KETAMINE

HANDBOOK

TD consultancy

Contents

1. Introduction

How to use this training pack

This pack is intended to be used as a learning tool and also for reference after the training course has been completed. It is not intended for use in isolation to the training course.

Not all the material provided in this pack will be relevant to all services. Much will depend on what services they are offering and the context within which they are provided. The tier structure in which the agency is working and the stage of the user themselves will greatly dictate the material that will be most relevant.

Agencies / individuals will also need to take into account the regional differences in patterns of use within their catchment area, type of service being offered and target group

2. Ketamine timeline

Ancient Greece -“Cave Sniffing”. It is assumed that in ancient Greece when consulting the Oracle of Delphi the visions and omens were produced from inhaling nitrous oxide (laughing gas) which escaped from the rocks of the cave.

1775 – Joseph Priestley discovers nitrous oxide a gas produced naturally from the earth.

1790s – Humphrey Davy tested the gas on himself including Coleridge and others.

19th Century - England and America
Ether, chloroform and nitrous oxide are used recreationally - “sniffing parties” and “ether frolics”

1880s Pharmaceutical company Parke-Davis added dried peyote cactus to their list, which contains mescaline.

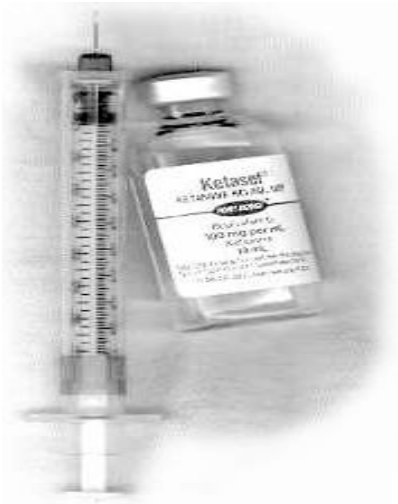
1952 PCP patented in America – though it was used post-WW1 as an anaesthetic

1962 Calvin Stevens invented CL369, renamed CI 581 and was then rechristened Ketamine.

1964 Ketamine was given to a human for the first time by Edward Domino, his wife coins the phrase “dissociative anaesthesia” - a replacement for PCP had been found.

1966 Ketamine was patented by Parke-Davis - used in Vietnam War as - ‘buddy drug’

It was patented by Parke-Davis as part of an effort to find a safer anaesthetic alternative to Phencyclidine (PCP), which was more likely to cause hallucinations, neurotoxicity and seizures.



Late 1960s Ketamine sold illegally under the names of “mean green” and “rockmesc” Hospital staff involved in trials divert ketamine into wider population

1970 FDA approved ketamine for use on children and the elderly

1970s - The drug was used in psychiatric and other academic research. In Argentina “ketamina” used in therapy to regress clients back to the womb

1978 Marcia Moore and John Lilly. Psychonauts - write influential books on the subjective use of Ketamine. John Lilly’s *The Scientist* and Marcia Moore and Howard Alltounian's *Journeys into the Bright World*, which documented the unusual phenomenology of ketamine intoxication.

1989 – 1992 In the UK Ketamine sees its appearance on the ecstasy scene. ‘Dud pills’ Ecstasy cut with Ketamine. Ketamine was also being used at underground parties and raves.

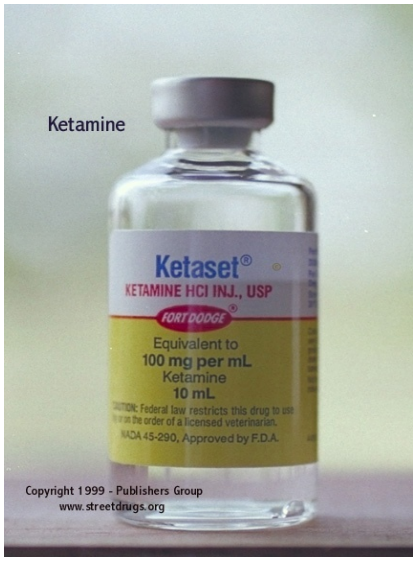
1995 Ketamine enters mainstream dance culture. Becomes popular has dance drug ‘Ketamine House’ music is still being played today

Late 1990s Berlin party scene - sniffing ketamine for its stimulant properties

Late 1990s IV injection of ketamine is the method preferred by Muscovite teenagers

1999 – Ketamine becomes a controlled substance in the USA.

1999 Time Out “Ketamine is the new E” though it was dismissed years earlier as just a fad.



2000 – Ketamine is regulated under Schedule 1 of Hong Kong Chapter 134 of *Dangerous Drugs Ordinance*. It can only be used legally by health professionals, for university research purposes, or with a physician's prescription

2003 – 5 MixMag reports show steady increase in Ketamine use year after year. Also Drugscope identifies it in its survey as a growing phenomena.

2005 – UK anecdotal information on bladder problems due to Ketamine use. Dismissed by health professionals as being psychosomatic.

2006 – Ketamine Class C drug in UK. Recreational use increases.

2007 – Hong Kong - First clinical reports of serious bladder and kidney problems among daily Ketamine street use.

2008 Isolated reports of serious bladder problems with users across the UK. Reasons for this are still unknown as Ketamine is considered a safe drug in medical circles and has received thousands of clinical trials which demonstrate its efficacy and safety.

2009 Druglink magazine highlights that Ketamine use is still increasing in the UK despite it being a Class C drug. Some services are starting to also see an increase in injecting users as well as those snorting the drug.

Late 2010s–early 2020s – growing prevalence

Crime Survey data for England and Wales show that ketamine use, while still lower than cannabis or cocaine, increases steadily through the late 2010s and early 2020s, with marked growth among 16–24-year-olds. By March 2023, an estimated 269,000 adults aged 16–59 report using ketamine in the previous year, with prevalence among 16–24s reaching around 3.8% – more than triple its level a decade earlier.

2020–2023 – harms and deaths

Analyses of coroner data show a sharp rise in deaths involving illicit ketamine in England, Wales and Northern Ireland, increasing more than ten-fold between 2014 and the early 2020s. By 2023, around 37 deaths per year in England and Wales mention ketamine on the death certificate, with most attributed to accidental poisoning, often involving polydrug use.

Clinical guidance on ketamine uropathy

UK urology and addiction literature in the early 2020s describes ketamine-induced uropathy as a severe, often irreversible condition characterised by frequency, urgency, pain, haematuria, incontinence, and in some cases hydronephrosis and renal impairment. Guidance emphasises that frequent use (for example, several times per week over months to years) significantly raises the risk of permanent bladder damage.

2024 – record prevalence and wastewater data

By 2024, at least 299,000 adults aged 16–59 in England and Wales report illicit ketamine use in the previous year – the highest figure on record. Wastewater analysis shows an approximately 85% increase in ketamine consumption between 2023 and 2024 in sampled English cities, confirming a sharp rise in population-level use.

2024–2025 – deaths and treatment demand

A 2025 national analysis of deaths involving illicit ketamine across England, Wales and Northern Ireland identifies 696 ketamine-positive deaths between 1999 and 2024, with a steep acceleration in both annual deaths and the proportion of all drug-related deaths involving ketamine in the 2020s. Adult treatment statistics for 2024–2025 show an increase in the proportion of people entering treatment in England whose primary problem drug is ketamine, rising from around 2.3% to 3.2% of new treatment presentations in one year.

2025 – updated harms assessments and policy debate (UK)

In early 2025, the Home Office publishes an updated harms assessment commissioning letter on ketamine, referencing the 2013 ACMD review and the 2014 upgrade to Class B, and noting continuing increases in use and harms. Policy and advocacy groups argue that simply escalating punitive controls will not reduce ketamine-related harms and call instead for better harm-reduction messaging, early intervention, and specialised services for ketamine dependence and urological complications.

2025 – clinical recognition of ketamine uropathy

Recent UK clinical practice resources (for example, NHS Lothian's 2025 guidance) describe ketamine-associated uropathy as a major emerging problem in young people, with up to 60% of people with ketamine use disorder reporting bladder symptoms. Specialist urology and continence services now routinely ask about ketamine when assessing otherwise unexplained severe cystitis or bladder pain in younger adults.

3. Types of Ketamine

Ketamine hydrochloride has a wide range of effects in humans including analgesia, anaesthesia, hallucinations, raised blood pressure and bronchodilation. It is primarily used for the induction and maintenance of general anaesthesia, usually in combination with some sedative drug. It is used in intensive care, for analgesia (particularly in emergency medicine), and treatment of bronchospasm. It is also a popular anaesthetic in veterinary medicine.

Ketamine hydrochloride is sold as **Ketanest**, **Ketaset**, and **Ketalar**. Like other drugs of this class such as phencyclidine(PCP), it induces a state referred to as "dissociative anaesthesia" and is used as a recreational drug.

Structure:

In chemical terms Ketamine is a chiral compound.

Most pharmaceutical preparations of ketamine are racemic (a mixture), of S and R isomers.

The same drug can have a variety of shapes. "S" means that a molecule is wound in an anticlockwise or Sinister direction

The shape that is wound clockwise is "R," or Rectus.

Anecdotally, users express differences between the different brands. The more active enantiomer, S-ketamine, is also available for medical use under the brand name **Ketanest S**. It was originally believed that this brand was less ‘hallucinogenic’ but this is not the case. At the same dose as Ketalar", S(+)ketamine causes a much faster loss of consciousness (due to an action on opioid receptors) has a much higher risk of suppressing breathing and has a faster recovery time. This does reduce the number of psychedelic experiences reported at these doses. However, at lower doses S(+)ketamine produces potent psychedelic effects.

Ketamine is a *core* medicine in the World Health Organisation's "Essential Drugs List", which is a list of minimum medical needs for a basic health care system. It is not a tranquilliser and is used in the NHS not only on young or old people but is finding a much wider application among adults with regards to pain management.

Ketamine has many street names in the UK including Ket, K, Special K, Katie, Regretamine and commonly known has a ‘horse tranquiliser’. Ketamine’s effect on horses, which where applied by the US army in Arizona during the 1980s proved

Ketamine provided horses with the faculty to jump notably higher than when they were not under the influence of Ketamine. Thus, being a response of Ketamine's stimulant effects.

Methods of use:

Ketamine is sold in either powdered or liquid form. In powdered form, its appearance is similar to that of pharmaceutical grade cocaine and can be snorted, injected, or placed in beverages.

It is also possible to smoke the drug in a joint or pipe, usually mixed with cannabis and tobacco. Freebase Ketamine use in the UK is rare at present.

CK1

Cocaine and Ketamine combined in powder (alternate lines) smoked together in 'rock' form or combined in a tablet is anecdotally referred to as CK1 – 'the ultimate designer drug', 'CK beauts' etc.

Not only a combination used on the Gay scene but is now found its way to the problematic injecting user. John Lilly used both cocaine and Ketamine, possibly in combination stating

"The experience is intense and weird. Imagine all the surrealism of K with the ability to take a more active role in the experience."

The CK1 pill, which combines cocaine and ketamine, is the latest entrant in North Goa's tourist coast where the clandestine trade in 'club drugs' has touched a new high, according to enforcement agencies.

Ketamine can be combined with many drugs including alcohol. The dangers and health considerations of these combination are not fully understood or investigated and much of the information is still anecdotal.

4. How Ketamine works

Ketamine is known for its short duration of hallucinatory effects, lasting about fifteen minutes when snorted, ten minutes when injected, and up to an hour when ingested. The onset is rapid, especially when smoked (10-15 seconds) or injected (30 seconds), and the total experience generally does not exceed a couple of hours. At lower doses, Ketamine can act as a stimulant, but higher doses can quickly suppress breathing and affect brain mechanisms and the body in various ways.

Unlike hallucinations induced by tryptamines and phenethylamines, those caused by Ketamine and other dissociative anaesthetics like DXM and PCP are distinctly different. At low doses, hallucinations typically occur in a dark room with closed eyes, while at medium to high doses, they become more intense, affecting perceptions of distance, scale, colour, and time, as well as the visual system's processing speed.

At higher doses, users might experience distorted speech and auditory hallucinations, with sounds and colours interchanging. This often leads to an out-of-body experience, encountering entities, or feeling like one is floating in space, known as the ‘K Hole’. For regular users, the intensity of the 'K Hole' may diminish, leading some to increase their dosage for the desired effect. Over time, with continuous use, Ketamine can shift from being a dissociative to a stimulant.

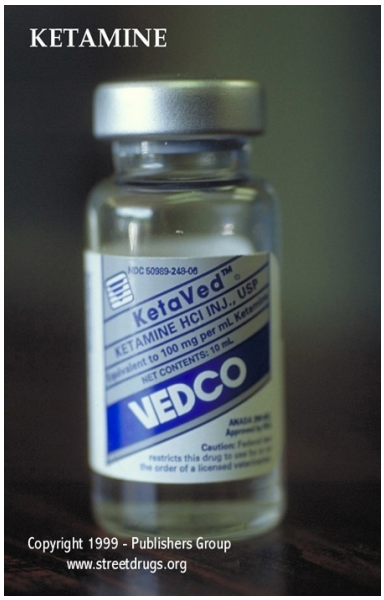
There are parallels drawn between the 'K Hole' experience and near-death experiences, as both involve reduced external sensory input. This similarity extends to dreaming, where studies have shown a correlation between individuals who recall their dreams and those who experience Ketamine-induced hallucinations. In a study of 150 patients, a significant majority of those who regularly remembered dreams at home also reported dreaming during Ketamine anaesthesia, contrasting with those who typically didn't recall dreams.

The significant increase in ketamine use among young people, particularly those aged 16 to 24, highlights a growing public health concern. Over the past five years, there has been a threefold rise in ketamine use within this age group.
The overall usage of ketamine has risen by 89% since 2018. Police forces seized the largest quantity of ketamine on record in the year ending March 2023 (500kg). This was an 189% increase from the previous year. Border Force seized the second largest quantity of ketamine on record (934kg), after the peak in 2021 to 2022. The average street price for ketamine in the UK is £20 a gram.
Ketamine is sold in either powdered or liquid form. In powdered form, its appearance is similar to that of cocaine and can be snorted, injected, or placed in beverages.

5. Ketamine and the brain:

Ketamine, acts on many systems and chemical pathways in the brain depending on the dose. Its mechanism of action is complex. Ketamine binds to receptors inside the brain and causes a blockage within channels or ‘tunnels’. The outer end of the tunnel is attached to a glutamate receptor (called an NMDA receptor) on the cell surface. The whole complex is known as an NMDA-PCP, or N-P receptor. The "N" part is on the outside and locks onto glutamate, and the "P" part is on the inside of the tunnel and locks onto ketamine.

Like Phencyclidine, Ketamine is primarily a non-competitive antagonist of the NMDA receptor which opens in response to binding of the neurotransmitter glutamate.
This NMDA receptor mediates the analgesic effects (painkilling effects) of ketamine at low doses. Evidence for this is reinforced by the fact that naloxone, an opioid antagonist, does not reverse the analgesia. Studies also seem to indicate that ketamine is "use dependent" meaning it only initiates its blocking action once a glutamate binds to the NMDA receptor.



The N-P receptor complex plays important roles in thinking, memory, emotion, language, sensation, and perception. Ketamine has effects in all of these areas, changing the way in which incoming data is integrated or blocking it out altogether. Theories formulated state that this can isolate parts of the brain from the setting which may then fill with other realities originating from the depths of the mind. Though strictly not psychedelic or hallucinogen Ketamine will effect all of the mechanisms of action that these drugs display on the brain.

Ketamine also has direct and/or indirect effects on opioid, dopamine,,cannabinoid, nitric oxide, noradrenaline GABA (gamma amino-butyric acid, an inhibitory messenger and acetylcholine systems. As the dose level rises, the drug binds to more and more types of receptors. There are also hormonal effects that include release of the stress hormone, cortisol.

Ketamine is racemic, and its R and S stereoisomers have different binding affinities:

(S)-ketamine has about four times greater affinity for the PCP site of the NMDA receptor than does (R)-ketamine.

(S)-ketamine seems to induce drowsiness more strongly than the (R) enantiomer.

6. Mental Health

Daily users of Ketamine are deemed to be psychologically dependent on the drug. There are no clear reports of a physical withdrawal syndrome from Ketamine in humans that do not also involve other drugs.

The heaviest users describe a variety of symptoms over the days following a binge, but it is difficult to say to what these are due. Some people are very twitchy and restless for several days. They have poor attention span and poor concentration, impaired recall, a high mood and may be tense and jittery. These symptoms may be due to lingering norketamine (the metabolite) rather than a lack of ketamine. With ketamine, there is almost no evidence of a physical syndrome resembling withdrawal from opiates, barbiturates, or alcohol.

As with cocaine, most people who use large quantities of ketamine stop doing so on their own. However, where attempts to stop have repeatedly failed, there may be a need for extra help. Such help is most likely to succeed when it involves a multi-leveled approach combining mental, physical and social methods.

The use of ketamine has been linked with a wide range of unpleasant mental effects. The list includes anxiety, panic attacks, flashbacks, post-traumatic stress disorder, persistent perceptual changes, mania, depression, suicide, insomnia, nightmares, night terrors, an unpleasant feeling of being unreal or that the world is unreal, paranoia and other false beliefs that overvalue one's role in the scheme of things (grandiose delusions), persistent hallucinations, automatic behaviour, fragmentation of the personality and aggression.

Ketamine use is usually linked with feeling high rather than low. In most cases, on stopping there is a gradual return to normal mood. Chronic use is occasionally followed by depression, but the chronic use may itself have been self-medication of a pre-existing or latent depression. Suicidal actions may not always be due to low mood. Being "too high" is more likely a risk factor than being "too low." Ketamine may trigger an episode of mania in persons with manic-depression (bipolar affective disorder). It also has possible anti-depressant effects and can reverse the effects of the mood-stabilising drug lithium.

Ketamine produces a dissociative state, characterised by a sense of detachment from one's physical body and the external world which is known as depersonalisation and de-realisation. Ketamine has less to do with set and setting than LSD. At sufficiently high doses, 150 mg, users may experience what is coined the "K-hole", a state of dissociation whose effects are thought to mimic the phenomenology of schizophrenia. This may include distortions in bodily awareness, such as the feeling that one's body is being tugged, or is gliding on silk, water, or energy. Users often report feeling more skeletal or becoming more aware of their bones - the shape of their hands.

Users may experience worlds or dimensions that are ineffable, (they are unable to put it into words) Users have reported intense hallucinations including visual hallucinations, perceptions of falling, 'seeing God', feeling connected to other users, objects and the cosmos, experiencing psychic connections, and shared hallucinations and thoughts with adjacent users.

Users may feel as though their perceptions are located so deep inside the mind that the real world seems distant (hence the use of a "hole" to describe the experience). Some users may not remember this part of the experience after regaining consciousness, in the same way that a person may forget a dream.

At first, users may not remember their own names, or even know that they are human, or what that means. Movement is extremely difficult, and a user may not be aware that he or she has a body at all.

Treatment of depression

The National Institute of Health News reports that a study of 18 patients has found that ketamine significantly improved treatment-resistant major depression within hours of injection. The improvement lasted up to one week after the single dose. The patients in the study were previously treatment resistant, having tried an average of six other treatments that failed. NIMH director Dr. Thomas Insel said in the paper:

"To my knowledge, this is the first report of any medication or other treatment that results in such a pronounced, rapid, prolonged response with a single dose. These were very treatment-resistant patients."

Similar studies were carried out by Liebrenz et al, who substantially helped a 55-year-old male subject with a treatment-resistant major depression and a co-occurring alcohol and benzodiazepine dependence by administering an intravenous infusion of 0.5 mg/kg ketamine over a period of 50 minutes.

7. Health

Medically, Ketamine is generally deemed to be a safe anaesthetic and had been used in medicine since the late 1960's. From a medical point of view, ketamine has a good record relative to other drugs. A standard club "bump" results in much lower blood levels than the i.v. injections used for surgery.

At psychedelic doses, ketamine behaves more like a stimulant than a sedative, increasing the heart rate and breathing. The anaesthetic is widely used in developing countries as it is considered safe enough to be given by paramedics where resources are scarce. It does not usually suppress breathing when injected into a muscle and swallowing and airway reflexes are usually preserved. However, the latest data sheet states that a fully trained specialist should be present.

There are very rare cases of children who failed to breath for a minute or more following i.m. injection of surgical doses. Doctors give the first i.v. dose slowly, over at least a minute, as there is a risk that rapid i.v. injection will suppress breathing. Airway problems have occurred at medical doses in very rare cases.

While any drug can cause death in a few people, deaths from Ketalar" in medicine seem to be rare. However, anesthetics are given within carefully controlled settings. Outside this setting, the real physical dangers do not arise so much from the drug itself as from the context of use. An anesthetic leaves the taker far more helpless than most "recreational" drugs, apart from large doses of alcohol. Disconnection from the body can be dangerous in almost any situation other than lying down, and even that has risks.

In 1989, psychiatry professor John Olney reported that Ketamine caused reversible changes in two small areas of the rat brain. 40 mg/kg resulted in fluid-filled bags ("vacuoles") appearing inside cells. The bags disappeared after several days, unless high doses of the far more toxic PCP or close relative MK801 were repeatedly given, in which case some cell death was seen. Similar results have not been found in humans possibly because of fundamental differences in metabolism between the rat and human brain.

Health consequences of Ketamine use may not solely be dependent on the route of administration though whether a user is snorting, smoking or injecting the drug would determine the health considerations and harm reduction techniques required to engage and help users.

On 21 June 2007 Hong Kong Medical Journal posted a report regarding the misuse of 'street K'. The report suggests that long term use may result in damage to the liver or urinary bladder, or even acute renal failure. However, the researchers suspect that the damage "may be due to other toxins that the 'street ketamine' has been contaminated with". Or a metabolite such as norketamine which stays in the body for longer hours.

In a study of 9 daily Ketamine users, Shahani et al found "marked thickening of the bladder wall, a small capacity, and perivesicular stranding, consistent with severe inflammation. Cessation of Ketamine use, with the addition of pentosan polysulfate, appeared to provide some symptomatic relief. Numerous other clinical and anecdotal reports from across the world are starting to see isolated incidences involving Ketamine use and urinary tract, bladder and kidney damage.

To date, most UK deaths on ketamine are due to accidents when the user is under the influence of the drug. Mainly from falling.

Medical Ketamine

Ketamine is usually injected intravenously or intramuscularly in medical settings, but it is also effective when smoked, snorted or taken orally.

In human medicine ketamine is still used as an anaesthetic as it doesn't suppresses breathing as much as other available anaesthetics. Ketamine can be used in podiatry and other minor surgery, and occasionally for the treatment of migraines. There is ongoing research in the US, the Netherlands and France into the drug's usefulness in the treatment of alcoholism and heroin addiction, depression suppression, and for pain therapy.

In veterinary anaesthesia, ketamine is often used for its anaesthetic and analgesic effects on dogs, cats, rabbits, rats, and other small animals. Ketamine is used to manage pain among large animals, though it has less effect on cows

Ketamine may be used in small doses (0.1–0.5 mg/kg/h) as a local anaesthetic, particularly for the treatment of pain associated with movement and neuropathic pain. It has the added benefit of counteracting spinal sensitisation or wind-up phenomena experienced with chronic pain. At these doses, the psycho-tropic side effects are less apparent and can be well managed with benzodiazepines.

Ketamine is a co-analgesic, and so is most effective when used alongside a low-dose opioid. While it does have analgesic effects by itself, the higher doses required can cause disorienting side effects. The combination of ketamine with an opioid is, however, particularly useful for pain caused by cancer.

The effect of ketamine on the respiratory and circulatory systems is different than that of other anaesthetics. When used at anaesthetic doses, it will usually stimulate rather than depress the circulatory system. It is sometimes possible to perform ketamine anaesthesia without protective measures to the airways.

Ketamine is also a powerful analgesic and can be used in sub-anaesthetic doses to relieve acute pain. However, its psychotropic properties must be taken into account. Patients have reported vivid hallucinations, "going into other worlds" or "seeing God" while anaesthetised and these unwanted side-effects have reduced the use of ketamine in human medicine. They can, however, usually be avoided by the simultaneous application of a sedative such as a benzodiazepine.

According to a retrospective review published in the October 2004 issue of Pain Medicine, low-dose ketamine is recognised for its potential effectiveness in the treatment of complex regional pain syndrome (CRPS), Although low-dose ketamine therapy is established as a generally safe procedure, reported side effects in some patients have included hallucinations, light headiness, dizziness and nausea. Therefore nurses administering ketamine to patients with

CRPS should only do so in a setting where a trained physician is available if needed to assess potential adverse effects on patients.

Treatment of addiction

A Russian doctor Evgeny Krupitsky has carried out studies using ketamine as part of a treatment for alcohol addiction, combining psychedelic and aversive techniques. This method involved psychotherapy, controlled ketamine use and group therapy. 60 of the 86 alcoholic males selected for the study remained fully abstinent through one year of treatment. Dr Krupitsky has also treated heroin addicts and reached the conclusion that one ketamine assisted psychotherapy session was significantly more effective than active placebo in promoting abstinence from heroin during one year.

In a recently published study, 59 detoxified inpatients with heroin dependence received a ketamine-assisted psychotherapy (KPT) session prior to their discharge from an addiction treatment hospital, and were then randomised into two treatment groups.

Participants in the first group received two addiction counselling sessions followed by two KPT sessions, (with a single im injection of 2 mg/kg ketamine) with sessions scheduled on a monthly interval (multiple KPT group). Participants in the second group received two addiction counselling sessions on a monthly interval, but no additional ketamine therapy sessions (single KPT group). After one year, there was a significantly higher rate of abstinence in the multiple KPT group. Thirteen out of 26 subjects (50%) in the multiple KPT group remained abstinent, compared to 6 out of 27 subjects (22.2%) in the single KPT group. No differences between groups were found in depression, anxiety, craving for heroin, or their understanding of the meaning of their lives. It was concluded that three sessions of ketamine-assisted psychotherapy are more effective than a single session for the treatment of heroin addiction.

Pharmacological model of schizophrenia

Ketamine and other NMDA antagonists such as PCP and MK-801 are considered to be the best available pharmacological models of schizophrenia to date. Unlike amphetamines, which influenced the synthesis of the "dopamine hypothesis of schizophrenia", ketamine can reliably produce the negative symptoms (social withdrawal, alogia), positive symptoms (hallucinations, delusions) and cognitive deficits of schizophrenia in healthy and schizophrenic humans, as well as in animal models of the illness.

This has led to the development of the alternative "NMDA hypothesis of schizophrenia" which posits that the aetiology of schizophrenia results from NMDA receptor hypofunction, particularly in the prefrontal cortex. NMDA receptors in the prefrontal cortex modulate subcortical dopamine neurotransmission, whose hyperactivity is believed to produce the positive symptoms of schizophrenia.

Disruption of the prefrontal cortex may also manifest the negative symptoms and cognitive deficits in schizophrenia. As disturbances in working memory, attention and

executive functioning are consistently seen in schizophrenics and their healthy relatives, it is proposed that cognitive deficits in schizophrenia are the core of the disorder.

Treatment of reflex sympathetic dystrophy

Ketamine is being used as an experimental and controversial treatment for Complex Regional Pain Syndrome (CRPS). CRPS is a severe chronic pain condition characterised by sensory, autonomic, motor and dystrophic signs and symptoms.

The pain in CRPS is continuous, it worsens over time, and it is usually disproportionate to the severity and duration of the original injury. Somebody can bang their leg against a table and be in severe pain for 7 years or more.

There are two main types of treatment one at low doses (sub anaesthetic) and the second treatment involves putting the patient into a medically induced coma and given an extremely high dosage of ketamine; typically between 600-900 mg. This treatment, currently banned in the United States, is most commonly carried out in Germany but some treatments are now also taking place in Monterrey, Mexico.

8. Harm Reduction:

The commonest mistakes in harm reduction leaflets are claims that ketamine is a "downer." This is because of the outward appearance of the user on large doses. Ketamine is more likely to act as a stimulant especially in small doses and possibly in the long term. Most information focuses on "overdose" (though there have been deaths due to overdose, these are normally when combined with other drugs) and vomiting (not as common as often claimed, unless the user has been drinking and research in this area is lacking), and not to mention that the main danger is falling over.

• Difficulty with walking and balance resulting in falls is a common problem:

•Snorting powders can eventually damage the linings of the nose and impair the sense of smell.

• Injecting carries a risk of hepatitis C, HIV and other infections if shared or unclean equipment is used.

•Ketamine pills can start very quickly in a person with an empty stomach, sometimes in as little as 10-15 minutes, much faster than most drugs taken by mouth other than alcohol.

•Oral doses can also take over an hour to work, especially if there is food in the stomach. This time delay can lead to taking more pills, in the mistaken belief that the pills must be weak. Pills result in more physical effects that will last longer.

•Guard against vulnerability and forgetfulness by making sure you're with people you can trust.

• If your bladder is affected and If you sit in the bath to soothe the pain there is a risk of unconsciousness and drowning.

• Benzodiazepines slow the breakdown of ketamine in the liver. They increase problems with memory, attention, and coordination.

• Mixing ketamine with other drugs or alcohol will make problems worse.

• Avoid severe and long-lasting abdominal pain (referred to as K cramps) by stopping completely, cutting down and getting medical help immediately.

• If you have a panic or anxiety attack stay with your friends. Make sure someone is looking after you.

• If you experience urination problems get it checked out immediately, users have reported that symptoms are relieved to some degree with cessation.

• Give yourself breaks between sessions or daily use

• If you feel depressed and anxious when stopping or reducing ketamine use, get some professional help to manage your symptoms during a gradual reduction.

• Get safer injecting advice from your nearest needle exchange.

•Some users may suffer depression related or unrelated to Ketamine use. The brain can make serotonin out of tryptophan in the diet, and higher levels of serotonin have been claimed to reduce depression, anxiety, insomnia, and craving.

•Pineapple, banana, turkey, chicken, yoghurt, unripened cheese, and chocolate are rich sources of tryptophan. Combining these foods with pasta, cereals, or bread may enhance the absorption of tryptophan into the brain. Tryptophan supplements are not recommended in pregnant women, asthmatics, or people with autoimmune conditions.

Always seek medical advice and mention ketamine use to the doctor.

9. References

Abstracts of some medical references can be obtained on the web.
Go to www.bmj.com

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Rapid needs analysis

Worker and Project Name:

Date of contact:

Sex:

Male Female

Age:

16-19 20-24 25-29 30-34 34-39 40-44 45-49 50-54 55-59 60+

Ethnicity:

Self described……

Ketamine use:

Type: Powder Rock Tablet Paste Liquid

Where are you getting it from? NHS Vet Other…….

Route: Smoke / chase Nasal IV Oral Other

Frequency: Daily Weekly Monthly

Cost per session: £10 £20 £40 £60 £80 £100 £150 £200 £250 £300 £400 £500+

Hits/lines per session: 1 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30+

Sharing any equipment (inc water)? Yes No (what?…….)

Injection sites used: Arms Legs Groin Neck Other…….

Other substance use:

Cocaine / Crack Heroin Cannabis Ecstasy Benzodiazepine Amphetamine Methamphetamine

Alcohol Methadone GHB LSD Other……

Physical health (client experiencing problems with):

Heart Lungs Kidney Liver Seizures Stomach Bladder Vein damage Nasal damage

Weight loss DVT's Strep 'A' HIV HCV MRSA Other(s)……

More detail:

Mental health (client experiencing problems with):

Anxiety Panic Paranoia Moods Depression Suicidal thoughts Hallucinations

Other:

Other information: