

Annex 3

Information of list of drugs abused in Hong Kong

Introduction

This section will highlight some of the important physical and neuro-psychological effects of drugs that are abused in Hong Kong. The first part includes classification of individual drugs. The second part describes the effects of those commonly abused drugs and the third part is about less commonly abused drugs.

Part (I): Classification of individual drugs

Most of the drugs can be classified under the following categories:

1. Opiates/opioids, e.g., heroin, opium, morphine, codeine, methadone, meperidine / pethidine, fentanyl, hydromorphone, oxycodone
2. Hallucinogens, e.g., LSD, magic mushroom, PCP
3. Cannabinoids
4. Stimulants, e.g., amphetamine, cocaine
5. Sedatives-hypnotics, e.g., benzodiazepines, barbiturates, methaqualone, zopiclone and zolpidem
6. Volatile solvents, e.g., glue, thinner
7. Over the counter (OTC) medication, e.g., cough mixture, cough tablet, antihistamine
8. Others, e.g., 3,4-methylenedioxymethamphetamine (MDMA), ketamine, γ -hydroxybutyrate (GHB), anabolic-androgenic steroids

Part (II): Effects of commonly abused drugs in Hong Kong

1. Physical and Neuro-psychological effects of opiates/opioids

The most common drug of abuse under this group is heroin. Its harmful effect arises from the drug itself, its impurities and one of its methods of administration, which is by intravenous injection. Other methods of use include chasing the dragon, snorting and subcutaneous administration (skin-popping).

Intoxication effects:

Individual reaction to drug may vary. Reported neuro-psychological effects include initial euphoria followed by apathy and dysphoria, psychomotor agitation or retardation and impaired judgment.

Reported physical effects include pupillary constriction or pupillary dilation (latter due to anoxia from severe overdose), slurred speech, impaired attention or memory, drowsiness and in severe cases, coma.

Withdrawal reaction:

Common withdrawal reactions include runny nose, lacrimation, piloerection, nausea and vomiting, diarrhoea, muscle aches, bone pain and insomnia.

After-effects:

Physical after-effects include loss of appetite, nausea and vomiting, weight loss, respiratory depression and constipation. Opiates/ opioids can lead to dependency.

Physical effects secondary to intravenous use:

Intravenous drug use, in particular the habit of needle sharing, is the main cause of morbidity. The user may develop cellulitis, pustule, vasculitis, thrombosis and myositis. Serious complications include hepatitis, endocarditis, AIDS, sudden death due to respiratory depression or embolism.

2. Physical and Neuro-psychological effects of Hallucinogens

The term ‘hallucinogens’ means drugs that produce hallucination. One of the hallucinogens available in Hong Kong is lysergic acid diethylamide (LSD) with street name being “Fing Ba”, “Black sesame” and “Blotter”. It is usually taken by mouth.

Intoxication effects of LSD:

Intoxication effects vary from one person to another. Reported neuro-psychological effects may include euphoria, increased energy level and increased awareness of senses.

Adverse neuro-psychological effects may include:

- | | |
|--|-----------------------------|
| ◆ Anxiety | ◆ Depression |
| ◆ Ideas of reference | ◆ Fear of losing one's mind |
| ◆ Paranoid ideation | ◆ Impaired judgement |
| ◆ Over-awareness and over-sensitization to music and noise | ◆ Depersonalization |
| ◆ Derealization | ◆ Illusion |
| ◆ Hallucination | ◆ Synesthesia |

There can also be a variety of physical intoxication effects, including:

- | | |
|----------------------------|----------------------|
| ◆ Pupillary dilation | ◆ Tachycardia |
| ◆ Increased blood pressure | ◆ Hyperthermia |
| ◆ Sweating | ◆ Palpitation |
| ◆ Nausea and vomiting | ◆ Blurring of vision |
| ◆ Tremor | ◆ Incoordination |
| ◆ Muscle twitching | ◆ Convulsion |

Withdrawal reaction:

No known withdrawal reactions reported.

Neuro-psychological after-effects of LSD:

Reaction to LSD varies from one person to another. Some may experience a variety of after-effects, including:

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|---|----------------------|
| ◆ Impaired motivation | ◆ Personality change |
| ◆ Chronic anxiety and depressive states | ◆ Delusion |
| ◆ Hallucination | ◆ Confusion |
| ◆ Self-destructive behaviour | ◆ Flashbacks |

In chronic users, LSD can lead to tolerance and the individual may develop a schizophrenia-like state.

Physical after-effects of LSD:

LSD was reported to cause hemiplegia, possibly secondary to vasospasm.

3. Physical and Neuro-psychological effects of Cannabinoids

Marijuana, the combined leaves, stems and flowering tops of *Cannabis sativa*, can be used in a variety of forms. It is most commonly smoked via rolled cigarette or in a pipe or bong (water pipe). Hashish, or hash, is the resin obtained from the female plant flowers. It is more toxic than marijuana.

Intoxication effects:

Intoxication effects can differ from one person to another. Neuro-psychological effects may include:

- ◆ Euphoria
- ◆ Apparent increase in deep thinking
- ◆ Feeling that boring tasks becomes more interesting
- ◆ Distorted time perception
- ◆ Sleepiness, though occasionally some people may have insomnia.
- ◆ Relaxation
- ◆ Increased awareness of senses
- ◆ Slowness
- ◆ Tiredness

Adverse neuro-psychological effects may include:

- ◆ Anxiety
- ◆ Social withdrawal
- ◆ Panic attacks at high doses or in sensitive users
- ◆ Impaired judgment
- ◆ Difficulty in following train of thoughts

Reported physical intoxication effects include:

- ◆ Impaired motor coordination
- ◆ Increased appetite
- ◆ Tachycardia
- ◆ Conjunctival injection
- ◆ Dry mouth

The risk of myocardial infarction is increased for more than 4 times in the first hour smoking cannabis.

Withdrawal reaction:

Withdrawal symptoms may occur after daily use in some users. Severity of symptoms is related to frequency of use and individual sensitivity. These may last for 1-6 weeks after cessation of use and can include:

- ◆ Anxiety
- ◆ Irritability
- ◆ General unease/discomfort
- ◆ Loss of appetite
- ◆ Feeling of boredom
- ◆ Anhedonia
- ◆ Headache
- ◆ Insomnia
- ◆ Craving
- ◆ Anger

Neuro-psychological after-effect::

A wide range of after-effects have been reported in literature and not everybody who uses cannabis experienced these effects. They include impairment in concentration, memory and learning ability, muddled thinking and depression. Serious after-effects include amnesia, paranoid reaction, hallucination, depersonalization, amotivational syndrome, panic, schizophrenia and dementia-like state. Cannabis is known to precipitate or exacerbate latent or existing mental disorders. There is a risk of dependency for heavy user of cannabis.

Physical after-effects:

Various physical after-effects have been reported and can be classified as:

- ◆ Respiratory: chronic cough, bronchitis, emphysema, pneumothorax.
- ◆ Impairment of immune system.
- ◆ Cancer of lips, mouth, pharynx, larynx, trachea, bronchi and lung.
- ◆ Cardiovascular: right heart disease and pulmonary hypertension.
- ◆ Sexual: decrease testosterone, sperm count and motility, disruption of the female reproductive cycle, having babies with low birth weight.

Drug interaction of cannabis:

Cannabis impairs the emesis normally produced by acute alcohol poisoning and can be associated with subsequent alcohol toxicity. It can induce vasodilatation of the nasal mucosa and attenuates the vasoconstrictive effects of cocaine and thus increases its absorption.

4. Physical and Neuro-psychological effects of Stimulants

The two most common stimulants being abused in Hong Kong are methamphetamine (“ice”), and cocaine (street name “coke”) or its free base “crack”.

I. Methamphetamine

Methamphetamine comes in the form of powder or crystals. It is used locally by the filtering method.

Intoxication effects of methamphetamine:

Reactions to methamphetamine varies from one person to another. Neuro-psychological effects reported include:

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|------------------------|------------------------------|
| ◆ Euphoria | ◆ Hypervigilance |
| ◆ Anxiety | ◆ Tension |
| ◆ Anger | ◆ Insomnia |
| ◆ Impaired judgement | ◆ Panic |
| ◆ Paranoid State | ◆ Psychosis |
| ◆ Aggressive behaviour | ◆ Self-destructive behaviour |

Physical effects during intoxication include:

- | | |
|----------------------------|-------------------------|
| ◆ Tachycardia | ◆ Pupillary dilation |
| ◆ Increased blood pressure | ◆ Sweating |
| ◆ Nausea and vomiting | ◆ Psychomotor agitation |
| ◆ Chest pain | |

Serious reactions may include:

- | | |
|--------------------------|----------------------|
| ◆ Myocardial infarction | ◆ Cardiac arrhythmia |
| ◆ Malignant hypertension | ◆ Heart failure |
| ◆ Stroke | ◆ Seizure |

Withdrawal reaction of methamphetamine:

A wide range of withdrawal reactions have been reported:

- | | |
|------------------|--------------------|
| ◆ Depression | ◆ Anxiety |
| ◆ Irritability | ◆ Agitation |
| ◆ Craving | ◆ Fatigue |
| ◆ Hypersomnia | ◆ Hyperphagia |
| ◆ Loss of energy | ◆ Loss of interest |

- ◆ Suicidal idea

Neuro-psychological after-effects of methamphetamine:

Some individuals may develop paranoid state and psychosis. Chronic use of methamphetamine often lead to dependency.

Physical after-effects of methamphetamine:

Reactions to drug varies from one person to another. Reported physical after-effects include weight loss and malnutrition, fatigue, stereotype behaviour, dyskinesia, and chorea. Serious reactions, e.g. cerebral vasculitis and cardiomyopathy were reported.

II. Cocaine

The major routes of administration of cocaine are sniffing or snorting, injecting, and smoking the free-base (crack cocaine).

Intoxication effects:

Reaction to cocaine varies from one person to another. Reported neuro-psychological effects during intoxication include:

- | | |
|--------------------------|----------------|
| ◆ Arousal | ◆ Euphoria |
| ◆ Increased energy level | ◆ Insomnia |
| ◆ Irritability | ◆ Anxiety |
| ◆ Fear | ◆ Restlessness |
| ◆ Aggressive behaviour | ◆ Panic attack |

Serious reactions include delirium, and acute psychosis.

A wide range of physical intoxication effects have been reported and can be classified as:

- ◆ Central Nervous System: headache, stroke, transient neurological deficit, subarachnoid haemorrhage, seizures, toxic encephalopathy, coma.
- ◆ Respiratory: pulmonary oedema, respiratory arrest, “crack lung” (fever, pulmonary infiltrates, bronchospasm, eosinophilia), pneumothorax, pneumomediastinum.
- ◆ Cardiovascular: hypertension, aortic dissection, arrhythmia, shock, sudden death, myocarditis, myocardial infarction, other organ ischaemia.
- ◆ Metabolic: Hyperthermia, rhabdomyolysis, renal failure, coagulopathy, lactic acidosis.

Withdrawal effects include:

Discontinuing regular use can lead to a variety of unpleasant withdrawal symptoms including:

- ◆ Craving
- ◆ Hunger
- ◆ Irritability
- ◆ Apathy
- ◆ Depression
- ◆ Paranoia
- ◆ Suicidal idea
- ◆ Loss of sex drive
- ◆ Insomnia or excessive sleepiness

Neuro-psychological after-effects:

Reported neuro-psychological after-effects include:

- ◆ Restlessness
- ◆ Anxiety
- ◆ Hyperexcitability
- ◆ Paranoia
- ◆ Irritability
- ◆ Insomnia
- ◆ Weight loss
- ◆ Schizophrenia-like psychosis
- ◆ Risk of dependency

Physical after-effects:

A wide range of physical after-effects were reported and can be classified as:

- ◆ Reproductive/neonatal: spontaneous abortion, placental abruption, placenta previa, intrauterine growth retardation, “crack baby syndrome” (irritability, tremulousness, poor feeding, hypotonia or hypertonia, hyperreflexia), cerebral infarction.
- ◆ Infection: HIV or AIDS, hepatitis B and infectious endocarditis associated with injection; frontal sinusitis with brain abscess associated with chronic cocaine snorting.
- ◆ Others: atrophy of nasal mucosa, necrosis and perforation of the nasal septum.

Drug interaction:

Cocaine abusers use alcohol to potentiate cocaine euphoria. Interestingly, the same drug combination has been reported to have been used so that alcohol would counteract the effects of insomnia and irritability induced by cocaine.

5. Physical and Neuro-psychological effects of Sedatives-Hypnotics

There are four main groups of drugs classified under the category of sedatives-hypnotics. They are benzodiazepines, barbiturates, imidazopyridines/ cyclopyrrolone and methaqualone.

I. Benzodiazepines

There are a number of benzodiazepines commonly abused in Hong Kong, e.g., diazepam

(Valium), flunitrazepam (Rohypnol), midazolam (Dormicum), chlordiazepoxide (Librium), nitrazepam (Mogadon), triazolam (Halcion), nimetazepam (“give-me-five”), estazolam, bromazepam (Lexotan), clozapepam (Rivotril), lormetazepam (Loramet), lorazepam (Ativan or Loran) and dalmadorm (Dalmane).

Intoxication effects:

Individual reaction to benzodiazepine may vary. Reported neuro-psychological effects include labile mood, impaired judgment and inappropriate sexual or aggressive behaviour. Physical intoxication effects include sedation, disorientation, slurred speech, ataxia, nystagmus, hypotension and hypothermia. There is increased chance of having accidents. In severe cases, the individual may develop respiratory depression, apnoea, shock and coma.

Withdrawal reaction:

In mild case, withdrawal reactions of benzodiazepine closely resembled anxiety state:

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|----------------------------|-----------------------|
| ◆ Tremor | ◆ Impaired attention |
| ◆ Anxiety | ◆ Poor memory |
| ◆ Depression | ◆ Loss of appetite |
| ◆ Restlessness | ◆ Nausea and vomiting |
| ◆ Insomnia | ◆ Tinnitus |
| ◆ Fatigue | ◆ Headache |
| ◆ Palpitation | ◆ Muscle pain |
| ◆ Increased blood pressure | |

Severe withdrawal reactions include delusion, loss of consciousness and convulsion.

Neuro-psychological after-effects:

User of benzodiazepine may experience amnesia. Benzodiazepine, particularly those with short half-life, e.g. Halcion and Dormicum, have high risk of dependency.

Physical after-effects:

No known physical after-effects of benzodiazepines.

II. Barbiturates

They are clinically used as sedative-hypnotic drugs before the introduction of the relatively safer group of benzodiazepines, and also for the treatment of epilepsy and induction of anaesthesia. There are several classes based on their elimination half-life. Ultrashort-acting

ones include thiopental and methohexital; short acting ones include pentobarbital and secobarbital; intermediate acting ones include amobarbital, aprobarbital and butobarbital; and long acting ones include phenobarbital and mephobarbital. Short acting barbiturates (secobarbital & pentobarbital) are primary drugs of abuse. Heroin is often adulterated with barbiturates which makes withdrawal more difficult. The use of barbiturates for sedation and hypnosis has a problem of rapid development of tolerance with a common tendency to raise the dose on chronic administration.

Intoxication effects:

Reaction to drug varies from one person to another. In mild case of intoxication, the individual may experience sedation, disorientation, slurred speech, ataxia and nystagmus. Severe cases may be associated with hypothermia, hypotension, respiratory depression, apnoea, shock and coma.

Withdrawal effects:

This is similar to benzodiazepines, but has a higher risk of seizure, particularly with short acting barbiturates.

Neuro-psychological after effects:

Reported after-effects include tolerance, dependence, disinhibition, amnesia, depression and suicide or parasuicide.

Interaction with drugs:

Barbiturates affect the GABA system, producing cross-tolerance to other sedating drugs, including alcohol and benzodiazepines, thus increasing the risk of fatal overdose.

III. Imidazopyridine/cyclopyrrolone

This group includes zolpidem (Stilnox) and zopiclone (Imovane). They are alternatives to benzodiazepines for treatment of insomnia.

Zolpidem (Stilnox) is an imidazopyridine with rapid onset, short duration of action and is not classified as dangerous drug in Hong Kong. It has largely replaced benzodiazepines as hypnotic agent. Its sedative effects are additive with alcohol. Like short acting benzodiazepines, e.g. triazolam (Halcion), it is reinforcing to alcoholics and drug addicts. Its adverse effects include impairment in memory and psychomotor function, psychotic reactions and delirium. In recent years, there has been increasing in cases of abuse, dependency and acute overdose.

Zopiclone (Imovane), a cyclopyrrolone, has the same pharmacological actions as barbiturates and benzodiazepines although differs chemically. Adverse effects reported include:

- ◆ Bitter taste
- ◆ Dry mouth
- ◆ Difficult to get up in the morning
- ◆ Daytime sedation
- ◆ Nausea
- ◆ Nightmares
- ◆ Headache
- ◆ Agitation
- ◆ Memory impairment
- ◆ Palpitation
- ◆ Psychomotor impairment
- ◆ Aggression
- ◆ Hallucination

Fatal overdose has been increasingly observed both overseas and locally. There are evidences that it can lead to tolerance, withdrawal and dependence.

Reported withdrawal symptoms include:

- ◆ Insomnia
- ◆ Tremor
- ◆ Muscle twitching
- ◆ Sweating
- ◆ Palpitation
- ◆ Headache
- ◆ Craving
- ◆ Muscle aches
- ◆ Numbness
- ◆ Fatigue
- ◆ Anxiety
- ◆ Loss of appetite
- ◆ Restlessness
- ◆ Irritability
- ◆ Poor concentration
- ◆ Sensitive to noise
- ◆ Convulsion
- ◆ Delirium

IV. Methaqualone

Methaqualone is a non-barbiturate, non-benzodiazepine sedative-hypnotic. It is used in combination with an antihistamine (as Mandrax) and it used to be a common drug of abuse in the 70's. Nowadays it can be found in ecstasy tablets as an adulterant. Methaqualone can be swallowed or injected. Its effect during intoxication include euphoria, depression, depressed tendon reflexes, slurred speech, ataxia and in severe cases, coma. It is no longer recommended for medical use because of its addictive potential and the severity of withdrawal. It is abused because of its dissociative 'high' and reported and unproven aphrodisiac properties.

Drug interaction of sedative-hypnotic:

Sedative-hypnotic, being a depressant of the central nervous system, will have cross-tolerance when used with other depressants, e.g. alcohol, opiates and GHB. The

subjects are at higher risk of having impaired performance on driving and operating machinery. Impairment of reaction time, attention and alertness have been reported and it seems that their combined use contributes to the causation of incidents such as traffic accidents, fires, falls, etc. Physically, the subjects are more likely to develop respiratory depression, apnoea, coma and death. On the other hand, users of stimulants, e.g. methamphetamine and cocaine, may use sedative-hypnotic to relieve anxiety and insomnia.

6. Physical and Neuro-psychological effects of Volatile Solvents

Many substances can be abused under this category, e.g. solvents, adhesives, petrol, cleaning fluid, thinner and butane. The methods of ingestion depend on the substance. They include inhalation from top of bottles or beer cans containing the solvent, cloths held over the mouth, plastic bags, and sprays.

Intoxication effects:

Reactions to volatile solvents vary from one person to another. Reported neuro-psychological effects include irritability, euphoria, slurring of speech, indecisiveness, disinhibition, hallucination and disorientation.

Physical effects reported include:

- | | |
|---------------------------|---------------------------------|
| ◆ Incoordination | ◆ Prone to accidents |
| ◆ Abdominal pain | ◆ Coma |
| ◆ Nausea and vomiting | ◆ Arrhythmia |
| ◆ Blurring of vision | ◆ Cardiac arrest |
| ◆ Chest pain | ◆ Inhalation of stomach content |
| ◆ Difficulty in breathing | ◆ Asphyxia |
| ◆ Tinnitus | ◆ Death |

Withdrawal reaction:

The specific signs and symptoms of withdrawal vary with the type of solvent, the dose and the duration of use. Typical withdrawal symptoms include:

- | | |
|-----------------|-----------------------|
| ◆ Tremor | ◆ Irritability |
| ◆ Anxiety | ◆ Depression |
| ◆ Seizures | ◆ Insomnia |
| ◆ Muscle cramps | ◆ Tingling sensations |

A reaction similar to delirium tremens was reported in toluene withdrawal.

Neuro-psychological after-effects:

Some individuals may experience nervousness and depression as after effects. Dependency has been reported.

Physical after-effects:

Reported physical after-effects include headache, loss of appetite, skin problems, nausea, vomiting and even vomiting blood. Neurotoxic effects, e.g. peripheral neuropathy, impaired cerebellar function, encephalitis, dementia have been reported. Volatile solvents are known to cause damage to liver, kidney, heart, lungs, bone marrow and adrenal glands.

7. Physical and Neuro-psychological effects of over the counter (OTC) medication

I. Cough Mixture

Cough mixture containing codeine (an opioid analogue), ephedrine/ pseudoephedrine (stimulants) and antihistamine is a form of over the counter medication that is abused commonly in Hong Kong. Codeine is an opioid analogue whose potency is only 20% that of morphine as an analgesic. It is used clinically as a cough suppressant and as an anti-diarrhoeal medication. Ephedrine is a naturally occurring stimulant found in certain Chinese medicine. It acts directly on alpha and beta-adrenergic receptors, and stimulates the release of noradrenaline. It exhibits less central nervous system effects compared to amphetamine. Pseudoephedrine is a dextro-isomer of ephedrine, and has similar alpha-, but less beta-adrenergic activity.

Intoxication effects:

Reactions to cough mixture vary from one person to another. Neuro-psychological effects reported include:

- ◆ Anxiety
- ◆ Irritability
- ◆ Unstable mood
- ◆ Suspiciousness
- ◆ Delusion
- ◆ Hallucination
- ◆ Impulsivity
- ◆ Confusion
- ◆ Aggressive behaviour

Physical effects reported include tachycardia, increased in blood pressure, hyperthermia, sweating, chest pain, dizziness and headache. Serious reactions include seizures, stroke, myocardial infarction, arrhythmia and death.

Withdrawal reaction:

Prolong use of cough mixture may lead to withdrawal reactions. Reported features include fatigue, insomnia, depression, loss of energy, loss of interest and suicidal idea.

Neuro-psychological after-effects:

Cough mixture has been reported to lead to psychosis. It can lead to dependency.

Physical after-effects:

Dental problems and constipation are often reported in users of cough mixture.

II. Cough Tablet

An alternative to cough mixture is cough tablet, with major constituents being codeine, dextromethorphan, ephedrine/ pseudoephedrine, chlorpheniramine and papaverine. Dextromethorphan is an opioid analogue. Its effect at high dose is similar to phencyclidine and ketamine as it blocks the NMDA receptors. Papaverine is a vasodilator, i.e. it dilates blood vessels. Papaverine has no established clinical use. Previously there were pure dextromethorphan tablets known as Romilar but nowadays these have been replaced by tablets containing the mixture as stated above, e.g. “Far Dim” (“花點”).

Intoxication effects:

Reactions may vary between individuals. Reported neuro-psychological effects include euphoria, creative dreamlike experience, increased perceptual awareness, altered time perception, feeling of floating, dissociation of mind from body. Some users report empathic feelings toward others while others may report feeling disconnected or isolated from others. Adverse neuro-psychological effects include:

- | | |
|--------------------------------------|------------------------|
| ◆ Anxiety, panic | ◆ Delusion |
| ◆ Irritability | ◆ Hallucination |
| ◆ Unstable mood | ◆ Impulsivity |
| ◆ Suspiciousness | ◆ Confusion |
| ◆ Altered tactile and skin sensation | ◆ Aggressive behaviour |
| ◆ Robotic, zombie-like walking | ◆ Disorientation |

Physical effects reported include:

- | | |
|---|---------------------------|
| ◆ Dizziness | ◆ Unstable blood pressure |
| ◆ Abdominal cramps, nausea and vomiting | ◆ Hyperthermia |

- ◆ Pupil dilation
- ◆ Drowsiness
- ◆ Tachycardia
- ◆ Rash
- ◆ Difficulty in achieving orgasm
- ◆ Sweating
- ◆ Chest pain
- ◆ Body itching

Withdrawal reaction:

Report of withdrawal effects similar to opiates, including watery eyes, stuffy nose, gooseflesh, muscle spasms, increased pain sensitivity, nausea, anxiety, and depression.

Neuro-psychological after-effects:

Reported after-effects include nervousness, depression, memory and language impairment, and prolonged dissociation from the real world. It carries a risk of dependency. Some individuals reported hangover effects, with features like lethargy, sleepiness, amotivation, mild sensory dissociation, muscle rigidity, muscle tics (especially in the jaw and hands), dizziness, loss of balance, headache, photophobia, and sharply diminished sense of taste or salty taste in mouth.

Physical after-effects:

Cough tablet can give rise to nausea, abdominal cramps, constipation.

III. Antihistamine

Antihistamine could exert its effect through 3 types of histamine receptors, H1, H2 and H3. It is the H1 receptor antagonist that is most likely to be abused. It is often found in over the counter cold remedy, with generic names like brompheniramine, chlorpheniramine, diphenhydramine and promethazine, etc. Individuals abuse antihistamine for its sedating effect.

Intoxication effects of antihistamine:

Reactions to drug vary from one person to another. Reported neuro-psychological effects during intoxication include fatigue, somnolence, increase reaction time, calming, unable to think properly, confusion and hallucinations.

Reported physical effects include tinnitus, blurred vision, dilated pupils, dry mouth, nausea and vomiting, epigastric pain, clumsiness or unsteadiness, dizziness, difficulty in breathing, seizures and death.

Withdrawal reactions:

No known withdrawal reactions reported.

Neuro-psychological after-effects:

Reported effects include drowsiness and poor concentration.

Physical after-effects:

Reported effects include difficulty in passing urine, constipation, increased appetite and weight gain.

Drug interaction:

Antihistamines add to the effects of alcohol and other depressants of central nervous system.

Note: Cold Remedy containing antihistamine and paracetamol:

Paracetamol, if taken at a dose of >4g/day, i.e. 8 tablets, can lead to liver failure that may require liver transplant.

8. Others

I. Physical and Neuro-psychological Effects of 3,4-methylenedioxyamphetamine (MDMA)

MDMA, also known as “Ecstasy”, “Adam”, “XTC” and “E”, usually contains other active compounds like 3,4-methylenedioxyamphetamine (MDA), methamphetamine and amphetamine. There are various adulterants being added during the manufacturing process, which can lead to unexpected effects. Some of the adulterants for MDMA tablets found in Hong Kong include:

- ◆ ketamine
- ◆ sedative-hypnotics- methaqualone, phenobarbitone, barbitone, amobarbitone, midazolam, estazolam, diazepam
- ◆ stimulants- ephedrine, nikethamide, methylamphetamine
- ◆ antihistamine- promethazine, chlorpheniramine, diphenhydramine
- ◆ antipsychotics- chlorpromazine, clozapine
- ◆ antidepressants- imipramine, clomipramine
- ◆ analgesics- paracetamol, antipyrine
- ◆ bronchodilator- theophylline, dyphylline
- ◆ anticholinergic- benzhexol
- ◆ antitussive- carbetapentane

Intoxication effects:

Reactions to MDMA may differ from one person to another. Reported neuro-psychological effects include feeling of relatedness to others, increased empathy, euphoria, increased awareness of senses and decreased aggression. Other reported neuro-psychological effects include reduced defensiveness, increased awareness of emotion and altered perception of time. Adverse neuro-psychological effects include:

- ◆ Anxiety
- ◆ Disinhibition
- ◆ Perceptual distortion
- ◆ Increased libido but diminished ability to achieve arousal and orgasm
- ◆ Confusion
- ◆ Paranoid Psychosis
- ◆ Reduced ability and desire to perform mental tasks
- ◆ Hyponatraemia due to excessive water intake

Reported physical effects during intoxication include:

- ◆ Teeth-grinding
- ◆ Tightening of jaw
- ◆ Loss of appetite
- ◆ Sweating
- ◆ Dehydration
- ◆ Hot flush
- ◆ Tremor
- ◆ Gooseflesh
- ◆ Increased or decreased body temperature
- ◆ Changes in blood pressure
- ◆ Increased heart rate

Serious reactions include:

- ◆ Arrhythmia
- ◆ Acute renal failure
- ◆ Neurotoxicity
- ◆ Rhabdomyolysis
- ◆ Disseminated intravascular coagulation
- ◆ Coagulopathy
- ◆ Liver toxicity
- ◆ Intracerebral haemorrhage
- ◆ Death

Withdrawal reaction

No known reported withdrawal effect.

Neuro-psychological after-effects:

Reported effects include:

- ◆ Depression
- ◆ Anxiety
- ◆ Aggressive outbursts
- ◆ Memory disturbance
- ◆ Flashback
- ◆ Drowsiness
- ◆ Panic
- ◆ Psychosis
- ◆ Impairment of attention

Hangover effects of MDMA include symptoms like:

- ◆ Depressed mood
- ◆ Sleepiness
- ◆ Lack of motivation
- ◆ Loss of energy
- ◆ Fatigue

Drug interaction:

MDMA and dextromethorphan can lead to serotonin syndrome. This is characterized by muscle spasm, gastrointestinal problems, confusion, agitation, incoordination, shivering, fever and sweating.

Taking MDMA after LSD-induced hallucinations have subsided has been reported to bring back hallucinatory effect. A related experience is reported when MDMA is combined with magic mushroom.

People on the antidepressant SSRI (selective serotonin reuptake inhibitors) showed a reduced response to MDMA. Those taking the antidepressant MAOI (monoamine oxidase inhibitor) should never take MDMA as this can lead to hypertensive crisis and possibly death.

Caution is advised, as each person has a different physical and psychological makeup and some people may be predisposed to untoward effects after drug combination.

II. Physical and Neuro-psychological Effects of Ketamine

Ketamine, also known as “Special K”, “Super K”, “Vitamin K”, or just plain “K”, is primarily used by veterinarians and paediatric surgeons as an anaesthetic. The powder is usually snorted while “K tablets” are taken orally.

Intoxication effects:

Effects of ketamine differ from one person to another. Reported neuro-psychological effects include:

- ◆ Mood elation
- ◆ Anxiety
- ◆ Insomnia
- ◆ Calmness
- ◆ Psychic numbness
- ◆ Dissociative effect
- ◆ Distorted perception of body, environment and time
- ◆ Illusion
- ◆ Paranoid delusion
- ◆ Hallucination
- ◆ Impaired attention and learning
- ◆ Vivid dreams
- ◆ Delirium
- ◆ Violence
- ◆ Suicide
- ◆ Catatonic state known as K-hole

- ◆ Floating sensation
- ◆ Near death experience (NDE)

Reported physical effects include:

- ◆ Increased heart rate
- ◆ Slurred speech
- ◆ Hypertension
- ◆ Increased intracranial pressure
- ◆ Nausea and vomiting
- ◆ Increased intraocular pressure
- ◆ Hypersalivation
- ◆ Anergia
- ◆ Numbness
- ◆ Ataxia
- ◆ Incoordination
- ◆ Analgesia

Withdrawal reaction:

Commonly reported reactions include fatigue, irritability, poor sleep and depression.

Neuro-psychological after-effects:

- ◆ Ketamine can lead to cognitive deficits, including impairment in executive function, memory, attention and learning.
- ◆ Ketamine users had more soft neurological signs, especially in motor coordination and sensory integration.
- ◆ Psychiatric manifestations include schizotypal symptoms, schizophrenia-like psychosis, perceptual distortion and flashback.
- ◆ Ketamine can lead to dependency.

III. Physical and Neuro-psychological Effects of γ -Hydroxybutyrate (GHB)

GHB is depressant of the central nervous system. Its street name is “liquid ecstasy” or “grievous bodily harm”. It has been used as a date-rape drug. It is taken by mouth. Note that the dose of GHB leading to unpleasant effect and dangerous overdose is just over the dose that some people enjoy ingesting.

Intoxication effects:

Reaction to GHB varies from one person to another. Reported neuro-psychological effects include:

- ◆ Euphoria
- ◆ Hallucination
- ◆ Feeling relaxed
- ◆ Temporary amnesia
- ◆ Disinhibition
- ◆ Sleep walking
- ◆ Drowsiness
- ◆ Confusion

Reported physical effects include:

- ◆ Dizziness
- ◆ Nausea and vomiting
- ◆ Weakness
- ◆ Loss of peripheral vision
- ◆ Agitation
- ◆ Slowing of heart rate
- ◆ Unsteady gait
- ◆ Urinary incontinence
- ◆ Seizure
- ◆ Respiratory depression
- ◆ Incoordination
- ◆ Coma

Withdrawal effects:

Reported withdrawal effects include agitation, sweating, insomnia, tremor, tachycardia, anxiety, and delirium.

Drug interaction

GHB, when mixed with alcohol, can lead to nausea, difficulty in breathing and loss of consciousness. Combine GHB with methamphetamine result in increased risk of seizure.

Part (III): Effects of drugs less commonly abused in Hong Kong

I. Magic Mushroom

Magic mushroom is a naturally occurring hallucinogen. The psychoactive ingredient is psilocybin. It can be chewed and ingested, brewed with warm water or mixed with fruit juices.

Intoxication effects of magic mushroom:

Reactions and experiences may vary from one person to another. Reported neuro-psychological effects include changes in visual perception, distorted time perception, increased emotional sensitivity, increased ability to focus on emotional problems or memories, increased chance of becoming caught in a loop thinking or dwelling on a single thought or feeling (usually negative or painful), feeling of connection with those around oneself, near death experiences (NDE), loss of self and delirium.

Reported physical effects include nausea and vomiting, pupil dilatation and tremor.

Withdrawal reaction:

No known reported withdrawal effects.

Neuro-psychological after-effects of magic mushroom:

Reported after-effects include cognitive impairment and schizophrenia like state.

II. Phencyclidine (PCP)

PCP is a dissociative anaesthetic. It was withdrawn from clinical use due to the peculiar psychic symptoms of delirium and hallucinations that frequently, but not always, accompanied its use. When abused, it is most commonly smoked, but can also be ingested orally, snorted, or injected intravenously. Its street name in U.S.A. is “Angel Dust”.

Intoxication effects:

Reaction to PCP differs between individuals. Reported neuro-psychological effects include:

- | | |
|-------------------------------------|--------------------------------|
| ◆ Euphoria | ◆ Bizarre behaviour |
| ◆ Relaxation | ◆ Psychosis |
| ◆ Feeling of numbness | ◆ Catatonic state |
| ◆ Body image and sensory distortion | ◆ Self injury due to analgesia |

- ◆ Agitation

Reported physical effects include:

- | | |
|---------------------------|------------------------|
| ◆ Nystagmus | ◆ Ataxia |
| ◆ Numbness of extremities | ◆ Myoclonus |
| ◆ Hypertension | ◆ Rhabdomyolysis |
| ◆ Tachycardia | ◆ Acute renal failure |
| ◆ Flushing | ◆ Seizure |
| ◆ Hyperthermia | ◆ Coma |
| ◆ Sweating | ◆ Respiratory arrest |
| ◆ Hypersalivation | ◆ Circulatory collapse |
| ◆ Miosis | ◆ Death |
| ◆ Dystonic reaction | |

Neuro-psychological after-effects:

Reported effects include memory impairment, personality changes and depression.

III. Steroids (Anabolic-Androgenic)

Anabolic steroids are used by athletes and others to enhance performance and to improve physical appearance. The word anabolic stands for muscle building while androgenic stands for substance that increases masculine characteristics. They are usually ingested orally or injected. They are used in cycles and sometimes several different steroids are used to maximize their effect (stacking).

Neuro-psychological effects:

Individual reactions to steroids may differ. Reported features include inflated self esteem, manic like symptoms when taking the drug and depression upon stopping, violent behaviour, paranoia, irritability, impaired judgment stemming from feelings of invincibility, increased chance of abusing other drugs to counteract its effect like insomnia and irritability.

Physical effects:

- ◆ For men: shrinking of the testes, reduced sperm count, infertility, baldness, development of breasts, increased risk of prostate cancer.
- ◆ For women: growth of facial hair, male-pattern baldness, changes in or cessation of menstrual cycle, enlargement of clitoris, deepened voice.
- ◆ For adolescents: growth halted prematurely through premature skeletal maturation and accelerated pubertal changes.

- ◆ General side effects: acne, jaundice, liver tumour and cancer, fluid retention, increased blood pressure, increase in low density cholesterol and decrease in high density cholesterol and kidney tumour.

Glossary

A

amotivational syndrome (動機缺乏綜合症): characterized by apathy, loss of effectiveness, diminished capacity or willingness to carry out complex, long-term plans, endure frustration, concentrate for long periods

aortic dissection (主動脈夾層分離): the walls of aorta is dilated, with subsequent longitudinal splitting, producing a tear and results in haemorrhage

apnea (窒息): cessation of breathing

arrhythmia (心律不正常): any variation from the normal rhythm of the heart beat

ataxia (協調缺失): failure of muscular coordination; irregularity of muscular action

B

bronchitis (支氣管炎): inflammation of air passages of the lungs (bronchus)

bronchospasm (支氣管收縮): spasmodic contraction of the smooth muscle of the bronchus

C

cardiomyopathy (心肌病): a general diagnostic term designating primary myocardial disease, often of obscure or unknown aetiology

catatonic state (緊張性木僵): a clinical state of psychomotor disturbances characterized by periods of physical rigidity, negativism, excitement and stupor. It is associated with schizophrenia, depression, bipolar affective disorder, substance abuse, and neuroleptic malignant syndrome

cellulitis (蜂窩組織炎): an acute, diffuse, spreading, oedematous, suppurative inflammation of the deep subcutaneous tissues and sometimes muscle, which may be associated with abscess formation

chorea (舞蹈症): the ceaseless occurrence of a wide variety of rapid, highly complex, jerky movements that appear to be well coordinated but are performed involuntarily

coagulopathy (凝血異常): any disorder of blood coagulation

crack lung (克賴克肺): a clinical condition characterized by fever, pulmonary infiltrates, severe chest pain, bronchospasm with dyspnoea, and eosinophilia, due to the effect of crack cocaine

D

delirium (譫妄): a syndrome characterized by concurrent disturbances of consciousness and attention, perception, thinking, memory, psychomotor behaviour, emotion, and the sleep-wake cycle. The delirious state is transient and of fluctuating intensity

delusion (妄想): a false unshakeable belief, which is out of keeping with the person's social and cultural background

depersonalization (人格解體): a subjective unpleasant experience that is of an internal or external change, characterized by a feeling of strangeness or unreality

derealization (非真實感): a feeling of unreality so that the environment is experienced as flat, dull and unreal. This often accompanies depersonalization

disseminated intravascular coagulation (彌散性血管內凝血): this is a coagulation defect which is potentially lethal. The clinical feature of the patient is often acutely ill and in shock. There may be no bleeding at all or complete haemostatic failure with widespread haemorrhage. Bleeding may occur from the mouth, nose and venepuncture sites and there may be widespread haemorrhagic spots. This may be followed by multi-organ failure

dissociative effect (像靈魂出竅的意識分離): a defect of mental integration in which one or more groups of mental processes become separated off from normal consciousness

dyskinesia (運動障礙): impairment of the power of voluntary movement, resulting in fragmentary or incomplete movements

E

embolism (血管栓塞): the sudden blocking of an artery by a clot or foreign material which has been brought to its site of lodgement by the blood current

emesis (嘔吐): vomiting

emphysema (肺氣腫): a condition of the lung characterized by abnormal increase in the size of air spaces distal to the terminal bronchioles, either from dilatation of the alveoli, or from destruction of their walls. The patient presents with cough and production of sputum, wheeze and breathlessness following many years of smoker's cough. Frequent infective exacerbations occur, giving purulent sputum. With advanced disease, breathlessness becomes severe even after mild exercise such as dressing

endocarditis (心內膜炎): exudative and proliferative inflammatory alterations of the lining membrane of the cavities of the heart and the connective tissue bed on which it lies

eosinophilia (嗜曙紅細胞增多): the formation and accumulation of an abnormally large number of eosinophils in the blood. Eosinophil is a kind of white blood cell, which is increased in cases of allergic reaction and parasitic infection

F

flashback (回閃現象): vivid memories of events intrude into awareness as images

H

hallucination (幻覺): a perception of an external stimulus object in its absence

hyperreflexia (過強的反射作用): exaggeration of reflexes

hyponatraemia (低血鈉症): abnormally low concentrations of sodium ions in the circulating blood. The person may present with anorexia, nausea, muscle weakness, oedema and hypertension. In severe cases, this may result in heart failure, confusion and fit

I

illusion (錯覺): a false interpretation of a real sensory image

L

lactic acidosis (乳酸性酸中毒): Acidosis (too much acid in the body) due to the build up of lactic acid in the body. Lactic acidosis occurs when cells make lactic acid (from glucose) faster than it can be metabolized. The key signs of lactic acidosis include unusually deep and rapid breathing, vomiting, and abdominal pain

M

miosis (瞳孔縮小): contraction of pupil

myocarditis (心肌炎): inflammation of the muscular wall of heart

myoclonus (肌陣攣): shock-like contractions of a portion of a muscle, an entire muscle, or a group of muscles, restricted to one area of the body or appearing synchronously or asynchronously in several areas

myositis (肌炎): inflammation of a voluntary muscle

N

near death experience (NDE) (瀕死體驗): refers to a wide array of experiences reported by some people who have nearly died or who have thought they were going to die. The typical condition includes a buzzing or ringing noise, a sense of blissful peace, a feeling of floating out of one's body and observing it from above, moving through a tunnel into a bright light, meeting dead people and seeing one's life pass before one's eyes

nystagmus (眼球震顫): an involuntary, rapid, rhythmic movement of the eyeball, which may be horizontal, vertical, rotatory or mixed

P

panic (驚恐): an attack of overwhelming anxiety.

panic attack (驚恐發作): a clinical phenomenon that describes an episode of intense anxiety or fear in which symptoms develop suddenly and reach a crescendo, usually within 10 minutes. Symptoms may include any of the following: shortness of breath or a smothering sensation, hyperventilation, palpitations and tachycardia, trembled, sweating, choking, nausea or abdominal distress, depersonalization or derealization, numbness, tingling and pricking sensation, hot flashes or chills, chest pain or discomfort, a fear of dying, and a fear of 'losing my mind' or of doing something uncontrolled

parasuicide (准自殺): an apparent attempt at suicide in which death is not the desired outcome, e.g. non-fatal drug overdose

peripheral neuropathy (周圍神經病變): describes damage to the peripheral nervous system, the vast communications network that transmits information from the brain and spinal cord (the central nervous system) to every other part of the body. Peripheral nerves also send sensory information back to the brain and spinal cord. Some people may experience temporary numbness, tingling, and pricking sensations, sensitivity to touch, or muscle weakness. Others may suffer more extreme symptoms, including burning pain (especially at night), muscle wasting, paralysis, organ or gland dysfunction. People may become unable to digest food easily, maintain safe levels of blood pressure, sweat abnormally, or experience abnormal sexual function

piloerection (毛髮豎起): erection of the hair

placenta previa (胎盤前置): a placenta which develops in the lower uterine segment, in the zone of dilatation. This results in painless haemorrhage in the last trimester, particularly during the eighth month of gestation

placental abruption (胎盤早期脫離): haemorrhage from a normally situated placenta

pneumomediastinum (縱隔積氣): the presence of air or gas in the mediastinum, which may interfere with respiration and circulation. The mediastinum contains the heart, the bases of the great vessels, the trachea and bronchi, oesophagus, thymus, lymph nodes, thoracic duct, phrenic and vagus nerves and other structures and tissues

pneumothorax (氣胸): an accumulation of air or gas in the pleural space. The pleural space is the cavity between the serous membrane investing the lungs and lining the thoracic cavity

psychosis (精神病): a mental disorder causing gross distortion or disorganization of a person's mental capacity, affective response, and capacity to recognize reality, communicate, and relate to others to the degree of interfering with his capacity to cope with the ordinary demands of everyday life

pulmonary oedema (肺水腫): oedema of the lungs, presenting with shortness of breath

R

rhabdomyolysis (橫紋肌溶解): disintegration or dissolution of muscle, associated with excretion of myoglobin (a kind of protein produced by muscle) in urine

S

schizophrenia-like psychosis (類似精神分裂症的精神病): a psychotic disorder similar to but does not fulfill the diagnostic criteria of schizophrenia. It is characterized in general by fundamental and characteristic distortions of thinking and perception, and by inappropriate or blunted affect. Clear consciousness and intellectual capacity are usually maintained, although certain cognitive deficits may evolve in the course of time. The disturbance involves the most basic functions that give the normal person a feeling of individuality, uniqueness, and self-direction. The most intimate thoughts, feelings and acts are often felt to be known to or shared by others. Explanatory delusion may develop, to the effect that natural and supernatural forces are at work to influence the afflicted individual's thoughts and actions in ways that are often bizarre. Hallucinations, especially auditory, are common and may comment on the individual's behaviour or thoughts. Perception is frequently disturbed. Irrelevant features of ordinary things may appear more important than the whole object or situation. Patient may believe that everyday situations possess a special, unusually sinister, meaning intended uniquely for the individual. Thinking becomes vague and obscure, and its expression in speech sometimes incomprehensible. Breaks and interpolations in the train of thought are frequent, and thought may seem to be withdrawn by some outside agency. Mood is characteristically shallow, capricious, or incongruous. Ambivalence and disturbance of volition may appear as inertia, negativism, or stupor. Catatonia may be present

soft neurological signs (不確定神經病徵): a group of poorly defined bodily signs, which is assumed to reflect the immaturity or clinical damage of the central nervous system. It usually includes impairment of visual acuity, non-fluent speech, clumsiness, choreic movement, hyper-reflexia, and left-right disorientation. Compared with hard neurological signs, soft neurological signs do not have definitive clinical meaning or value

stereotyped behaviour (刻板動作): repetitive non-goal directed action which is carried out in a uniform way

subarachnoid haemorrhage (蛛網膜下出血): bleeding between two layers of the membrane covering the brain, i.e., the arachnoid and the pia mater

synesthesia (聯覺): sensory stimulus in one modality is perceived as a sensation in another modality

T

tachycardia (心搏過速): excessive rapid heart beat, usually above 100 per minute

thrombosis (血栓): the formation, development, or presence of a blood clot, frequently causing vascular obstruction

toxic encephalopathy (中毒性腦病): degenerative disease of the brain caused by poison