TABLE

Drug classification and the main characteristics relevant to pharmacists and other healthcare professionals

Drug or drug class	Administration path	Mechanism of action	Effects	Classification	Does it cause dependence?	Street names
Benzodiazepines	Oral; IV and IN use also recorded in misuse cases.	They act on benzodiazepine receptors located between α and γ subunits of GABA-A receptor/channel complexes, enhancing the inhibitory effects of GABA.	CNS-depressant: sedative, hypnotic, anxiolytic, anticonvulsant and muscle-relaxant properties.	• ACMD: Class C; • DEA: Schedule IV.	Yes	
Pregabalin; gabapentin (gabapentinoids)	Oral; IV and IN use also recorded in misuse cases.	• Selective inhibitory effect on voltage-gated calcium channels containing the α2δ-1 subunit; • Although structurally related to GABA, no known direct actions on GABA or its receptors.	Diminish excessive neuronal activity and neurotransmitter release, resulting in anxiolytic, muscle relaxant, anticonvulsant and antineuralgic effects.	• EMCDDA: regarded as NPS; • ACMD: both reclassified as Class C controlled substances.	Yes	
Quetiapine (second generation antipsychotic)	Oral; IV and IN use also recorded in misuse cases.	• Increased DA levels in the nucleus accumbens area and D2 receptor blockage; • Norquetiapine-related norepinephrine reuptake blockade, 5-HT7 antagonist properties and σ-receptor activation.	Sedative and anxiolytic effects.	EMCDDA: notified as NPS (2014).	No	'Susie Q'; 'quell'; and 'baby heroin', with 'Q ball' and 'maq ball' being used in combinations with cocaine and marijuana respectively.
Bupropion (antidepressant)	Oral; IV and IN use also recorded in misuse cases.	• Dopaminergic, stimulant-like activity; • Selective inhibition of catecholamines' (NE and DA) reuptake.	Stimulant-like effects, including euphoria and enhanced motivation.	EMCDDA: notified as NPS (2014).	No	'Welbys', 'wellies', 'dubs', or 'barnies'.
Venlafaxine (antidepressant)	Oral; IV and IN use also recorded in misuse cases.	• Inhibition of 5HT/NE/DA reuptake with dose-dependent effects, acting on 5-HT transmission at low doses (<150mg/day); on both 5-HT and NE systems at moderate doses (>150mg/day); and on DA at high doses (>300mg/day); • The main active metabolite of venlafaxine, desvenlafaxine, presents with high levels of NE transporter inhibitory activities (further increasing levels of DA turnover in the prefrontal cortex); • At high doses it might exhibit some dopamine reuptake inhibition; • Chronic administration is associated with adaptive changes of D3 receptors, and desensitisation of 5-HT1A and β-adrenergic receptors.	Stimulant-like effects, including euphoria and increased sociality; dissociative effects, including distorted sense of time and "numbness".	None	Yes: abrupt discontinuation may be associated with a withdrawal syndrome.	'Baby ecstasy'.
Zolpidem, zaleplon, zopiclone (Z-drugs)	Oral; IV and IN use also recorded in misuse cases.	Z-drugs bind to the α-1 isoform of the benzodiazepine receptor, enhancing GABA inhibitory actions.	CNS depressant: relaxant, sedative and hypnotic effects.	• EMCDDA: zaleplon and zopiclone are already regarded as NPS; • ACMD: Class C; • DEA: Schedule IV.	Dependence and/or tolerance may be developed; risks may be greater with high doses and long-duration treatments.	
Loperamide (antidiarrheal)	Oral; IV and IN use also recorded in misuse cases.	Loperamide binds to peripheral μ-opioid receptors in the gastrointestinal tract at therapeutic doses (2mg, up to 16mg/day).	At high dosages (50–800mg), it may exert cross central opioid effects and be recreationally abused to alleviate symptoms of opioid withdrawal and to achieve feelings of euphoria.	DEA: previously Schedule V owing to high dosages recorded and withdrawal symptoms; then, owing to the low abuse potential reported with normal dosages, was made OTC in 1988.	Dependence and/or tolerance may be developed.	'Lope dope', 'lope high', 'poor man's methadone'.
Dextromethorphan (antitussive)	Oral; IV and IN use also recorded in misuse cases.	At high doses, acting as a NMDA receptor antagonist, dextromethorphan, and its potent metabolite dextrorphan, inhibit the excitatory amino acid and neurotransmitter glutamate.	Neurobehavioural effects are dose-related, starting from a mild to moderate stimulation with restlessness and euphoria (100–200mg), to a dissociated state characterised by hallucinations, paranoia, perceptual distortions, delusional beliefs, ataxia and out-of-body experiences (>1,000mg).	EMCDDA: regarded as NPS.	It might determine addictions owing to GABAergic/antiglutamatergic mechanisms, including substance-taking compulsive behaviours, tolerance and autonomic withdrawal symptoms.	'Robo', 'skittle', 'tussin', 'dex', 'triple C'.
Benzydamine (non-steroidal anti-inflammatory)	Oral	The molecular mechanism underlying benzydamine's psychoactive and reinforcing effects is unknown; however, a central cannabinoidergic mechanism of action has been hypothesised.	Used at high doses (500–3,000mg) to achieve stimulant effects on the CNS, including euphoria, hyperreactivity, insomnia; abnormal behaviour; and psychotic symptoms, including paranoia and visual hallucinations.	EMCDDA: regarded as NPS.	No	
Promethazine (antihistamine)	Oral	It is a phenothiazine derivative and a H1 receptor antagonist, and also acts as a direct antagonist at muscarinic (M1) and dopamine (D2) receptors. It is classified as a first-generation antihistamine molecule, which easily penetrates the blood–brain barrier.	Calming and sedating effects are observed. Can be used to enhance effects of other co-ingested substances (e.g. opioids, leading to euphoric or hallucinogenic experiences).	EMCDDA: regarded as NPS.	No	
Hyoscine butylbromide/scopolamine (antispasmodic)	Oral	Anticholinergic properties exerting potent CNS effects.	Psychoactive effects, including: restlessness, excitement, euphoria, disorientation and characteristic delirium-like states with auditory/visual/and tactile hallucinations, altered mood and cognitive dysfunctions.	None	No	

ACMD: Advisory Council on the Misuse of Drugs; DEA: Drug Enforcement Administration; DA: dopamine; EMCDDA: European Monitoring Centre for Drugs and Drug Addiction; GABA: gamma-amino-butyric acid; H: histamine; IN: intranasal; IV: intravenous; CNS: central nervous system; NE: norepinephrine; NPS: new psychoactive substance; OTC: over-the-counter; 5-HT: serotonin.

Sources: *Curr Opin Pediatr*[7], *Psychol Med*[8], *Subst Abuse Rehabil*[12], *Addict Behav*[28], *Eur Neuropsychopharmacol*[29], *J Clin Psychopharmacol*[30], *Subst Abuse Rehabil*[31], *Hum Psychopharmacol*[32], *Subst Use Misuse*[33], *Basic Clin Pharmacol*[34], *Eur J Pediatr*[35], *Basic Clin Pharmacol Toxicol*[36], *J Psychoactive Drugs*[37], *Braz J Psychiatry*[38], *Addiction*[39], *South Med J*[40], *PLoS One*[41], *CNS Neurosci Ther*[42], *Riv Psichiatr*[43], Cambridge University Press[44], *Am J Addict*[45], *J Addict Med*[46], *Subst Use Misuse*[47], *Health Policy*[48]