Substance Withdrawal Management
Guidelines for addiction and allied practitioners
Acknowledgements

The main authors of this document are Ashley Koning and Vanessa Caldwell. Contributions by the members of the Matua RaKI Withdrawal Management Reference Group, see Appendix 3, are greatly appreciated.

The Substance Withdrawal Management: Guidelines for addiction and allied practitioners have in part been based on the New South Wales Department of Health’s Drug and Alcohol Withdrawal Clinical Practice Guidelines. Matua RaKI is grateful for the generosity of the NSW Department of Health in allowing their original material to be adapted and used in this manner.

The Guidelines

This guideline is one of a series that have been developed to provide information about safer substance withdrawal management. Each set of guidelines is tailored to the information needs of a particular audience.

Substance Withdrawal Management: Guidelines for medical and nursing practitioners in primary health, specialist addiction, custodial and general hospital settings provides guidance for the specialist medical assessment and treatment of acute substance withdrawal including the use of medication.

Substance Withdrawal Management: Guidelines for addiction and allied practitioners provides an overview of the effects of substance, associated withdrawal symptoms and risk assessment and general withdrawal management strategies.

Managing your own Withdrawal is a booklet for people who use substances, and their family, whānau and support people, outlining self help strategies for managing mild or uncomplicated withdrawal.

Disclaimer

The opinions expressed herein are the views of the authors and do not necessarily reflect the official position of the Ministry of Health.

The guidelines in this document should not be considered exhaustive, exclusive or substitutes for individualised care and treatment decisions.

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Foreword

Tēnā koutou, Kia orana, Fakaalofa lahi atu, Taloha ni, Talofa lava, Malo e lelei, Ni sa bula vinaka, Nameste, Talofa.

Substance Withdrawal Management: Guidelines for addiction and allied services

This guideline has been developed for use in a variety of settings where practitioners from a range of disciplines and backgrounds work with people who are likely to experience withdrawal symptoms on voluntary or involuntary cessation of substance use. This will be an important and useful resource for frontline workers in Corrections, Justice, primary healthcare and general hospital settings and the addiction treatment sector of Aotearoa New Zealand. The development of the guidelines has been in response to calls for withdrawal management information and guidelines tailored to the New Zealand context. The guidelines draw on similar material from Australia, Great Britain and the United States as well as current research.

The aim of these guidelines is to provide practical and accessible information to help with the recognition and identification of substance withdrawal and appropriate withdrawal management options across a range of substances.

Dr John Crawshaw
Director of Mental Health
Ministry of Health
March 2012
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Withdrawal

Stopping the use of most substances after heavy prolonged use generally leads to some form of acute withdrawal symptoms. For the majority of substances acute withdrawal symptoms tend to last one to two weeks. It is these acute withdrawal symptoms that are the focus of withdrawal management strategies. Many of these symptoms can be safely managed in the community without the use of medication or specialist medical or nursing input. Where acute withdrawal symptoms are intense; potentially life threatening and/or the person going through withdrawal has complex co-existing problems, withdrawal management is best managed by specialist addiction practitioners and services.

Withdrawal symptoms occur along a spectrum of severity that tends to be dependent on what substance a person has been using; how much they have been using; how long they have been using and with some substances, how they have been using. It is difficult to predict who will experience withdrawal symptoms and how severe they will be as personality differences and pre-existing conditions can impact on the severity and risks associated with substance withdrawal. However broadly speaking many withdrawal symptoms tend to be the opposite of the desired effects of the substance.

While drug use initially increases dopamine release, chronic drug use dramatically decreases dopamine release. …… The neurochemistry of the reward pathway appears to adapt to the repeated abnormal elevations in dopamine release by compensatory down-regulation. ……Abrupt cessation of chronic drug use leads to a decrease in dopamine release …

EMCDDA, 2009.

Physiologically, withdrawal effects appear to be a response to neuroadaptation as the brain endeavours to regain equilibrium, or homeostasis.

Neuroadaptation is the process by which the function of the brain cells changes in response to exposure to drugs. These adaptive changes may include increases in the number of receptor sites, alterations in the shape of the receptors, or changes in the chemical functioning of the cell

Perron et al, 2011.

Where neuroadaptation has occurred and the person stops using the substance the brain is no longer able to produce or regulate adequate levels of some neurotransmitters resulting in both acute and protracted withdrawal symptoms. How long a substance needs to be used or what level of substance use is required to cause neuroadaptation is unknown.

Many substance users are unaware of the range of possible withdrawal symptoms from the substance(s) they have been using and may blame internal processes and/or external events for emotional and physical symptoms that emerge in acute and protracted withdrawal. Discussing and predicting possible withdrawal symptoms helps people to make sense of their experiences as they make changes to their patterns of substance use. Knowing the withdrawal symptoms associated with particular substances will also help with making an assessment of possible withdrawal risks.
In situations where people are less likely to be candid about their substance use, such as in a custodial or hospital setting, knowledge of the acute and ongoing effects of a wide range of substances can help to predict the range of possible withdrawal symptoms that could occur when people reduce or stop use. Learning to identify signs of recent and regular substance use will help to decide what questions to ask that could inform risk assessment and withdrawal management planning. Having a reasonably accurate idea of what substance(s) a person has been using will make it easier to identify symptoms that are more likely to be withdrawal symptoms and those that may have a different cause.

Many substances also have protracted withdrawal symptoms of lesser intensity but which last for much longer, e.g. methamphetamine, benzodiazepines, cannabis and methadone. Due to the prolonged presence of withdrawal symptoms the person can be at high risk of lapses and relapses. Treatment planning needs to take into account both the need for acute withdrawal management and the need for support and relapse prevention through protracted withdrawal, which can sometimes last many months.
Figure 1: General substance withdrawal management pathway

Person seeks assistance and is screened by:
- General Practitioner/PHO
- NGO/DHB addiction service
- Corrections
- WINZ
- Community/iwi service
- NGO/DHB mental health service
- ACC
- CYFs

Does the person have: confusion, mood, psychosis or anxiety symptoms not explained by acute withdrawal?
- Yes
  - Mental health assessment
- No
  - Does the person have mild withdrawal symptoms:
    - anxiety
    - agitation
    - restlessness
    - irritability
    - sleep problems
  - Yes
    - Self managed or supported withdrawal
  - No
    - Does the person have good supports?
    - Yes
      - Refer to specialist service for assessment and withdrawal management.*
    - No
      - Are there concerns for safety of the person or others?
      - Yes
        - Hospital /Inpatient admission
      - No
        - Does the person have co-existing mental or physical health problems?
        - Yes
          - Urgently refer to GP and or ED for medical assessment
        - No
          - Follow-up treatment as needed

* See Substance Withdrawal Management Guidelines for medical and nursing practitioners in primary health, specialist addiction, custodial and general hospital settings. (MatuaRaki 2011a)
Risks of stopping substance use

The extent and level of risk is largely dependent on what substance or substances the person has been using and pre-existing factors.

Table 1: Specific serious withdrawal related risks

<table>
<thead>
<tr>
<th>Severity</th>
<th>Common</th>
<th>Less Common</th>
<th>GET URGENT MEDICAL HELP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>restlessness and agitation</td>
<td>low mood and suicidal thoughts and behaviour</td>
<td>dehydration due to nausea, vomiting</td>
</tr>
<tr>
<td></td>
<td>irritability and anger</td>
<td>co-existing physical health problems get worse</td>
<td>hallucinations</td>
</tr>
<tr>
<td></td>
<td>anxiety and panic attacks</td>
<td>co-existing mental health problems get worse</td>
<td>delusions and psychosis</td>
</tr>
<tr>
<td></td>
<td>disturbed sleep</td>
<td>aggression and violence</td>
<td>seizures</td>
</tr>
<tr>
<td></td>
<td>intense dreams, nightmares, insomnia</td>
<td>changes in heart rate</td>
<td>confusion and disorientation</td>
</tr>
<tr>
<td></td>
<td>poor concentration and memory problems</td>
<td>high blood pressure</td>
<td>brain damage</td>
</tr>
<tr>
<td></td>
<td>cravings</td>
<td>no appetite (anorexia)</td>
<td>death</td>
</tr>
</tbody>
</table>

Generally acute substance withdrawal is not life threatening or physically risky unless the person has been using alcohol, benzodiazepines, gamma-hydroxybutyrate (GHB) and/or inhalants heavily and regularly over a prolonged period of time and/or has a history of previous severe withdrawal. The seriousness of the risks involved with withdrawal from these substances indicates a greater need for careful substance specific risk assessment and the involvement of specialist addiction services and/or medical providers.

Suddenly stopping alcohol use may trigger:
- nausea and vomiting
- dehydration
- seizures
- hallucinations
- heart problems
- death

Stopping benzodiazepine use may trigger:
- panic attacks
- hallucinations
- seizures
- confusion
- death
Stopping GHB use may trigger:
› nausea and vomiting
› seizures
› hallucinations
› muscle and kidney damage
› heart problems
› death

Inhalant withdrawal is poorly understood but it appears that for some people stopping use of inhalants may trigger:
› nausea
› confusion
› hallucinations
› seizures

**Delirium Tremens (DTs)**

In the past the death rate from untreated severe alcohol withdrawal and Delirium Tremens was as high as 20%. With early recognition and improved treatment the death rate from DTs has reduced to approximately 1-5%.

http://emedicine.medscape.com/article/819502-overview#a0199

The signs of DTs include:
› agitation
› confusion
› disorientation
› hallucinations
› fever
› heavy sweating
› high blood pressure
› changes in heart rate

DTs is a medical emergency and once it is recognised that a person is in severe alcohol withdrawal and may have, or is at risk of, DTs it is important that they are admitted to hospital as rapidly as possible.

While the term Delirium Tremens is used specifically to describe severe alcohol withdrawal, severe GHB, benzodiazepine and inhalant withdrawal symptoms closely resemble DTs. Failing to treat or inadequately treating GHB, benzodiazepine or inhalant withdrawal is likely to have similar risks to not treating alcohol withdrawal appropriately.

Paradoxically practitioners may need to advise people who have been using substances heavily and regularly to continue to use and to not suddenly stop use in order to avoid the risks associated with acute withdrawal. This is particularly likely to be required when it is impossible to provide immediate specialist or medical care, or access to
medical care is limited by geographical isolation or local circumstances. Withdrawal management planning needs to take into account the potential need for medical support to be available at very short notice in case severe withdrawal symptoms such as DTs emerge. Care needs to be taken when providing this advice to people who have come for help and could feel they are being fobbed off and their needs ignored by being told to keep drinking or using.

Appearing to be intoxicated and/or regularly presenting intoxicated at a service are not necessarily indicators of the risk of withdrawal symptoms emerging on stopping use. Some physical and mental health conditions and prescription medication use may also present with an appearance of apparent substance intoxication. These include: head injuries; low blood sugar; seizure disorders; multiple sclerosis and medications such as some anti psychotics.
Recognising substance use and withdrawal symptoms

Alcohol

Alcohol is used as a general term to describe substances containing ethanol. Alcohol stimulates neurotransmission of serotonin and acetylcholine; enhances the action of some GABA receptors and also reduces the responsiveness of some glutamate receptors.

Current national safer drinking guidelines recommend men should consume no more than five standard drinks and women no more than four standard drinks on any one occasion to reduce the risk of injury and harm. The guidelines also recommend that men consume no more than fifteen standard drinks in a week and three standard drinks on any one day and women no more than ten standard drinks in a week and two standard drinks on any one day to avoid long term health risks.

Since 2007 methylated spirits available in New Zealand shops has not contained methanol and therefore use of methylated spirits should be treated like any other use of alcohol.

Signs of recent alcohol use

› strong smell of alcohol on breath or sweat
› slurred speech
› repetitive conversation (perseveration)
› repetitive eye movements (nystagmus)
› flushed skin
› reactive behaviour
› short term memory loss
› disinhibition (being impulsive and not behaving in a generally accepted way)
› poor coordination
Table 2: Specific alcohol withdrawal symptoms that indicate a need for medical consultation

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILD</td>
<td>Tends to follow drinking less than 8 standard drinks a day</td>
</tr>
<tr>
<td></td>
<td>&gt; restlessness</td>
</tr>
<tr>
<td></td>
<td>&gt; irritability</td>
</tr>
<tr>
<td></td>
<td>&gt; anxiety</td>
</tr>
<tr>
<td></td>
<td>&gt; agitation</td>
</tr>
<tr>
<td></td>
<td>&gt; disturbed sleep</td>
</tr>
<tr>
<td></td>
<td>&gt; intense dreams, nightmares</td>
</tr>
<tr>
<td></td>
<td>&gt; cravings</td>
</tr>
<tr>
<td>MODERATE</td>
<td>Tends to follow drinking between 8 and 15 standard drinks a day</td>
</tr>
<tr>
<td></td>
<td>&gt; poor concentration</td>
</tr>
<tr>
<td></td>
<td>&gt; poor memory and judgment</td>
</tr>
<tr>
<td></td>
<td>&gt; sensitive to sound, light and touch</td>
</tr>
<tr>
<td></td>
<td>&gt; shakes (tremor)</td>
</tr>
<tr>
<td></td>
<td>&gt; faster heart rate</td>
</tr>
<tr>
<td></td>
<td>&gt; high blood pressure</td>
</tr>
<tr>
<td></td>
<td>&gt; no appetite (anorexia)</td>
</tr>
<tr>
<td></td>
<td>&gt; nausea, vomiting</td>
</tr>
<tr>
<td>SEVERE</td>
<td>Tends to follow drinking more than 15 standard drinks a day</td>
</tr>
<tr>
<td></td>
<td>&gt; heavy sweating</td>
</tr>
<tr>
<td></td>
<td>&gt; fever (hyperthermia)</td>
</tr>
<tr>
<td></td>
<td>&gt; hallucinations e.g. electric fleas (formication)</td>
</tr>
<tr>
<td></td>
<td>&gt; delusions</td>
</tr>
<tr>
<td></td>
<td>&gt; seizures</td>
</tr>
<tr>
<td></td>
<td>&gt; strange eye movements</td>
</tr>
<tr>
<td></td>
<td>&gt; confusion</td>
</tr>
<tr>
<td></td>
<td>&gt; disorientation</td>
</tr>
<tr>
<td></td>
<td>&gt; loss of consciousness</td>
</tr>
</tbody>
</table>

Figure 2: Progress of acute alcohol withdrawal

Amphetamine-type stimulants (ATS) *

Amphetamine-type stimulants is used as a term to cover stimulant substances including amphetamine; dexamphetamine; methamphetamine; methylphenidate (ritalin); methylenedioxymethamphetamine (MDMA or ecstasy); methylenedioxymphetamine (MDA); piperazines (BZP, TFMPP, etc); methylmethcathinone (mephedrone) and numerous other substances chemically related to amphetamine. ATS are central nervous system stimulants that appear to be similar to the neurotransmitters dopamine, noradrenaline and serotonin. ATS appear to act by stimulating the release of these neurotransmitters and blocking their re-uptake back into neurons.

* For more information about ATS please refer to: Interventions and Treatment for Problematic Use of Methamphetamine and Other Amphetamine-Type Stimulants (ATS). (Matua Raki, 2010).

Signs of amphetamine-type stimulant use

› increased confidence
› restlessness
› agitation (fidgety) and repetitive movements
› rapid and tangential speech
› moving around or pacing
› sweaty palms
› scabs or sores on skin
› large dark pupils that react slowly to light
› clenched jaw and or grinding teeth (bruxism)
› edgy and alert to any possible source of threat
› paranoia

Table 3: Specific ATS withdrawal symptoms

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>MILD</th>
<th>MODERATE</th>
<th>SEVERE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>› sleeping for up to three days</td>
<td>› mood swings</td>
<td>› depression</td>
</tr>
<tr>
<td></td>
<td>› tired</td>
<td>› cravings</td>
<td>› paranoid thoughts and behaviours</td>
</tr>
<tr>
<td></td>
<td>› restless</td>
<td>› anxiety</td>
<td>› hallucinations</td>
</tr>
<tr>
<td></td>
<td>› sleep problems</td>
<td>› not enjoying what used to enjoy</td>
<td>› psychosis</td>
</tr>
<tr>
<td></td>
<td>› low energy</td>
<td>› poor concentration and memory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>› agitation</td>
<td>› irritability, reactivity or anger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>› low mood</td>
<td>› diarrhoea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>› aches and pains</td>
<td></td>
</tr>
</tbody>
</table>

Substance Withdrawal Management Guidelines
Benzodiazepines

Benzodiazepines are central nervous system depressants used as medication for treatment of insomnia, agitation, seizures and anxiety. Benzodiazepines enhance the effect of the GABA neurotransmitter. Common trade names of benzodiazepines include valium; rivotril; serepax; mogadon; xanax; ativan; normison; halcyon and rohypnol. Use at greater than prescribed levels may result in intoxication similar to the effects of alcohol. People using benzodiazepines regularly should be advised not to stop using them without specialist support.

Signs of benzodiazepine use
› disinhibition
› loss of balance, stumbling
› slurred speech and drooling
› repetitive eye movements
› dropping off to sleep unless stimulated

Table 4: Specific benzodiazepine withdrawal symptoms

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>MILD</th>
<th>MODERATE (Consult with a medical specialist)</th>
<th>SEVERE (Get urgent medical help)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>anxiety</td>
<td>headaches</td>
<td>tinnitus (ringing in ears)</td>
</tr>
<tr>
<td></td>
<td>disturbed sleep</td>
<td>blurred vision</td>
<td>confusion</td>
</tr>
<tr>
<td></td>
<td>restlessness</td>
<td>fear of going outside</td>
<td>delusions</td>
</tr>
<tr>
<td></td>
<td>agitation</td>
<td>panic attacks</td>
<td>paranoia</td>
</tr>
<tr>
<td></td>
<td>irritability</td>
<td>feelings of unreality</td>
<td>hallucinations</td>
</tr>
<tr>
<td></td>
<td>craving</td>
<td>nausea</td>
<td>seizures</td>
</tr>
<tr>
<td></td>
<td>poor memory and concentration</td>
<td>tiredness</td>
<td>loss of consciousness</td>
</tr>
<tr>
<td></td>
<td>low mood</td>
<td>thumping heart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>muscle aches</td>
<td>menstrual changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>itching</td>
<td></td>
</tr>
</tbody>
</table>


Cannabis

Cannabis is used as a term to include all parts of the cannabis sativa and indica plants, including the leaf, heads (flowering tops), hashish and hash oil. Active ingredients in cannabis include delta-9 tetra-hydrocannabinol (THC) and cannabidiol (CBD). THC is thought to exert its effect by locking onto cannabinoid receptors which inhibit the transmission of neurotransmitters, including GABA, which in turn means more dopamine is released. Synthetic cannabinoids are also available and have similar effects to natural cannabinoids. Some people experience very few or mild symptoms in withdrawal and others can experience a severe reaction to stopping use.

Signs of cannabis use

› bloodshot or heavy-lidded eyes
› strong smell of cannabis on clothes and hair
› distractibility
› restlessness
› poor concentration
› irrelevant conversation
› paranoid thoughts and behaviour
› smirking
Table 5: Specific cannabis withdrawal symptoms

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MILD</strong></td>
<td>anxiety, irritability, restlessness, nervousness, agitation</td>
</tr>
<tr>
<td><strong>MODERATE</strong></td>
<td>lack of ability to concentrate, low mood, sleep problems, nausea, lack of appetite, craving</td>
</tr>
<tr>
<td><strong>SEVERE</strong></td>
<td>stomach pain, nightmares or intense dreams, anger, suicidal thoughts, headaches, vomiting, heavy sweating, chills</td>
</tr>
</tbody>
</table>

Figure 4: Progress of acute cannabis withdrawal

Symptoms and duration of cannabis withdrawal. Reproduced and used with permission of NSW Department of Health (2008a).
Gamma-hydroxybutyrate (GHB)

Gamma-hydroxybutyrate, is used as a general term to include GHB and the related chemicals 1,4 butanediol (1,4-BD) and gamma-butyrolactone (GBL). When 1,4-BD and GBL are consumed they are naturally converted into GHB in the body. GHB is naturally present in the brain and acts as an inhibitory neurotransmitter and anaesthetic. GHB is believed to possess partial agonist activity at GABA receptors and may also convert to GABA. GHB also has effects on dopamine, acetylcholine, serotonin, glutamate and opioid neurotransmission. Synthetic forms of GHB, 1,4-BD and GBL have been used as anaesthetics and sedatives; for muscle building and, more recently, to get intoxicated. The effects of low doses of GHB are very similar to some of the effects of alcohol and MDMA in terms of disinhibition and feeling close to other people.

Signs of GHB use

› drowsiness
› disinhibition
› nausea
› muscle spasms
› impaired movements
› impaired speech

Table 6: Specific GHB withdrawal symptoms

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILD &lt;br&gt; Consult with a medical specialist</td>
<td>anxiety &lt;br&gt; sweating &lt;br&gt; restlessness &lt;br&gt; disturbed sleep</td>
</tr>
<tr>
<td>MODERATE</td>
<td>tremor &lt;br&gt; nausea &lt;br&gt; vomiting &lt;br&gt; stomach cramps &lt;br&gt; diarrhoea</td>
</tr>
<tr>
<td>SEVERE &lt;br&gt; GET URGENT MEDICAL HELP</td>
<td>irregular heart beat &lt;br&gt; high blood pressure &lt;br&gt; muscle weakness &lt;br&gt; hallucinations &lt;br&gt; delusions or paranoia &lt;br&gt; psychosis &lt;br&gt; delirium &lt;br&gt; seizures</td>
</tr>
</tbody>
</table>
Inhalants

The term inhalant is used to refer to the wide range of substances which give off fumes that can be inhaled for psychoactive effects. This includes aerosols, LPG, butane, petrol, thinners, glue, nitrous oxide and dry cleaning fluids. Inhalants generally appear to inhibit one glutamate receptor (NMDA) and activate serotonin and GABA receptors. The effects of inhalants are similar to the effects of alcohol and in higher doses some can also cause hallucinations and delusions.

Signs of inhalant use

› strong chemical smell about clothes and hair
› disinhibition
› slurred speech
› discoloured lips or fingers
› memory loss
› uncoordinated movements
› dizziness
› double vision
› confusion

Table 7: Specific inhalant withdrawal symptoms

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>MILD</th>
<th>MODERATE</th>
<th>SEVERE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>anxiety</td>
<td>chills</td>
<td>irregular heart beat</td>
</tr>
<tr>
<td></td>
<td>sweating</td>
<td>tingling</td>
<td>hallucinations</td>
</tr>
<tr>
<td></td>
<td>restlessness</td>
<td>agitation</td>
<td>delirium</td>
</tr>
<tr>
<td></td>
<td>disturbed sleep</td>
<td>headaches</td>
<td>seizures</td>
</tr>
<tr>
<td></td>
<td>low mood</td>
<td>nausea</td>
<td>stomach pain</td>
</tr>
<tr>
<td></td>
<td>irritability</td>
<td>stomach pain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tremor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Opioids

An opioid is any substance with opiate-like activity that acts as a central nervous system depressant. Opioids inhibit neurotransmitter release by binding to endogenous opioid receptors. The inhibition of GABA by opioid receptor stimulation leads to the release of dopamine.

Opioids is used as a term to include:
› opiates which are ‘naturally’ occurring - opioids that are derived from the juice of the papaver somniferum poppy, e.g. opium, codeine and morphine
› opioids which are ‘semi-synthetic’ - chemical derivatives of morphine e.g. heroin, dihydrocodeine, buprenorphine and oxycodone
› opioids which are fully ‘synthetic’ - pethedine, tramadol and methadone

Signs of opioid use
› pin point pupils
› appearing to fall asleep, ‘on the nod’
› eyes rolling back in head during conversation
› maintaining conversations while eyes closed
› long pauses in conversation with no loss of context
› bland affect
› signs of recent injection in inner elbow, back of hand, forearm, etc, ‘track marks’
› itching and scratching
› burn holes in clothing from dropped cigarettes
### Table 8: Specific opioid withdrawal symptoms

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON</td>
<td>› rhinorrhoea (runny nose and eyes)</td>
</tr>
<tr>
<td></td>
<td>› dilated (big) pupils</td>
</tr>
<tr>
<td></td>
<td>› aches and pains</td>
</tr>
<tr>
<td></td>
<td>› disturbed sleep</td>
</tr>
<tr>
<td></td>
<td>› tiredness</td>
</tr>
<tr>
<td></td>
<td>› excessive yawning</td>
</tr>
<tr>
<td></td>
<td>› sweating</td>
</tr>
<tr>
<td></td>
<td>› craving</td>
</tr>
<tr>
<td></td>
<td>› restlessness</td>
</tr>
<tr>
<td></td>
<td>› diarrhoea</td>
</tr>
<tr>
<td></td>
<td>› nausea and vomiting</td>
</tr>
<tr>
<td></td>
<td>› pilo-erection (hair standing on end, goosebumps)</td>
</tr>
<tr>
<td></td>
<td>› agitation</td>
</tr>
<tr>
<td></td>
<td>› anxiety</td>
</tr>
<tr>
<td>LESS COMMON</td>
<td>› fear</td>
</tr>
<tr>
<td></td>
<td>› irritability</td>
</tr>
<tr>
<td></td>
<td>› anorexia (no appetite)</td>
</tr>
<tr>
<td></td>
<td>› inability to concentrate</td>
</tr>
<tr>
<td></td>
<td>› heavy sweating</td>
</tr>
<tr>
<td></td>
<td>› urinary frequency</td>
</tr>
<tr>
<td></td>
<td>› headaches</td>
</tr>
<tr>
<td></td>
<td>› twitching</td>
</tr>
<tr>
<td></td>
<td>› lacrimation (weeping eyes)</td>
</tr>
<tr>
<td></td>
<td>› muscle cramps</td>
</tr>
<tr>
<td></td>
<td>› low mood</td>
</tr>
<tr>
<td></td>
<td>› itching</td>
</tr>
<tr>
<td></td>
<td>› hot and cold flushes</td>
</tr>
<tr>
<td></td>
<td>› photosensitivity (sensitive to light)</td>
</tr>
<tr>
<td></td>
<td>› high blood pressure</td>
</tr>
</tbody>
</table>

### Figure 5: Progress of acute opioid withdrawal

Symptoms and duration of opioid withdrawal.
Reproduced and used with permission of NSW Department of Health (2008a).
**Nicotine**

Nicotine is the main active ingredient in tobacco and acts as a stimulant on the nervous system. Nicotine mimics the actions of acetylcholine and acts to release dopamine by repeated and protracted stimulation of nicotinic receptors.

Nicotine withdrawal is included here as it is often very difficult for people to manage as it is such a short acting substance and withdrawal is very rapidly felt after last use.

**Signs of tobacco use**

› strong smell of tobacco about clothing and hair  
› smell of tobacco on breath  
› yellow stains on fingers of dominant hand  
› inability to concentrate for extended periods of time without using tobacco  
› stained teeth  
› respiratory (breathing) problems especially when exercising

**Table 9: Nicotine withdrawal**

<table>
<thead>
<tr>
<th>Mild</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>craving</td>
<td>restlessness</td>
<td>frustration</td>
<td>slower heart rate</td>
<td>increased appetite</td>
</tr>
<tr>
<td>More Severe</td>
<td>irritability</td>
<td>anxiety</td>
<td>inability to concentrate</td>
<td>low mood</td>
<td></td>
</tr>
</tbody>
</table>

**Hallucinogens**

Hallucinogens are substances that disrupt the interaction of nerve cells and the neurotransmitter serotonin in the central nervous system. Initial impacts of hallucinogen use are altered perceptions; (vision, touch, time, sound, taste and smell); raised blood pressure and heart rate; poor co-ordination; raised body temperature and rapid and intense changes in mood and emotions. Higher levels of use can result in paranoid thoughts and behaviour with fear and anxiety about what people think or perceive is happening around or to them. What counts as high level of use can vary between individuals as some people, particularly those with a predisposition to developing mental health problems, are very sensitive to the negative effects of hallucinogens. There is no significant evidence of a withdrawal syndrome related to use of hallucinogens.

Included in the hallucinogens are: lysergic acid diethylamide (LSD), psilocybin (magic mushrooms), datura and mescaline (cactus). Some depressants, e.g. ketamine and petrol, and some stimulants, MDMA and MDA, also have hallucinogenic properties.
Signs of lysergic acid diethylamide and psilocybin use
› large dark pupils
› excitement
› distortions of vision, hearing, touch
› misinterpreting what is happening
› distraction
› anxiety
› fear
› paranoid thoughts

Signs of mescaline use
› similar to LSD etc
› nausea
› vomiting
› significant visual distortions

Signs of datura use
› hallucinations
› loss of contact with reality
› clenched jaw
› loss of vision
› dry mouth

Signs of ketamine (Special K) use
› thought disorder
› distortions of sight, hearing, smell, touch and taste
› hallucinations
› anxiety
› agitation
› temporary loss of sight, hearing, touch, smell and taste
Withdrawal management

The purpose of withdrawal management is to ensure the safety of the person, and others, when substance use is stopped or reduced, and where possible to address withdrawal symptoms and to alleviate acute distress. Appropriate withdrawal management planning depends on an accurate assessment of the person:

- patterns of substance use: what type of substance used; how much; how often; how used; how long and last use
- withdrawal risks; risks to self and others; history of withdrawal
- co-existing mental and physical health problems
- support systems: family, whānau and friends
- motivation: goals and resilience
- setting safety
- external sources of stress

Acute withdrawal management can be provided in a wide range of settings including in the person’s own home; primary healthcare settings; respite and social detoxification and withdrawal management services; general hospitals; specialist inpatient detoxification units and police cells and prisons. Many people will stop or reduce substance use by choice with no complications while others will have this imposed upon them through admission to hospital or prison, including home detention. In the latter two situations people may not disclose substance use or may not be aware of the possibility and risks of withdrawal themselves. In many settings people may not disclose substance use because of fear of stigmatisation and or legal consequences. To provide safer, appropriate and timely care workers and practitioners across a range of disciplines need to be able to recognise the withdrawal features of a range of substances and tailor responses accordingly.

First presentation

When a person presents to any service requesting help, or is struggling with stopping using a substance or substances, the first step is to identify the substances used and assess immediate risk, i.e. does the person have current withdrawal symptoms and what risks are associated with them. An assessment will provide the information needed to develop a treatment plan that suits the needs and situation of that person, including a plan for withdrawal management if needed.

Brief assessment

When the person is intoxicated or in acute withdrawal, or where assessment is not the core business of the service provider, it is inappropriate to carry out a full comprehensive assessment. However effort should be made to identify:

- recent substance(s) used and how used
- last use
- current possible withdrawal symptoms
Current co-existing problems
Current risks to self and/or others and safety

Comprehensive assessment

If the person is not at immediate risk and is not intoxicated, addiction and mental health services should carry out a comprehensive assessment. Other service providers should assess the person as far as possible within their competence.

A comprehensive assessment generally includes details of:
- Presenting issues
- What the person identifies as problematic, if anything, about their substance use and their goals for treatment
- A detailed substance use history and patterns of substance use over time
- Current, past three month, substance use including frequency, amounts, how used and last use
- Impact of substance use and risk taking behaviour
- Evidence of withdrawal, historical and current
- Gambling history
- Developmental history, family and whānau background and relationships
- Parenting responsibilities
- Current living circumstances
- Family and whānau substance use, physical and mental health histories
- Cultural assessment and formulation, social connectedness and needs
- Education and employment history
- History of physical, emotional and psychological trauma
- Physical health history and current issues and medication, noting any traumatic brain injuries (TBI), blood borne virus history and risks and results of cognitive screening
- Mental health history with current mental health status and any medication
- Forensic history and current or pending justice involvement
- Risk assessment: self harm and harm to others, including safety of children

On the basis of the assessment the practitioner carrying out the assessment, possibly in consultation with others, should be able to develop:
- Provisional diagnoses
- A formulation of issues
- Clear treatment goals
- A negotiated treatment or management plan

For a more detailed description of a model of assessment refer to Matua Rakī (2011) and Todd (2010).
Assessing risk

In the context of acute withdrawal management it is important to assess the risk to the person and or others, e.g. dependants, of supporting the person through the withdrawal process in their own home. While risk assessment is an integral part of assessment and ongoing intervention and treatment there are risks specific to withdrawal to the person and or others (see Table 1). The great majority of people going through withdrawal can be supported through the process, with or without medication, in their own home and remain in their own community. The decision to refer the person to a specialist addiction service; social detoxification facility or a hospital depends very much on the outcome of the risk assessment and the degree of support the person would have available to them in the community. See Figure 1 for overview of withdrawal management pathways.

Driving and using machinery

Where withdrawal management is carried out in the community the issue of safety to drive and operate machinery must be addressed with the person. People need to be advised that the physical and or psychological effects of substance withdrawal may make it unsafe for them to drive. Withdrawal effects may also make it unsafe to use machinery that requires sustained concentration and the ability to react quickly. Where people are prescribed medication as part of withdrawal management they should be encouraged not to drive a vehicle or operate heavy machinery at all while on medication. In extreme situations it may be necessary to inform the Police or New Zealand Transport Agency of the risks to the community of the person driving. The person planning a managed withdrawal should be informed of these possible outcomes before starting the process.

Additional assessments

Specialist addiction services may also carry out a range of physical examinations to assist the assessment and treatment planning process. These could include:

- breathalysing the person for recent alcohol use and current levels
- saliva testing to screen for recent substance use
- urine drug screening (UDS)
- plasma blood levels of substances
- blood tests screening for physical impact of substance use (see Appendix 1)
- testing for blood borne viruses
  - Hepatitis B (HBV)
  - Hepatitis C (HCV)
  - Human Immunodeficiency Virus (HIV)
- taking blood pressure
- taking pulse
- checking for injection sites
- physical examination
- neuropsychological or cognitive screening
Urine drug screens (UDS)

Urine drug screens are used in community settings for a variety of purposes including occupational safety and monitoring of substance use or non-use. In the context of withdrawal management UDS are used to confirm recent substance use prior to and during withdrawal management. This is especially important where medication is prescribed that could contribute to an overdose if substances with similar modes of action, e.g. central nervous system depressants, are used at the same time or the potential for serotonin syndrome to develop exists. UDS also provide useful feedback to people as they go through withdrawal and are able to see no evidence of substance use or, as in the case of cannabis, reducing levels in their urine of substance metabolites.

Self reported substance use is usually a more reliable measure of current or recent substance use. Limits to UDS include technical limitations as all test procedures produce both false positive results (when a substance shows up despite not being used) and false negative results (when a substance does not show up despite being used). When people could have negative consequences from having a positive UDS it is also relatively straightforward to provide another person’s urine sample or add an adulterant to their urine to mask substance use.

General withdrawal management principles

In work environments where it is likely that workers and practitioners will come face to face with people in acute withdrawal or requesting help to manage withdrawal symptoms it helps if practitioners feel confident to deal with people in acute withdrawal. Knowledge and training about withdrawal processes; how to manage withdrawal and potential risks can contribute to improved safety and outcomes for the person in withdrawal, the worker and the service. If workers feel out of their depth, and are not confident that they can manage the situation, then they are better to call in a more experienced colleague and/or contact a specialist addiction service.

To improve the chances of a successful and safe withdrawal it is helpful for services that may become involved in supporting people in withdrawal to:

› quickly identify one key case worker/manager when it is identified someone is in or planning withdrawal
› identify probable and possible withdrawal symptoms and risks associated with the substance or substances the person is stopping or reducing use of
› where significant risks are identified, involve and/or refer to a specialist addiction service and/or seek medical support
› keep colleagues and support staff informed about what behaviours and symptoms to expect through the withdrawal process
› formulate a clear back up plan if problems emerge
› address social and health issues that could be causing distress, pain or potentially require urgent treatment
› support people who choose to use safe complementary treatments to relieve withdrawal symptoms, including Rongoā Māori; massage; multivitamins and natural alternatives
remain aware that people in withdrawal can be impulsive and irritable and can have extreme mood swings
involves mental health services if marked anxiety, depression or psychosis emerge as problems

The case worker/manager who is identified by a service to work with the person in withdrawal can help reduce the stresses associated with withdrawal by:

keeping the person informed about what to expect through the withdrawal process
regularly reassuring them, allaying concerns about acute symptom severity and duration
discussing the back-up plan if problems emerge
keeping partners, family and whânau informed of the withdrawal process; how to help; who they can talk to if needed and what to expect
encouraging and providing daily feedback on progress
avoiding panic or reacting in a challenging manner if person is impulsive or irritable
remembering that people in withdrawal often have concentration and memory problems and repeating information as often as necessary
monitoring mood states; reality orientation and thoughts of suicide closely
providing advice about multivitamin use and the need to develop and maintain healthy eating patterns after a probable poor diet while using substances problematically
encouraging and enabling the use of B vitamins, especially vitamin B1, for people who have been using alcohol, GHB and inhalants
providing advice about coping skills and strategies such as relaxation techniques, distraction and exercise
giving people a copy of Managing Your Own Withdrawal (Matua Raki, 2012) for practical withdrawal management advice and to share with family and whânau

Services likely to deal with people who may be intoxicated or in withdrawal may want to consider:

setting up a quiet uncluttered space with comfortable chairs
having basic items such as sick bowls, cloths and towels close at hand
reducing the potential that objects in the immediate environment could be used to self harm or as weapons
having an established procedure which will not escalate risk and that workers can use to alert colleagues if the situation has become unsafe
having personal/duress alarms available
establishing formal arrangements with local specialist addiction services; Emergency Departments; acute mental health services and Police to improve responsiveness in crises
having staff trained in sensory modulation techniques (see www.tepou.co.nz for more information)
Tips to assist communication with people in acute withdrawal

When dealing with people that you know or suspect are in withdrawal:
› talk with them in a steady, calm and quiet manner
› listen carefully and ask for clarification if you need it
› make sure they can see you before approaching them
› avoid humour and jokes
› explain what you are doing, and why, in short simple statements
› gently orient the person if they appear disoriented in time or place
› avoid rapid movements or sudden moves towards the person, giving them plenty of space and room to move
› keep an open and relaxed posture with hands clearly visible
› pay attention to eye contact, too much can be threatening and too little seem offhand or not interested
› see the person with another worker if they have a known history of aggression and violence
› take nothing personally
› don’t expect to be able to engage the person in anything complex like an assessment or counselling
› where space is available keep people in a simple, uncluttered and well lit but not bright environment
› avoid leaving people alone for any length of time
› know when to walk away and call for help

Co-existing problems

The presence of co-existing problems can make the withdrawal process more distressing and risky for people who stop or reduce substance use. The impact of withdrawal on co-existing problems is not predictable and could include a worsening of mental health problems such as depression and/or anxiety; a worsening of pain issues; explosive anger; self harm and suicidal thoughts and behaviour. Practitioners will need to be aware of potential problems and adapt treatment to manage significant risks and possible consequences beforehand.

Where people are prescribed medication for co-existing problems, particular care needs to be taken as substances and medication for withdrawal management may inhibit or enhance the effects other medication (see Appendix 3 in Todd, 2010, for a guide to some known drug-medication interactions). Some foodstuffs and complementary or natural therapies can also inhibit or enhance the effects of some medication. Practitioners need to remain aware that interactions between substances and/or medications are possible so that if practitioners observe, or people report, unexpected effects these can be treated seriously and discussed with the person and/or their health provider.

Ongoing monitoring of co-existing problems is necessary through both the acute and protracted phases of withdrawal to reduce risks and enhance likelihood of a successful withdrawal process.
Co-existing problems of particular concern during the withdrawal process include:

› depression
› bi-polar affective disorder
› anxiety
› psychosis
› borderline personality disorder
› conduct disorder
› anti social personality disorder
› neurological disorders including Parkinson’s; Multiple Sclerosis or history of stroke
› brain injuries
› chronic pain
› malnutrition
› disorders of the digestive system including stomach and colon
› infection
› liver disorders
› heart diseases
› epilepsy
› lung disorders

It is possible that ongoing substance use has masked a co-existing problem that could emerge during acute or protracted withdrawal. Practitioners need to be alert to the possible appearance of co-existing problems and support the person to seek appropriate treatment, including referral to specialist services, if needed.

Special populations

Older people

It is important to be aware that older people metabolise substances and medications less effectively and drug accumulation can be common with regular use. This can contribute to greater levels of both intoxication and physical damage at relatively low levels of use. Because of the less effective metabolism of medication older people can also potentially experience benzodiazepine toxicity during withdrawal management using diazepam. When supporting withdrawal management in older people this risk requires close monitoring. If it becomes apparent that the person is adversely affected by their medication then it is important to contact the prescriber and/or a specialist addiction service as soon as possible.

Older people are also more likely to have co-existing physical health problems, e.g. high blood pressure, and these can add to withdrawal risks and extend the length and intensity of both acute and protracted withdrawal. Some health problems can be a direct consequence of the length of time they have been using substances, e.g. liver impairment.
Young people

Most young people going through substance withdrawal can be safely managed in the community unless there are significant concerns relating to their mental health or other safety issues. Be aware that young people are developmentally more likely to be impulsive and reactive and the psychological impact of withdrawal may trigger depression and/or suicidality. If it becomes apparent that the young person’s mood is very low it is important to contact a specialist mental health or addiction service as soon as possible. (See Christie and Temperton, 2008, for a specific guide to adolescent withdrawal management)

Pregnant women

Pregnant women may trigger withdrawal when they realise they are pregnant and suddenly stop using substances. Abruptly stopping substance use, especially central nervous system depressants, during pregnancy can carry significant risks for the baby. This is particularly true in the first and third trimesters of pregnancy. Risks include infant mortality, miscarriages and low birth weight. Referral to a specialist addiction service for planned withdrawal management is recommended for the safety of both mother and foetus.

Hospital, secure facilities and prison inmates

Admission into a hospital, a secure facility or imprisonment with limited access to substances can trigger involuntary withdrawal. The combination of illness or loss of freedom and substance withdrawal can add to the risk of mood disorders and the risk of self harm and suicidality. At times it can be difficult to distinguish between withdrawal and some mental health disorders and careful assessment and monitoring is needed to decide on an appropriate treatment plan.

Specialist withdrawal management settings

People who need withdrawal management supported by a specialist addiction service are likely to have greater needs than other substance users when going through withdrawal. The need for specialist support and/or a safe environment to go through withdrawal indicates a severe substance use disorder and/or complicating factors such as co-existing problems. This includes mental health problems; other substance use; physical health problems or risks to the individual or community.

Community/home based withdrawal management

Many addiction services offer a community-based home detoxification and withdrawal management service. This involves addiction practitioners visiting people in their own home during the acute withdrawal period to provide supervision; encouragement; support and medication if needed. Along with an assessment of specific withdrawal risks addiction practitioners also assess the person’s supports; their physical environment and general safety. Issues that might possibly make it unsafe to carry out a managed withdrawal in the community include living with or near other people who are using substances; living alone; living with people who might be vulnerable; living
somewhere too noisy or busy; not having access to a telephone in case of emergency or living a long way from a main centre. When acute withdrawal management that involves medication is carried out in the community, detoxification or withdrawal management nurses visit people in their own homes as often as needed. Addiction medicine specialists, physicians or psychiatrists are available for consultation as needed.

Contact your local Community Alcohol and Drug Service for more information.

Social/respite service based withdrawal management

Social or respite detoxification and withdrawal management services are located in the main centres and provide a safe, supervised environment away from community and peer influences. Staff members are available for support and encouragement twenty four hours a day. Nursing and medical staff members are available on call for consultation. Many services also work in collaboration with community withdrawal management services. The Ministry of Health Nationwide Services Framework provides options that allows the funding of respite for people with substance use problems (refer to District Health Board Planning and Funding departments for more detail).

Social detoxification and withdrawal management beds

The Government’s tackling methamphetamine initiative has made beds available in residential treatment services nationally to assist people who are dependent on methamphetamine to have time-out as a one-off opportunity or as a lead-in to residential treatment.

Hospital based withdrawal management

Hospital based detoxification and withdrawal management is appropriate for people with severe problematic dependent substance use and/or co-existing problems. This includes:

› co-existing mental health problems
› other problematic substance use
› co-existing physical health problems
› risks to the individual or community
› a history of seizures and withdrawal complications

Specialist inpatient detoxification units are available in the main centres for planned complex withdrawal management. Urgent and less complex withdrawal management is often carried out in local general hospital and/or acute mental health units.

For a description of medication commonly used in withdrawal management see Appendix 2.

Complementary and alternative therapies for withdrawal management

There is no reliable evidence to support the use of natural alternatives or complementary therapies for use in managing substance withdrawal. However to support withdrawal management some addiction services support the use of:
Useful dietary supplements include:
- B group vitamins, especially high dose B1, B3 and B6
- vitamin C
- zinc
- magnesium

Products helpful for stress reduction, relaxation and sleep assistance include:
- DL-phenylalanine
- valerian
- kava
- Rescue Remedy (a homeopathic remedy)
- natural melatonin

Products potentially helpful for nausea and vomiting include:
- ginger, Nux Vomica or Vomiplex (homeopathic remedies)
- peppermint

Products possibly helpful for joint pain
- calcium
- fish oils
- flax seed oil
- magnesium

Complementary therapies should not be used as an alternative to a planned and managed withdrawal process as the risks of doing so include:
- progression to severe withdrawal
- risk of injury to self and others due to altered mental state
- risk of fluid and mineral loss (dehydration or electrolyte imbalance)
- seizures
- the person having a co-existing illness that remains untreated as it is masked or mimicked by withdrawal
- accidents due to side effects such as hypotension (low blood pressure)
- serotonin syndrome
Rongoā Māori

Some Māori undergoing withdrawal and some kaupapa health services might want to utilise mirimiri (similar to massage); Rongoā (remedies derived from trees, leaves, berries, fruits, bark and moss) and karakia to improve general health and well being, and to relieve distress and withdrawal symptoms. Being supportive of these techniques might help engagement with, and complement the process of, managed withdrawal. Supporting the use of traditional therapies may also help with engaging whānau or family who may wish to support their whānau member through acute and protracted substance withdrawal.

Protracted withdrawal

Protracted withdrawal is when substance specific and some commonly observed signs and symptoms last longer, develop or appear later than acute withdrawal symptoms.

It appears to be a consequence of the reversal of neuroadaptation that has occurred during the time a person has been using a substance or substances. Not every person who has used substances problematically over a long period of time develops protracted withdrawal symptoms but everybody who undertakes supported withdrawal should be considered at risk.

Unmanaged protracted withdrawal is a significant trigger for substance use and can lead to a relapse to problematic substance use. Many people use a different substance to relieve symptoms to avoid a return to earlier patterns of behaviour, e.g. smoking cannabis rather than drinking alcohol. However they can quickly become dependent on that substance so caution should be advised.

Alongside cravings for the substance a common feature of protracted withdrawal from many substances is ‘anhedonia’, or the inability to feel pleasure or enjoy oneself. Research has identified that

...anhedonia appeared to be a symptom of protracted withdrawal that was unrelated to other clinical and psychosocial features.

Pozzi et al. in Centre for Substance Abuse Treatment, 2010

Substance specific long term protracted withdrawal symptoms that can occur at greater or lesser levels of intensity have been identified by people who use or have used substances, practitioners and through research.

Alcohol

- anxiety
- hostility
- irritability
- depression
- moodiness
- fatigue
- disturbed sleep
- difficulties concentrating and thinking
- reduced interest in sex
- physical complaints and pain

May last for up to two years
Opioids
› anxiety
› depression
› sleep disturbances
› fatigue
› itching
› feeling emotionally numb
› feeling down
› irritability
› distractibility
› poor decision making
› impulsivity

May last for several months

Amphetamine-type stimulants
› disturbed sleep
› fatigue
› low mood
› poor decision making
› impulsivity

May last for several months

Cannabis
› sleep difficulties
› strange dreams
› distractibility
› difficulty concentrating
› poor short term memory

May last from weeks to months

Benzodiazepines
› generalised anxiety
› depression
› panic
› short term memory problems

May last for several months to a year

Long term management and support

Managing and supporting people through protracted withdrawal can require a long term commitment on the part of addiction and allied practitioners and their services. With some symptoms of protracted withdrawal possibly lasting for up to two years practitioners may need to be available for support, on an occasional basis at least, for one to two years.
Over time these options to help with symptom management may be of use:

› education and reassurance throughout the process that protracted withdrawal is a reality and that symptoms will resolve in time, remembering to repeat as often as necessary because of memory and concentration problems
› considering the use of complementary therapies to help with sleep and fatigue
› providing people with advice about healthier sleeping habits and avoiding caffeine may help to address disturbed sleep patterns
› supporting and encouraging people to develop regular exercise routines will also help with mood and sleep problems
› referral to a GP or mental health service may be required to assess the need for medication and or specialist treatment where symptoms of low mood and anxiety persist for longer than two months after acute withdrawal
› encouraging the development of set daily living routines and the use of a diary for non routine activities
› screening for co-existing problems such as traumatic brain injuries if cognitive problems with memory and concentration persist
› referral to a specialist addiction service to consider use of specific medication such as naltrexone and disulfiram (antabuse) to help with cravings and to provide a safety net for people committed to abstaining from alcohol:
  – naltrexone is an opioid antagonist that reduces people’s cravings for alcohol and if people do use alcohol while taking it, the amount consumed per occasion tends to be greatly reduced
  – disulfiram is a medication that reduces the ability of the body to process and metabolise alcohol, so much so that if people use alcohol while taking disulfiram they quickly feel physically unwell with flushing, headache, nausea, breathing problems and can feel their heart beating
› discussing and teaching cognitive behavioural strategies that help people to manage cravings, negative thought processes and make safer decisions (see Matua Raki, 2010, for more information)
› discussing and teaching relapse prevention strategies helps people predict and plan for situations that trigger thoughts and feelings about substance use
› encouraging people to explore self help groups such as AA, NA and Rational Recovery and peer support groups, as the experiences of peers will support the message that protracted withdrawal is a normal process that resolves over time

Generally supportive counselling, availability, empathy and positive regard, and not dismissing symptoms as being unrelated to substance use, will help to normalise people’s experiences of protracted withdrawal making the symptoms less likely to trigger a return to problematic substance use.
**Glossary**

**Acetylcholine**

Acetylcholine is a neurotransmitter that functions to slow the heart rate and reduce arousal in the central nervous system. Acetylcholine has also been associated with cognitive functioning such as memory. In the peripheral nervous system acetylcholine stimulates muscles.

**Addiction**

In these guidelines the word addiction is used to preface specialist alcohol and other drug workers, practitioners and clinicians dealing with problematic through to severe dependent substance use. The term addiction is also used as a comprehensive term to cover the range of problems related to misuse of alcohol and other drugs, tobacco and gambling.

**Agonist**

An agonist is a substance/drug/medication/chemical that mimics the effects of naturally occurring neurotransmitters, binding to and stimulating their specific receptor sites in the brain, producing direct effects or enhancing the effects of other neurotransmitters: e.g. morphine binds to the endorphin, or endogenous (naturally occurring) opioid, receptor sites in the brain and stimulates the receptors responsible for producing opioid like effects.

**Antagonist**

An antagonist is a substance/drug/medication/chemical that mimics the chemical structure of naturally occurring neurotransmitters and binds to, but does not stimulate, their receptor sites in the brain, blocking the receptor and the effects of particular neurotransmitters and agonists, e.g. naloxone (narcan) binds to opioid receptor sites and blocks the effects of opioids.

**Co-existing problems (CEP)**

The term co-existing problems is used to describe the presence of complex problems in the same person at the same time. Problems can include substance use; mental health; physical health; interpersonal; cultural and social problems.

**Depressant or Central Nervous System Depressant**

A depressant is a substance that slows down the central nervous system (CNS) and the messages going between the brain and the body. The initial impact on the person is reduced concentration; lack of co-ordination and slower reflexes. With higher levels of intake the central nervous system can 'shut down' which can result in reduced breathing and unconsciousness. The term depressant does not mean that the substance causes depression. Depressant substances include alcohol; benzodiazepines; gamma-
hydroxybutyrate; opioids and inhalants. Cannabis and ketamine both have depressant qualities along with hallucinogenic and stimulant properties.

**Detoxification (Detox)**

In common use detoxification is used as a term to describe the process of flushing toxins (substances) from a person’s body. In an addiction context the term is used to describe the process, and what happens, when a person who has been using a substance or substances heavily and regularly (that is in a moderate to severe dependent use pattern) stops using that substance or substances. The term is often used interchangeably with ‘managed withdrawal’ and withdrawal management.

**Dopamine**

Dopamine is a neurotransmitter that is involved with many functions including behaviour; movement; sleep; mood; memory and learning. High levels of dopamine in the brain have also been associated with feelings of enjoyment and pleasure. As many substances raise the level of dopamine in the brain the pleasure this produces reinforces substance use. Some substances increase the amount of dopamine in the brain by slowing down reuptake after it is released into the synapse; other substances directly trigger the release of more dopamine in the brain.

**DSM IV and V**

The Diagnostic and Statistical Manual of Mental Disorders (DSM) has been developed by the American Psychiatric Association to provide a consistent framework and language to describe and diagnose mental health problems. DSM V is currently under development and is due for publication in 2013.

**Family and whānau**

Family and whānau has been used throughout the document to incorporate western concepts of family with the wider extended relationships inherent in the Māori concept of whānau.

**Gamma amino butyric acid (GABA)**

Gamma amino butyric acid is a neurotransmitter that has a major role in slowing down the release of neurotransmitters and the generation of electrical signals in neurons. Increased levels of GABA and increased sensitivity of GABA receptors are associated with feeling relaxed and reduced anxiety. Substances that are GABA agonists include alcohol, benzodiazepines and GHB. GABA also controls the release of dopamine and substances that inhibit the action of GABA lead to the release of dopamine.

**Glutamate**

Glutamate is the major neurotransmitter stored in neurons in the brain and when released stimulates specific receptors including NMDA receptors. Glutamate is involved in most aspects of normal brain function including cognition, or how we think; memory and learning.
Neuron

A neuron is a cell in the body that conducts electrical signals and forms part of a circuit of neurons that controls senses and movement. Electrical signals trigger the release of neurotransmitters which are then released into the synaptic cleft or the gap between neurons.

Neuroadaptation

Neuroadaptation to substances occurs when the brain modifies its response to a substance, e.g. an agonist, which is used repeatedly over time. This appears to occur through two main processes:

› When the brain produces less receptor sites for a particular neurotransmitter, due to over supply triggered by substance use, this is called down regulation. When less receptor sites are available for a substance to stimulate via a neurotransmitter the person will become tolerant to the substance and need more and more of it to get the desired effects and possibly need the substance to feel normal.

› When the brain produces more receptors for a neurotransmitter that is inhibited, or slowed down, by a substance this is called up regulation and this leads to sensitivity to the effects of that neurotransmitter. When this occurs the person begins to use the substance to avoid withdrawal symptoms or the over stimulation of those receptors that have been inhibited by the substance.

Neurotransmitter

A neurotransmitter is a chemical that is released by a neuron in the brain to act on the receptor of another neuron in the brain, acting as a messenger telling it to either generate or slow down an electrical signal travelling through the circuit of neurons. Substances can stimulate the release of some neurotransmitters, such as dopamine, and also inhibit the release of other neurotransmitters, such as GABA.

Panic Attacks

A panic attack may occur when a person is suddenly overcome by severe anxiety feelings for no obvious reason. Panic attacks can last for up to 20 minutes but people can be left shaken for much longer afterwards. Symptoms can include;

› racing or thumping heart
› chest pains
› stomach pain
› dizziness or light headedness
› nausea
› difficulty breathing
› tingling or numb fingers
› hot flushes or chills
› shaking
› feeling removed from reality
› fear of dying or general terror
Partial Agonist Antagonist
A substance/drug/medication/chemical that mimics the effects of naturally occurring neurotransmitters, binding to and partially stimulating receptor sites while at the same time blocking the receptor, producing mild effects and blocking any other agonist effects, e.g. buprenorphine will trigger mild opioid effects while blocking the effects of any additional opioids.

Psychosis
Psychosis is defined as a loss of contact with reality which can include:
› false beliefs about what is happening or false beliefs about who one is (delusions)
› feeling, seeing or hearing things that are not there (hallucinations)
› thoughts, as evident in conversation, that jump between unrelated topics (disordered thinking)

Receptor site
A receptor site is the place on a neuron where a neurotransmitter docks and binds to exert its action within the brain, either stimulating the neuron or slowing it down, depending on the neurotransmitter and the function of the receptor. Receptors are a specific shape designed for specific neurotransmitters, similar to a lock and key.

Serotonin
Serotonin is a neurotransmitter that has been identified as being related to feelings of well being. Low levels of serotonin in the brain have been identified as being associated with mood and panic disorders, sensitivity to pain and aggression. High levels of serotonin in the brain can lead to serotonin syndrome.

Serotonin syndrome
Serotonin syndrome occurs when certain medications and/or substances lead to the excessive production of serotonin in the brain. Serotonin syndrome is potentially fatal. Symptoms include agitation; confusion; hallucinations; loss of consciousness; shivering; sweating; high temperature; nausea; diarrhoea; twitching; high blood pressure and racing heart.

SSRI
Selective Serotonin Re uptake Inhibitors are a category of anti-depressant medication widely used to treat depression and anxiety. SSRI's make more serotonin available in the brain by slowing down how quickly it is processed after being released by neurons.
**Stimulant**

A stimulant is a substance that speeds up the central nervous system and the messages going between the brain and the body. The initial impact on the person is increased alertness; increased energy; sexual arousal; reduced appetite and raised blood pressure and heart rate. Higher levels of use can lead to dehydration; overheating and an increased risk of strokes and seizures. Substances that belong to the stimulant category of substances include amphetamine type stimulants including methamphetamine and ecstasy; cocaine; nicotine and caffeine. Cannabis and ketamine also have some mild stimulant properties.

**Synaptic cleft**

A synaptic cleft is the gap between two neurons where neurotransmitters are released before docking with specific receptor sites on another neuron.

**Withdrawal**

Withdrawal is used as a term to describe both the process and the acute and protracted symptoms, physical and psychological, that can accompany the cessation or reduction of use of any substance that has been used regularly over a prolonged period of time.

**Withdrawal management (see Detoxification)**

Withdrawal management is the process of ensuring the safety of a person, and others, when substance use is stopped or reduced, and where possible to address withdrawal symptoms to alleviate acute distress. Withdrawal management also refers to strategies to address protracted withdrawal symptoms that may continue for months after cessation of substance use.
Resources

A glossary of common addiction terminology:  http://www.ncbi.nlm.nih.gov/books/ NBK26352/

For animated description of substance specific effects on neurotransmission:
   http://thebrain.mcgill.ca/flash/i/i_03/i_03_m/i_03_m_par/i_03_m_par.html

An overview of withdrawal syndromes with some specific detail:

Explanation of what common laboratory test procedures are and why they are carried out:
   http://labtestsonline.org/understanding/

For New Zealand youth specific withdrawal management guidelines:

For a description of cognitive behavioural interventions:


### Appendix 1: Common blood tests

<table>
<thead>
<tr>
<th>Test</th>
<th>aka</th>
<th>General description</th>
<th>Why tested for</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFT</td>
<td>liver function test</td>
<td>collection of tests</td>
<td>used to screen for evidence of liver damage or disease (inflammation)</td>
<td>› alcohol is toxic to the liver and can cause permanent damage › hepatitis B and C can also potentially damage the liver</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>GGT</td>
<td>gamma-glutamyl transferase</td>
<td>enzyme found in the liver</td>
<td>elevated levels are associated with heavy use of alcohol and liver disease</td>
<td></td>
</tr>
<tr>
<td>ALT</td>
<td>alanine aminotransferase</td>
<td>enzyme found in the liver</td>
<td>elevated levels are associated with heavy use of alcohol, some medication and liver disease</td>
<td>tends to be higher than AST with hepatitis</td>
</tr>
<tr>
<td>AST</td>
<td>aspartate aminotransferase</td>
<td>enzyme found in the liver</td>
<td>elevated levels are associated with heavy use of alcohol and liver disease</td>
<td>tends to be higher than ALT with heavy alcohol use</td>
</tr>
<tr>
<td>MCV</td>
<td>mean corpuscular volume</td>
<td>measures the size of red blood cells</td>
<td>bigger cells can be related to heavy use of alcohol and associated Vitamin B12 and or folate (Vitamin B9) deficiencies</td>
<td></td>
</tr>
<tr>
<td>CBC</td>
<td>complete blood count</td>
<td>collection of tests</td>
<td>screen for general health conditions including infections, anaemia and Vitamin B12 deficiency</td>
<td></td>
</tr>
<tr>
<td>FBC</td>
<td>full blood count</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Folate</td>
<td>vitamin B9</td>
<td>essential to produce and maintain cells</td>
<td>screen for a deficiency possibly due to heavy alcohol use</td>
<td>alcohol reduces absorption and flushes folate through the kidneys quicker</td>
</tr>
<tr>
<td></td>
<td>folic acid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>cobalamin</td>
<td>essential to maintain healthy nerve cells and red blood cells</td>
<td>screen for a deficiency possibly due to poor diet and or heavy alcohol use</td>
<td>alcohol reduces absorption and flushes vitamin B12 through the kidneys quicker</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Test</td>
<td>aka</td>
<td>General description</td>
<td>Why tested for</td>
<td>Note</td>
</tr>
<tr>
<td>--------------</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Electrolytes</td>
<td>sodium</td>
<td>essential for electrical signals in neurons</td>
<td>levels may be elevated in liver and kidney diseases</td>
<td>levels may also fall due to withdrawal symptoms such as diarrhoea and vomiting and pose a serious health risk</td>
</tr>
<tr>
<td></td>
<td>potassium</td>
<td>necessary for normal muscle and cell function</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>magnesium</td>
<td>necessary for normal muscle and nerve function</td>
<td>levels may be low with heavy use of alcohol</td>
<td></td>
</tr>
<tr>
<td>Urea</td>
<td>blood urea</td>
<td>chemical by product of liver functioning removed from body in urine</td>
<td>▶ low levels are associated with liver disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nitrogen</td>
<td></td>
<td>▶ high levels are suggestive of kidney damage</td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>simple sugar</td>
<td>carbohydrate used as energy by cells</td>
<td>low levels may be associated with malnutrition, heavy alcohol use and or liver disease</td>
<td></td>
</tr>
<tr>
<td>CDT</td>
<td>carbohydrate-deficient transferrin</td>
<td>involved in transport of iron in the blood</td>
<td>elevated levels are associated with heavy alcohol use</td>
<td></td>
</tr>
<tr>
<td>Plasma blood levels</td>
<td>specific substance plasma levels</td>
<td>all substances are transported through the body and brain by blood and can be tested for until metabolised</td>
<td>high plasma levels of a particular substance, or its active metabolites, indicate very recent and or heavy use</td>
<td>used to confirm recent and or risky substance use</td>
</tr>
</tbody>
</table>
## Appendix 2: Medication used in withdrawal management

<table>
<thead>
<tr>
<th>Name</th>
<th>Common trade names</th>
<th>Classification</th>
<th>Used when there is</th>
<th>Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diazepam</strong></td>
<td>Valium, D-Pam, Propam</td>
<td>Tranquilliser, Anticonvulsant, Anxiolytic Benzodiazepine</td>
<td>› risk of seizure&lt;br› reducing benzodiazepines&lt;br› agitation&lt;br› anxiety&lt;br› aggression&lt;br› sustained sleep problems</td>
<td>› alcohol&lt;br› benzodiazepines&lt;br› cannabis&lt;br› ATS&lt;br› GHB&lt;br› opioids</td>
</tr>
<tr>
<td><strong>Clonazepam</strong></td>
<td>Paxam, Rivotril</td>
<td>Sedative-hypnotic, Anticonvulsant, Anxiolytic Benzodiazepine</td>
<td>› risk of seizure&lt;br› liver damage and or impaired metabolism of medication&lt;br› reducing benzodiazepines&lt;br› agitation&lt;br› anxiety&lt;br› aggression&lt;br› sustained sleep problems</td>
<td>› alcohol&lt;br› benzodiazepines&lt;br› cannabis&lt;br› ATS&lt;br› GHB</td>
</tr>
<tr>
<td><strong>Oxazepam</strong></td>
<td>Serepax, Ox-Pam</td>
<td>Sedative-hypnotic, Anticonvulsant, Anxiolytic Benzodiazepine</td>
<td>› risk of seizure&lt;br› liver damage and or impaired metabolism of medication&lt;br› reducing benzodiazepines&lt;br› agitation&lt;br› anxiety&lt;br› aggression&lt;br› sustained sleep problems</td>
<td>› alcohol&lt;br› benzodiazepines&lt;br› cannabis&lt;br› ATS&lt;br› GHB</td>
</tr>
<tr>
<td><strong>Buprenorphine</strong></td>
<td>Suboxone, Temgesic</td>
<td>Opioid-partial agonist antagonist</td>
<td>› reducing opioids&lt;br› opioid substitution treatment</td>
<td>› opioids</td>
</tr>
<tr>
<td><strong>Methadone</strong></td>
<td>Methadone, Biodone</td>
<td>Opioid (agonist)</td>
<td>› reducing opioids&lt;br› opioid substitution treatment</td>
<td>› opioids</td>
</tr>
<tr>
<td><strong>Olanzapine</strong></td>
<td>Zyprexa, Olanzine</td>
<td>Atypical antipsychotic</td>
<td>› anxiety&lt;br› agitation&lt;br› sleep problems&lt;br› psychosis</td>
<td>› ATS&lt;br› benzodiazepines</td>
</tr>
<tr>
<td><strong>Quetiapine</strong></td>
<td>Seroquel, Quetapel</td>
<td>Atypical antipsychotic</td>
<td>› anxiety&lt;br› agitation&lt;br› sleep problems&lt;br› psychosis</td>
<td>› ATS&lt;br› cannabis&lt;br› benzodiazepines</td>
</tr>
<tr>
<td>Name</td>
<td>Common trade names</td>
<td>Classification</td>
<td>Used when there is</td>
<td>Substances</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------</td>
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<td>-------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>Haldol, Serenate</td>
<td>Antipsychotic</td>
<td>anxiety, agitation, sleep problems, psychosis</td>
<td>ATS, alcohol, GHB, benzodiazepines</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>Prozac, Fluox</td>
<td>SSRI Antidepressant</td>
<td>depression, anxiety</td>
<td>ATS, cannabis, benzodiazepines</td>
</tr>
<tr>
<td>Paroxetine</td>
<td>Aropax, Loxamine</td>
<td>SSRI Antidepressant</td>
<td>depression, anxiety</td>
<td>ATS, cannabis, benzodiazepines</td>
</tr>
<tr>
<td>Citalopram</td>
<td>Cipramil, Celapram</td>
<td>SSRI Antidepressant</td>
<td>depression, anxiety</td>
<td>ATS, cannabis, benzodiazepines</td>
</tr>
<tr>
<td>Sertraline</td>
<td>Zoloft</td>
<td>SSRI Antidepressant</td>
<td>depression, anxiety</td>
<td>ATS, cannabis, benzodiazepines</td>
</tr>
<tr>
<td>Amitriptyline</td>
<td>Amitrip</td>
<td>Tricyclic Antidepressant</td>
<td>sleep, pain, depression</td>
<td>benzodiazepines</td>
</tr>
<tr>
<td>Nortriptyline</td>
<td>Norpress</td>
<td>Tricyclic Antidepressant</td>
<td>sleep, pain, depression</td>
<td>nicotine/tobacco, benzodiazepines</td>
</tr>
<tr>
<td>Bupropion</td>
<td>Zyban</td>
<td>Atypical antidepressant</td>
<td>smoking cessation</td>
<td>nicotine/tobacco</td>
</tr>
<tr>
<td>Varenicline</td>
<td>Champix</td>
<td>Nicotine mixed antagonist partial agonist</td>
<td>smoking cessation</td>
<td>nicotine/tobacco</td>
</tr>
<tr>
<td>Sodium Valproate</td>
<td>Epilim</td>
<td>Anticonvulsant, Antipsychotic</td>
<td>to reduce risk of seizure, mania</td>
<td>alcohol, cannabis</td>
</tr>
<tr>
<td>Phenobarbitone</td>
<td>Phenobarb-</td>
<td>Sedative-hypnotic, Anticonvulsant Barbirurate</td>
<td>agitation</td>
<td>GHB</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>Lopresor, Betaloc</td>
<td>Anti hypertensive Beta blocker</td>
<td>palpitations, muscle tremors, muscle jerks</td>
<td>benzodiazepines</td>
</tr>
<tr>
<td>Metoclopramide</td>
<td>Maxolon, Metamide</td>
<td>Antiemetic</td>
<td>nausea, vomiting</td>
<td>opioids</td>
</tr>
<tr>
<td>Loperamide</td>
<td>Imodium, Diamide, Nodia</td>
<td>Antidiarrheal</td>
<td>diarrhoea</td>
<td>opioids</td>
</tr>
<tr>
<td>Clonidine</td>
<td>Catapress</td>
<td>Anti hypertensive</td>
<td>cramps, restlessness, agitation</td>
<td>opioids</td>
</tr>
<tr>
<td>Name</td>
<td>Common trade names</td>
<td>Classification</td>
<td>Used when there is</td>
<td>Substances</td>
</tr>
<tr>
<td>--------------</td>
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<td>------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Scopolamine</td>
<td>Buscopan</td>
<td>Antiemetic, Antispasmodic</td>
<td>› stomach cramps</td>
<td>› opioids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>› nausea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>› vomiting</td>
<td></td>
</tr>
<tr>
<td>Baclofen</td>
<td>Pacifen</td>
<td>Antispasmodic</td>
<td>› stomach cramps</td>
<td>› opioids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>› nausea</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>› vomiting</td>
<td></td>
</tr>
<tr>
<td>Gabapentin</td>
<td>Neurontin</td>
<td>Anticonvulsant,</td>
<td>› neuropathic (nerve)</td>
<td>› opioids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>› pain</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>› peripheral neuropathy</td>
<td>› alcohol</td>
</tr>
<tr>
<td>Paracetemol</td>
<td>Panadol</td>
<td>Analgesic</td>
<td>› aches</td>
<td>› opioids</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>› pain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>› headaches</td>
<td>› cannabis</td>
</tr>
<tr>
<td>Ibuprofen,</td>
<td>Nurofen, Voltaren</td>
<td>Non steroid</td>
<td>› aches</td>
<td>› opioids</td>
</tr>
<tr>
<td>Diclofenac</td>
<td></td>
<td>anti-inflammatory</td>
<td>› pain</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>› headaches</td>
<td>› cannabis</td>
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<tr>
<td>Zopiclone</td>
<td>Imovane</td>
<td>Hypnotic</td>
<td>› sleep problems</td>
<td>› benzodiazepines</td>
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<td></td>
<td></td>
<td></td>
<td>› cannabis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>› ATS</td>
</tr>
<tr>
<td>Thiamine</td>
<td>Vitamin B1</td>
<td>Vitamin</td>
<td>› reduce risk of Wernicke's</td>
<td>› alcohol</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>encephalopathy</td>
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<td></td>
<td></td>
<td>› GBH</td>
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<tr>
<td>Melatonin</td>
<td>Circadin</td>
<td>Natural hormone</td>
<td>› sleep problems</td>
<td>› benzodiazepines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>› cannabis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>› ATS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>› Nicotine/tobacco</td>
</tr>
<tr>
<td>Nicotine (NRT)</td>
<td>Habitrol</td>
<td>Nicotine (agonist)</td>
<td>› nicotine replacement</td>
<td>› nicotine/tobacco</td>
</tr>
<tr>
<td></td>
<td>› Transdermal</td>
<td></td>
<td>› smoking cessation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>patches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>› Lozenges</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>› Chewing gum</td>
<td></td>
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</tr>
</tbody>
</table>
Appendix 3: Withdrawal Management Reference Group

Many thanks to the contributions and expertise of the members of the Reference Group:

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