

Department of Social Protection

Substance and Drug Dependency

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1. Overview and Definition of Substance Abuse

1.1 Overview

It is clear that the misuse of licit and illicit substances has a profound effect in terms of harm across all areas of society. This includes high costs in terms of healthcare provision, social and economic costs as well as the effect on individuals and their families. Problem substance use is increasing in Ireland, with one fifth of all individuals treated from problem substance abuse being aged 18 or under. The majority of cases in Ireland result from use of cannabis or opiates, however the use of cocaine is increasing (Health Services Executive, 2008).

Substance misuse can take the form of anti-social or harmful behaviour, and have harmful effects on the individual in terms of physical health (overdose, hepatitis, HIV, respiratory problems), mental health (depression, anxiety disorders, suicide), social problems and criminal and violence issues (DH, 2006; NCCHM, 2008).

In the UK, the Advisory Council on the Misuse of Drugs (ACMD) describes drug misuse as a condition that may cause an individual to experience social, psychological, physical or legal problems related to intoxication and/or regular excessive consumption, and/or dependence (ACMD, 1998).

Whilst consumption of any licit and illicit forms of drug can produce addictive/dependent behaviour (Nutt and Law, 2009), this protocol deals with illicit substances (***opioids, cannabinoids, sedative, anxiolytic and hypnotic drugs, crack/cocaine, MDMA – Ecstasy, other stimulant drugs such as amphetamines, hallucinogens, volatile solvents and dissociative substances***).

The terms **polydrug** or **polysubstance** use are used to describe individuals who consume more than one of these substances.

This protocol does not cover the abuse of licit substances (***alcohol, tobacco or caffeine***). Please note conditions resulting from excess alcohol consumption are covered in a separate protocol ***Alcohol Related Disorders***.

The relative risks of substance abuse come not only from the risk of the drug itself, but from the extent that it controls an individual's behaviour, the ease of stopping the drug, the risk of the route by which the drug is taken (for example the risk of contracting HIV or hepatitis from intravenous use) and from the social, economic and environmental considerations of drug use in terms of crime etc.

1.2 Definition of the Condition

Substance misuse or abuse is frequently classified as experimental, recreational, or dependant that may result in adverse physical and/or psychological effects (i.e. harmful use). This represents a wide-ranging spectrum of the use of therapeutic drugs or substances with physiological and psycho-active effects on the body or mind which are out with legal or medical guidelines.

Drug misuse is defined as the use of a substance for a purpose not consistent with legal or medical guidelines (WHO, 2006). A further definition by the Royal College of Psychiatrists states "... any taking of a drug which harms or threatens to harm the physical or mental health or social well-being of an individual or other individuals or society at large, or which is illegal" (Royal College of Psychiatrists, 1987).

Care should be taken when defining drug use in terms of addiction or dependence as these terms are not necessarily used with consistent meaning and also have social and cultural implications to their use. Definitions are provided below from the two most recognised disease classification systems - the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders Fourth edition Text Revision (2000) – usually referred to as DSM-IV-TR - and the International Classification of Diseases (ICD-10) coding system published by the World Health Organisation (2007) in order to clearly describe the processes of substance abuse and dependence.

1.3 Diagnostic and Statistical Manual of Mental Disorders 4th Edition Text Revision (DSM-IV-TR) Classification

1.3.1 DSM-IV-TR Substance Abuse

The term Substance Abuse is used when an individual will repeatedly consume an illicit substance but the pattern of this abuse does not lead to addiction or compulsive behaviour, nor withdrawal symptoms.

DSM-IV-TR describes substance abuse as: a 'maladaptive' pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following within a 12 month period:

1. Recurrent use leading to failure to fulfil major role obligations (work, home, school, etc.)
2. Recurrent use in situations where it is physically hazardous (e.g. drunk driving)
3. Repeated substance related legal problems (repeated disorderly conduct while drunk)
4. Persistent use despite recurrent social/interpersonal problems caused or exacerbated by the effects of a substance (e.g. arguments with spouse or physical fights)

Alternatively, the symptoms have never met the criteria for substance dependence for this class of substance.

1.3.2 DSM- IV-TR Substance Dependence

The term Substance Dependence is used when an individual compulsively and repetitively consumes an illicit drug despite problems related to the consumption of that drug, possible tolerance to the effects of the drug, and possible withdrawal

symptoms should the drug use be reduced or stopped altogether.

DSM-IV-TR describes Substance dependence as a: 'maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by three (or more) of the following within a 12 month period:

1. Tolerance: a need for increased amounts of a substance to achieve the desired effect or a diminished effect with ongoing use of the same amount of substance
2. Withdrawal symptoms
3. The substance taken in larger amounts over longer periods than was intended
4. Persistent desire or unsuccessful efforts to cut down or control use
5. A great deal of time spent in activities relating to obtaining the substance, using the substance or recovering from use
6. Significant social, occupational or recreational activities are given up or reduced because of use
7. Use continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance'

DSM-IV criteria for substance dependence include several specifiers, one of which outlines whether Substance dependence is:

- With physiologic dependence (evidence of tolerance or withdrawal) or
- Without physiologic dependence (no evidence of tolerance or withdrawal).

In addition, remission categories are classified into four subtypes: (1) full, (2) early partial, (3) sustained, and (4) sustained partial; on the basis of whether any of the criteria for abuse or dependence have been met and over what time frame. The remission category can also be used for patients receiving agonist therapy (such as methadone maintenance) or for those living in a controlled, drug-free environment.

(American Psychiatric Association, 2000)

1.4 World Health Organisation: International Classification of Diseases 10th Edition (ICD-10) Classification

ICD-10 classifies substance abuse mainly under the code F10-F19 Mental and behavioural disorders due to psychoactive substance use. However, an additional code exists for non-dependence producing substances such as aspirin.

The codes in this range represent an individual diagnostic code for different substances.

- F10 - Mental and behavioural disorders due to use of alcohol
- F11. – Mental and behavioural disorders due to use of opioids
- F12. – Mental and behavioural disorders due to use of cannabinoids
- F13. – Mental and behavioural disorders due to use of sedative hypnotics
- F14. – Mental and behavioural disorders due to use of cocaine
- F15. – Mental and behavioural disorders due to use of other stimulants, including caffeine
- F16. – Mental and behavioural disorders due to use of hallucinogens
- F17. – Mental and behavioural disorders due to use of tobacco
- F18. – Mental and behavioural disorders due to use of volatile solvents
- F19. – Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances
- F55 – abuse of non-dependence-producing substances (e.g laxatives or Aspirin)

Further codes specify diagnostic criteria for the different clinical conditions (stages) that ICD-10 recognises as detailed below.

1.4.1 Acute intoxication

ICD-10 describes acute intoxication as a transient condition following the administration of alcohol or other psychoactive substance, resulting in disturbances in level of consciousness, cognition, perception, affect or behaviour, or other psycho-physiological functions and responses (WHO, 2007). This diagnosis is not appropriate where harmful use or dependence exist, but covers conditions such as acute drunkenness in alcoholism and “bad trips” (due to hallucinogenic drugs).

1.4.2 Harmful use

ICD-10 describes harmful use as a pattern of psychoactive substance use that has caused the individual actual physical harm (as in cases of hepatitis from the self-administration of injected drugs) or mental harm (e.g. episodes of depressive disorder secondary to heavy consumption of alcohol), but where dependent patterns of use do not exist.

1.4.3 Dependence syndrome

ICD-10 describes dependence syndrome as a cluster of physiological, behavioural,

and cognitive phenomena in which the use of a drug becomes a high priority for the user, overtaking other activities.

A central descriptive characteristic of dependence syndrome is the desire (often strong, sometimes overpowering) to take psychoactive drugs (which may or may not have been medically prescribed), alcohol, or tobacco – the element of taking or desire to take in terms of dependence being the key; this diagnosis would not apply for example, so someone taking Opioid analgesics following major surgery even though an element of withdrawal may be present when such drugs are discontinued. There may be evidence that return to substance use after a period of abstinence leads to a more rapid reappearance of other features of the syndrome than occurs with nondependent individuals.

Diagnostic guidelines

A definite diagnosis of dependence should usually be made only if three or more of the following have been present together at some time during the previous year:

- (a) a strong desire or sense of compulsion to take the substance;
- (b) difficulties in controlling substance-taking behaviour in terms of its onset, termination, or levels of use;
- (c) a physiological withdrawal state (see F1x.3 and F1x.4) when substance use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for the substance; or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
- (d) evidence of tolerance, such that increased doses of the psychoactive substances are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol- and opiate-dependent individuals who may take daily doses sufficient to incapacitate or kill non-tolerant users);
- (e) progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects;
- (f) persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to periods of heavy substance use, or drug-related impairment of cognitive functioning; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

1.4.4 Withdrawal State

ICD-10 describes this state as being group of symptoms which may vary in nature and severity according to the dosage and type of substance which has been discontinued. This may occur after repeated, and usually prolonged and/or high dose use of that substance. Onset and course of the withdrawal state are time-

limited. Common psychological symptoms include anxiety, depression and sleep disorders. A coded classification for **withdrawal state with delirium** also exists in this diagnostic classification system.

1.4.5 Psychotic Disorder

This occurs during or after substance use and will result in individuals experiencing vivid hallucinations, misidentifications, delusions, possibly paranoid type behaviours, psychomotor disturbances (excitement or stupor), and an abnormal affect, which may range from intense fear to ecstasy. The effects of this disorder resolve partially within 1 month and fully within 6 months.

2. Epidemiology

Drug misuse often goes undetected and many of the quoted figures may be just the proverbial tip of the iceberg. Figures below have been taken from results published by the National Advisory Committee on Drugs (NACD) & Drug and Alcohol Information and Research Unit (DAIRU) from the 2006/2007 Drug Prevalence Survey which was carried out in Ireland and Northern Ireland (and subsequent reports of this work published within 'Drugnet' – the newsletter of the Alcohol and Drug Research Unit - see references). Figures have also been included from the European Monitoring Centre for Drugs and Drug Addiction country overview for Ireland which can be accessed at:

<http://www.emcdda.europa.eu/publications/country-overviews/ie#pdu>

- 24% of individuals aged 15-64 reported taking an illicit drug during their lifetime, with cannabis, ecstasy and cocaine having the highest reported use. This had increased from 18% in the previous survey
- Men reported a higher proportion of drug use than women. Studies outside Ireland report this proportion to be roughly two thirds male to one third female (Mayet et al, 2009)
- The use of the most common illicit drug - cannabis - has not declined in Ireland as it has in other parts of Europe, although the number of individuals reporting cannabis a main problem drug has decreased
- Half of all cannabis users had first used the drug before the age of 18. One in four cannabis users use the drug on a daily or almost daily basis
- Ireland is one of the highest countries in Europe for the prevalence of cocaine use. The number of individuals entering treatment programmes for cocaine use has increased considerably between 2001-2007
- Ireland has medium prevalence of European countries for ecstasy use. Although rates of use remain relatively stable, the number of individuals seeking treatment stating ecstasy is their main problem drug has markedly decreased. Approximately 10 deaths a year are reported from ecstasy use. Studies in the UK and Europe indicate that ecstasy use is commonly linked with the 'dance' scene with 90% of individuals reporting they have used the drug at least once (Winstock and Schifano, 2009)
- Amphetamine use is relatively uncommon in Ireland, although studies from the UK indicate that methamphetamine use is becoming more common (Winstock and Schifano, 2009)
- Less than 1% of individuals reported using heroin or crack cocaine over their lifetime. There are approximately 15,000 opiate users in Ireland (figures

from 2001). Almost 90% of drug related deaths in Ireland are related to opiate use.

- Drug use was highest in the 25-34 year age group, followed by the 15-24 year age group
- The highest use of sedatives, tranquillisers and antidepressants was found in women and older age groups
- The highest use of volatile substances was in the 15-24 age group
- The highest use of Opioid substances was in the 35-44 age group
- 63% of individuals entering treatment programmes within Ireland are Opioid dependent users, 16% for cannabis and 13% for cocaine
- 36% of individuals entering treatment programmes were aged under 25 years, and between 70-80% of individuals entering treatment programmes are male.
- Only a low proportion (3%)of individuals reported polydrug use – use of more than one illicit substance

3. Aetiology

3.1 Aetiology

Many factors have been implicated in the initiation of drug abuse but the most important factors seem to be the widespread and easy availability of drugs, vulnerable personality and adverse social and environmental factors. Involvement in the 'dance' or 'party' scene emerging since the late 1980's is also a factor.

Many individuals who occasionally experiment with drugs do not develop any significant problems or dependence. There appears to be a correlation between vulnerable personality and developing dependence-related disorders. Poor school record, truancy, delinquency, sensation seeking and impulsivity are traits commonly associated with drug taking behaviour.

Disrupted families, divorce, psychiatric disturbances in families, social deprivation, unemployment, homelessness and peer pressure within groups are all social influences that are linked to an increased tendency to drug use, although cocaine powder is the exception to this, as there is also a high degree of use by more individuals of higher socio-economic and more affluent status (Seivewright and Fung, 2009). Rates of dependence are high in inner city than rural areas.

3.2 Neurobiology of misuse

Experimentation and occasional use of drugs for recreational purposes is widespread and in most cases does not lead to misuse or dependence. Studies show that psychoactive drugs act on receptors in the brain to cause their biological or psychoactive effects. These effects then act as positive reinforcers for repeated drug use in some people. Long term use of drugs leads to adaptive changes in the receptors and in nerve terminals leading to unpleasant symptoms on withdrawal of the drug. These unpleasant effects then act as a negative reinforcement and thereby perpetuate continued use of the drugs.

For a detailed description of the action of drugs at the receptor level, see **Appendix K**.

4. Diagnosis

Individuals seeking help with substance abuse disorders commonly approach other health professionals rather than the GP; for example the community pharmacist, nurse, midwife (Department of Health et al, 2007).

Individuals may present in a variety of ways:

- Actively requesting help for substance abuse issues or alcohol abuse issues (in which case substance misuse disorders should also be considered)
- Presenting with complications from substance abuse e.g. hepatitis A, B, or C infection; HIV infection, thrombophlebitis
- Presenting with clinical features of withdrawal or Opioid intoxication (see below).

(CKS, 2008)

A full health assessment should be undertaken where substance abuse is suspected due to the high rates of physical and psychiatric morbidity in substance dependence (particularly in heroin dependence (Mayet et al, 2009)). This assessment should include a full physical examination as well as a mental health assessment to detect abnormal general behaviour, disorders of mood (particularly anxiety or low mood), delusions or hallucinations, confusion.

4.1 Clinical Features

Misuse of drugs and dependence leads to self-neglect which is evident on observation. Unkempt and dishevelled appearance, injection scars and wearing long sleeves in summer are some informal observations of significance. A disorientated person with a glazed look or an extremely drowsy individual is likely to be under the influence of drugs.

The individual is may well understate, or indeed, overstate their drug use for secondary gain. History is often unreliable and detailed questions have to be asked to establish the pattern of drug use. History of typical drug use during the day, or alternatively during a week should be sought. A careful account of the number of substances abused, route of ingestion, dangerous practices like injecting in the groin and sharing needles, craving, withdrawal symptoms, attempts at detoxification and rehabilitation, history of hospital admissions, hepatitis and other complications should be recorded.

4.2 The Mental State Examination

Appearance and Behaviour

Drug dependence may lead to varying degrees of self-neglect, which may be evident on observation of appearance and behaviour.

Cognitive Function

Cognitive function relates to concentration and memory. Drug dependence may lead to varying degrees of cognitive impairment.

Mood

Anxiety and depression often coexist with drug misuse. Eye contact and verbal interaction is poor in the depressed individual. They may be tearful and appear low in mood. An anxious individual is likely to be edgy, irritable and worried about minor things. It may be difficult putting an anxious person at ease. Euphoric mood may also be encountered.

Thoughts and Perceptions

Some drugs are associated with psychotic mental illness. This may be either residual or late onset psychotic disorder as described in ICD-10 (WHO, 2007). In this disorder the psychotic symptoms occur as a result of drug intake, but persist beyond the period during which a direct effect of the substance would be expected. Signs such as suspiciousness, pressure of speech, thought blocking, distractibility, or the experience of hallucinations would suggest psychosis.

Insight and Motivation

Motivation to stop drugs and insight into the drug problem and its far-reaching effects are good prognostic factors. Conversely, poor insight and motivation are poor prognostic features.

4.3 Physical Examination

Physical signs include needle tracks, thrombosis of veins and subcutaneous abscesses.

- Loss of weight (opioids)
- Chronic respiratory illness (cannabis)
- Destruction of nasal septum (cocaine)
- Signs of comorbid conditions such as hepatitis and AIDS

4.4 Investigations

Urine testing is generally used in preference to blood tests for the initial assessment of illicit drug use, or to confirm treatment compliance, although testing in this manner does not confirm drug dependence. Rarely blood and hair analysis may be used.

Approximate durations of drug detectability through urine testing are shown below (Department of Health et al, 2007).

Drug or its metabolite(s)	Duration of detectability
Amphetamines, including methylamphetamine and MDMA	2 days
Benzodiazepines: <ul style="list-style-type: none"> • Ultra-short-acting (half-life 2h) (e.g. midazolam) • Short-acting (half-life 2–6h) (e.g. triazolam) • Intermediate-acting (half-life 6–24h) (e.g. temazepam, chlordiazepoxide) • Long-acting (half-life 24h) (e.g. diazepam, nitrazepam) 	12 hours 24 hours 2–5 days 7 days or more
Buprenorphine and metabolites	8 days
Cocaine metabolite	2–3 days
Methadone (maintenance dosing) (approximate)	7–9 days
Codeine, dihydrocodeine, morphine, propoxyphene (heroin is detected in urine as the metabolite morphine)	48 hours
Cannabinoids: <ul style="list-style-type: none"> • Single use • Moderate use (three times a week) • Heavy use (daily) • Chronic heavy use (more than three times a day) 	3–4 days 5–6 days 20 days Up to 45 days

4.5 Clinical Features of Withdrawal

Signs and symptoms of withdrawal include sweating, tremor, restless, anxious or irritable behaviour, runny eyes and nose, extremes of hot and cold, anorexia, abdominal cramps, nausea, vomiting, diarrhoea, insomnia, tachycardia, hypertension, dilated pupils, presence of a cough.

In opiate withdrawal, once the initial symptoms have subsided, these are often followed by protracted fatigue and insomnia. Cravings for opioids may last for up to 6 months or longer.

Heroin withdrawal symptoms reach their peak 36–72 hours after the last dose and subside substantially after 5 days.

Methadone withdrawal symptoms typically reach their peak 2–4 days after the last dose of methadone but may take 10–12 days to resolve.

Buprenorphine withdrawal symptoms peak within 3–5 days and continue for up to several weeks.

(Department of Health et al, 2007).

5. Differential Diagnosis and Comorbidity

5.1 Differential Diagnosis

Neuroadaptive changes in brain function and changes in synaptic transmission and receptor sensitivity may lead to permanent mental disorders (e.g. residual or late-onset psychotic disorder).

There might be other mental disorders in addition to substance abuse or dependence. Dual diagnosis (i.e. mental disorders like schizophrenia, PTSD, depression etc. and substance abuse) may present difficulties. The presence of pre-existing mental problems pre-dating drug use may need to be differentiated from the mental effects of psychoactive drug abuse.

Cognitive impairment and behavioural disorders after head injury might present with features similar to intoxication and drug abuse.

Other relevant conditions include:

- Alcohol related disorders
- Acute head injury
- Hypoglycaemia
- Anxiety conditions
- Depressive conditions
- Aggravation or precipitation of another mental condition by substance abuse e.g. psychoactive substance-induced psychotic state
- Organic amnesic syndrome
- Syndromes involving impairment of memory (e.g. dementia)
- Mild or Moderate mental retardation
- Endocrine disorders (e.g. hyperthyroidism)

The effects of mixed or polydrug use should also be considered.

(Mayet et al, 2009; Medical Disability Guidelines, 2009)

5.2 Comorbidity

Individuals who abuse substances commonly develop co-morbid psychiatric illness with prevalence rates for those with Opioid dependent abuse being up to 50% (Verthein et al, 2005). This is increased by concurrent use of alcohol or other drugs

especially stimulant classes of substances.

Other comorbid conditions include

- Alcohol dependence/abuse
- Nicotine dependence
- Anxiety disorders
- Depressive disorders
- Hepatitis B and/or C
- HIV infection
- Cardiovascular disorders
- Chronic Pain
- Endocrine disorders
- Gastrointestinal disorders
- Immunologic disorders
- Mood disorders
- Neurological disorders
- Obstetric disorders
- Personality disorders
- Psychoses
- Schizophrenia
- Antisocial personality disorder
- Other psychiatric disorders
- Other substance abuse disorders

(Mayet et al, 2009; Medical Disability Guidelines, 2009)

6. Treatment

In terms of substance abuse, the greatest proportion of those seeking treatment is for Opioid dependence. This is also likely to be the main problem drug of those individuals undergoing incapacity assessment. Pharmacological treatment options below have been shown to be effective for opioid dependence, but no medications have been shown in studies to be effective with other classes of drugs such as cocaine or cannabis (de Lima, 2002; Seivewright and Fung, 2009).

Specific treatment options for other classes of illicit drugs are detailed within the specific section for each drug contained within the appendices to this protocol.

6.1 Pharmacological Treatment Options for Opioid Dependence

The aim of treatment for Opioid dependence can be classified into three goals:

1. Maintenance treatment of opioid dependence – to achieve reduction in harm from intravenous drug use, and to stabilise the individual's lifestyle.
2. Treatments for withdrawal (detoxification) from opioids – to achieve complete abstinence from opioid substance abuse.
3. Relapse prevention.
4. Recognition and Management of concomitant use of other drugs of depressants.

Factors influencing the decision as to whether an individual undergoes maintenance treatment or detoxification include if the individual is currently taking opioids and the degree of dependence they have on opioid substances – an individual may be using opioids but may not necessarily be dependent or tolerant of these substances. The individual's motivation to change their behaviour and degree of commitment will also play a part in this decision.

Treatment setting can vary. Specialist inpatient and outpatient units with psychiatric facilities deal with the treatment of drug misuse and dependence. General practitioners also manage the day-to-day care of individuals with drug problems.

6.1.1 Clinical Assessment and Assessment of Dependency

Clinical assessment with regard to a treatment plan should focus on:

- Current consumption
- Typical day and use of substances
- Drug use history
- Social circumstances including employment history, criminal activity,

relationships; environmental circumstances such as housing

- Biophysical factors such as episodes of overdose, viral screening, issues with routes of administration etc.
- Psychiatric history
- Past treatments; past abstinent periods
- Motivation for change

Confirmation of dependence and tolerance should also be sought in order to reduce the possibility of overdose from methadone in a non tolerant individual.

6.1.2 Opioid Maintenance Treatment

This form of treatment involves substituting heroin for a long-acting opioid substance which reduces cravings for the drug and avoids intravenous use. Evidence indicates that long term outcomes are better when maintenance therapy is used than detoxification programmes. (CKS, 2008). Drugs with slower action are prescribed and therefore are less addictive; e.g. methadone is prescribed as a replacement for opioid dependence. The rationale behind the replacement approach is as below:

- It removes the need to obtain "street drugs".
- It is easier to retain individuals in the programme when they are on replacement than those in drug-free programmes. Long-term retention is associated with better long-term results.
- Harmful practices (like sharing injection needles) are controlled or eliminated.

This type of therapy is usually community based; however inpatient settings may be more appropriate should the individual have a complex physical or psychiatric history which would make a greater dependence of care necessary.

Outcomes for maintenance therapy are improved when included as part of a package of interventions including psychosocial and pharmacological interventions (Mayet et al, 2005).

Maintenance therapy may be continued in the long term within a community setting, or may be used before withdrawal/detoxification treatment with the aim of discontinuing all illicit drug use.

Oral methadone and buprenorphine are usually used for maintenance treatment. Evidence indicates there is no difference in effectiveness, however on cost effectiveness grounds, methadone is usually selected (NICE, 2007). Patient preference will also play a part as some patients find side effects from one drug means they prefer another (e.g. methadone can cause patients to report 'cloudy' thinking).

Individuals undergoing maintenance therapy should have a period of supervised consumption for at least the first three months, with initial daily contact. Whilst

stable on maintenance therapy they should ideally be reviewed every fortnight or monthly with a care plan review undertaken every three months (Department of Health et al, 2007).

6.1.3 Withdrawal/Detoxification

Detoxification to completely discontinue use of most drugs including opioids can be accomplished on an outpatient basis; however for individuals with a history of prolonged use of very high doses of hard drugs like opioids, this is best undertaken in a hospital setting. This form of treatment is suitable for highly motivated individuals who want to completely stop using any form of opioid substance and have stable circumstances which are conducive to maintaining abstinence.

Some people may choose detoxification without entering maintenance therapy. This choice is more suitable for a young user, or people with a low level of drug use or those who have used opioids for a short time, or who rarely inject.

Oral methadone and buprenorphine are the drugs most commonly used, as the effectiveness of lofexidine is questionable, especially when used alone (Department of Health, 2007). Where an individual is progressing to detoxification from maintenance therapy, the drug they used in that stage should be continued. Where an individual is entering detoxification treatment without having undertaken maintenance therapy, buprenorphine is recommended (NCCMH, 2007). There is some evidence to indicate that naltrexone in addition to methadone or buprenorphine allows withdrawal to be completed more quickly but this needs to be confirmed (Mayet et al, 2009).

6.1.4 Ultra- rapid withdrawal

Evidence indicates that ultra-rapid withdrawal has unknown effectiveness in the treatment of opioid dependence. This is primarily due to safety concerns but also due to the cost effectiveness of such treatment, and the fact that this method of treatment may not encourage individuals to make the life changing positive choices necessary to sustain abstinence from substance abuse. NICE (2007) recommends such treatment should only be offered to individuals who have specifically requested this form of withdrawal, and fully understand the risks and issues involved with the treatment. NICE also recommends that non-anaesthesia related methods are used due to the high mortality rates associated with anaesthesia assisted withdrawal.

6.1.5 Relapse Prevention

Once detoxification treatments have been completed, evidence indicates that naltrexone is effective in avoiding relapse prevention in the management of opioid dependence (NICE, 2007).

6.2 Psychological treatment for Substance Abuse

Evidence indicates that psychological therapies alone are not adequate for treatment of opioid dependence (Mayet, 2004) but are effective when used alongside

pharmacological methods. However, psychosocial interventions form the basis of treatment for individuals who misuse cocaine and other stimulants, cannabis and hallucinogens (Department of Health et al, 2007).

Forms of psychological treatments which can be considered include:

- Brief Motivational Interventions – short sessions ranging for 5 to 10 minutes within existing contacts (e.g. at a GP appointment) should be offered, aimed at harm reduction strategies with respect to blood-borne viruses, for example on reducing sexual and injection risk (NCCMH, 2007).
- Cognitive Behavioural Therapy is effective when offered to substance abusing individuals who have comorbid anxiety or depressive conditions (NCCMH, 2007)
- A strong evidence base (mainly from the US) exists for Contingency Therapy which is based on a reward scheme, e.g. vouchers. This is usually provided as part of a structured care plan but is not common within the UK (Department of Health et al., 2007) or Ireland.
- Behavioural couples therapy – where one person within the couple is drug-free and willing to participate in treatment
- Family Therapy in the form of self help, structured support groups or formal sessions. Again, although evidence indicates that this is effective, this form of therapy is not common in the UK (Department of Health et al, 2007) or Ireland.
- Self help groups such as Narcotics Anonymous and Cocaine Anonymous.

6.3 Rehabilitation

The abstinent individual needs to be integrated back into society. Work and social contact in sheltered surroundings should be attempted first. Gradual introduction into society is then attempted. Unless this can happen, the treatment may fail. Rehabilitation is a team effort and involves occupational therapists and social workers in addition to the psychiatric team. Social support is indispensable during this transition period, and for some time after. Rehabilitation and reintegration interventions will depend upon the individual's motivation, Socio-domestic circumstances and physical or mental sequelae. Each of these aspects must be rigorously addressed. Flexibility in approach is essential and will be guided by those circumstances which dominate in the individual person.

7. Prognosis (Main Prognostic Factors)

Most substance abuse disorders can be considered chronic relapsing conditions resulting in severe physical, mental and social consequences (Cami, 2003; Mayet, 2009)

In heroin dependent individuals there is a 10-15% mortality at 10 years. The overall abstinence in the same group is 50% at 10 years, suggesting a tendency towards the eventual avoidance of substance or drug use in the survivors.

Drug dependence cannot be cured completely; it can only be effectively controlled. Relapse is the greatest challenge, and reversion to full-blown dependence is all too common.

The abstinent individual experiences may experience intense craving for the drug, in which case there is a tendency to initiate self-administration. This situation usually arises after administration of a very small dose of the drug even years after the last drug dose. This has been attributed to the "priming effect" of the drug on which the individual was dependent.

Craving and relapses are not the exception, but the rule. Successful treatment depends on management of cravings and relapses, in those individual who continue usage.

Contrary to popular belief, craving in *abstinent* individuals is not produced by the absence of the drug, but by its presence. Hence avoidance of exposure to a drug-related environment may be an important aspect in improving the prognosis⁶.

The morbidity of drug misuse is very high. Self-neglect, venous thrombosis, abscesses, endocarditis, pneumonia and other infections, HIV, hepatitis, accidental overdoses and associated psychiatric morbidity are some of the detrimental consequences of drug misuse.

In addition, there is a high tendency on the part of drug dependent individuals to resort to crime to fund their drug habit.

8. Information Gathering at the In Person Assessment

The drugs most commonly misused include cocaine, cannabis, heroin, benzodiazepines and amphetamines. An increasing evidence of use has been reported for drugs like ecstasy and solvents. Polysubstance misuse is also common.

Many young drug users remain employed and their drug use is viewed as a harmless recreational activity by their peer group. Many people do not regard occasional use and experimentation with drugs as abnormal. However, drug users in employment have a high absenteeism rate and a higher incidence of accidents and injuries. Though many **who misuse drugs** remain employed, the employment rates for **drug dependent** individuals are very low.

Drug dependence by itself is not covered by the Disability Discrimination Act 1995.

The disability arising from drug use is highly variable.

Common ‘street’ or vernacular names for misused substances are detailed in Appendix L.

8.1 Assessing the Claimant

A mental health assessment must always be done in individuals with a history of substance abuse.

A thorough perusal of all available evidence on file is necessary. It must be borne in mind that the effects of drug abuse include aggressive and potentially violent behaviour.

If drug misuse is an unexpected finding then the claimant’s GP should be notified. Informed consent from the claimant must be obtained for this.

History should include pattern, duration, extent, severity and type of drug use. Variability over a period of time should be noted. A note must be made of attempts at detoxification, if any. A history of current functional impairment(s) should be obtained along with an account of a typical day. If the individual leads a haphazard existence, an account of a typical week may be more helpful. Adverse socio-domestic effects and behavioural problems should also be documented.

If the claimant is in a state of intoxication, consideration should be given to aborting the examination, if it is clear that it will not be possible to carry out an appropriate assessment. This may be because of threatening or persistent uncooperative behaviour.

8.1.1 Informal Observation

Informal observation may be of immense help in corroborating the history and any documentary evidence. The following observations may be made informally:

- General appearance and demeanour
- Gait, posture and balance
- Eye contact
- Involuntary movements and mannerisms
- State of self care and personal hygiene
- Facial expressions.
- Nature of talk and engagement

8.1.2 Physical Assessment

This may be appropriate if there are any reported or claimed physical disabilities. General physical features to be noted include:

- General appearance and weight
- State of self care
- Smell of breath
- Gait and posture
- Skin colour, needle marks and scars.

8.1.3 Mental State Examination

It may be difficult to assess the mental state in some cases. It is important to be sensitive and non-judgemental in order to be able to gather as much information as possible. The following areas need to be assessed:

- Appearance
- Behaviour
- Speech
- Mood
- Thoughts and perception
- Intellect and cognition
- Insight and motivation.

Drug use may lead to poor concentration causing inability to read, watch TV and enjoy leisure activities. It may be necessary to repeatedly prompt the claimant. There may be a history of multiple accidents around the home due to poor

concentration and poor memory.

Daily living activities may be neglected if all time and effort is concentrated on obtaining and using drugs. Self-neglect may be evident and the claimant may not follow a set daily routine.

Anxiety, panic or euphoria may result from use of some drugs. Fatigue, lack of interest and initiative may lead to a complete disregard of routine tasks.

Some drugs may cause inappropriate temper outbursts and even physical aggression. The ability to communicate and interact with other people may be lost. The drug dependent person may prefer solitude or the company of other drug users.

All information elicited (evidence from file, history, account of typical day, informal observation and formal assessment) should be used to assess the overall disability and functional impairment. Variability must be fully addressed, and consideration given to the severity and duration of the condition so that appropriate prognostic advice may be presented in the report.

9. Analysis of Effect on Functional Ability

Eligibility to the Department of Social and Family Affairs various Illness-related schemes and Activation Programme, is determined primarily by the degree of Ability/Disability and its expected duration.

The degree of Ability/Disability assessed, using the following Indicators, can be depicted on the Ability/Disability Profile illustrated below.

9.1 Indicators of Ability/Disability

Normal

- Normal social functioning
- Normal mood and concentration
- Good inter-personal skills
- Well-motivated to abstain from use

Mild

- Recreational drug use only
- Adequate self-care
- No loss of interests or hobbies
- Well groomed with no evidence of self-neglect
- Intact insight
- Appropriate behaviour

Moderate

- Long history of drug abuse and dependence
- Multiple failed detoxification attempts
- Associated mental disorders such as anxiety
- Intensive input and support from community psychiatric team and social services
- Some evidence of self-neglect
- Poor insight and motivation
- Poor social relationships
- Associated mood disorders
- Impaired concentration

Severe

- Chaotic and disorganised lifestyle

- Poly-substance abuse and dangerous injecting habits
- Compulsive drug seeking behaviour to the exclusion of all other activities
- Gross self-neglect
- Grossly impaired social interaction
- Currently undergoing detoxification or detoxification planned in the near future
- Overdoses or suicide attempts in the last six months
- Suicidal ideation and low self-esteem
- Evident gross self-neglect
- Co-morbidity due to associated severe mental illness
- Behavioural and/or thought disorders
- Attends with CPN or care worker

Profound

- Drug dependency to a degree, which severely and adversely affects a person's behaviour, which severely restricts social functioning and requires or is undergoing treatment in a detoxification unit or residential rehabilitation unit
- Mood and/or behaviour are so adversely affected that they are likely to pose a real threat or danger to others (work colleagues or members of the public)
- Severe psychotic behaviour resulting from drug abuse
- Neurotoxicity, cerebrovascular accident, or other forms of central nervous system damage resulting from drug abuse

In chronic substance abusers displaying self-neglect, there may be an inability to maintain adequate levels of nutrition and cleanliness. Performing essential domestic tasks, or coping with day to day transactions and communicating with others generally are all likely to be significantly affected.

9.2 Ability/Disability Profile

Indicate the degree to which the Claimant's condition has affected their ability in ALL of the following areas.					
	Normal	Mild	Moderate	Severe	Profound
Mental health/Behaviour	<input type="checkbox"/>				
Learning/Intelligence	<input type="checkbox"/>				
Consciousness/Seizures	<input type="checkbox"/>				
Balance/Co-ordination	<input type="checkbox"/>				
Vision	<input type="checkbox"/>				
Hearing	<input type="checkbox"/>				
Speech	<input type="checkbox"/>				
Continence	<input type="checkbox"/>				
Reaching	<input type="checkbox"/>				
Manual dexterity	<input type="checkbox"/>				
Lifting/Carrying	<input type="checkbox"/>				
Bending/Kneeling/Squatting	<input type="checkbox"/>				
Sitting	<input type="checkbox"/>				
Standing	<input type="checkbox"/>				
Climbing stairs/Ladders	<input type="checkbox"/>				
Walking	<input type="checkbox"/>				

10. Summary of Scheme Criteria

Scheme eligibility criteria are maintained on the DSP website and are accessible from the following links:

- **Carer's Allowance**
http://www.welfare.ie/EN/OperationalGuidelines/Pages/carers_all.aspx
- **Carer's Benefit**
http://www.welfare.ie/EN/OperationalGuidelines/Pages/carers_ben.aspx
- **Disability Allowance**
<http://www.welfare.ie/EN/OperationalGuidelines/Pages/disall.aspx>
- **Disablement Benefit**
http://www.welfare.ie/EN/OperationalGuidelines/Pages/oib_disableb.aspx
- **Domiciliary Care Allowance**
<http://www.welfare.ie/EN/Schemes/IllnessDisabilityAndCaring/Carers/DomiciliaryCareAllowance/Pages/DomiciliaryCareAllowance.aspx>
- **Illness Benefit**
<http://www.welfare.ie/EN/OperationalGuidelines/Pages/illben.aspx>
- **Injury Benefit**
http://www.welfare.ie/EN/OperationalGuidelines/Pages/oib_injuryb.aspx
- **Invalidity Pension**
<http://www.welfare.ie/EN/OperationalGuidelines/Pages/invalidity.aspx>
- **Respite Care Grant**
<http://www.welfare.ie/EN/OperationalGuidelines/Pages/respitegrant.aspx>

Appendix A - Opioids

These substances can be taken by intravenous injection, subcutaneous injection (*skin-popping*), snorting (*sniffing*) and inhalation (*chasing*) and result in strong analgesic, euphoriant and anxiolytic effects. Other effects include respiratory depression, constipation, reduced appetite and decreased libido.

Withdrawal syndrome includes intense craving for the drug, restlessness, insomnia, muscular pains, runny nose and eyes, sweating, abdominal cramps, diarrhoea, vomiting, pilo-erection, dilated pupils, tachycardia and disturbance of temperature control.

Morbidity and mortality is significant in users, with use being described as a chronic relapsing disease (Mayet, 2009).

Appendix B - Cannabinoids

Cannabis, commonly known as Marijuana, is a substance derived from the plant *Cannabis sativa*. It contains many psychoactive substances, the most powerful being δ -9-tetrahydrocannabinol. It is used either as the dried vegetative parts in the form of marijuana or grass, or as the resin secreted by flowering tops of the female plant. Cannabis is commonly smoked with tobacco, but can also be ingested in food products. The effects last from 5-12 hours orally, and 2-4 hours if inhaled.

Cannabis acts via specific cannabinoid receptors. The endogenous ligand for these receptors is anadamide. Cannabis exaggerates the pre-existing mood. It causes distortion of perception of time and space, reddening of eyes, dry mouth, tachycardia, irritation of respiratory tract and coughing. It also causes anxiety, mild paranoid ideation, and at higher doses, can cause toxic confusional states and psychosis in clear consciousness.

Tolerance may develop when high doses are used for long periods, but is rare on intermittent use of small doses. The vast majority of those who use cannabis do not develop dependence nor do they misuse the drug.

Withdrawal symptoms from high doses include irritability, nausea, insomnia and anorexia.

(Hall 2009)

Appendix C - Sedative Hypnotics

This is a condition where individuals become dependent on, or abuse, substances used for their calming effect (sedatives), sleep-inducing effect (hypnotics), and anti-anxiety effect (anxiolytics). The most frequently misused drugs in this group are benzodiazepines. Other drugs of this group that are misused are chlormethiazole, chloral hydrate and very rarely, barbiturates.

Benzodiazepine misuse is commonly associated with abuse of other substances – for example, individuals may take benzodiazepines to alleviate the after effects of cocaine use, or to enhance the effect of other drugs.

Drugs of this class vary in potency and length of effect. They are usually taken orally, although some users have taken substances of this nature intravenously. This route of administration is associated with substantially greater mortality and morbidity (Welch and Farrell, 2009).

High levels of psychiatric comorbidity are commonplace in individuals who abuse these types of substance.

Diagnosis

These drugs act by facilitating brain GABA function. Withdrawal symptoms include anxiety, irritability, sweating, tremor, sleep disturbance, altered perception, depersonalisation, derealisation, hypersensitivity, abnormal sensations, depression, psychosis, seizures and delirium tremens.

Treatment

Treatment aims to achieve gradual withdrawal with counselling. Benzodiazepines with shorter half-life and high potency, may be replaced by longer-acting drugs like diazepam before withdrawal is attempted.

Barbiturate misuse is rare. Abrupt withdrawal of barbiturates can be dangerous. In-patient detoxification is advisable if the dose is high. Replacing the barbiturate by a benzodiazepine and then gradual withdrawal may be an option.

(Medical Disability Guidelines, 2009; Welch and Farrell, 2009)

Appendix D - Cocaine

Cocaine, found in *Erythroxylum coca* ("Coca") is a stimulant drug, and can cause strong dependence in persistent users.

Dependent on form, it is administered by injection, smoking and sniffing and acts by blocking the re-uptake of dopamine in the nucleus accumbens in the midbrain dopamine system. Abuse usually starts with binge or episodic use but dependence can develop quickly after only a few months of substance abuse. Effects last for 30-50 minutes resulting in individuals taking frequent doses to maintain effects.

The use of cocaine use leads to excitement, increased energy, euphoria, grandiose thinking, impaired judgement and sexual disinhibition. Higher doses can cause hallucinations, paranoid ideation and aggressive behaviour. Prolonged use of high doses can result in paranoid psychosis with violent behaviour.

"Crack" cocaine is a form of free base cocaine. It is not soluble in water and is smoked. Smoked crack cocaine reaches the brain even faster than injected cocaine and produces an immediate "high" or "rush". It is extremely addictive and may lead to compulsive cocaine abuse to the exclusion of all other activities.

Diagnosis

Physical effects of cocaine use include dilatation of pupils, tachycardia, and increased BP. Severe effects include cardiac arrhythmias, myocardial infarction, myocarditis, cardiomyopathy, stroke, fits and respiratory arrest. Obstetric complications are similar to those of amphetamines. Sometimes cocaine use leads to formication ('cocaine bugs') - a sensation as if insects are crawling under the skin. Sniffing cocaine can lead to nasal septal perforation.

Withdrawal symptoms include dysphoria, anhedonia, fatigue and hypersomnolence. Severe withdrawal is seen in prolonged use of high doses, and symptoms include intense craving, depression and suicidal thoughts.

Treatment

Withdrawal followed by cognitive behavioural therapy, relapse prevention and cue exposure treatment are preferred lines of management. There is no evidence that any medication therapy is consistently effective in reducing stimulant abuse (de Lima et al, 2002).

(Seivewright and Fung, 2009; Medical Disability Guidelines, 2009)

Appendix E - MDMA (Ecstasy)

The use of 3,4 methylenedioxyamphetamine (MDMA), popularly known as ecstasy, has increased dramatically over the last 10 years, and is closely associated with the 'dance' or 'rave' music scene, and therefore is a substance that tends to be abused by a younger population. Alongside the UK, Ireland has one of the highest European prevalence rates for ecstasy use at 3.5% lifetime prevalence (European Monitoring Centre for Drugs and Drug Addiction, 2008).

MDMA is a stimulant with mild hallucinogenic effects, which acts by stimulating the release of dopamine and 5-hydroxytryptamine (5-HT) in the brain.

MDMA is usually taken as an oral tablet but may also be taken in capsule or powder form. It is possible to take forms of MDMA intranasally or intravenously. The rising popularity of MDMA may be due to the relative inexpensiveness of tablets – which can be purchased for less than €10 (European Monitoring Centre for Drugs and Drug Addiction, 2008), and continuing to fall still lower.

Diagnosis

The effects of MDMA are euphoria, sociability, intimacy, new insights and heightened perceptions. Physical effects include loss of appetite, tachycardia, sweating and compulsive grinding of teeth.

Adverse reactions include hyperthermia, which can be a cause of sudden death. There have been reports of arrhythmia, hypertensive crisis and intracerebral bleed, although pre-existing cardiac disease may have played a role. It has been linked with paranoid psychoses and with 'flashbacks' weeks or months after ingestion of the drug.

It has the potential to cause long-term neurological damage.

Treatment

It is not common for individuals misusing MDMA to seek treatment – less than 1% of all treated individuals list MDMA as their primary problem drug (European Monitoring Centre for Drugs and Drug Addiction, 2008). Symptoms which may persist after taking MDMA usually resolve within 2-4 weeks following cessation of use, however less acute withdrawal symptoms such as mood and sleep disorders may take some months to resolve.

Antidepressant therapy is not recommended until 2-4 weeks of abstinence from MDMA (Winstock and Schifano, 2009)

(European Monitoring Centre for Drugs and Drug Addiction, 2008; Winstock and Schifano, 2009)

Appendix F - Other Stimulant drugs

This class of substances includes a wide range of substances. Amongst the most common are:

- Amphetamine
- Methamphetamine
- Methylenedioxypropylamphetamine
- Methylphenidate
- Phenmetrazine
- Various appetite suppressants and decongestants

Cocaine and Methylenedioxymethamphetamine (MDMA – Ecstasy) are also considered a stimulant drug, but are discussed in separate sections of these appendices.

The effects of this class of drug are due to their ability to release and block the re-uptake of dopamine and noradrenaline in the brain, enhancing mood and movement.

These substances can be taken orally, intranasally, smoked, or used intravenously. The effects of these substances can be felt within 30 to 40 minutes and last for 4 to 8 hours, and can result in individuals feeling extreme euphoria ('high'). Clinical effects include over-talkativeness, over-activity, insomnia, dryness of lips, mouth and nose, anorexia, dilated pupils, tachycardia and high blood pressure. Larger doses can lead to cardiac arrhythmia, severe hypertension, stroke and rarely circulatory collapse. Further higher doses can lead to fits and coma.

Acute adverse effects include dysphoria, irritability, insomnia, confusion, anxiety and panic. Obstetric complications include miscarriage, placental abruption and premature delivery. Prolonged use can lead to repetitive stereotyped behaviour and paranoid psychosis. Features of the psychosis are persecutory delusions, auditory and visual hallucinations and rarely dangerously hostile behaviour. It usually lasts for a few weeks, but can in rare cases, persist for months.

Smoked or injected amphetamine more commonly leads to dependence than does the oral form.

Withdrawal from these forms of drugs can take 2-4 weeks, and is closely linked with depressive symptoms. Other symptoms include anxiety, fatigue, lethargy and nightmares. Intense craving and suicidal thoughts are sometimes seen.

Diagnosis

Use of stimulant drugs may result in a number of physical symptoms including effects on the sympathetic nervous system e.g. raised heart rate and blood pressure, dilated pupils, perspiration, nausea or vomiting, psychomotor agitation or

retardation. Individuals may exhibit constant or 'nervous' movement.

The most marked symptoms may not be physical – issues with interpersonal, occupational and social functioning are common.

Marked physical symptoms are not common from withdrawal of stimulant drugs.

Treatment

Psychosocial treatments have been found to be effective, but no pharmacological treatments have been identified which are effective in cases of psychostimulant withdrawal (Shearer and Gowing, 2004)

(Medical Disability Guidelines 2009; Winstock and Schifano, 2009)

Appendix G - Hallucinogens

This class of substances includes a number of different types of compounds which have different effects. Readily available, drugs in this group include lysergic acid diethylamide (LSD), botanical hallucinogens e.g. fungi such as hallucinogenic mushrooms. LSD is the most commonly used drug from this group in the UK.

Hallucinogens exert their effects by acting as partial agonists at brain 5-HT_{2A} receptors.

Diagnosis

Physical effects are usually not severe and include hypertension, tachycardia and dilated pupils. In the presence of pre-existing cardiovascular pathology, hypertension can precipitate adverse myocardial and cerebrovascular events.

Psychological effects include distortion and intensification of sensory perception, and confusion between sensory modalities (synaesthesia). The passage of time appears to be slowed. Body image may be distorted with a feeling of being outside one's body. This may lead to panic with fears of insanity. There is a risk of suicidal and homicidal tendencies.

Tolerance can occur, but dependence is very rare.

Treatment

Anxiolytics are effective in treatment.

Flashbacks of psychedelic experiences, weeks or months after use of the drug have been reported.

Controversy exists over an association between the use of LSD and long-term abnormalities in thinking and behaviour and even schizophrenia; the evidence for such an association is very dubious.

(Abrahm, 2009)

Appendix H - Volatile Solvents

Solvents cover a huge number of substances: Substances commonly abused include solvents, adhesives (glue sniffing), petrol, cleaning fluid, aerosols, butane, agents used in fire extinguishers, toluene and acetone.

Clinical effects are similar to alcohol consumption. The nervous system is first stimulated and then depressed. The stages of intoxication are - euphoria, blurred vision, slurred speech, incoordination, staggering gait, nausea, vomiting and coma. There may be frightening visual hallucinations.

There is no evidence that use of solvents leads to dependence although tolerance can occur. Effects are short lasting – up to 45 minutes- leading to users taking repeated doses over a short period of time. (Talk to Frank, 2009)

Volatile solvents probably act by increasing brain GABA function and by increasing the fluidity of neuronal cell membranes.

Sudden death may occur. The main causes are cardiac arrhythmias and respiratory depression. Other causes of sudden death include trauma, asphyxiation when using plastic bags over the head, and inhalation of stomach contents.

Chronic users display evidence of neurotoxicity and peripheral neuropathy. There may be evidence of impaired cerebellar function, encephalitis and dementia. Other vital organs may also suffer damage.

(Ives, 2009)

Appendix I - Dissociative Substances

Substances in this class of psychoactive drugs include the following:

- **Dextromethorphan** (DXM; Robitussin, Delsym, Triaminic, Coricidin, etc; "Dex", "Robo", "Triple CCC", "Cough Syrup")
- **Ketamine** (K; Ketalar, Ketaset, Ketanest; "Ket", "Kit Kat", "Special-K", "Vitamin K", "Jet Fuel", "Horse Tranquilizer")
- **Nitrous Oxide** (N₂O; "Nozz", "Laughing Gas", "Whippets")
- **Phencyclidine** (PCP; Sernyl; "Angel Dust", "Rocket Fuel", "Killer Weed", "Super Grass")

These types of drugs have been generally developed as dissociative anaesthetic agents, but their use has been associated with adverse reactions like delirium and hallucinations. These reactions are different from other classes of hallucinogens such as LSD.

Dextromethorphan

This is an ingredient commonly found in cough medicine and is classified as a dissociative psychedelic drug. Used at much higher than recommended doses can result in effects that are similar to those of ketamine and phencyclidine.

Although preparations containing this drug are available as over the counter medicine, it is normally only sold with a pharmacist's approval.

Ketamine

This drug is similar to PCP but with a shorter half life. It is classed within the UK as a Class C drug (Winstock and Schifano, 2009) and as a prescription only drug in Ireland. Its use is common across a number of areas of medicine including major trauma and battle zones, but it is also common in veterinary practice which may contribute to its availability.

The street value of this drug is relatively low which is resulting in an increase in availability and popularity. Typically the substance is taken intranasally although it can be injected or taken orally.

Ketamine is increasingly linked to the "rave" or "dance" scene with a prevalence of about 20% of clubbers (Winstock and Schifano, 2009). The effects generally last 1-2 hours so users of this substance may take repeated doses over a short period of time.

Adverse effects are commonly chest pain, palpitations, tachycardia, nausea, vomiting, ataxia, temporary paralysis or difficulty with speech, derealisation or depersonalisation. When taken in overdose this drug is relatively safe although more harmful and sometimes fatal effects can result when Ketamine is combined with CSN depressants. More long term effects include urinary tract problems.

Nitrous Oxide

Nitrous oxide (N₂O) is a colourless, gaseous dissociative drug that can cause analgesia, depersonalization, derealisation, dizziness, euphoria and sometimes hallucinations. Used as an inhalant, illicit use of the substance is usually from the propellant used in compressed gas containers in a balloon or plastic bag.

Nitrous oxide is short-lived with the effects dissipating in less than a minute. Dependency does not usually result from the use of nitrous oxide.

Phencyclidine

This drug is not commonly used within the UK or Ireland. The drug can be ingested, smoked or injected. It acts at the N-methyl-D-aspartate (NMDA) receptors in the brain. At small doses it produces 'drunkenness', analgesia of fingers and toes and anaesthesia. Intoxication is prolonged and marked by agitation, depressed consciousness, psychotic features, aggression, high BP and nystagmus. With higher doses there is a likelihood of ataxia, muscle rigidity and absence of response to stimuli with eyes wide open.

With serious overdoses, an adrenergic crisis with its attendant complications may occur. Death may result from cardiovascular or cerebrovascular events or from respiratory failure. There is a risk of suicide as well.

Chronic use leads to aggression with amnesia. Tolerance and dependence can occur, but withdrawal symptoms are very rare indeed.

Treatment of intoxication depends on the symptoms. Haloperidol and/or diazepam may be given. Respiratory and cardiac manifestations are dealt with accordingly.

Appendix J - Other Substances

Gamma Hydroxy Butyrate (GHB)

This drug is in increasing use, particularly with respect to the 'dance' scene.

GHB was originally developed as a general anaesthetic, but has also been used as treatment for insomnia, clinical depression, narcolepsy, and alcoholism, and as a performance enhancing substance in athletics. GHB has also been linked to use as a 'date rape' drug.

A colourless and odourless liquid or powder with a salty taste, GHB results in euphoria, increased enjoyment of movement and music, increased libido, increased sociability and intoxication. Adverse effects include nausea, dizziness, drowsiness, agitation, visual disturbances, depressed breathing, amnesia, collapse, unconsciousness, and death. There is a significant risk of overdose, especially if large doses have been taken alongside alcohol (Winstock and Schifano, 2009).

The effects of GHB can last from 1.5 to 3 hours or even longer if large doses have been consumed or if it is mixed with alcohol.

There are reports of dependence and withdrawal syndromes developing in individuals who have used this substance (Winstock and Schifano, 2009).

Appendix K - Neurobiology of drug misuse and dependence

The target for action of most psychoactive drugs seems to be the *nucleus accumbens* in the *midbrain dopamine system*. The ingestion of certain drugs increases the release of dopamine in the nucleus accumbens and leads to feelings of euphoria and reduction in anxiety. Dopamine pathways also form a reward system, and drugs acting on it act as positive reinforcing agents, heightening the feelings of euphoria, and thereby increasing the propensity for misuse.

Learning and conditioning factors after prolonged misuse of drugs are important in the development of tolerance, withdrawal syndrome and dependence.

Neuroadaptive changes and altered brain function are responsible for phenomena such as anhedonia, craving and dysphoria resulting from discontinuation of drugs after long-term dependence.

Other drugs act by enhancing the brain *GABA function*. On long-term use of these drugs, there are changes in the sensitivity of the GABA and benzodiazepine receptors. This down-regulation of receptor sensitivity could be responsible for development of *tolerance* and the need for higher doses to produce the same effects. Adaptive changes in the receptors tend to persist, and on abrupt discontinuation of drugs, (e.g. anxiolytics) there is sharp drop in GABA activity leading to anxiety, insomnia and seizures.

This common pathway of brain action may be responsible for cross-tolerance between anxiolytics, alcohol and hypnotics, and it also helps the clinician to treat alcohol withdrawal with a benzodiazepine.

Cannabis exerts its effects via specific cannabinoid receptors in the brain. The receptors may be responsible for the effects of endogenous cannabinoids, cannabis, certain other drugs and even chocolate cravings.

Opioids, in addition to acting on opioid receptors, also act on noradrenaline cell bodies in the brain stem. Adaptive changes occur in opioid receptors and the firing of noradrenaline cell bodies is reduced. If opioids are suddenly withdrawn, the rate of firing of noradrenaline cells increases, resulting in sweating, tachycardia, hypertension and anxiety. Hence alpha-2 receptor antagonists like clonidine and lofexidine are used in the management of opioid withdrawal.

Positive reinforcing actions of drugs promote drug use and similarly withdrawal effects play an important part by negative reinforcement, i.e. dependent individuals try to avoid unpleasant withdrawal effects by continued use of drugs.

Appendix L - Vernacular Names for Commonly Misused Substances

L.1 Opioids

Substances that individuals may misuse in this class include:

- Buprenorphine (Temgesic)
- Codeine
- Diacetylmorphine (Heroin; "Smack", "Dope", "Tar")
- Dihydrocodeine (DHC)
- Pethidine
- Methadone
- Morphine (MS-Contin, MS-IR; "Morpha", "Emma")
- Opium (from *Papaver somniferum* ("Opium Poppy"))

L.2 Cocaine

Cocaine is commonly known as "Coke", "Crack", "Blow" or "Snow".

L.3 Other Stimulant Drugs

'Street' names for other classes of stimulant drugs include:

- Amphetamine (Adderall, Dexedrine; "Speed")
- Methamphetamine (Desoxyn; "Meth", "Crank", "Crystal", "Tweak", "Glass")
- Methylenedioxypropylamphetamine (MDPV; "Sonic", "Magic")
- Methylphenidate (Ritalin, Focalin, Concerta)
- Phenmetrazine (Preludin; "Prellies", "Preludes")

L.4 Dissociative Substances

Vernacular names for these classes of psychoactive drugs include the following:

- **Dextromethorphan** (DXM; Robitussin, Delsym, Triaminic, Coricidin, etc;

"Dex", "Robo", "Triple CCC", "Cough Syrup")

- **Ketamine** (K; Ketalar, Ketaset, Ketanest; "Ket", "Kit Kat", "Special-K", "Vitamin K", "Jet Fuel", "Horse Tranquilizer")
- **Nitrous Oxide** (N₂O; "Nozz", "Laughing Gas", "Whippets")
- **Phencyclidine** (PCP; Sernyl; "Angel Dust", "Rocket Fuel", "Killer Weed", "Super Grass")

L.5 Gamma Hydroxy Butyrate (GHB)

GHB is commonly known as G; Xyrem; "Liquid Ecstasy" or "Fantasy"

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