New Psychoactive Substances: A Guide for Pharmacists

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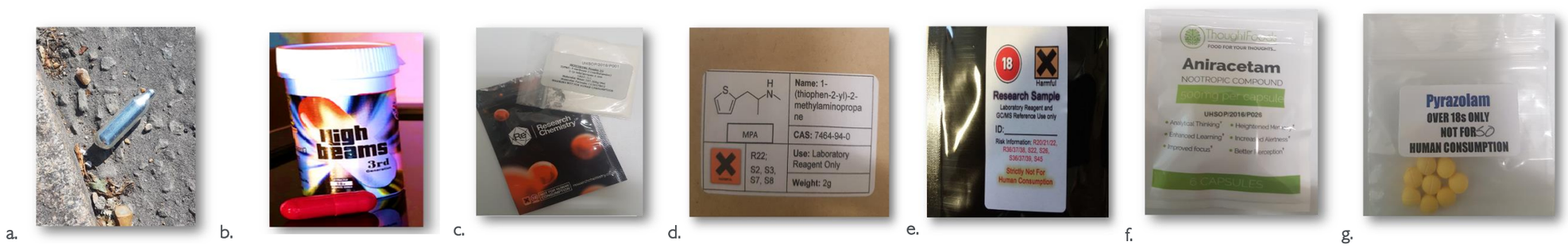
What are New Psychoactive Substances?

- The UK Psychoactive Substances Act (PSA) 2016 describes compounds commonly known as new psychoactive substances (NPS) as 'psychoactive substances' that are 'capable of producing a psychoactive effect' [1]. The term 'new' does not necessarily mean newly invented/synthesised but rather recently made available for recreational use [2], and includes failed or existing pharmaceuticals such as over-the-counter (OTC) medicines (codeine-based medicines, dextromethorphan, diphenhydramine hydrochloride, pseudoephedrine, ephedrine, laxatives, benzydamine hydrochloride) or prescription only medicines (POMs) (opioids, benzodiazepines, stimulants e.g. methylphenidate) used in novel ways and in new formulations [3-5]. The term 'new' has not been included in the UK PSA 2016 definition, possibly to broaden the description of these substances.
- Until recently, when NPS came onto the UK market, they were by default 'legal' purely because they had not yet been banned. It is still possible that an NPS can be 'legal' in one country and 'illegal' in another. In the UK, NPS are now controlled under the UK PSA 2016.
- In December 2016, the European Monitoring Centre on Drugs and Drug Addiction (EMCDDA) reported more than 620 NPS at a European level and estimated the emergence of one new NPS onto the EU market every week [6]. At a global level, the United Nations Office on Drugs and Crimes (UNODC) has reported more than 740 NPS [7].
- To enable their identification, NPS are currently classified according to their chemical classes, chemical structures, or pharmacological classes. The main groups based on NPS effects include: Sedatives/Hypnotics; Dissociatives; Hallucinogens; Stimulants; Synthetic Cannabinoid Receptor Agonists (SCRAs); New Synthetic Opioids (see UNODC report). For their legal status based on the Misuse of Drugs Act 1971 or the UK PSA 2016 (see The Drug Wheel) [6-8].

What they look like? What to watch out for?



Various NPS products: (a) A nitrous oxide canister found in the street, (b) NPS sold on the surface web as a branded product 'High Beams', (c to e) research chemical powders with a data safety sheet-type label, (f) cognitive enhancer supplements "aniracetam" or (g) pharmaceutical tablets 'pyrazolam'.
NPS photos taken by Amira Guirguis with permission from the University of Hertfordshire

- NPS are sold online, disguised on the surface web, openly on the deep net of the dark web, in the illicit drug market as NPS or as illicit drugs (i.e. heroin or ecstasy) covertly containing NPS. They are sold purported to be 'bath salts', pot pourri, incense, research chemicals, 'legal highs', herbal highs, designer drugs, food supplements, performance and image enhancers or as branded products (e.g. Pink Panthers, Burberry) [9-10]. They can also be sold under their claimed chemical name e.g. (1-(5-fluoropentyl)-3-(1-naphthoyl) indole), as acronyms e.g. AM-2201, or active pharmaceutical ingredients e.g. methylphenidate [9-10].
- The NPS content in NPS products may be claimed on the label but information on labels cannot be relied upon. NPS products may contain unclaimed NPS (not listed on the label), illicit drugs, POMs, controlled drugs/precursors, or other diluents e.g. benzocaine, lidocaine, procaine, diltiazem, phenacetin, paracetamol, caffeine, creatine, glutamate, L-tyrosine, lactose, microcrystalline cellulose, nicotinamide, trace elements, or synthesis by-products [9-11].
- NPS are sold in different formulations (tablets, capsules, pellets, powders, herbs, herbal extracts, seeds or e-liquids). They can also be sprayed on herbs. NPS are taken via various routes and modes: orally, sublingually, buccally; transdermally, parenterally, rectally, intranasally (e.g. snorted); via inhalation, vaping or smoking (also through a spray or vaporisation) [12]. Various words or phrases are used on the street to describe administration including: keying (drug is spooned onto a key then inhaled); gay slamming (men intravenously injecting psychostimulants in a sexual context to improve mood and induce sexual disinhibition [13]); bombing (drug is ground and wrapped in a cigarette paper then swallowed); plugging (drug is rectally administered); vaping via e-cigarettes [9].
- Injecting NPS (as with injecting traditional drugs of abuse) introduces health problems such as blood-borne infections (HIV, hepatitis C virus, hepatitis B virus), sexually transmitted infections, infections at the site of injections, skin necrosis, abscesses and development of aspects of addiction such as compulsive behaviour, sharing needles, craving, and withdrawal symptoms [14].
- NPS use is prevalent among all age ranges. They are popular among students, professionals, unemployed, party goers, prisoners, high-risk injecting drug users, patients on opioid substitution therapy [15, 16], lesbian, gay, bisexual and transgender individuals, men who have sex with men (MSM), heroin users, clubbers and the homeless population [17].
- In addition to mental and physical withdrawal symptoms, NPS are also associated with a plethora of mental and physical toxic effects including neurotoxic, psychiatric, metabolic and cardiovascular effects. Sexually transmitted diseases and outbreaks of blood-borne infections are on the rise because of chemsex (NPS-facilitated sex among MSM) [2].

Recommendations for Pharmacists

- Pharmacists need to be aware of the changes in the drug scene and the implications this may have on their day-to-day practice; the section below provides 'Useful Resources' for the education of pharmacists around the harms and clinical management of NPS.
- Many pharmacists provide harm reduction services that can also be relevant to NPS users such as needle and syringe exchange programmes, advice on safer injecting techniques, injecting hygiene, alternatives to injecting and vein care.
- Pharmacists should also advise patients attempting to purchase medicines or supplements online on how to identify legitimate online pharmacies (see GPhC website for more information.
- Pharmacists should not supply medicines to anyone if they believe them to be intoxicated, the signs and symptoms of which include psychosis, seizures, agitation, violence, aggression, cardiovascular symptoms (e.g. chest pain), and gastrointestinal symptoms (e.g. nausea, vomiting). However, the range of symptoms presented may vary depending upon a variety of factors such as poly-substance use.
- A briefing on SCRAs has recommended healthcare professionals call an ambulance if an overdose is suspected or dial 999 if in doubt of what action to take [18].
- Pharmacists should ask about the use of NPS, performance and image enhancing drugs, or herbal/dietary supplements during their consultations with patients such as medicines use reviews, drug history taking and regular follow-ups, and educate and refer appropriately to psychosocial, physical, mental, sexual health or addiction services (e.g. CGL (Change, Grow, Live), Addaction).
- Pharmacists should assess the degree of problem use e.g. diverted use of OTC medicines or POMs in addition to NPS use, risky behaviours e.g. injecting, family history of substance use, NPS supply through family members or friends, psychiatric co-morbidities, need for additional strong opioids for chronic pain management and drug-drug interactions.
- During drug history taking, pharmacists should ask about the name of the substance thought to be consumed, co-consumed substances, alcohol and tobacco smoking, route of administration, frequency of intake and perceived amounts (the potency and strength of the substance may not be known).
- Based on the UK guidelines on the clinical management of drug misuse and dependence, it is recommended to encourage smoking cessation in people smoking illicit substances as it has been shown that these individuals are most likely to adopt risky behaviours of substance use e.g. injecting. It is also recommended to encourage hepatitis B vaccination in individuals who are 'likely to progress to injecting' [19].
- It is recommended to report adverse effects related to NPS to the Public Health England (PHE) Report Illicit Drug Reactions (RIDR) system.
- Pharmacists should be aware of NPS classes associated with high-risk use. These include: (a) SCRAs, (b) synthetic cathinones (e.g. mephedrone (4-MMC), 3-MMC, 4-MEC, pentedrone, and pyrovalerone derivatives such as MDPV or alpha-PVP), (c) new synthetic opioids (e.g. AH-7921, MT-45 and U-47700) and (d) benzodiazepines (counterfeit alprazolam, flubromazolam, diazepam, phenazepam and etizolam).

Useful Resources

Useful resources can be found in the following links:

1. General information on NPS:
   - EMCDDA publications; Public Health England guidance on NPS; Scottish Drugs Forum (SDF); Wedinos and the Wedinos annual report 2016-2017; EU MADNESS Project Fact Sheets; RPS Guide on NPS.
2. Clinical guidance for healthcare professionals:
   - Drug misuse and dependence. UK guidelines on clinical management (2017) (known as the Orange book).
   - UK Network NEPTUNE Clinical Guidelines (2015); NEPTUNE Club drug use among lesbian, gay, bisexual and trans (LGBT) people (2016); NEPTUNE e-modules (2018); NEPTUNE The misuse of synthetic opioids: harms and clinical management of fentanyl, fentanyl analogues and other novel synthetic opioids (2018).
   - Understanding the patterns of use, motives, and harms of New Psychoactive Substances in Scotland (2016).
   - New Drugs, New Trends? A Workers Toolkit for NPS. SDF e-learning (2017).
   - CPPE educational module: Substance use and misuse (2017); WCPPE educational module: Substance Misuse (2017).
   - RPS Medicines, Ethics and Practice (MEP). New psychoactive substances.
3. Databases for healthcare professionals for reporting ADRs and obtaining peer information on treatment of poisoning:
   - TOXBASE clinical toxicology database (National Poisons Information Service); Reporting Adverse Drug Reactions (RIDR - Public Health England).
4. Referral:
   - Public Health England. 2014. Drug prevention, treatment and recovery for adults: JSNA support pack. Good practice prompts for planning comprehensive interventions in 2015-16.
   - CGL (Change, Grow, Live); Addaction

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Further questions can be directed to the RPS Support: support@rpharms.com

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