

Appendix 1 (as supplied by the authors)

Substances assessed on toxicology and corresponding generic medications			
Substance	Class	Matched Pharnanet substance	Notes
11-Carboxytetrahydrocannabinol	Cannabinoid		
3-METHYLFENTANYL	Opioid		
6-Monoacetylmorphine (Heroin metabolite)	Opioid	DIACETYLMORPHINE	
9-Hydroxyrisperidone	Antipsychotic	PALIPERIDONE	
Acetaminophen	Other		
Acetylfentanyl	Opioid		
Alprazolam	Benzodiazepine/z-drug	ALPRAZOLAM	
Aminoclonazepam	Benzodiazepine/z-drug	CLONAZEPAM	
Amiodarone	Other		
Amitriptylin	Antidepressant	AMITRIPTYLINE	
Amlodipine	Other		
Amphetamines	Stimulant	DEXTROAMPHETAMINE	
Aripiprazole	Antipsychotic	ARIPIPRAZOLE	
Benzodiazepine	Benzodiazepine/z-drug		
Benzoylcegonine	Stimulant		
Buprenorphine	Opioid	BUPRENORPHINE	
Bupropion	Antidepressant	BUPROPION	
Cannabinoids	Cannabinoid		
Carbamazepine	Other	CARBAMAZEPINE	
Carfentanil	Opioid		
Chlorpheniramine (Chlor-Trimeton)	Over-the-counter		
Citalopram	Antidepressant	CITALOPRAM	
Clomipramine	Antidepressant	CLOMIPRAMINE	
Clonazepam	Benzodiazepine/z-drug	CLONAZEPAM	
Clozapine	Antipsychotic		
Cocaethylene	Stimulant		
Cocaine	Stimulant		
Codeine	Opioid	CODEINE	
Cyclobenzaprine	Other	CYCLOBENZAPRINE	
Cyclopropyl Fentanyl	Opioid		
Desmethyldiazepam (Valium Metabolite)	Benzodiazepine/z-drug	DIAZEPAM	
Desmethylvenlafaxine	Antidepressant		
Dextromethorphan	Over-the-counter		
Diazepam	Benzodiazepine/z-drug	DIAZEPAM	
Diphenhydramine	Over-the-counter		
Duloxetine	Antidepressant	DULOXETINE	
EDDP=Methadone Metabolite	Opioid	METHADONE	
Ephedrine	Stimulant		
Escitalopram	Antidepressant	CITALOPRAM	
Ethyl Alcohol	Alcohol		
Fentanyl	Opioid	FENTANYL	
Fluoxetine	Antidepressant	FLUOXETINE	
Flupenthixol	Antipsychotic	FLUPENTIXOL	
Furanylfentanyl	Opioid		
Gabapentin	Gabapentinoid	GABAPENTIN	

Gamma-Hydroxybutrate	Other		
HYDROXYZINE	Other		
Haloperidol	Antipsychotic	HALOPERIDOL	
Hydromorphone	Opioid	HYDROMORPHONE	
Hydroxybupropion	Antidepressant	BUPROPION	
Ketamine	Other		
Lamotrigine	Other	LAMOTRIGINE	
Lidocaine	Other		
Lorazepam	Benzodiazepine/z-drug	LORAZEPAM	
Loxapine	Antipsychotic	LOXAPINE	
Lysergic Acid Diethylamide	Other		
MDA 3,4-Methylenedioxyamphetamine	Other		
MDMA METHYLENEDIOXYMETHAMPHETAMINE	Other		
MITRAGYNINE	Opioid		
Meperidine	Opioid	MEPERIDINE	
Methadone	Opioid	METHADONE	
Methamphetamine	Stimulant		
Methocarbamol	Other	METHOCARBAMOL	
Methotrimeprazine	Antipsychotic	METHOTRIMEPRAZINE	
Methoxphenidine	Other		
Methylone	Other		
Metoclopramide	Other		
Mirtazapine	Antidepressant	MIRTAZAPINE	
			Codeine and morphine on toxicology matched to prescribed codeine, not to morphine
Morphine	Opioid	MORPHINE	
Naproxen	Other		
Norfentanyl	Opioid	FENTANYL	
Norfluoxetine	Antidepressant	FLUOXETINE	
Nortriptyline	Antidepressant	NORTRIPTYLINE	
Olanzapine	Antipsychotic	OLANZAPINE	
Other	Other		
Oxazepam	Benzodiazepine/z-drug	OXAZEPAM	
Oxycodone	Opioid	OXYCODONE	
Paroxetine	Antidepressant	PAROXETINE	
Phencyclidine	Other		
Phenobarbital	Other	PHENOBARBITAL	
Pseudoephedrine	Stimulant		
Quetiapine	Antipsychotic	QUETIAPINE	
Risperidone	Antipsychotic	RISPERIDONE	
Rocuronium	Other		

Salicyclate	Other		
Sertraline	Antidepressant	SERTRALINE	
Temazepam	Benzodiazepine/z-drug	TEMAZEPAM	
Tetrahydrocannabinol	Cannabinoid		
Topiramate	Other	TOPIRAMATE	
TRAMADOL	Opioid	TRAMADOL	
Trazadone/Trazodone	Antidepressant	TRAZODONE	
Valproic Acid	Other	VALPROIC ACID	
Venlafaxine (Effexor)	Antidepressant	VENLAFAXINE	
Verapamil	Other		
W-18	Other		
Zopiclone	Benzodiazepine/z-drug	ZOPICLONE	
Zuclopenthixol	Antipsychotic	ZUCLOPENTHIXOL	

ICD9/10 codes used to derive mental diagnoses

Diagnosis	ICD9 codes	ICD10 codes	Algorithm
Mental health			
Substance use disorder	292 304 305 (excluding 305.0)	F11 F12 F13 F14 F15 F16 F17 F18 F19	Either: 2 family physician visits or 1 hospitalization in 1 year
Alcohol use disorder	291 303 305.0	F10	Either: 2 family physician visits or 1 hospitalization in 1 year
Depression	300.4 311 50B (also requires another code to qualify)	F32 F33 F34.1	Either: 2 family physician visits or 1 hospitalization in 1 year
Anxiety	300 (excluding 300.4) 50B (also requires another code to qualify)	F40 F41	Either: 2 family physician visits or 1 hospitalization in 1 year
Stress and adjustment disorder	308 309	F43	Either: 2 family physician visits or 1 hospitalization in 1 year

Schizophrenia	295 297 298	F20 F21 F22 F23 F24 F25 F28 F29	Either: 2 family physician visits or 1 hospitalization in 1 year
Bipolar disorder	296	F30 F31 F34 (excluding F34.1) F38 F39	Either: 2 family physician visits or 1 hospitalization in 1 year
Personality disorders	301	F60 F61 F69	Either: 2 family physician visits or 1 hospitalization in 1 year

Medications by class in prescription history

Opioids

anileridine
 buprenorphine
 butorphanol
 codeine
 diamorphine
 fentanyl
 hydrocodone
 hydromorphone
 levorphanol
 meperidine
 methadone
 morphine
 oxycodone
 oxymorphone
 pentazocine
 propoxyphene
 tapentadol
 tramadol

Antidepressants

amitriptyline
 amoxapine

bupropion
citalopram
clomipramine
desipramine
desvenlafaxine
doxepin
duloxetine
escitalopram
fluoxetine
fluvoxamine
imipramine
isocarboxazid
levomilnacipran
maprotiline
mirtazapine
moclobemide
nefazodone
nomifensine
nortriptyline
paroxetine
phenelzine
protriptyline
sertraline
tranylcypromine
trazodone
trimipramine
tryptophan
venlafaxine
vilazodone
vortioxetine

Antipsychotics

aripiprazole
asenapine
butaperazine
chlorpromazine
chlorprothixene
clozapine
flupentixol
fluphenazine
fluspirilene
haloperidol
loxapine
lurasidone
mesoridazine
methotrimeprazine

olanzapine
paliperidone
periciazine
perphenazine
pimozide
piperacetazine
pipotiazine
prochlorperazine
promazine
quetiapine
remoxipride
risperidone
thiopropazate
thiopropazine
thioridazine
tiotixene
trifluoperazine
ziprasidone
zuclopenthixol

Benzodiazepines and z-drugs

alprazolam
bromazepam
chlordiazepoxide
clobazam
clonazepam
clorazepate
diazepam
estazolam
flurazepam
ketazolam
lorazepam
nitrazepam
oxazepam
temazepam
triazolam
zaleplon
zolpidem
zopiclone

Stimulants

atomoxetine
dextroamphetamine
lisdexamfetamine

methylphenidate
modafinil
pemoline

Gabapentinoids

gabapentin
pregabalin

Mood stabilizers and antiepileptics

carbamazepine
lamotrigine
levetiracetam
lithium
phenytoin
topiramate
valproic acid

Muscle relaxants

baclofen
cyclobenzaprine
methocarbamol