Anxiety and depression

- 12.10** The Council remains unconvinced that there is a causal relationship between the use of cannabis and the development of any affective disorder (Sections 8.12 and 8.13).

Gateway theory

- 12.11** The Council does not consider the risks of progression to Class A drugs as a consequence of using cannabis to be substantial; and considers that such risks are likely to be less than those associated with the use of alcohol and tobacco (Section 8.14).

Social harms

- 12.12** The adverse effects of cannabis on psychological and psychomotor performance (Section 9.1, 9.2) are well-known and were noted in the Council's previous reports [1, 2]. The recent study, in France, of the association between fatal road accidents and the presence of THC emphasises the importance of the Council's previous warnings about the potential dangers of cannabis use among those driving, piloting aircraft and operating heavy machinery as well as among professionals in the health, military and emergency services [1, 2].
- 12.13** The evidence available to the Council does not suggest that cannabis use is a substantial cause of acquisitive crime (Section 9.3).
- 12.14** Anti-social behaviour is an unlikely consequence of the known psychological effects of cannabis itself (Section 9.5). There is, however, a clear perception among the public that cannabis is associated with anti-social behaviour. In the opinion of experts on the Council, anti-social behaviour is probably largely exacerbated by alcohol. It is therefore possible that the public regard smoking cannabis in the presence of others as, in itself, a form of anti-social behaviour.
- 12.15** The Council recognises (and shares) the concern of the police at the appearance, over the past three years, of very substantial numbers of cannabis farms (Section 9.6). The involvement of "organised crime", the diversion of the farms' profits into other (sometimes even more serious) illegal activities, and the associated "people trafficking" (including children) are unacceptable.

Potency

- 12.16** The Council considers that, since its last review [2], there is evidence to suggest users of cannabis are now exposed to products with a higher THC content than previously (Section 10). This has occurred largely because of the substantial increase in the market share of sinsemilla. The Council is therefore concerned at the dominance of sinsemilla in the market because of its greater potency and the virtual absence of CBD.

12.16.1 The consequences, however, are less easy to predict because, if users titrate their intake to achieve a desired intensity of effect, the “effective” THC dose for individuals may be unchanged. On the other hand, if some users (especially younger males) “binge smoke” the consequences may be very serious to their mental health.

12.16.2 It is worthy of note that despite the increase in cannabis potency there has been no concomitant recorded increase in enquiries to the National Poisons Information Service, nor an increase in hospital admissions due to cannabis intoxication.

Public perceptions and opinions

12.17 The views expressed in response to the specific questions relating to cannabis in the consultation on the government’s drug strategy depended on the nature and interests of respondents (Section 11). The Council places greater weight on the polling data which show, in contradiction to the assertion of many witnesses, that only 4% of the public believe cannabis to be a legal substance. Although the public’s knowledge of the details of the classification system is limited, there is little desire for the penalties for possession to be increased from a maximum prison sentence of two years to five years (Section 11.3.3).

12.18 Of the many individuals and non-governmental organisations who wrote to the Council during this inquiry, roughly equal numbers were in favour of the reclassification of cannabis to Class B as were in favour of maintaining its Class C status.

12.18.1 Those seeking reclassification did so largely because they believed it would send out a signal to young people about the dangers associated with its use. Few, if any, however, wished to see the penalties for possession to be increased. Only 24% of the sample polled wished the penalties for possession to be increased while 67% sought for the penalties for possession to be either unchanged or abolished (Section 11.3.3).

12.18.2 Those who recommended that cannabis remain as a Class C substance mainly considered that reclassification would serve no useful purpose, cause confusion, and be less likely to result in criminal charges for possession.

12.19 In its evidence to the Council, ACPO indicated that its desire for cannabis to be reclassified to Class B was based on three factors:

- the 2004 change in classification has inadvertently provided an opportunity for a greater, and flourishing, illegal market;
- the potential for cannabis users to suffer associated mental health problems has increased; and
- policing cannabis as a Class C substance, while seen as a low policing priority, is affecting public confidence.

12.20 ACPOS indicated in written evidence to the Council that the 2004 reclassification did not alter its approach to enforcement of the legislation. ACPOS did not necessarily seek change for change’s sake, but was clear in outlining its concerns regarding the harms associated with cannabis.

13. Conclusions and Recommendations

- 13.1** The Council is still very concerned about the widespread use of cannabis among young people. Although the number of users have decreased over the past few years, cannabis still poses a real threat to the health of those who use it.
- 13.2** The Council hopes that the government, parliament and the public appreciate that the use of cannabis is, ultimately, a public health problem; and that it requires a public health response if current use and the associated harms are to be substantially reduced. Although the criminal justice and classification systems have a role to play – especially in reducing supply – the major emphasis must be directed at ways that drastically reduce demand (i.e. primary prevention), especially in the young; and to provide help for those who are dependent on cannabis (i.e. secondary prevention).

Recommendation 1: In the face of the widespread use of cannabis, a concerted public health response is needed to drastically reduce its use.

Recommendation 2: Special emphasis should be placed on developing effective primary prevention programmes, directed at young people.

Classification

- 13.3** In advising the government on the classification of a substance the Council is required, under the terms of the Misuse of Drugs Act, to consider only its harmfulness to individuals and society. There is no legal basis for the Council, in advising on classification, to take into account matters such as the message that is conveyed to the public, or the consequences for policing priorities.
- 13.4** Since the Council's last review [2] further evidence has become available about the harmfulness of cannabis to both individuals and society.
- 13.4.1** The most worrying individual harms are the effects on mental health but, since the Council's previous review the evidence has become more, rather than less, confused. Although there is a consistent (though weak) association, from longitudinal studies, between cannabis use and the development of psychotic illness, this is not reflected in the available evidence on the incidence of psychotic conditions. The most likely (but not the only) explanation is that cannabis – in the population as a whole – plays only a modest role in the development of these conditions. The possibility that the greater use of cannabis preparations with a higher THC content might increase the harmfulness of cannabis to mental health cannot be denied; but the behaviour of cannabis users, in the face of stronger products – as well as the magnitude of a causal association with psychotic illnesses – is uncertain.

- 13.4.2** Evidence about the social harms associated with cannabis is clearer. Despite public anxieties, there is little real evidence that cannabis is a significant cause of acquisitive crime or of anti-social behaviour. There is, though, cause for concern about the growth of cannabis farms and the emergence of wider organised crime, including people trafficking, that is associated with them.
- 13.5** Decisions about advising on classification must, ultimately, be based on the Council's collective judgment about the relative harmfulness of substances within, and between, classes. On balance, taking into account the totality of the relevant issues and very mindful of the actual and potential harms, the majority of the Council advises that cannabis and the cannabinoids remain in Class C. Although the majority of members recognise the harms caused by the use of cannabis to individuals and society, they do not consider these to be as serious as those of drugs in Class B.
- 13.5.1** A minority of members of the Council remain very concerned about effects of cannabis on the mental health of users, especially in the light of the (now) wide availability and use of sinsemilla. In their view the balance of harms more closely equates to substances in Class B than Class C.

Recommendation 3: Cannabis should remain a Class C drug.

- 13.5.2** The Council anticipates that additional data will become available within the next few years specifically relating to the causal association between cannabis use and psychoses. The Council therefore proposes to undertake a further review of the evidence in 2010.

Recommendation 4: The Council should convene a further review of cannabis in two years' time.

- 13.6** Irrespective of the classification of cannabis, the Council unanimously advises that the government develop a full public health strategy under the auspices of the Chief Medical Officers. The potential threat to public health requires nothing less.

Recommendation 5: A public health strategy, designed to minimise the harms from the use of cannabis, should be developed under the auspices of the Chief Medical Officers.

- 13.7** A public health strategy should address each of the following issues.

Primary prevention

- 13.7.1** The government should be congratulated on its FRANK campaign. Nevertheless, the Council recommends that a more generously resourced campaign to alert young people to the dangers of cannabis should be developed.

Recommendation 6: A well-resourced campaign alerting young people to the dangers of cannabis should be developed.

13.7.2 In addition, schools (including the independent sector) and local authority youth services should be required to develop and publish their policies relating to substance misuse. This should include the nature and extent of the teaching given to children (as advised by the Department for Children, Schools and Families), as well as the actions taken when pupils are found possessing or dealing illegal substances. The higher education sector should also (in view of the extensive use of cannabis by undergraduate students) be requested to develop and publish policies in relation to the actions taken where students or staff are found in possession of illegal drugs, including cannabis, both for personal use and for supply.

Recommendation 7: Schools and higher education establishments should develop and publish policies on substance misuse.

13.7.3 Efforts to reduce the use of cannabis (as well as other controlled substances) must also involve parents and families. Advice on what to tell children about substance misuse, as well as advice regarding what action(s) parents or other family members should take if they discover a child is in possession of an illegal drug, should be made widely available.

Recommendation 8: Credible and consistent advice and support should be available for parents and families about the appropriate action(s) they should take if their child is in possession of an illegal drug.

Secondary prevention

13.7.4 The extent of dependency on cannabis is unknown but significant. Health professionals should be trained, encouraged and offered resources to treat and support cannabis-dependent people in the community and inpatient settings. Services to help people dependent on cannabis should be widely available. There is some evidence that tobacco smoking cessation services are less effective with patients who are also dependent on cannabis. Efforts therefore need to be made to explore the feasibility of combining treatment programmes for those who are dependent on cannabis along with tobacco, alcohol and other substances.

Recommendation 9: Health professionals should be encouraged to identify, and offer help to, people dependent on cannabis. The health departments should consider making recommendations for combining cannabis treatment programmes with those of tobacco, alcohol and other substances.

Reducing supply

13.8 The criminal justice system has an important role to play in reducing supplies of cannabis.

13.8.1 The Council fully supports the police in their wish to be able to devote greater resources to restricting the importation and, most importantly, the domestic cultivation of cannabis.

Recommendation 10: The Council strongly supports the police in being able to devote greater resources to reducing cannabis supply, particularly through restricting the domestic cultivation of cannabis.

13.8.2 The Council is concerned about the easy availability of paraphernalia associated with cannabis use and its cultivation. The Council recommends that the Home Office explores the potential for regulating these activities, including whether it might be practical to bring cannabis seeds within the scope of the Misuse of Drugs Act; and whether appropriate warnings (including both tobacco and cannabis) should be placed on packs of cigarette rolling papers.

Recommendation 11: The Home Office should assess the extent to which the trade in cannabis paraphernalia might be more effectively regulated.

13.8.3 As indicated at various points in the report, the Council has expressed its concern that vulnerable people have easy access to cannabis. These include children, university undergraduates, patients in psychiatric hospitals or attending community psychiatric health services, and prisoners. The Council therefore recommends that the Home Secretary gives consideration to amending Section 4A of the Misuse of Drugs Act 1971 to incorporate additional aggravating factors including supply of a controlled drug in the vicinity of any further and higher educational establishments, psychiatric health institutions and prisons.

Recommendation 12: Additional aggravating factors should be introduced into legislation concerning the seriousness of offences involving the supply of controlled drugs.

Other measures

13.9 Warnings about the risks of cannabis to those with cardiovascular disease and asthma as well as to women who are, or seek to become, pregnant should be made widely available. Warnings about the risks of cannabis in driving, flying aircraft or operating heavy machinery should be emphasised. Those whose work requires cognitive skills should also be made aware that cannabis may impair their performance.

Recommendation 13: Warnings regarding cannabis use among particular at-risk groups should be emphasised.

14. Research Recommendations

- 14.1** The scale and public health significance of current preparations of cannabis use in the UK require further research if the harmful consequences for future generations of young people are to be substantially diminished. This should include considerations of effects on families. Qualitative research on the impact of cannabis farms on local people should be undertaken.

Recommendation 14: The scale and public health significance of cannabis use in the UK require further research.

- 14.2** Efforts should be made to improve cannabis use data collected from children and the general population. We understand that the Home Office is considering the feasibility of including under-16s within the British Crime Survey (or a separate similar survey). We would welcome this approach and encourage the collection of drug-related data.

Recommendation 15: The Home Office should extend the British Crime Survey to the under-16s and the survey should include drug use.

- 14.3** There is a real and urgent need for research into the sociology of the use of cannabis. This should attempt, in particular, to assess how users react to the more potent forms of cannabis; the extent to which people engage in “binge smoking”; and to investigate the pharmacodynamics and pharmacokinetics of those users who “titrate” their intake of THC.

Recommendation 16: Further research is required into the pattern of the use of cannabis, dependency and the resulting physical and physiological complications, particularly to assess how users react to more potent forms.

- 14.4** There is also a need to continue to monitor the market share of cannabis products as well as continuing to monitor their potencies in relation to their THC and CBD content. Products purchased from suppliers should also be considered. The possible protective role of CBD needs to be fully evaluated in humans.

Recommendation 17: Continued monitoring of the market share of cannabis and its potency should be undertaken.

- 14.5** Research into the prevalence of cannabis use and the trajectory of drug use histories, especially the transfer from occasional use to dependency, will enable mental health services to plan effective service provision. Research is also required into the clinical and cost effectiveness of measures designed to help people stop using cannabis. In addition we need better data on the routes by which users access services.

Recommendation 18: Research is required into the clinical and cost effectiveness of measures designed to help cannabis-dependent users recover from their addiction.

- 14.6** Research is needed to identify those young people who may be at particular risk (i.e. subgroups or those with “susceptibility factors”) of developing enduring psychoses from the use of cannabis. Such knowledge could usefully inform an effective public health campaign.

Recommendation 19: Further research should be aimed at identifying young people who may be at risk of developing enduring psychoses from the use of cannabis.

14.7 Research aimed at clarifying possible associations between cannabis use and psychosis should be extended. For instance, the Council recommends a full evaluation of the General Practice Research Database as a source of data for such enquiries. Given the possibility that new high potency forms of cannabis have only recently been in general use, it may be important to perform regular – possibly annual – schizophrenia data collections from this source.

14.8 Data on the incidence and prevalence of schizophrenia should be obtained in order to provide better estimates of the risks young people run when they smoke cannabis. Such knowledge, again, would usefully inform an effective public health campaign.

Recommendation 20: Data on the incidence and prevalence of schizophrenia should be obtained in order to better estimate the risks to young people when they smoke cannabis.

14.9 Although, currently, there are no available THC substitutes to prescribe for withdrawal programmes, the newer CB1 and CB2 agonists and antagonists that are now emerging might provide pharmacological assistance for those seeking to stop cannabis use. In addition, by analogy with buprenorphine for heroin dependence, cannabis agonists or partial agonists might offer treatment options for cannabis dependence.

Recommendation 21: Further research on the biological mechanisms involved in cannabis addiction, and the consequent potential treatments, is needed.

15. Recommendations

Recommendation 1: In the face of the widespread use of cannabis, a concerted public health response is needed to drastically reduce its use.

Recommendation 2: Special emphasis should be placed on developing effective primary prevention programmes, directed at young people.

Recommendation 3: Cannabis should remain a Class C drug.

Recommendation 4: The Council should convene a further review of cannabis in two years' time.

Recommendation 5: A public health strategy, designed to minimise the harms from the use of cannabis, should be developed under the auspices of the Chief Medical Officers.

Recommendation 6: A well resourced campaign alerting young people to the dangers of cannabis should be developed.

Recommendation 7: Schools and higher education establishments should develop and publish policies on substance misuse.

Recommendation 8: Credible and consistent advice and support should be available for parents and families about the appropriate action(s) they should take if their child is in possession of an illegal drug.

Recommendation 9: Health professionals should be encouraged to identify, and offer help to, people dependent on cannabis. The health departments should consider making recommendations for combining cannabis treatment programmes with those of tobacco, alcohol and other substances.

Recommendation 10: The Council strongly supports the police in being able to devote greater resources to reducing cannabis supply, particularly through restricting the domestic cultivation of cannabis.

Recommendation 11: The Home Office should assess the extent to which the trade in cannabis paraphernalia might be more effectively regulated.

Recommendation 12: Additional aggravating factors should be introduced into legislation concerning the seriousness of offences involving the supply of controlled drugs.

Recommendation 13: Warnings regarding cannabis among particular at-risk groups should be emphasised.

Recommendation 14: The scale and public health significance of cannabis use in the UK require further research.

Recommendation 15: The Home Office should extend the British Crime Survey to the under-16s and the survey should include drug use.

Recommendation 16: Further research is required into the pattern of the use of cannabis, dependency and the resulting physical and physiological complications, particularly to assess how users react to more potent forms.

Recommendation 17: Continued monitoring of the market share of cannabis and its potency should be undertaken.

Recommendation 18: Research is required into the clinical and cost effectiveness of measures designed to help cannabis-dependent users recover from their addiction.

Recommendation 19: Further research should be aimed at identifying young people who may be at risk of developing enduring psychoses from the use of cannabis.

Recommendation 20: Data on the incidence and prevalence of schizophrenia should be obtained in order to better estimate the risks to young people when they smoke cannabis.

Recommendation 21: Further research on the biological mechanisms involved in cannabis addiction, and the consequent potential treatments, is needed.

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Annex A: Members of the Advisory Council on the Misuse of Drugs

Professor Sir Michael Rawlins	Chair, National Institute for Health and Clinical Excellence
Dr Dima Abdulrahim	Briefings Manager, National Treatment Agency
Lord Victor Adebawale	Chief Executive, Turning Point
Mr Martin Barnes	Chief Executive, Drugscope
Dr Margaret Birtwistle	Specialist General Practitioner, Senior Tutor – Education and Training Unit, St George’s Hospital and Forensic Medical Examiner
Commander Simon Bray	Commander, Metropolitan Police
Mr Eric Carlin	Chief Executive, Mentor UK
Ms Carmel Clancy	Principal Lecturer in Mental Health and Addiction, Middlesex University
Professor Ilana Crome	Professor of Addiction Psychiatry, Keele University Medical School
Ms Robyn Doran	Mental health nurse and Director of Operations, North-West London Mental Health Trust
Dr Clare Gerada	General Practitioner, London, and Primary Care Lead for Drug Misuse, Royal College of General Practitioners
Mr Patrick Hargreaves	Adviser for drugs and alcohol, Durham County Council Education Department
Ms Caroline Healy	National adviser for the commissioning of mental health services for children in secure settings, Department of Health
Dr Matthew Hickman	Reader in Public Health and Epidemiology, Department of Social Medicine, University of Bristol
Professor Leslie Iversen	Professor of Pharmacology, Oxford University
Dr Leslie King	Former Head of Drugs Intelligence Unit, Forensic Science Service
Professor Michael Lewis	Professor of Oral Medicine, Cardiff University
Mr David Liddell	Director, Scottish Drugs Forum
Dr John Marsden	Research Psychologist, Institute of Psychiatry
Mr Peter Martin	Independent consultant in substance misuse

Professor David Nutt	Director of Psychopharmacology Unit, Bristol University
Mr Trevor Pearce	Director of Enforcement, Serious Organised Crime Agency
District Judge Justin Philips	District Judge, drugs court
Mr Richard Phillips	Independent consultant in substance misuse
Dr Ian Ragan	Pharmaceutical industry consultant
DCC Howard Roberts	Deputy Chief Constable, Nottinghamshire Police (temporary DCC Dyfed and Powys)
Dr Mary Rowlands	Consultant psychiatrist in substance misuse, Exeter
Dr Polly Taylor	Veterinary surgeon, Cambridgeshire
Ms Monique Tomlinson	Freelance consultant in drugs misuse
Mrs Marion Walker	Pharmacist, Berkshire Healthcare NHS Foundation Trust
Mr Arthur Wing	Assistant Chief Office, Sussex Probation Area

Annex B: Co-opted experts attending meetings of the Advisory Council on the Misuse of Drugs

Professor Thomas Barnes	Professor of Clinical Psychiatry Division of Neurosciences and Mental Health, Imperial College London
Professor Stephen Evans	Professor of Pharmacoepidemiology, London School of Hygiene and Tropical Medicine
Mr Rudi Fortson	Barrister, specialising in drug law
Professor Peter Jones	Professor of Psychiatry and Head of the Department of Psychiatry, University of Cambridge
Professor Klim McPherson	Professor of Public Health Epidemiology, Oxford University

Annex C: Oral evidence given to the Advisory Council on the Misuse of Drugs at its meetings in February and April 2008

Professor Louis Appleby	National Director for Mental Health, Department of Health
Ms Debra Bell	Talking About Cannabis
Ms Cindy Burnett	Magistrates Association
Assistant Chief Constable Simon Byrne	Association of Chief Police Officers
Mr Andrew Clatworthy	Forensic Science Services
Mr Paul Corry	Rethink
Dr Martin Frisher	Keele University
Ms Sheila Hardwick	Home Office Scientific Development Branch
Dr Matthew Hickman	Centre for Research on Drugs and Health Behaviour, University of Bristol
Dr Leslie King	Home Office Scientific Development Branch
Professor Simon Lenton	Beckley Foundation and National Drug Research Institute, Australia
Professor Glynn Lewis	Academic Unit of Psychiatry, University of Bristol
Dr Paul Morrison	Department of Psychological Medicine, King's College London
Mr David Potter	GW Pharmaceuticals
Mr Steve Rolles	Transform
Dr Simon Thomas	National Poisons Information Service, Newcastle Regional Drugs and Therapeutics Centre
Ms Rhonda Wake	Ipsos MORI
Ms Marjorie Wallace	SANE
Dr Mike White	Forensic Science Services
Ms Marije Wouters	University of Amsterdam
Representatives from the Home Office, the Department of Health and the Department for Children, Schools and Families	

Annex D: Organisations submitting written evidence to the Advisory Council on the Misuse of Drugs

Association of Chief Police Officers

Association of Chief Police Officers in Scotland

Beckley Foundation

Drugs Education Forum

Europe Against Drugs

Forensic Science Services

Government Departments (Home Office, Department of Health and Department for Children, Schools and Families)

GW Pharmaceuticals

Hope UK

Ipsos MORI (ACMD polling results)

Joseph Rowntree Foundation

Keele University

King's College London, Institute of Psychiatry (R Murray)

Legalise Cannabis Alliance

LGC Forensics

Magistrates Association

National Treatment Agency for Substance Misuse

Police Superintendents' Association of England and Wales

Release

Rethink

RSA Commission on Illegal Drugs, Communities and Public Policy

SANE

Serious Organised Crime Agency

Talking About Cannabis

Transform

UK Drugs Policy Commission

University of Bristol, Academic Unit of Psychiatry (G Lewis)

The Council also considered correspondence from members of the public.

Annex E: Other evidence considered by the Advisory Council on the Misuse of Drugs (in addition to the items cited under References)

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Annex F: Glossary of Terms

Bong: A water pipe that consists of a vertical tube partially filled with liquid, and a smaller tube ending in a mouthpiece. It is used to smoke a variety of substances including cannabis.

Cannabis resin: Material produced by mechanically separating the resinous parts of *Cannabis sativa* from the rest of the plant and typically presented as fine-grain compressed blocks.

Confidence Interval (CI): An interval constructed so that a statement that the true value of an unknown parameter lies in this interval will be true, in the long run, a proportion (95%) of the time that the statement is made.

Marijuana: A form of cannabis that can be smoked.

Odds ratio: The “odds ratio” is a measure of association between a condition and a possible risk factor. An odds ratio around 1.0 suggests no association; an odds ratio of <1.0 suggests an association that is beneficial; and an odds ratio of >1.0 suggests a harmful association. The size of an odds ratio is an important factor in judging whether an association may indicate a causal relationship. For example, the odds ratio linking smoking and lung cancer is about 20 (representing a 20-fold increase in the likelihood of smokers developing lung cancer). An odds ratio of this size indicates that smoking plays a crucial, though not necessarily the only, role in causing lung cancer. The odds ratio for developing schizophrenia in someone with a first degree relative with the condition – compared to someone who has not – is about 10 (in the absence of cannabis use). In this instance, the size of the odds ratio again strongly suggests a causal role for genetic factors.

Potency: The content of the major active compound Δ^9 -tetrahydrocannabinol (THC).

Psychotic illness: To meet the criteria for a “psychotic illness”, the symptoms described below generally need to meet a threshold of severity, last for a significant period of time, and have an adverse impact on the person’s social functioning

Psychotic symptoms: Disordered thinking, delusions (abnormal beliefs) and hallucinations (abnormal perceptual experiences).

Risk factor: A determinant of ill-health that increases the probability of developing a certain disease.

Schizophrenia: A severe mental disorder characterised by delusions, hallucinations, incoherence and physical agitation

Sinsemilla: Meaning: “without seeds”. The highest potency herbal cannabis, representing the flowering tops of unfertilised female cannabis plants. Sinsemilla is normally produced by intensive indoor cultivation techniques which may include use of selected seed varieties, hydroponic cultivation, additional lighting and artificial control of “day” length. It is both home-grown and imported, although much is now grown in the UK.

Skunk: A form of sinsemilla with a characteristic odour. It is often of high potency.

Tetrahydrocannabinol: The main psychoactive component of cannabis products mimicking several naturally-occurring substances known as endocannabinoids.

Traditional, imported herbal cannabis: A dried plant preparation of floral and foliar material imported from the Caribbean, Africa or Asia.

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