PHILTRE

Annual Report

1st Oct 2016 - 30th Sept 2017

WEDINOS

GIG CYMRU NHS WALES | Iechyd Cyhoeddus Cymru Public Health Wales

Llywodraeth Cymru Welsh Government

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Headline Figures 2016-17

WEDINOS provides a mechanism for the anonymous submission and testing of samples of new psychoactive substances and the dissemination of pragmatic harm reduction advice.

7,130 samples received and 357 compounds identified either in combination or isolation since project launch (September 2013).

1,345 samples analysed by WEDINOS and 126 compounds identified either in combination or isolation.

Median age for all mind altering/ psychoactive sample providers was 36 years.

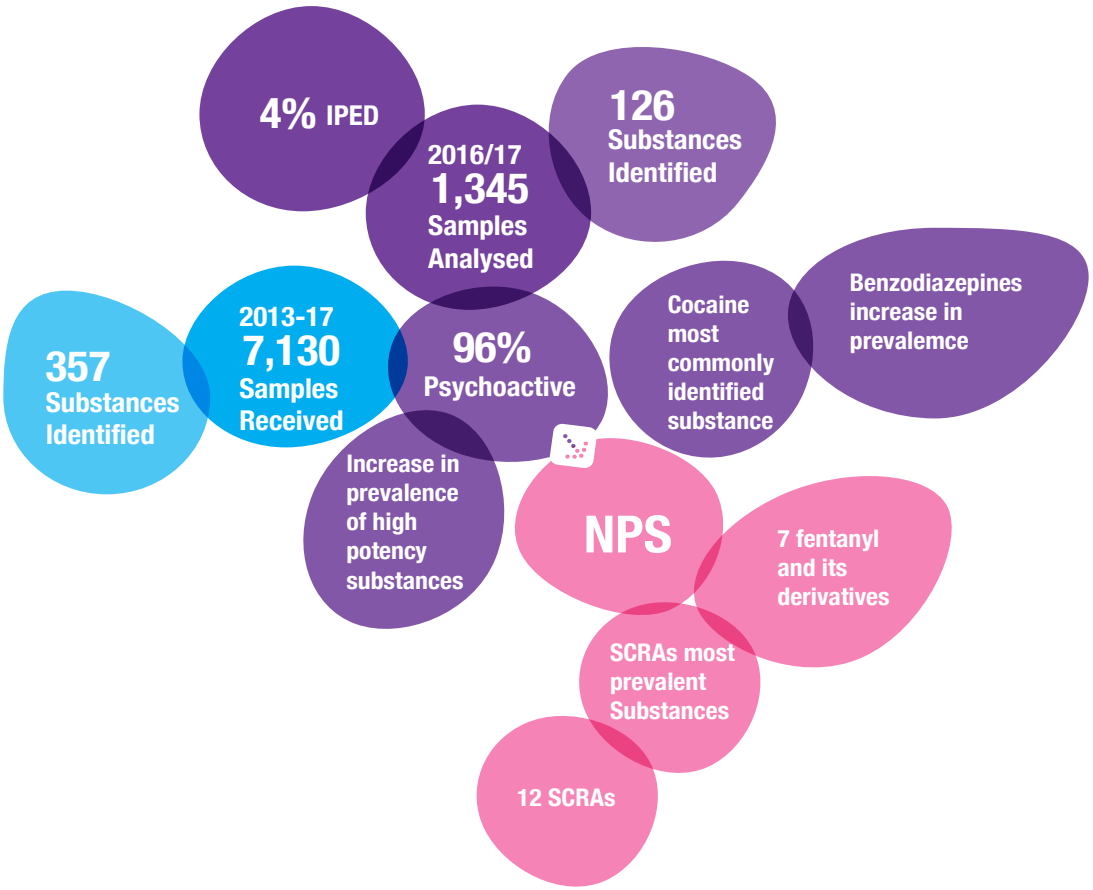
33%

33 per cent of samples purchased, in the belief they were controlled under the Psychoactive Substances Act, contained substances controlled by the Misuse of Drugs Act 1971.

Cocaine was the most commonly identified substance controlled by the Misuse of Drugs Act 1971.

Synthetic Cannabinoid Receptor Agonists were the most commonly identified substance categorised as New Psychoactive Substance.

26 samples received found to contain fentanyl(s), with 7 fentanyl and its derivatives substances identified.



PS and NPS

Psychoactive substances are substances that, when taken in or administered to one's system, affect mental processes, e.g. cognition or affect. This term and its equivalent, psychotropic drug, are the most neutral and descriptive term for the whole class of substances, licit and illicit, of interest to drug policy. 'Psychoactive' does not necessarily imply dependence-producing, and in common parlance, the term is often left unstated, as in 'drug use' or 'substance abuse'.
World Health Organisation

The term "**new psychoactive substances (NPS)**" has been legally defined by the European Union as a new narcotic or psychotropic drug, in pure form or in preparation, that is not scheduled under the Single Convention on Narcotic Drugs of 1961 or the Convention on Psychotropic Substances of 1971, but which may pose a public health threat comparable to that posed by substances listed in those conventions.
Council of the European Union decision 2005/387/JHA

PS
NPS

3 years and counting...

Due to changes in supply, demand, legislation, control measures and scientific innovation there have been many shifts in the Welsh, United Kingdom (UK) and European drug markets over the past decade. Since October 2013 WEDINOS has endeavoured to monitor the Welsh and wider UK drugs market through analysing the content of substance samples, submitted via one of the programmes sample collection mechanisms, whilst also linking this quantitative data with the qualitative information provided by sample providers in relation to effects experienced and from stakeholders working with substance users.

In addition to this and to ensure that WEDINOS has as complete a picture as possible, programme staff also provide and receive information directly to and from; UK Focal point, The UK New Psychoactive Substances (NPS) Clinical Network, UK Report Illicit Drug Reactions (RIDR), DrugWatch UK, European Early Warning System and European Monitoring Council for Drugs and Drug Addiction (EMCDDA).

375

The WEDINOS programme was designed primarily for the collection and testing of psychoactive substances and combinations of psychoactive drugs and, most importantly, dissemination via the website - **www.wedinos.org** - of pragmatic evidence based harm reduction information for users. Since then 7,130 samples have been submitted from 21 countries. 357 compounds have been identified and 34 reported to the European Early Warning System.

The United Nations Office on Drugs and Crime (UNODC) reports that an estimated quarter of a billion people, or around 5 per cent of the global adult population, used drugs at least once in 2015. With about 29.5 million of those substance users, or 0.6 per cent of the global adult population experiencing harms as a result of their use.

In 2016 the number of NPS reported for the first time to the European Union Early Warning System (EWS) fell for the second consecutive year from 98 in 2015 to 66, this is significantly lower than the 101 substances reported in 2014[1].

Despite the large number of NPS present in drug markets, the overall size of the market is still relatively small when compared with other drug markets. However, the UNODC notes that one of the most troubling aspects of NPS is that users are unaware of the content and dosage of psychoactive substances. An example of this is Synthetic Cannabinoid Receptor Agonists (SCRAs), where in the UK and other countries all substances related to this group are described under the umbrella terms of 'spice' and 'mamba'. This has the potential of additional health risks to the users of these substances.

Table 1.

WEDINOS most commonly identified stimulants (2016-2017)
Cocaine
MDMA
Amphetamine
Mephedrone
N-Ethyl Hexedrone

1. European Drug Report – Trends and developments 2017; EMCDDA; Lisbon; June 2017 http://www.emcdda.europa.eu/publications/edr/trends-developments/2017 [Accessed 18th October 2017]

high potency

Since the enforcement of the Psychoactive Substances Act on 26th May 2017, WEDINOS has seen a reduction in the number of substances being found upon analysis by the programme, however, we have also seen an increase in the prevalence of high potency, therefore, potentially more harmful substances; particularly amongst Synthetic Cannabinoid Receptor Agonists, Synthetic Opioids and Benzodiazipines(see Table 3).

The number one and two substances identified by the project during this reporting period were cocaine and diazepam, followed by MDMA (see Table 2). Cocaine and MDMA are the most commonly used illicit stimulants across Europe according to the EMCDDA's Annual Report 2017; with multiple indicators suggesting that the availability and purity of cocaine is on the increase. This is alongside a continuation of increases in the availability of high dosage MDMA pills.

This is a worrying trend as the Office for National Statistics reports a year on year increase in the number of deaths where cocaine and amphetamines (which includes MDMA) were mentioned on the death certificate since 2012.

In 2016 in England and Wales, there were 371 deaths involving cocaine, representing a 16% increase from the 320 deaths registered in 2015. Amphetamine deaths rose slightly from 157 (2015) to 160 in 2016 – however, this is a significant increase from 97 deaths involving amphetamines recorded in 2012.

10.6%

NPS Prevalence

There remains little robust evidence on trends in prevalence of NPS use in the UK. The Global Drugs Survey 2017 (GDS17), a self selecting survey, reports that 10.6 per cent of UK respondents stated the purchase of NPS in the last twelve months.

The UK has the third highest percentage of respondents purchasing NPS within the last twelve months out of countries participating in GDS17, behind USA (13.3 per cent) and the Netherlands (12.8 per cent).

It is worth noting that in GDS17 the question focussed on 'purchased' as opposed to 'use' as in previous years. In GDS16 11.6 per cent of UK respondents stated that they had used NPS in the previous 12 months. The UK had the highest level of NPS use amongst countries participating in GDS16.

The 2016/17 Crime Survey for England and Wales (CSEW) another self report survey of England and Wales residents, has included a generic question around the use of NPS among adults aged 16 to 59 since 2014/15. For the context of the CSEW NPS relates to "newly available drugs that mimic the effect of drugs such as cannabis, ecstasy and powder cocaine, and which may or may not be illegal to buy, but are sometimes referred to as 'legal highs'".

Of respondents to the 2016/17 CSEW 0.4 per cent of adults aged 16 to 59 reported taking NPS in the last year, down from 0.7per cent in 2015/16 and 0.9 per cent in 2014/15; with 2.4 per cent stating that they had taken NPS at some point in their lifetime, a statistically non-significant change from 2.7 per cent in 2015/16. Men were found to be twice as likely to have taken an NPS in their

lifetime than women; with young adults (16-24yrs) twice as likely (4.2 per cent) to have taken an NPS than the wider age group of 16 to 59[2].

Across Europe a number of countries have included NPS in their general population surveys, however, due to different methods and survey questions it is difficult to make direct comparisons. For young adults (aged 15–34), last year prevalence of use of these substances ranges from 0.3 % in Austria, to 1.6 % in the Czech Republic and Ireland. These do not include the use of ketamine and GHB.

123

NPS related fatal drug poisonings

The Office for National Statistics reported that there were 123 fatalities registered in 2016 where NPS were mentioned on the death certificate. This is an increase from 114 in 2015. However this figure remains very low when compared to the 1,209 deaths where heroin and/or morphine was mentioned on the death certificate[3].

2. Drug Misuse: Findings from the 2016/17 Crime Survey for England and Wales; Home Office; July 2017; https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/642738/drug-misuse-2017-hosb1117.pdf
[Accessed 18th October 2017]

3. Deaths related to drug poisoning in England and Wales: 2016 registrations; Office for National Statistics; 2nd August 2017. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoninginenglandandwales/2016registrations
[Accessed 18th October 2017]

WEDINOS Findings - 1st October 2016 to 30th September 2017

Between the launch of the project on 1st October 2013 and 30th September 2016, the WEDINOS project has received 7,130 samples, identifying 357 substances either in isolation of combination.

For the year October 2016 to September 2017, 1,345 samples were received. These samples were submitted from 55 different organisations and services from across Wales. Three services from across the wider UK also contributed this year. Since the project launch samples have been received from 140 organisations and services from across the United Kingdom and Northern Ireland.

Of the samples received from Wales 90 per cent were submitted through participating organisations and 10 per cent from individuals accessing via the website: **www.wedinos.org**.

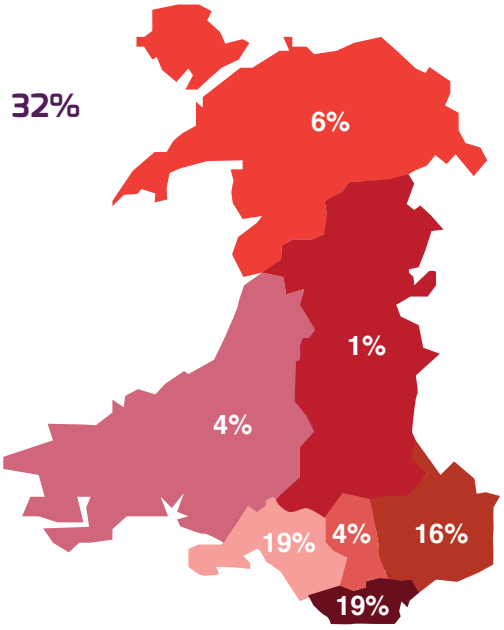
96%

Reason for Purchase
96 per cent were mind altering / psychoactive substances; the remaining 4 per cent being Image and Performance Enhancing Drugs (IPEDs). This figure is very similar to 2015-16 and 2014-15.

As stated in previous annual reports and the website, WEDINOS stopped accepting samples of Image and Performance Enhancing Drugs (IPEDs) from the general public in 2014. However, samples are still submitted via Public Health Wales approved sentinel providers to ensure contemporary evidence. This year 49 samples of IPEDs were submitted by the agreed sentinel providers, with samples originating from Wales and England.

Mind altering / psychoactive substances – The where, who, what and how

Chart 1.



Where...

68 per cent of samples were received from within Wales, 23 per cent from England, 4 per cent from Scotland, 3 per cent from Northern Ireland and the remaining 2 per cent was submitted from outside of the United Kingdom (the results of these samples analysis were not published).

Within Wales, the Abertawe Bro Morgannwg and Cardiff & Vale University Local Health Boards (LHB) contributed the highest proportion of samples, accounting for 19 per cent of all mind altering/psychoactive samples each.

It should be noted that **Chart 1** does not represent the spread, use or concentration of NPS use in Wales. It highlights the geographic variation in the engagement and proactive response of services with the WEDINOS project.

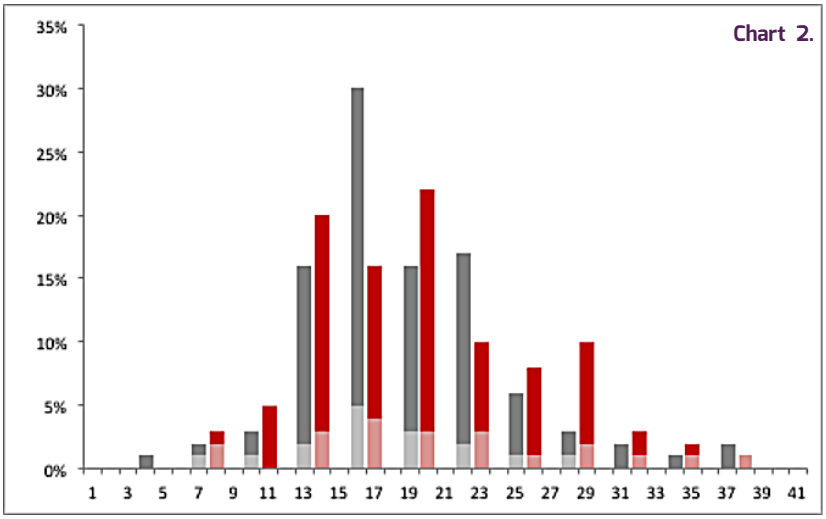
Who...

Demographic data was provided with 80 per cent of samples, of which 87 per cent of sample providers were male and 13 per cent female, this is consistent with previous years.

- Median age: 36 years, up from 33 in 2015/16.
- Average age: 32 years old, up from 31 last year.
- Age range: 12-65, the age range captured in 2014-15 was 13-63

Females - median age: 31 years, average age: 33 years (range: 15-65 years).
Males - median age: 35 years, average age: 31 years (range: 12-63 years).

Chart 2.



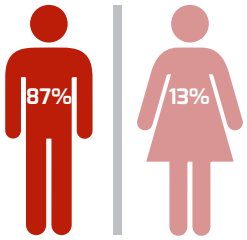


Chart 2: Profile of psychoactive sample providers
The largest proportion of submissions from males was provided by individual's aged 30-34, with just under a fifth of all psychoactive samples submitted by this group. For females the highest proportion of samples was submitted by 25-29 year olds. For females this mirrors submissions of psychoactive substances in previous years; but for males this is a shift from 25-29 year olds in 2015-2016 and 20-24 years olds submitting the largest proportion of samples in 2013-2014 and 2014-2015.

What...

Most commonly identified substances

During the last year, there has been a reduction in the number of NPS substances identified. Synthetic Cannabinoid Receptor Agonists (SCRAs) remain the most commonly identified group of NPS. SCRAs remain the third most commonly identified substance, with cocaine remaining the most prevalent for the second year, and diazepam replacing MDMA as the second. MDMA, falls to fourth equal with cannabis. However, following no SCRA's as a single substance appearing in the top ten most commonly identified substances for the first time since project launch last year, 5F-ADB comes in at number ten.

Table 2. shows the most commonly profiled psychoactive substances from WEDINOS.

As in previous years levamisole is the most popular bulking/ cutting agent identified, and is remains exclusively found in samples that also contained cocaine.

Table 2.

Most commonly identified mind altering/ psychoactive substance WEDINOS samples

One	Cocaine
Two	Diazepam
Three	SCRA's
= Four	MDMA
	Cannabis
Six	Caffeine
Seven	Buprenorphine
Eight	Levamisole
Nine	Paracetamol
Ten	5F-ADB

Most commonly identified New Psychoactive Substanceses

WEDINOS utilises the definition of NPS as defined by Council of the European Union decision 2005/387/JHA.

The most commonly identified NPS groups remain SCRAs, followed again by designer benzodiazepines and then cathinones. Of the ten most commonly identified NPS profiled by WEDINOS in the last year, four are SCRAs and three benzodiazepines, as shown in **Table 3**.

In the 2015-16 report we described our initial observations of reduced numbers of NPS substances being submitted and identified by WEDINOS alongside an increase in more potent substances such as the SCRA's MDMB-CHMICA and 5F-ADB, this year we must add AMB-FUBINACA to that list along with benzodiazepines alprazolam and etizolam.

Table 3. **Top ten most commonly identified New Psychoactive Substances**

Position	2016/17	2015/16
1 – Up five	5F-ADB	5F-PB-22
2 – New entry	AMB-FUBINACA	MDMB-CHMICA
3 – Up six	Alprazolam	Ketamine
4 – Up three	Etizolam	5F-AKB48
5 – New entry	Quetiapine	Mephedrone
6 – Down three	Ketamine	5F-ADB
7 – Down five	MDMB-CHMICA	Etizolam
8 – New entry	Zopiclone	3-Fluorophenmetrazine
9 – New entry	Pregabalin	Alprozolam
10 – Down five	Mephedrone	Diclazepam

5F-ADB, AMB-FUBINACA and MDMB-CHMICA are synthetic cannabinoid receptor agonists. Alprazolam and Etizolam are benzodiazepines. Quetiapine is a an atypical antipsychotic Ketamine is a dissociative. Zopiclone is non-benzodizepine hypnotic/sedative. Pregabalin is a prescribed medication used to treat used to treat several conditions, including neuropathic pain, epilepsy, and anxiety. Mephedrone is a stimulant.

Legal Status...

The following section relates to samples submitted to the WEDINOS project between 15th October 2016 and 30th September 2017

Note: Substance legal status (perceived and actual), is for consistency, based on legislative controls at the time of writing and as such takes into consideration both the Misuse of Drugs Act 1971 and the Psychoactive Substances Act 2016.

10%

10 per cent of samples that were purchased / submitted in the belief that they were a controlled substance by the Misuse of Drugs Act 1971, upon analysis, were found to be non-controlled compounds; with a further 8 per cent controlled by the Psychoactive Substances Act 2016.

Likewise, overall a third of samples that were purchased / submitted in the belief that they were controlled under the Psychoactive Substances Act or not currently controlled. The majority of these changes in classification related to SCRAs controlled as class B substances under the Misuse of Drugs Act 1971.

As in previous years this evidence of one substance being substituted for another continues to raise concerns around unexpected psychological, physiological and social effects to the end user including potential criminal justice impacts. As **Table 4.** clearly indicates, many samples had a different legal classification to that believed by the purchaser.

Many samples that were submitted with information relating to their perceived, based on the intended purchase, legal classification under the Misuse of Drugs Act 1971 or Psychoactive Substances Act 2016, changed classification from what the sample provider perceived, to a different legal status following analysis.

Examples of these changes include:

Table 4.

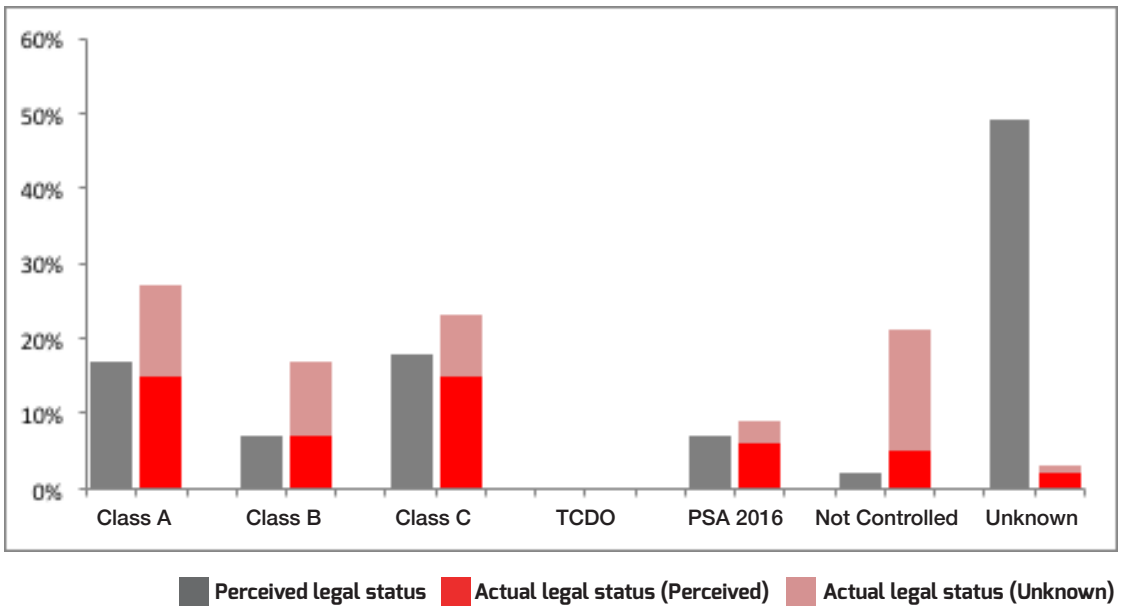
Believed to be...	Actual contents...
Mephedrone	Mexedrone
MDMA	4-Methylethcathinone
Ketamine	Cocaine
MDMA	Ephylone
3-Fluorophenmetrazine	Cocaine
3-Fluorophenmetrazine	AMB-FUBINACA
Diazepam	Diclazepam
Cocaine	TFMPP
Mephedrone	N-ethyl hexedrone
MDMA	N-ethyl hexedrone
Mephedrone	4-Chloroethcathinone
Ketamine	Furanylfentanyl
Diazepam	Etizolam
Alprazolam	Etizolam

Other samples, although remaining within the same classification did not contain what they were perceived to, this included:

Table 5.

Believed to be...	Actual contents...
Diazepam	Zopiclone
Psilocybin mushrooms	25C-NBOMe
LSD	25B-NBOMe
2C-I	Cocaine
Diazepam	Alprazolam
Mephedrone	3-Methylmethcathinone
Diazepam	Phenazepam
Fentanyl	Carfentanil
Fentanyl	Furanylfentanyl
MDMA	4,4-DMAR

Chart 3: Proportion of controlled and not controlled / legal – perceived and actual (Psychoactive Substances).

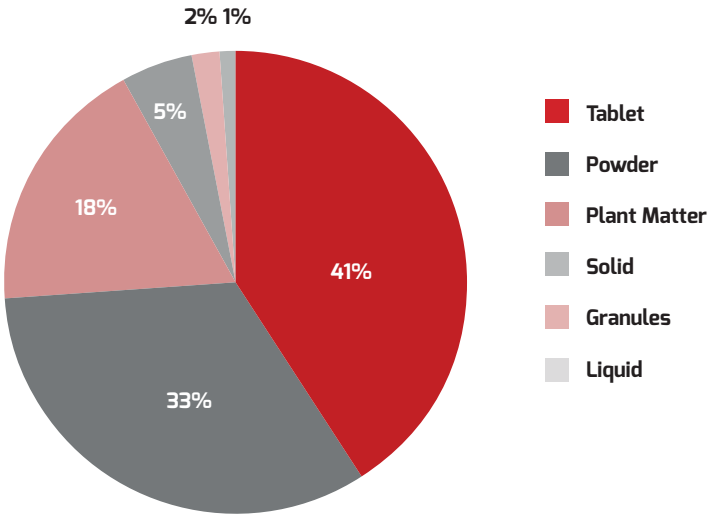


How...

Form of sample

WEDINOS requests the 'form of sample' for each submission to note any differences in the forms of the same drug/compounds being submitted from the population including mechanisms for ingestion or use. This allows for the identification of emerging changes in the way that certain types of substances may be being used and assess and describe the relative harms as a consequence. For example, recently WEDINOS has seen several samples of SCRAs submitted in powder and crystalline form alongside the more commonly seen ready to smoke plant matter submissions.

Chart 4: Form of psychoactive samples



Method of consumption

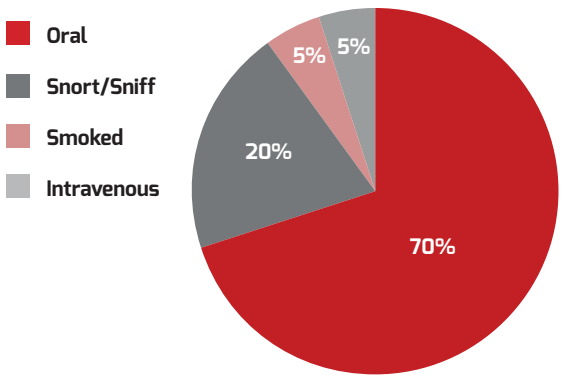
Method of consumption was reported in 51 per cent of sample submissions.

Previously we have made the assumption that all plant matter samples are smoked (unless stated otherwise, such as oral psychedelic mushroom consumption), however, doing this has a marked effect on the most common methods of consumption. Due to this, we will only include samples where a method of consumption was stated in this section.

For substances where a method of consumption was stated:

Consuming a substance orally (swallowing, bombing) was the most common method of consumption with 70 per cent describing it as how they took a substance; age range of sample providers using substances orally was 17 to 58 years. This was followed by snort/sniff at 20 per cent, as shown in **Chart 5.** Age range of sample providers using this method of consumption was 18 to 51 years. 5 per cent described smoking, with this method of consumption used by the youngest sample providers, age range: 16 to 60 years. The only substances that were consumed by smoking were SCRAs and heroin.
5 per cent stated intravenous administration, the age range for intravenous injectors was 23 to 45 years, which is a wider age

Chart 5: Method of consumption: All psychoactive samples



range than the 22 to 35 years observed in 2015-2016. Injecting drug use carries with it inherent risks of bacterial and viral infection over and above the risks / toxicity of the substance being injected.

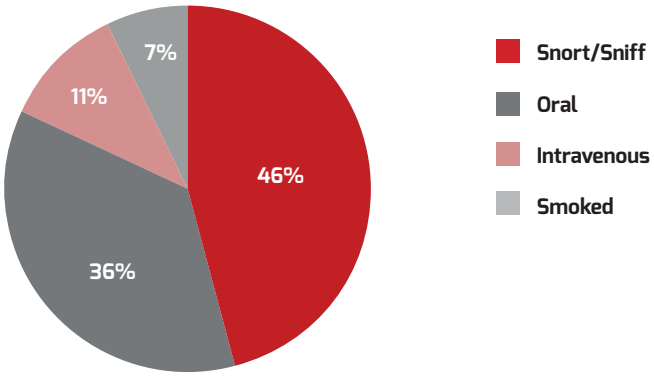
Substances submitted to WEDINOS that had "Intravenous" listed as the method of consumption include:

- Heroin
- Carfentanyl (purchased as Fentanyl)
- Fentanyl
- Oxycodone
- Ketamine
- Cocaine
- Caffiene (Purchased as amphetamine)

Focusing on the method of use for powders and crystalline materials, the most common method of consumption was snorting/sniffing with 46 per cent reporting this as shown in **Chart 6**. Snorting/sniffing potentially caustic or toxic substances carries additional risks related to damage to the nasal passages as well as potential transmission of blood borne viral infection when sharing snorting paraphernalia in the precense of nasal passage damage and blood.

Of additional concern is the 7 per cent reporting intravenous injecting of powders / crystalline materials, this is an increase from 5 per cent in 2015-16.

Chart 6: Method of consumption: Powders



Increased prevalence of high potency substances – An inadvertent effect of the legislative control

Napoleon Bonaparte

In 1798, whilst leading a military campaign in the country, Napoleon Bonaparte discovered that the majority of the Egyptian lower class habitually used hashish (cannabis resin). He declared a total prohibition of use on his troops. Despite this his soldiers brought the practice of using hashish back to France with them[4].

Throughout drug legislation history, there are many actions and effects that legislators may not have accounted for.

In 1912 the International Opium Convention convened with the end result being the banning of the use of opiates for non-medical purposes. Despite over a century of international control the average prevalence of problem/high-risk opioid use among adults (15–64) in Europe is estimated at 0.41 %, the equivalent of 1.4 million people. 'Opioids' here includes mainly heroin, but also other opioids[5].

In the United Kingdom heroin is controlled as a 'Class A' substance under the Misuse of Drugs Act 1971 (MDA 1971), making it an offence to possess, possess with an intent to supply it; and the supply or offering to supply heroin. Estimated number of problematic primary opioid users (in line with EMCDDA definition of problematic drug use (PDU)) for Wales for 2015/16 is 14,740 (95% CI 13260 – 16540)[6].

On 26th May 2017 the UK saw what was probably the most substantial change to its drug legislation for over 45 years, with the enforcement of the Psychoactive Substances Act 2016 (PSA 2016). This new legislation made it an offence to produce, supply, offer to supply, possess with intent to supply, possess on custodial premises, import or export psychoactive substances.

As previously mentioned in this report WEDINOS has observed the PSA 2016 appears to have had a positive effect on reducing the availability of NPS, and on the accessibility of NPS with the disappearance of high street sales and a reduction of online vendors. However, NPS remain available from European vendors (although they should not ship to the UK), the dark web and through the illicit drug market and as the range of substances has decreased the prevalence of high potency substances, linked to acute adverse effects and fatalities has increased.

This is particularly evident amongst SCRA's; prior to the PSA 2016 coming into force, WEDINOS analysed 4,239 samples identifying 195 substances classified as New Psychoactive Substances, accounting for 35% of substance identifications. 46 SCRAs were identified within this group (24% of substance identifications). Post act 13 SCRAs were identified (24% of substance identifications) with 5F-ADB and AMB-FUBINACA the most prevalent. Both of which are highly potent and have

Psychoactive Substances Act 2016

Pre and Post PSA 2016

26/05/15 to 25/06/16	26/05/16 to 25/05/17
• 1,863 samples received	• 1,563 samples received
• 182 substances	• 146 substances
• 128 NPS	• 73 NPS (43% decrease)
• 46 SCRAs	• 12 SCRAs (74% decrease)

4. Timeline: The use of Cannabis; BBC, Panorama; 16th June 2005; http://news.bbc.co.uk/1/hi/programmes/panorama/4079668.stm [accessed 13th October 2017]

5. Heroin drug profile; EMCDDA; http://www.emcdda.europa.eu/publications/drug-profiles/heroin [accessed 13th October 2017]

6. Personal communication, Health Protection, Public Health Wales; 13th October 2017.

Unlike THC, the synthetic cannabinoid receptor agonists are high-potency, high-efficacy, cannabinoid receptor full agonists.

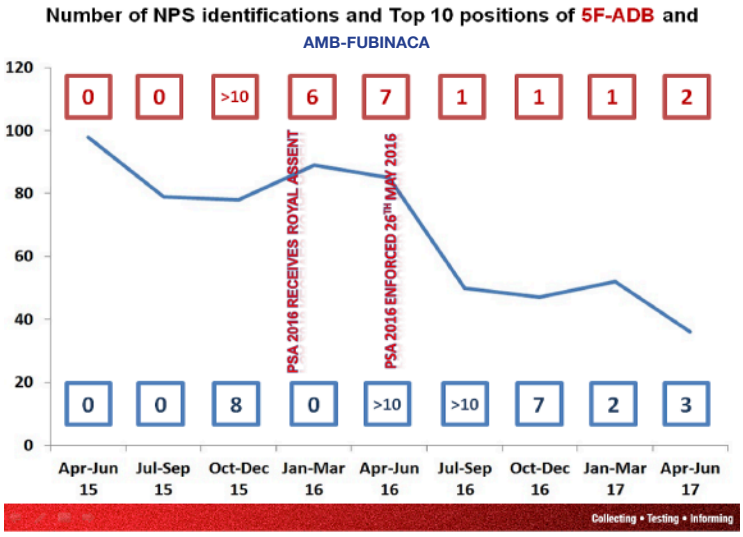
been responsible for hospitalisations and deaths. As highlighted by **Chart 7**. 5F-PB-22 was the most commonly identified NPS in 2015-2016 and 2014-2015; and has not been the subject of any alerts on the European information Database on New Drugs (EDND), now sits outside the TOP 10 with only four identifications in 2016-2017.

Acute psychoactive effects as a result of consuming SCRA's include, changes in mood, anxiety, perception, thinking, memory and attention. Adverse effects include anxiety, agitation, panic, dysphoria, psychosis and uncharacteristic behaviour. Adverse events necessitating intervention by Poison Control Centers, law enforcement, emergency responders and hospitals are increasing[7].

These substances pose greater public health concerns than the early SCRAs, such as the JWH series, developed by John W. Huffman. Huffman began to develop and research these substances for medicinal uses. Following these products being sold as alternatives cannabis, initially in Germany in the late 2000's, Huffman said "I figured once it got started in Germany it was going to spread. I'm concerned that it could hurt people.....I think this was something that was more or less inevitable. It bothers me that people are so stupid as to use this stuff".

We are aware from information provided by WEDINOS stakeholders that NPS use, in particular the use of synthetic cannabinoid receptor agonists (SCRAs), is most prevalent amongst marginalised and vulnerable substance users; such as the homeless and prison population. With the rise in SCRA use in custody and the size of the drug market is posing significant challenges to the management and healthcare of offenders[8]. This appears to be mirrored across the majority of Europe with the EMCDDA stated in their 2017 report that around two thirds of European countries identifying the use of SCRAs in marginalised populations, including homeless people and prisoners, as an emerging problem.

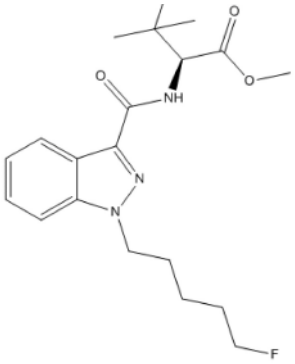
Chart 7: Number of NPS identified



7. Spicing things up: synthetic cannabinoids. Spaderna M1, Addy PH, D'Souza DC., Psychopharmacology (Berl). 2013 Aug;228(4):525-40. doi: 10.1007/s00213-013-3188-4. Epub 2013 Jul 9.

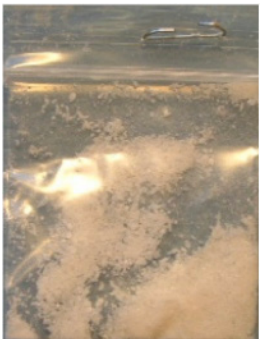
8. Adding Spice to the Porridge: The development of a synthetic cannabinoid market in an English prison, Ralphs R, Williams L, Askew R, Norton A., Int J Drug Policy. 2017 Feb;40:57-69. doi: 10.1016/j.drugpo.2016.10.003. Epub 2016 Dec 7.

5F-ADB and AMB-FUBINACA



5F-ADB

F-ADB (also known as 5F-MDMB-PINACA or MDMB(N)-2201) was first notified to the European Early Warning System (EU EWS) on 6th January 2015 (Hungary) following a seizure in Budapest on 2nd September 2014 in white powder form. WEDINOS first identified this substance on 26th November 2016, also in white powder form submitted from the Warrington area of North West England. Since then the project has received samples found to contain 5F-ADB, primarily in a ready to smoke plant matter mixture, but also in powder form.



Described as a potent SCRA, 5F-ADB is structurally similar to MDMB-CHMICA. Under UK legislation 5F-ADB is controlled by the Psychoactive Substances Act 2016. Supply, manufacturing, import/export of this substance is illegal. Personal possession, except in a custodial setting, is not.

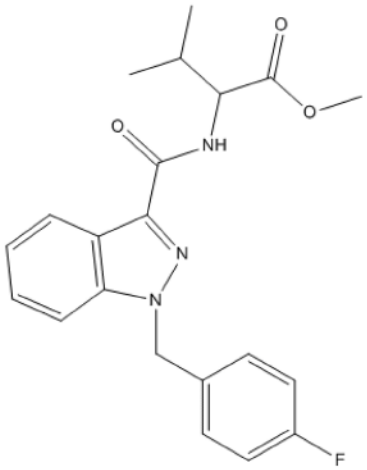
In July 2016 5F-ADB was subject to a EMCDDA alert following being associated with 5 deaths and 4 acute intoxications in Germany. All acute intoxications were described as 'potentially life threatening'. All cases related to the smoking of 5F-ADB in a plant matter mixture. It must be noted that post mortem exposure to other substances was analytically confirmed from biological samples.

In one case where the cause of death was a heroin/morphine overdose, it was stated that '5F-ADB and Lorazepam likely reinforced the effect of the heroin'[9].

This follows reports of 10 deaths associated with 5F-ADB that occurred in Japan between September and December 2014[10].

9. 5 deaths and 4 acute intoxications associated with synthetic cannabinoid 5F-MDMB-PINACA (5F-ADB), EU Early Warning System Alert, EMCDDA, July 2016.

10. Hasegawa, K. & Wurita, A. et al., Identification and quantitation of 5-fluoro-ADB, one of the most dangerous synthetic cannabinoids, in the stomach contents and solid tissues of a human cadaver and in some herbal products. Forensic Toxicol., 2015.



AMB-FUBINACA

AMB-FUBINACA also known as FUB-AMB and MMB-FUBINACA was first notified to the EU EWS on 4th December 2014 in a seizure of white powder in Sweden. First identified by WEDINOS in powder form on 16th November 2015 in a white powder sample submitted from Peterborough. Samples have been received in powder and ready to smoke plant matter mixtures.

On 12th July 2016, a SCRA caused the acute intoxication of 33 people in New York. Serum, whole blood and urine samples (from eight patients) along with samples of a plant matter mixture analytically confirmed the presence of AMB-FUBINACA. It was concluded from this that the potency of AMB-FUBINACA is consistent with strong depressant effects that account for the "zombielike" behavior reported in this mass intoxication and is described as an "ultrapotent" SCRA[11]. In vitro pharmacologic studies indicate that it is 85 times as potent as THC and 50 times as potent as JWH-018, one of the earliest SCRA's at the CB1 receptor site.

Focus on

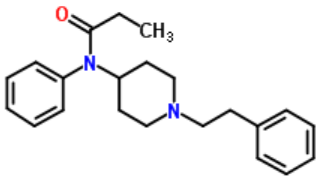
5F-ADB / 5F-MDMB-PINACA	AMB-FUBINACA
• 6th January 2015 – Hungary	• 6th November 2014 – Sweden
• Potent SCRA	• Ultra potent SCRA
• Sept to Dec 2014 – 10 deaths in Japan	• July 2016 – 33 acute intoxications in New York, USA.
• July 2016 EMCDDA alert – acute intoxications and fatalities in Germany	• 85 times as potent as THC and 50 times as potent as JWH-018

Collecting • Testing • Informing

85 times 50

11. Axel J. Adams et al., "Zombie" Outbreak Caused by the Synthetic Cannabinoid AMB-FUBINACA in New York.

Fentanyl and its derivatives



Across the globe the use of opioids and heroin remains the most harmful type of use, 70 per cent of the global burden of disease attributable to drug use disorders, were attributable to opioids and heroin.

The United States of America (USA) and Canada has seen a large increase in opioid and heroin related morbidity and mortality. In the USA there was a tripling in the number of fatal overdoses from 1999 to 2015, from 16,849 to 52,404 annually. The emergence of NPS derivatives of prescription medicines, particularly fentanyl analogues, has been associated with rising numbers of overdoses, including fatal overdoses, among opioid users in these countries[12].

100
50 times

Fentanyl is a synthetic analgesic of high potency and short duration of action. Its potency is 50 to 100 times of morphine. Fentanyl was first synthesized in 1960 by Paul Janseen[13]. and has been used in a clinical setting since 1963 as an addition to surgical anaesthesia.

Fentanyl is capable of producing severe repiratory depression, muscle rigidity, seizures, coma and hypotension[14].

In the mid-1990s a fentanyl patch was introduced, this was followed over the next decade by the introduction of other methods of delivering fentanyl; such as, lollipops, dissolving tablets and a sublingual spray.

This category of substances includes prescription only medicines (POMs) including fentanyl and pethidine (fentanyl and pethidine are also controlled by the Misuse of Drugs Act 1971 as a Class A substance), and NPS including AH-7291 and MT-45 which have very little history of use and no evidenced medicinal uses.

high potency

Since 2012 the EU Early Warning System has been receiving an increasing number of reports of highly potent new synthetic opioids, primarily fentanyl derivatives. Different fentanyl derivatives have been developed both legitimately by the pharmaceutical industry and of non-pharmaceutical fentanyls.

These highly potent synthetic opioids pose a serious health risk.

The emergence of the fentanyls on the illicit drug market in the European Union dates back to occasional reports from the mid-1990s. There was a case report of a death in Italy in 1992 that details an overdose from fentanyl–cocaine use. This appears to be the first detection of fentanyl on the illicit market in the EU[15].

Although, the use of fentanyls has been reported across Europe, use predominates in Eastern European countries where a substantial rise in fentanyl use is seen during periods where heroin had been in short supply e.g. Bulgaria (2010/11) and Slovakia (2011). In 2012, there was evidence of localised fentanyl use and fentanyl-related deaths amongst opioid users in Sweden, Finland and Germany. In Estonia, fentanyl use has been described as endemic in the injecting drug use population, with fentanyls becoming the most used opioid since 2000.

12. United Nations Office on Drugs and Crime, World Drug Report 2017

13. The history and development of the fentanyl series. TH Stanley; J Pain Symptom Manage. 1992 Apr;7(3 Suppl):S3-7.

14. Disposition of toxic drugs and chemicals in man; Randall C. Baselt; Fifth edition. 2000 Ferrara, S. D., Snenghi, R. and Tedeschi, L. (1994), 'Fatality due to fentanyl-cocaine intoxication resulting in a fall',

15. International Journal of Legal Medicine, 106(5), pp. 271–3.

58

In 2016 there were 58 deaths reported in England and Wales where fentanyl was mentioned on the death certificate, an increase from 34 in 2015[16].

In April 2017, the National Crime Agency produced the report 'Recent Deaths Possibly Linked to Fentanyl'[17] as a result of an increase in deaths attributed to heroin in the North East of England.

To date WEDINOS has received and analysed 26 samples that were found to contain fentanyl's, identifying 7 substances.

100
50
times

• **Fentanyl** – Described as 100 times more potent than morphine and 50 times more potent than heroin. This increased potency would also result in an increase in the potential for harms and the risk of overdose.

• **Ocfentanil** - More potent than heroin, it has similar effects to fentanyl producing strong analgesia and sedation. However, it is slightly more potent than fentanyl, with 3µg/kg of ocfentanil being equivalent to 5µg/kg of fentanyl. First notified to the EU EWS on 23rd October 2013 in the Netherlands, ocfentanil was found in combination with paracetamol and caffeine as a white powder. This product was marketed as Heroin. This mirrors WEDINOS submissions found to contain ocfentanil, as well as notifications from Finland, France, Luxembourg and Sweden.

• **Furanylfentanyl** – First identified by the EU EWS on 26th June 2015 following a border seizure in Finland. On 7th October 2016 the EMCDDA issued an alert relating to furanylfentanyl following the substance being analytically associated to 8 deaths in Sweden (the deaths occurred between November 2015 and June 2016). In July 2017 furanylfentanyl was subject to a EMCDDA and EUROPOL joint report[18].

10,000
times

• **Carfentanil** - First notified to the EU EWS on 12 February 2013 in Latvia, carfentanil was first synthesized in 1974, and is 10,000 times more potent than morphine, making it one of the most potent known and the most potent commercially used opioids. It is used as a general anaesthetic agent for large animals. Carfentanil has now be detected in nine European countries.

• **Acetylfentanyl** – First notified to the EU EWS on 12 September 2014 in Poland, acetylfentanyl is a potent synthetic opioid analgesic and is derivative of fentanyl. It is suggested that acetylfentanyl is 5 to 15 times more potent than heroin[19].

• **Thiofentanyl** – No medical use.

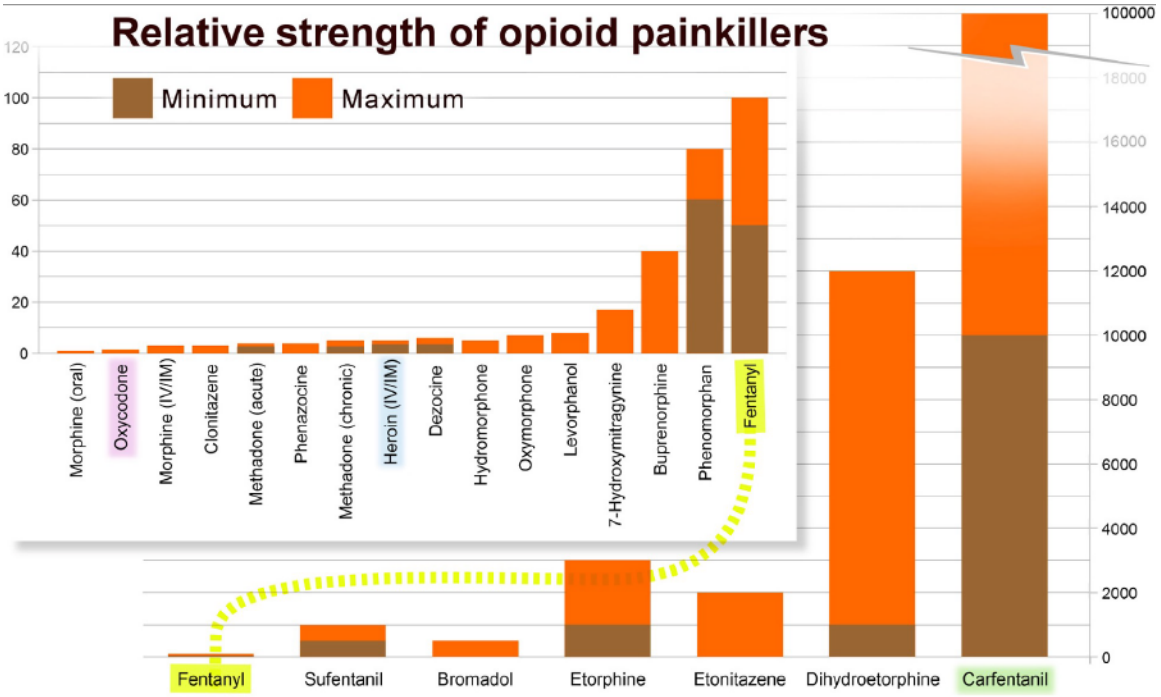
• **Beta-hydroxyfentanyl** – Identified in two samples submitted to WEDINOS from Milton Keynes in September 2017. One sample beta-hydroxyfentanyl was found in combination with carfentanil (submitted as carfentanil) and the other in isolation, submitted as acryloylfentanyl. A reporting form has been submitted to the EU EWS in relation to these samples.

16. Deaths related to drug poisoning in England and Wales: 2016 registrations; Office for National Statistics; 2nd August 2017. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoninginenglandandwales/2016registrations [Accessed 18th October 2017]

17. Recent deaths possibly linked to fentanyl, National Crime Agency, April 2017, http://www.nationalcrimeagency.gov.uk/publications/795-recent-deaths-possibly-linked-to-fentanyl/file [Accessed 6th October 2017]

18. EMCDDA–Europol Joint Report on a new psychoactive substance: N-phenyl-N-[1-(2-phenylethyl)piperidin-4-yl]-furan-2-carboxamide (furanylfentanyl), July 2017, http://www.emcdda.europa.eu/system/files/publications/4682/JOINT_REPORT_furanylfentanyl_web.pdf [Accessed 6th October 2017]

19. Higashikawa Y and Suzuki S. (2008). Studies on 1-(2-phenethyl)-4-(Npropionylanilino) piperidine (fentanyl) and its related compounds: structure-analgesic activity relationship for fentanyl, methyl-substituted fentanyls and other analogues. Forensic Toxicol 26:pp.1-5.



Source: Homeless in Vancouver: Fentanyl overdoses are just the beginning - http://www.straight.com/blogra/770691/homeless-vancouver-fentanyl-overdoses-are-just-beginning

Potency varies amongst fentanyl analogues. As potency increases, so do the potential relative harms. As a result of this variance, doses can also vary greatly. The greater the potency the lower / smaller the potentially harmful / fatal dose.

Naloxone will have the same reversal effect for fentanyls as it does for fentanyl and other synthetic opioids, however due to its higher potency compared to heroin it may require a larger dose[20].

- Ensure you carry your Naloxone kit.
- Use in sight or in the company of others.
- If you are using alone, inform someone of your intentions.
- If you do use in a separate room, ensure the door is not blocked and can be easily opened.

Further information is available from DrugWatch Information Sheet on Overdoses & Emergencies - http://michaellinnell.org.uk/resources/downloads/DrugWatchOD_Emergency_1_0.pdf

20. Roberts JR. (2013). Acetyl fentanyl: new drug of abuse more common than assumed. Emerg Med News 35:1-28.

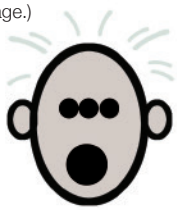
Information Sheet
Overdoses & Emergencies

Date: 14/04/2014
Version: 1.0

DrugWatch

Overdoses of depressant drugs often involve breathing difficulties, while overdoses of stimulant drugs can involve heart attacks or fits. Because of this, you may need to do different things to help someone. What you should do depends on their appearance and behaviour.

Vomiting/feeling unwell: vomiting is usually nature's way of telling you've had too much. If somebody is unwell, don't give them anything to eat and only let them drink water (never force them to drink anything). If after vomiting they want to sleep, let them but keep your eye on them. Make sure they are lying on their side (see the **recovery position** on next page.)



Bad trip/freak out/paranoia: if somebody is having a frightening or disturbing drug experience or have become very paranoid, take them somewhere that is quiet where they feel safe (ideally a low stimulus environment and not a dance floor in a nightclub). Try to calm and reassure them (*"it will pass - the drugs will wear off"*). This can take hours, so be prepared to be patient. If they become panicky and you notice them breathing very fast, get them to control their breathing by slowing it down or breathing into a paper bag. If any of these disturbing experiences carry on after the drug has worn off, they need to speak to a doctor or drug service.

If they are having a 'fit': make sure the area is safe and there is nothing they could hurt themselves on. **Call an ambulance.** Be sure to inform the paramedics if the fit stops and starts, if it doesn't stop within a couple of minutes or if the person turns blue.

If they are overheating: cool them down by removing outer clothing; fan them; use a wet cloth on their skin*; take them outside or somewhere cool. If they are conscious allow them to sip water or a non alcoholic drink. **Call an ambulance.**

**Do not use very cold water, this can repel the superficial blood vessels deeper into the body and prevent heat loss. Even lukewarm water is fine as it mimics the temperature of sweat, the body's natural way to reduce temperature.*

Serotonin syndrome: Serotonin syndrome can kill if it is not dealt with quickly by **calling for an ambulance.** Serotonin syndrome is a result of your body releasing too much of the neurotransmitter serotonin. It can be triggered by a number of different drugs. The most severe cases involve interactions of drugs that release serotonin, such as MDMA (ecstasy) and a range of other drugs known as *'serotonin re-uptake inhibitors'*.

The main symptoms of serotonin syndrome are: rigid, jerky, twitchy unusual movements, often involving the legs shaking; fully dilated pupils; overheating; shivering; racing heart; the person appearing agitated and confused. If in doubt, ring for an ambulance.

It is important if they have rigid, jerky movements, not to hold people down because of the risk of muscle tissue breaking down (*rhabdomyolysis*). As with people who have been using *volatile substances* (solvents) it can also be risky to startle or frighten people as this can lead to heart failure.

If they have chest pains: sit them down in a calm environment and reassure them. **Call an ambulance.**

If they can't be woken: (by shaking their shoulders and calling their name), or you notice a blueness of the skin, including lips or fingernails (or greyish for darker complexions) or they have trouble breathing, **call an ambulance.**

Check breathing: try to assess the airway and then breathing. If there is no breathing or it is abnormal (e.g. death rattle, agonal breath) then **CPR** should be attempted.

Check there is nothing stuck in their throat (vomit etc), if there is remove it. For vomit turn the head to the side and let gravity do its job. If that doesn't work turn their far shoulder towards you so that their mouth points towards the ground for 5 secs. If neither work don't waste time, start CPR or they will die quickly.

CPR: this can be **chest compressions** alone. If you know how and feel able to, give 30 chest compressions followed by 2 **rescue breaths**. These compressions and rescue breaths are called 1 cycle of CPR and should be repeated.

If they are unconscious, but still breathing normally (at least 1 normal breath in a 10 second period) **put them in the recovery position and call an ambulance.**

see next page

"Look after people who have overdosed in the same way you would want them to look after you"

Information Sheet
Overdoses & Emergencies

Date: 14/04/2014
Version: 1.0

If somebody is unconscious and then vomits while lying on their back, they can swallow their vomit and literally drown in it. That is why you should put an unconcious person in the recovery position and **call for an ambulance**.

The Recovery Position

Put the hand closest to you by the head (as if they were waving)

Put the arm furthest away from you across the chest, so that the back of the hand rests against the cheek

Hold the hand in place and lift up the knee furthest away from you, making sure the foot is planted firmly on the ground

Turn them on their side by pushing down on their knee

Antidotes

Doctors and paramedics can administer an antidote to some types of overdoses caused by depressants. If it is an opiate (eg. heroin) overdose and there is **naloxone*** available you should administer it as directed by its Patient Information Leaflet within the naloxone pack. It is perfectly legal for you to do so in an emergency.

**In some areas naloxone is given out as Prenoxad, a licensed product but still containing naloxone HCL (at 1mg/ml).*

Calling an ambulance

Never hesitate to call an ambulance. In most areas, the police are only called to overdoses if there is a death or an under 16 involved, or if there has been a previous incident of violence at the address given. In some areas the police may also attend if the caller states that the casualty is not breathing normally or not breathing at all. In this circumstance their priority is the preservation of life rather than law enforcement.

"Look after people who have overdosed in the same way you would want them to look after you"

WEDINOS... What next?

WEDINOS has always endeavoured to provide a proactive and pragmatic harm reduction service. This does not only include the analysis of substances, but also the gathering of qualitative information from a wide variety of services and substance users from across the UK, Europe and further afield. The interpretation of this quantitative and qualitative data has allowed WEDINOS to develop and tailor the service provided and to offer timely, relevant and targeted advice and information.

In 2016-2017 we have seen further evidence of a reduction in the number of NPS available on the market, but an increase in the prevalence of high potency substances, a trend that began following the Psychoactive Substances Act 2016 receiving Royal assent and its subsequent enforcement. We have provided examples of this earlier in the report specifically relating to synthetic cannabinoid receptor agonists (SCRAs), but this is also mirrored with the establishment of the benzodiazepines, alprazolam and etizolam in the Top 10 most commonly identified substances. This despite the prevalence of cannabis and diazepam. Information on SCRAs and designer benzodiazepines have been the focus of the WEDINOS quarterly reports over the past 12 months. All previous quarterly reports and annual reports can be found here: **http://www.wedinos.org/newsletter.html**

We also continue to monitor the opioid and heroin market in a bid to reduce potential harms to users of these substances. In the past we have been able to analytically allay concerns over the presence of krokodil (desomorphine) in the South Wales market, by identifying the presence of stimulant substances being sold under the street name 'krokodil'.
Now, we alert to the potential of fentanyl and its deriviatives entering the drug market. As has been mentioned earlier in this report, the contamination of the opiod and heroin market with these substances in North America has led to a tripling of fatal drug poisons associated to these substances; and in the UK there were the Office for National Statistics reported 58 deaths associated to fentanyl in 2016. As has been identified by criminal justice services within the UK and WEDINOS analysis there have been pockets of heroin contaminated with fentanyl. However, from engagement with treatment services and substance users, what is also evident is that there is a small population of substance users for whom fentanyl and its derivatives are drugs of choice.

When WEDINOS launched in 2013, concerns raised at the launch events primarily focused around mephedrone and a small number of other cathinones, and in particular the intravenous injection of these substance, there was very little conversation around SCRAs and no mention of fentanyls in Wales. So, with the identification of new substances and information provided by stakeholders over the past four years we have developed as a service and actively continue do so. During a recent WEDINOS Health Impact Assessment, involving stakeholder events and expert witness interviews the key finding was that WEDINOS is a valued service and that it contributes to reducing harms and informing the substance misuse agenda.

As legislation and drug markets evolve and adapt to each other, WEDINOS will strive to do the same. Providing evidence based information with the primary aim of reducing harm to those individuals who are determined to use substances.

Iechyd Cyhoeddus Cymru
Public Health Wales

Llywodraeth Cymru
Welsh Government