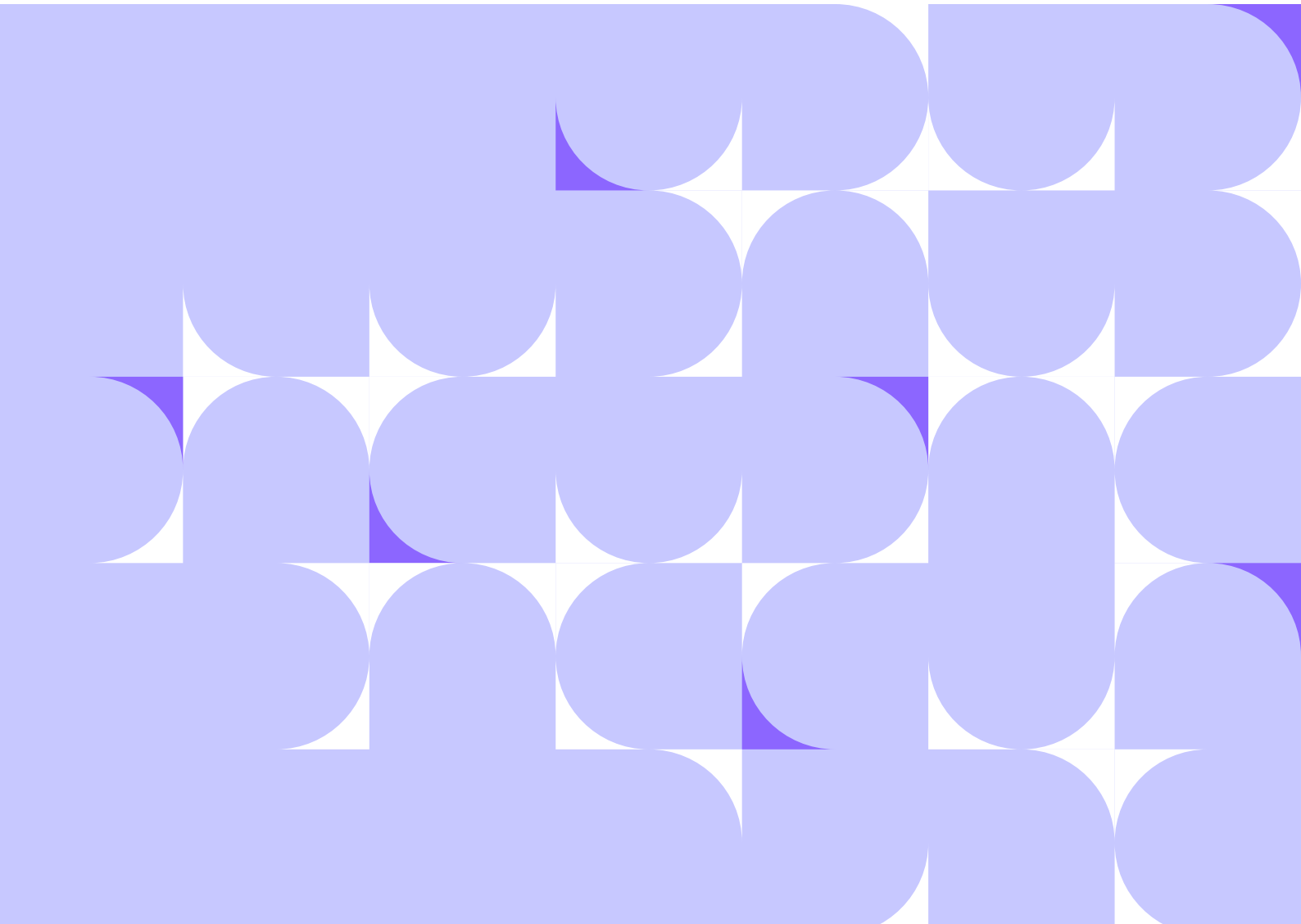
EUDA
EUROPEAN UNION DRUGS AGENCY

TECHNICAL REPORT

Collection of drug-related hospital emergency data in Western Balkans and Southern Neighbourhood countries using Euro-DEN Plus methodology

December 2025



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Summary

Introduction

The European Drug Emergencies Network (Euro-DEN, later Euro-DEN Plus) project has been collecting data on acute drug toxicity presentations to European emergency departments since 2013. From 2021, a pilot project started to collect data from European Neighbourhood Policy region partners and candidates and potential candidates to the European Union (EU) under the auspices of the EU for Monitoring Drugs (EU4MD) and Instrument for Pre-Accession assistance (initially programme 7 and then programme 8 countries — IPA7/8) projects. The initial studies demonstrated the feasibility of using the Euro-DEN Plus methodology to collect data. Due to clinical demands limiting the ability of some centres to collect the full Euro-DEN Plus dataset, the Euro-DEN Plus data collection tool was modified in 2023 to focus on data parameters that are of most interest from a trend and drug monitoring perspective, while also facilitating data collection alongside the clinical workload of the sentinel centres.

Objective

The data collection was carried out in order to collect data on acute drug toxicity presentations in sentinel centres in EU4MD II and IPA8 countries from July to December 2024 and compare this with previous data collected in 2021, 2022 and 2023.

Methods

Twelve sentinel centres (nine EU4MD II — Bab El Oued in Algeria, Tunis in Tunisia, Beirut in Lebanon, Haifa in Israel and Ramallah, Hebron, Bethlehem, Qalqilia and Nablus all in Palestine ([1]); and three IPA8 — Belgrade in Serbia, Tirana in Albania and Skopje in North Macedonia) collected data on acute drug toxicity presentations using the modified data collection tool in Excel from 1 July to 31 December 2024. All sites had appropriate local ethical or equivalent approval in place. Data were emailed monthly to the coordinating centre in London, UK, for collation, cleaning and analysis.

Findings

There were 987 presentations across the 12 sentinel centres. Consistent with the last 3 years of data collection, presentations were predominantly male (831; 85.8 %), and the median age was 32 years, with an interquartile range (IQR) of 24–40 years. The use of only one substance was reported in the majority of presentations (575; 58.3 %). Two substances were reported in 165 (16.7 %) presentations, and three or more substances in 247 (25.0 %) presentations. A total of 1772 substance identifications were reported. Illicit drugs (1061; 59.9 %) and prescription/over the counter medicines (636; 35.9 %) remained the most common substances reported. The most commonly reported substances were

([1]) This designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual positions of the Member States on this issue.

cocaine (330; 18.6 % of all drugs reported), cannabis (294; 16.6 % of all drugs reported), amphetamine (154; 8.7 % of all drugs reported), heroin (114; 6.4 % of all drugs reported) and pregabalin (99; 5.6 % of all drugs reported), while new psychoactive substances, only reported in centres in Isreal and Palestine, accounted for 44 identifications (2.5 % of all drugs reported). The use of alcohol was documented in 28.5 % of presentations, unknown in 18.3 % of presentations; in 53.2 % presentations, it was documented that alcohol was not used. Some 65.2 % of patients were discharged from the emergency department (medically discharged: 50.6 %; self-discharged: 14.7 %); 31.3 % were admitted to hospital from the emergency department (13.1 % to critical care, 10.4 % to psychiatry and 7.8 % to other areas). There were 56 deaths (case fatality ratio: 5.7 %): 24 of these occurred in the emergency department and 32 after initial admission to hospital. The median length of stay was 3 hours 32 minutes (IQR: 1 hour 42 minutes to 11 hours 49 minutes).

Comparing these data to those of the previous years, new psychoactive substances were reported for the first time in 2023 (in 2.3 % of the 952 presentations) and in a similar proportion of presentations in 2024 (2.5 %). The proportion of presentations involving illicit drugs (59.9 %) remained similar, with 59.5 % reported in 2021, 61.7 % in 2022 and 54.6 % in 2023. Regarding prescription medicines, pregabalin and methadone remained common. Unknown benzodiazepines were no longer in the top 5 and were replaced by diazepam from the same class. Tramadol and oxycodone entered the top 5 prescription medicines in 2023 and have maintained this position, with tramadol now being the third most reported prescription medicine in 2024.

Conclusion

Overall, the demographics and drugs involved in the presentations remained similar, but there were some important differences. The number of presentations involving prescription opioids, in particular tramadol and oxycodone, increased between 2023 and 2024, highlighting the need for continued monitoring, particularly as oxycodone is an uncommon drug in European Euro-DEN Plus presentations. New psychoactive substances were not reported in 2021 and 2022 but have been reported in a similar proportion of presentations in 2023 and 2024. Given the rapidly changing drug market, it is important that this data collection in the EU4MD II and IPA7/8 countries continues; triangulation with other indicators and other data sources will increase the public health relevance of these data.

Background

The Euro-DEN Plus Network

The European Union Drug Agency (EUDA, formerly the EMCDDA, European Monitoring Centre for Drugs and Drug Addiction) collects data to monitor the social and health burden relating to drug use in Europe using five key epidemiological indicators: prevalence and patterns of drug use, problem drug use, treatment demand, drug-related infectious diseases and drug-related deaths and mortality. Data on these key indicators are supplemented with information from complementary data sources, including wastewater analysis, internet surveys, drug checking, trendspotter studies and data on hospital emergencies provided by Euro-DEN Plus. The European Drug Emergencies Network (Euro-DEN) was established in October 2013 as a 2-year project funded by the European Commission Directorate-General for Justice, with the aim of improving knowledge at European level on acute established illicit/recreational drug and new psychoactive substance toxicity. The project started with 16 sentinel centres in 10 European countries in 2013, and it has continued and expanded, with the support of the EMCDDA and now the EUDA, as the Euro-DEN Plus Project since 2014. By the end of 2024, there were 35 sentinel centres in 21 countries contributing presentations to the Euro-DEN Plus registry. The Euro-DEN Plus data provide a unique insight into the public health implications of drug use in Europe, and data from Euro-DEN Plus have been included in the European Drug Report since 2015 (European Monitoring Centre for Drugs and Drug Addiction, 2021; European Union Drugs Agency, 2025a, no date).

EU4MD II and IPA7/8

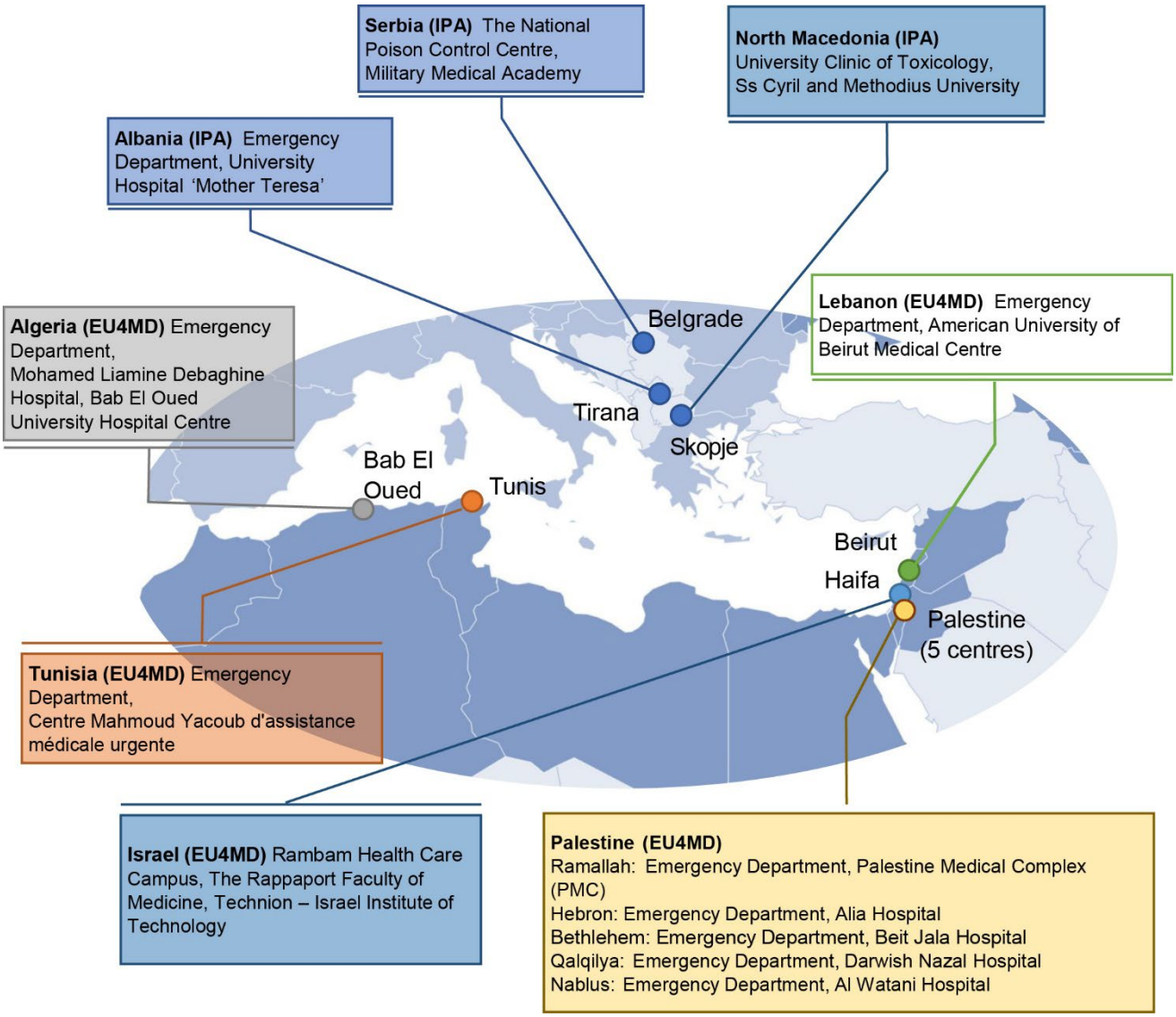
There is an increasing interest in data relating to drug use in countries surrounding the European Union, particularly given the paucity of data available from these countries. In 2021 a pilot project started to collect data from European Neighbourhood Policy partners and candidates and potential candidates to the European Union under the auspices of the EU for Monitoring Drugs (EU4MD, now EU4MD II) and the Instrument for Pre-Accession assistance (initially IPA7 and more recently the IPA8 countries) projects (Dines et al., 2015; European Union Drugs Agency, 2025b).

The 2021 pilot study, initially aimed at determining the feasibility of collecting data in these new areas, was successful. Seven sentinel centres from six countries collected data over a period of 6 months using the Euro-DEN Plus methodology (De Baerdemaeker et al., 2024). Centres reported that they found it difficult to continue data collection alongside their busy clinical roles. In 2022 the study was repeated. However, only five centres were able to complete the data collection. Centres reported similar problems to the initial study, with busy clinical activity as a serious obstacle — particularly in the context of data collection not being remunerated. In 2023, based on feedback from the 2021 and 2022 rounds of data collection, the Euro-DEN Plus data collection tool was adapted and reduced for the modified EU4MD II/IPA8 data collection to focus on data parameters that are of most interest from a trend and drug monitoring perspective (demographics, agents used, treatment and outcomes). This enabled data

collection alongside the clinical workload of the sentinel centres, reducing the burden on the participating centres. Eleven sentinel centres from seven countries were able to successfully participate and collect data over a 6-month period in 2023 (Figure 1).

The aim of the 2024 data collection was to use the modified Euro-DEN Plus data collection tool to collect data on acute drug toxicity presentations to sentinel centres across the Western Balkans, European Neighbourhood Policy (ENP) countries and beyond and compare this with previous data collected in 2021, 2022 and 2023.

Figure 1. Map showing the participating centres



Methodology

All centres that had collected data from 2021 to 2023 were invited to participate in the 2024 data collection round. No new centres were included in 2024. Twelve sentinel centres (nine EU4MD II and three IPA8) collected data on acute drug toxicity presentations using the modified Euro-DEN Plus data collection tool over 6 months in 2024 (see Sentinel centres, below). All sites had appropriate local ethical or equivalent approval in place. Data were emailed monthly to the lead centre for collation, cleaning and analysis.

The inclusion criteria, defined in the Euro-DEN Plus standard operating procedure ([2]), were the same as for the data collections undertaken in the previous years, namely the main Euro-DEN Plus inclusion criteria (De Baerdemaeker et al., 2024; European Monitoring Centre for Drugs and Drug Addiction, 2021; European Union Drugs Agency, 2025a); each sentinel centre collected data from 1 July to 31 December 2024 for all presentations to their emergency department with acute drug toxicity.

Presentations were identified by each sentinel centre, and data were extracted from the patients' routine medical records; identification of the drugs involved in the presentations was based on patients' self-reported information combined with the opinion of the treating clinician (European Monitoring Centre for Drugs and Drug Addiction, 2021; European Union Drugs Agency, 2024).

The data parameters were:

- Year, month and day of the week of presentation
- Time of day of presentation (08:00 to 19:59 or 20:00 to 07:59)
- Length of stay (hours:minutes)
- Discharge from emergency department (medically discharged, self-discharged, admit critical care, admit psych, death, admit other, unknown/not recorded)
- Died in hospital? (yes or no)
- Age (in years)
- Sex (male or female)
- Ambulance to emergency department? (yes or no)
- Ethanol co-ingested? (yes, no, not recorded)
- Agent 1

([2]) The Euro-DEN Plus standard operating procedure is available to approved parties on request from the EUDA.

- Agent 2
- Agent 3
- Agent 4
- Agent 5
- Agent 6
- Any treatment given? (yes or no)
- Naloxone given? (yes-pre-hospital, yes-hospital, yes-both, no)
- Analytical tests done? (yes or no)

The data collection SOP document together with a pre-configured Microsoft Excel spreadsheet was sent to each sentinel centre. The spreadsheet was completed monthly and emailed to the lead centre in London, UK, where the data were compiled onto a central Microsoft Excel spreadsheet.

The coordinating centre in London, UK (Guy's and St Thomas' NHS Foundation Trust) provided support during the data collection process for any questions/queries and administrative tasks. Each centre had appropriate local ethical approval in place to be able to collect and share the data. The data collected in this follow-up study were compared to the data collected in 2023 (952 presentations and 11 sentinel centres), 2022 (571 presentations and five sentinel centres) and 2021 (741 presentations and seven sentinel centres).

Results

Sentinel centres

Twelve sentinel centres from eight countries contributed data to the project (see Table 1). All centres had previously been involved in collecting data for at least one year of the project.

Table 1. Sentinel centres and number of presentations per centre

Project	Centre	Number of presentations in 2024	Previous years participated
IPA7/8	Belgrade, Serbia	250	2021, 2022, 2023
	Skopje, North Macedonia	79	2022, 2023
	Tirana, Albania	206	2021, 2022
EU4MD (II)	Bab El Oued, Algeria	41	2021, 2022, 2023
	Beirut, Lebanon	2	2021, 2023
	Bethlehem, Palestine	28	2023
	Haifa, Israel	102	2021, 2023
	Hebron, Palestine	35	2023
	Nablus, Palestine	36	2023
	Qalqilia, Palestine	46	2023
	Ramallah, Palestine	54	2023
	Tunis, Tunisia	108	2021, 2022, 2023
Total		**987**	

Demographics

There were 987 presentations in the 12 centres; they were more commonly male (831; 85.8 %), with a median age of 32 years (IQR: 24–40 years). Figure 2 shows the sex distribution per age group. Details relating to the demographics of these presentations per centre are shown in Table 2.

Figure 2. Number of cases by age and gender in 2024

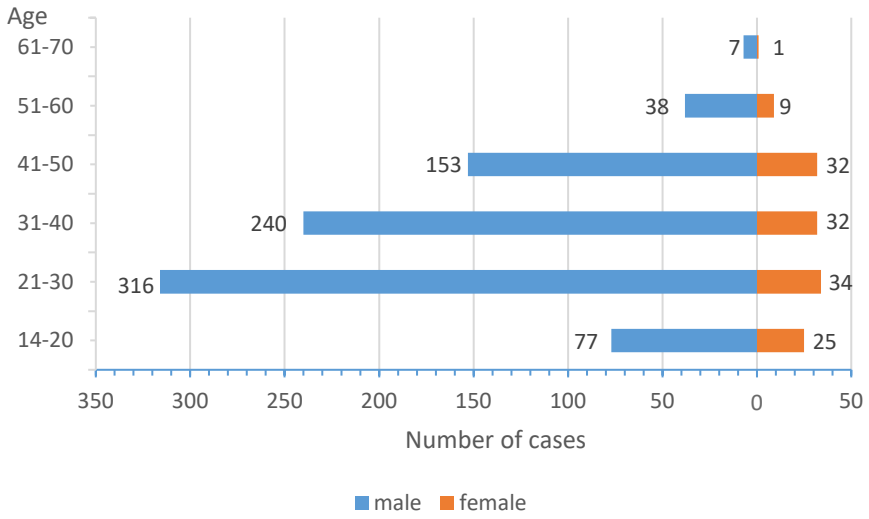
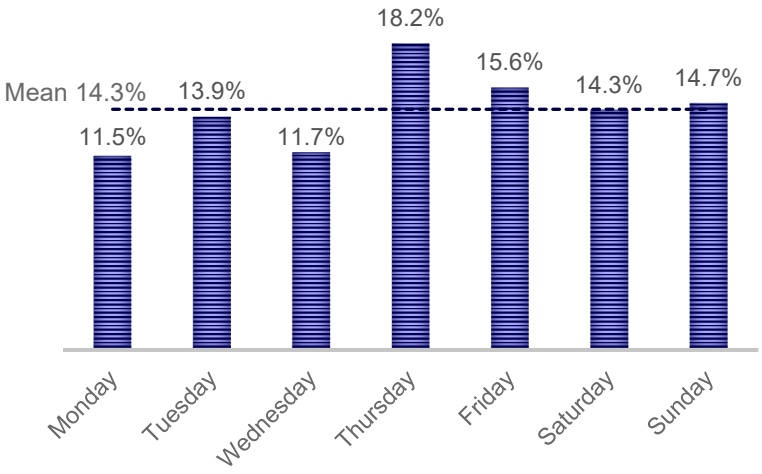


Table 2. Demographics of presentations by centre in 2024

Project	Centre	Total	Median age, IQR1–IQR3 (years)	Admissions, number (%)	Deaths, number (%)	Male, number (%)	Age range (years)	Notes
IPA8	Belgrade, Serbia	250	32 (24–43)	115 (46.0 %)	5 (2.0 %)	195 (78.0 %)	14–70	1 age not recorded
	Skopje, North Macedonia	79	35 (23–41)	20 (25.3 %)	0 (0.0 %)	69 (87.3 %)	15–58	2 age not known
	Tirana, Albania	206	30 (24–36)	38 (18.4 %)	1 (0.5 %)	189 (91.7 %)	14–56	4 age not recorded of which 2 sex not recorded
EU4MD II	Bab El Oued, Algeria	41	27 (23–32)	2 (4.9 %)	2 (4.9 %)	38 (92.7 %)	16–38	
	Beirut, Lebanon	2	N/A	2 (100 %)	0 (0.0 %)	2 (100.0 %)	20	
	Bethlehem, Palestine	28	36 (28–43)	16 (57.1)	7 (25.0 %)	24 (85.7 %)	22–51	
	Haifa, Israel	102	33 (25–43)	14 (13.7 %)	1 (1.0 %)	78 (76.5 %)	18–70	
	Hebron, Palestine	35	37 (28–45)	19 (54.3 %)	6 (17.1 %)	29 (82.9 %)	14–56	1 age not recorded
	Nablus, Palestine	36	38 (30–44)	20 (55.6 %)	9 (25.0 %)	33 (91.6 %)	22–51	
	Qalqilia, Palestine	46	36 (28–43)	19 (41.3 %)	6 (13.0 %)	41 (89.1 %)	19–54	1 sex not recorded, 2x age not recorded
	Ramallah, Palestine	54	37 (31–44)	29 (53.7 %)	17 (31.5 %)	44 (81.5 %)	19–62	1 sex unknown and 6 age unknown
	Tunis, Tunisia	108	26 (22–34)	15 (13.9 %)	2 (1.9 %)	103 (95.4 %)	15–62	

Figure 3. Time distributions of acute drug toxicity presentations (weekdays)



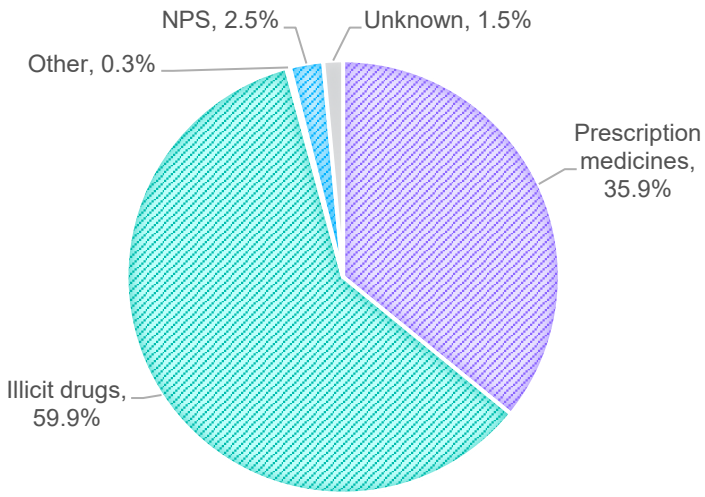
Time patterns of presentations

As shown in Figure 3, presentations were more common on Thursdays (18.2 %) compared to other days of the week. Mondays and Wednesdays had the fewest presentations, accounting for 11.5 % and 11.7 % of the total presentations, respectively. The majority of patients presented at night (55.2 %).

Substances involved in the acute drug toxicity presentations

Overall, 72 different substances (a total of 1772 substance identifications) were reported in the 987 presentations. As shown in Figure 4, established illicit drugs accounted for the majority of substance identifications (1061; 59.9 %), while 636 (35.9 %) were prescription medicines, 44 (2.5 %) were new psychoactive substances (NPS) and five (0.3 %) were classified as ‘other’. The latter category comprised tobacco, glue, energy drink and caffeine.

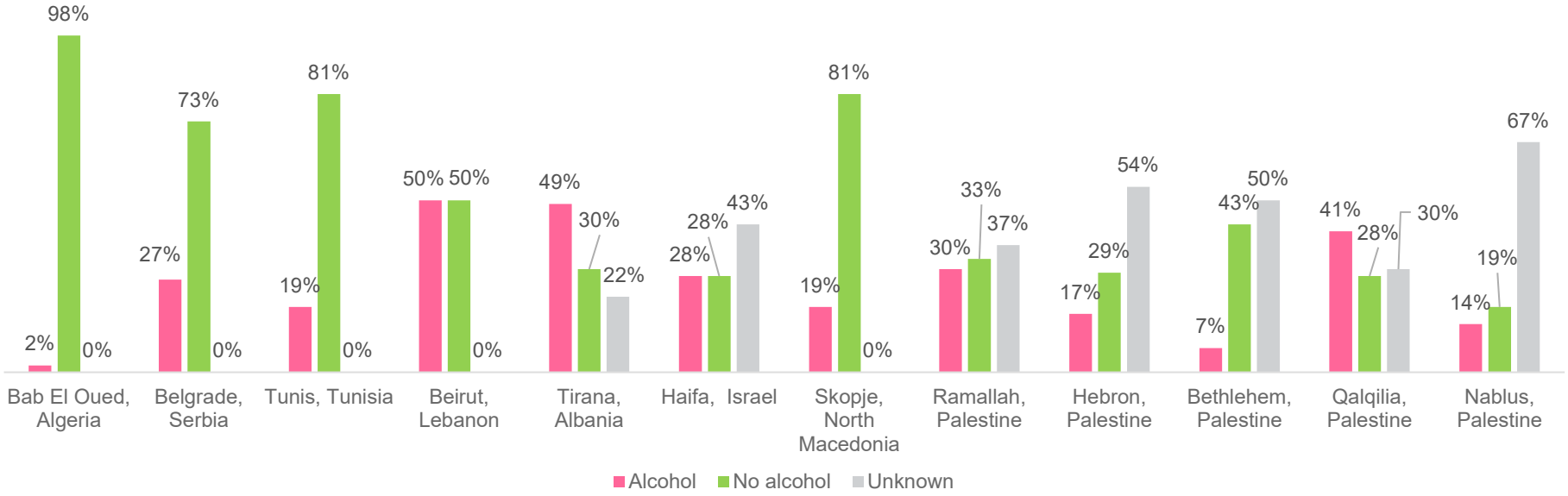
Figure 4. Classification of reported substances



The majority of presentations (575; 58.3 %) reported the use of a single substance. Multiple substances were reported in 412 presentations (41.7 %): 165 presentations (16.7 %) reported use of two drugs, 157 (15.9 %) reported use of three drugs, 57 (5.8 %) reported use of four drugs, 30 (3.0 %) reported use of five drugs and in three presentations (0.3 %) six different drugs were reported to have been used.

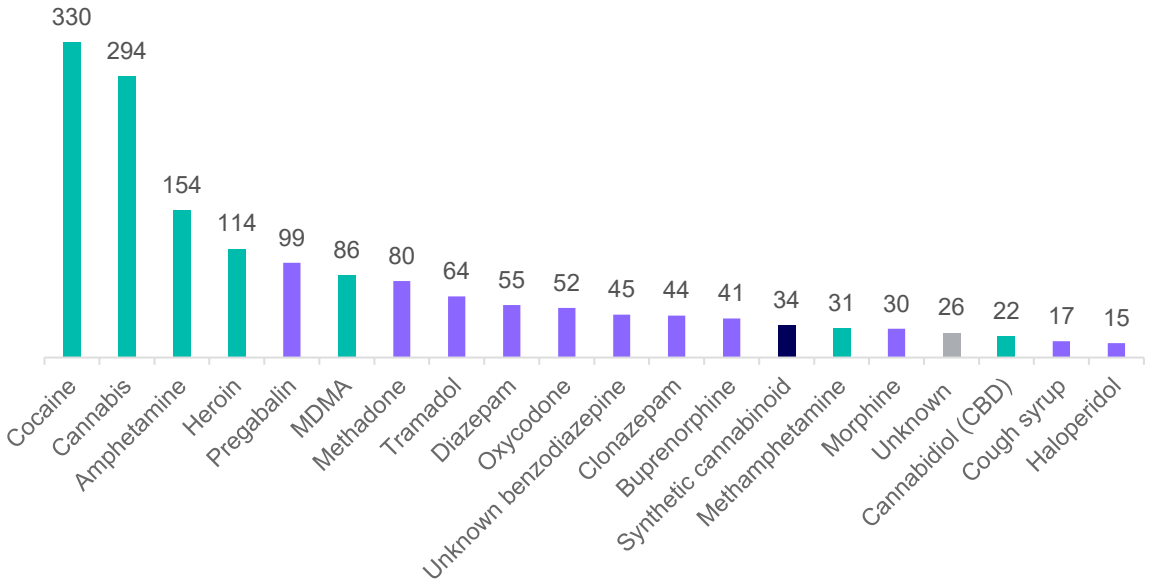
In 281 presentations (28.5 %), alcohol was recorded as co-ingested, 525 presentations (53.2 %) documented that alcohol was not co-ingested, and in 181 (18.3 %) information on the use of alcohol was not recorded. The co-ingestion of alcohol differed strongly across the centres, from only 2.4 % of presentations reporting alcohol co-ingestion in Bab El Oued (Algeria) to up to 48.5 % reporting alcohol co-ingestion in Tirana (Albania). The share of presentations with alcohol co-ingestion reported per centre is shown in Figure 5.

Figure 5. Percentage of presentations reporting co-ingestion of alcohol per centre



Note: Only two presentations were included over 6 months for Beirut (Lebanon).

Figure 6. Top 20 of the reported drugs



Note: Illicit drugs are shown in green, prescription-only medicines in purple and new psychoactive substances in black.

As shown in Figure 6, the three most commonly reported drugs were illicit drugs: cocaine followed by cannabis and amphetamine. Pregabalin was the most common prescription medicine, followed by methadone and tramadol.

As shown in Table 3 and Table 4, there was variation in the proportion of prescription medicines/illicit drugs involved in presentations across the centres as well as in the top 5 reported drugs and top 5 illicit drugs and prescription medicines. For Lebanon, Beirut, the top 5 were not listed to prevent identifiable information being reported, given they only reported two patients. It is worth mentioning that both presentations reported a combination of illicit drug use and prescription medicine use. New psychoactive substances were reported in all Palestinian centres and in the Israeli centre but were not present elsewhere.

Table 3. Overview of proportion of substances per reported centre, IPA7/8 project

Centre	Illicit drugs, number (%)	Prescription medicines, number (%)	NPS, number (%)	Other/ unknown, number (%)	Top 5 drugs	Top 5 illicit drugs	Top 5 prescription medicines
Belgrade, Serbia	263 (75.6 %)	84 (24.1 %)	–	1 (0.3 %)	1. Cannabis 2. Amphetamine 3. Cocaine 4. Methadone 5. Heroin	1. Cannabis 2. Amphetamine 3. Cocaine 4. Heroin 5. Methamphetamine	1. Methadone 2. Buprenorphine 3. Pregabalin 4. Clonazepam 5. Alprazolam/ diazepam ([1])
Skopje, North Macedonia	70 (53.4 %)	58 (44.3 %)	–	3 (2.3 %)	1. Cocaine 2. Methadone/heroin ([1]) 4. Diazepam 5. Cannabis	1. Cocaine 2. Heroin 3. Cannabis 4. Amphetamine 5. Phencyclidine	1. Methadone 2. Diazepam 3. Buprenorphine 4. Tramadol 5. Carbamazepine
Tirana, Albania	220 (89.1 %)	27 (10.9 %)	–	–	1. Cocaine 2. Cannabis 3. Heroin 4. Diazepam/ methadone ([1])	1. Cocaine 2. Cannabis 3. Heroin 4. Crack 5. Cannabis (CBD)	1. Diazepam/ methadone ([1]) 3. Unknown antidepressant 4. Clonazepam 5. Unknown benzodiazepine

([1]) Substances reported with equal prevalence.

Table 4. Overview of proportion of substances per reported centre, EU4MD (II) project

Centre	Illicit drugs, number (%)	Prescription medicines, number (%)	NPS, number (%)	Other/ unknown, number (%)	Top 5 drugs	Top 5 illicit drugs	Top 5 prescription medicines
Bab El Oued, Algeria	27 (39.7 %)	41 (60.3 %)	–	–	1. Pregabalin 2. MDMA 3. Cannabis 4. Unknown benzodiazepine 5. Cocaine	1. MDMA 2. Cannabis 3. Cocaine 4. Cannabis (CBD) (2)	1. Pregabalin 2. Unknown benzodiazepine 3. Tramadol 4. Carbamazepine 5. Haloperidol
Beirut, Lebanon	2 (50.0 %)	2 (50.0 %)	–	–	Specific drugs not reported as there are only two patients and to prevent identifiable information being reported. Both reported a combination of illicit drug use and prescription medicine use		
Bethlehem, Palestine	44 (46.3 %)	47 (49.5 %)	4 (4.2 %)	–	1. Cannabis 2. MDMA/amphetamine/ heroin (1) 5. Clonazepam	1. Cannabis 2. MDMA/ amphetamine/ heroin (1) 5. Cocaine	1. Clonazepam 2. Diazepam/ unknown benzodiazepine/ methadone (1) 5. Tramadol
Haifa, Israel	64 (47.1 %)	43 (31.6 %)	3 (2.2 %)	26 (19.1 %)	1. Cannabis 2. Unknown 3. Cocaine 4. Unknown benzodiazepine/ nitrous oxide (1)	1. Cannabis 2. Cocaine 3. Nitrous oxide 4. Amphetamine 5. Heroin/LSD/ MDMA (1)	1. Unknown benzodiazepine 2. Unknown opioid 3. Fentanyl/ zopiclone (1) 5. Clonazepam/ lorazepam (1)
Hebron, Palestine	50 (38.8 %)	69 (53.5 %)	10 (7.8 %)	–	1. Cannabis 2. Tramadol 3. Synthetic cannabinoid/ heroin (1) 5. Amphetamine	1. Cannabis 2. Heroin 3. Amphetamine 4. MDMA 5. Methamphetamine	1. Tramadol 2. Morphine 3. Pregabalin/ oxycodone (1) 5. Diazepam/ clonazepam (1)

Centre	Illicit drugs, number (%)	Prescription medicines, number (%)	NPS, number (%)	Other/ unknown, number (%)	Top 5 drugs	Top 5 illicit drugs	Top 5 prescription medicines
Nablus, Palestine	62 (53.9 %)	43 (37.4 %)	10 (8.7 %)	–	1. Cannabis 2. Amphetamine 3. Heroin 4. Oxycodone 5. Tramadol	1. Cannabis 2. Amphetamine 3. Heroin 4. MDMA 5. Cocaine	1. Oxycodone 2. Tramadol 3. Pregabalin/ unknown benzodiazepine (1) 5. Morphine/ buprenorphine/ cough syrup (1)
Qalqilia, Palestine	80 (56.7 %)	54 (38.3 %)	7 (5.0 %)	–	1. Amphetamine 2. Heroin 3. Cannabis 4. Cannabis (CBD) 5. Oxycodone	1. Amphetamine 2. Heroin 3. Cannabis 4. Cannabis (CBD) 5. MDMA	1. Oxycodone 2. Pregabalin 3. Clonazepam 4. Unknown benzodiazepine/ tramadol (1)
Ramallah, Palestine	85 (40.3 %)	117 (55.5 %)	9 (4.3 %)	–	1. Amphetamine 2. Cannabis 3. Oxycodone 4. Tramadol/ methadone (1)	1. Amphetamine 2. Cannabis 3. MDMA 4. Heroin 5. Cocaine	1. Oxycodone 2. Tramadol/ methadone (1) 4. Morphine 5. Diazepam
Tunis, Tunisia	93 (65.5 %)	49 (34.5 %)	–	–	1. Cocaine 2. Cannabis 3. MDMA 4. Pregabalin 5. Haloperidol	1. Cocaine 2. Cannabis 3. MDMA (2)	1. Pregabalin 2. Haloperidol 3. Lorazepam 4. Buprenorphine/ bromazepam/ clonazepam (1)

(1) Substances reported with equal prevalence.

(2) No other illicit drugs reported in this centre.

Oxycodone, reported in 52 presentations, was reported in all Palestinian centres and in Haifa, Israel but not in any other centres. Tramadol was slightly more common with 64 presentations, most of these (53) were in the Palestinian centres, six presentations were reported in Skopje (North Macedonia), four presentations were reported in Bab El Oued (Algeria), and one presentation in Tunis (Tunisia) reported the use of tramadol.

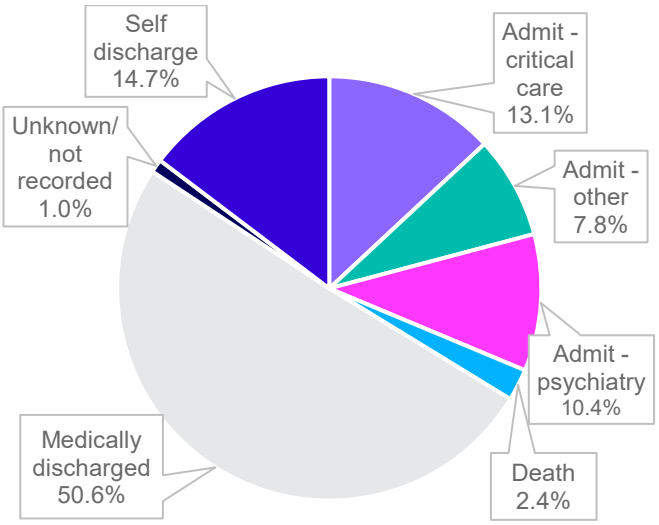
Treatment

A total of 880 (89.2 %) presentations received one or more treatments. Naloxone was administered in 161 (16.3 %) presentations. Most of the naloxone administrations (104, 64.6 %) were performed in hospital. A breakdown of treatment and naloxone administration is shown in Table 5.

Table 5. Treatment requirements per centre

Project	Centre	Naloxone use				Overall treatment given	
		Hospital, number (%)	Pre-hospital, number (%)	Both, number (%)	No naloxone used, number (%)	Treatment received, number (%)	No treatment, number (%)
IPA8	**Belgrade, Serbia**	26 (10.4 %)	5 (2.0 %)	12 (4.8 %	207 (82.8 %)	229 (91.6 %)	21 (8.4 %)
	Skopje, North Macedonia	7 (8.9 %)	–	–	72 (91.1 %)	62 (78.5 %)	17 (21.5 %)
	Tirana, Albania	10 (4.9 %)	–	–	196 (95.1 %)	196 (95.1 %)	10 (4.9 %)
EU4MD II	**Bab El Oued, Algeria**	1 (2.4 %)	–	–	40 (97.6 %)	41 (100 %)	–
	Beirut, Lebanon	–	–	–	2 (100 %)	2 (100 %)	–
	Bethlehem, Palestine	9 (32.1 %)	1 (3.6 %)	3 (10.7 %)	15 (53.6 %)	26 (92.9 %)	2 (7.1 %)
	Haifa, Israel	5 (4.9 %)	8 (7.8 %)	3 (2.9 %)	86 (84.3 %)	68 (66.7 %)	34 (33.3 %)
	Hebron, Palestine	13 (37.1 %)	–	6 (17.1 %)	16 (45.7 %)	32 (91.4 %)	3 (8.6 %)
	Nablus, Palestine	9 (25.0 %)	–	3 (8.3 %)	24 (66.7 %)	31 (86.1 %)	5 (13.9 %)
	Qalqilia, Palestine	8 (17.4 %)	–	7 (15.2 %)	31 (67.4 %)	38 (82.6 %)	7 (15.2 %)
	Ramallah, Palestine	15 (27.8 %)	–	9 (16.7 %)	30 (55.6 %)	50 (92.6 %)	4 (7.4 %)
	Tunis, Tunisia	1 (0.9 %)	–	–	107 (99.1 %)	105 (97.2 %)	3 (2.8 %)
Total		**104 (10.5 %)**	**14 (1.4 %)**	**43 (4.4 %)**	**826 (83.7 %)**	**880 (89.2 %)**	**106 (10.7 %)**

Figure 7. Overall disposition (discharge location) from the emergency department



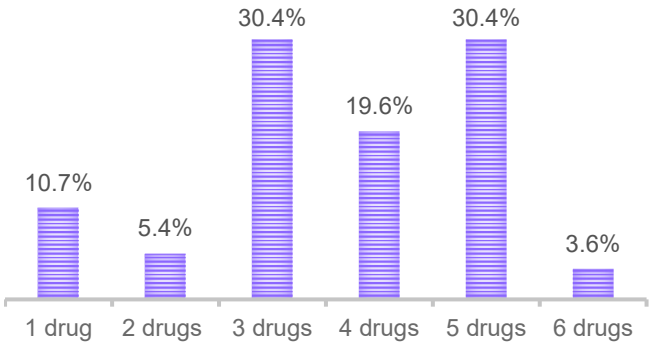
Outcomes

An overview of the disposition (discharge location) from the emergency department is shown in Figure 7. The majority of patients left the hospital from the emergency department, with 50.8 % being medically discharged and 14.7 % self-discharging. A further 13.1 % were admitted to critical care, 10.4 % to a psychiatric ward and 7.8 % were admitted to another ward. Twenty-four (2.4 %) patients died in the emergency department.

Deaths

Fifty-six (5.7 %) of all presentations died. Twenty-four (42.9 %) of these died in the emergency department. Thirty-one (55.4 %) died after admission to critical care and one patient (1.7 %) died after admission to another ward. The median age of the deaths was 39 (range: 19–62; IQR: 33–44) years (data on age was not available for three presentations that died). All deaths were among males. All presentations resulting in death required treatment, of these 47 (83.9 %) patients received naloxone. The median time from presentation to death was 11 hours 00 minutes (IQR: 3 hours 33 minutes to 1 day 10 hours 30 minutes; range: 35 minutes to 4 days 20 hours). The majority of deaths involved the use of multiple drugs (a total of 204 substance identifications reported), and only six deaths (10.6 %) had just one substance reported, as shown in Figure 8. The most common drugs involved were heroin (30; 14.7 %), followed by oxycodone (23; 11.5 %), cocaine (19; 9.5 %), methadone (17; 8.5 %) and tramadol (16; 8.0 %).

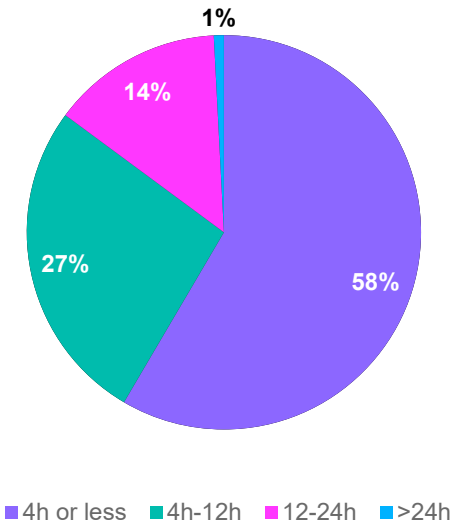
Figure 8. Number of substances (*n* = 204) reported in the patients that died



Length of stay

The median length of stay was 3 hours and 32 minutes (IQR: 1 hour 42 minutes to 11 hours 49 minutes), and the majority (53.7 %) were discharged within 4 hours of presenting to the emergency department. An overview of the length of stay is shown in Figure 9. For 12 presentations, the length of stay was not known.

Figure 9. Length of stay in hospital



Discussion and comparing 2024 results with the previous years

Comparing the results of this study in 2024 with the data from 2021, 2022 and 2023, there are many similarities but also some differences that are worthy of discussion. An overview of the comparison is shown in Table 6.

When looking at demographics, the majority of presentations over the 4 years have been in young males, with the male percentage ranging from 79.9 % to 85.8 % and the median age ranging from 28 to 32 years.

Illicit drugs continue to represent the largest share of reported substances, while the proportion of prescription medicines remains unchanged overall. In 2024, illicit drugs accounted for 59.9 % of reported substance identifications, compared with 54.6 % in 2023, 61.7 % in 2022 and 59.5 % in 2021. Prescription medicines represented 35.9 % of reported substance identifications in 2024, 40.3 % in 2023, 31.4 % in 2022 and 36.1 % in 2021. New psychoactive substances were not reported in 2021 or 2022 but were reported in 2.3 % of presentations in 2023 and 2.5 % of presentations in 2024.

Cannabis and cocaine remain the most commonly reported substances overall. Since 2023, amphetamine completes the top 3, moving heroin to fourth place. Compared to 2023, pregabalin is now the most commonly reported prescription medicine.

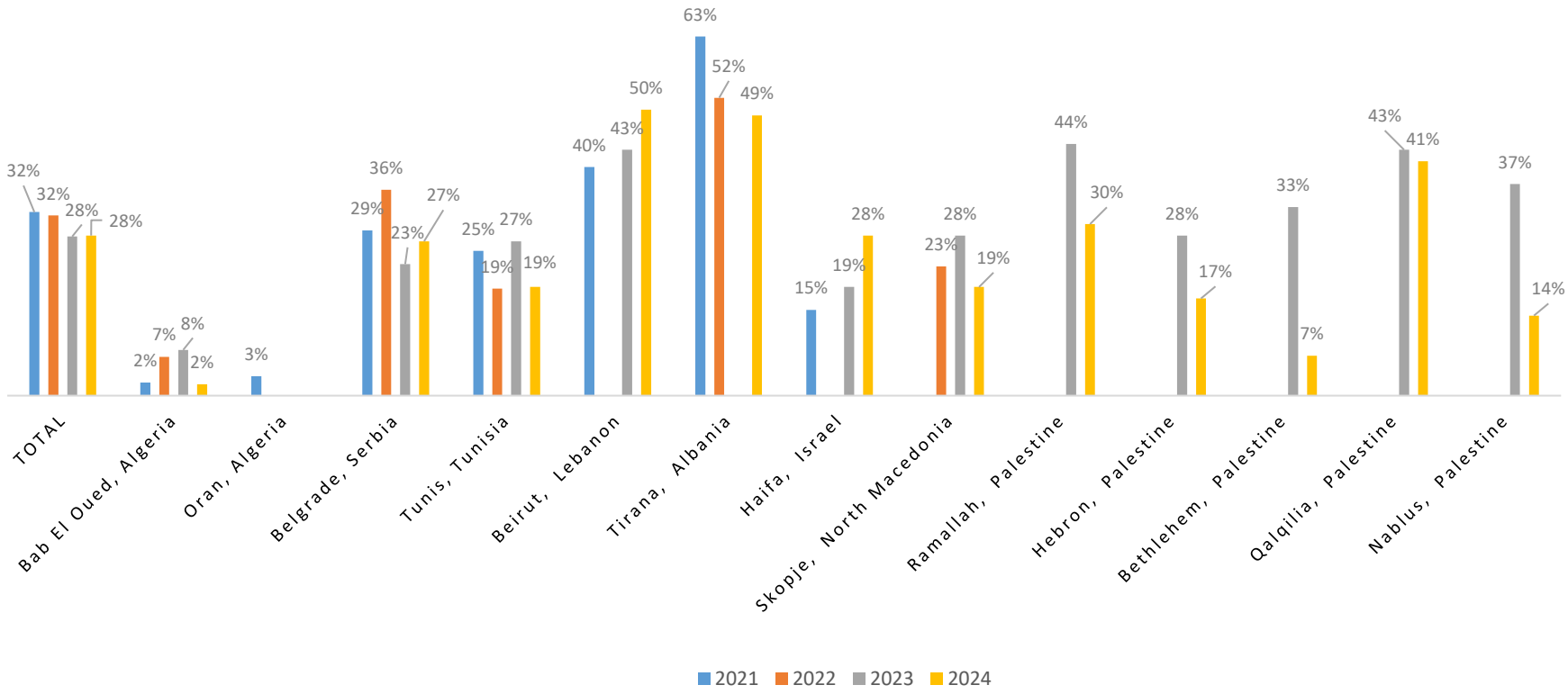
There have been changes over the study period in the prescription medicines involved in the presentations. Unknown benzodiazepines, which were most reported in 2023, left the top 5 prescription-only medicines in 2024. This is potentially due to better reporting of specific substances such as diazepam, which is more reported in 2024 compared to previous years. Tramadol and oxycodone are now in the top 5 prescription medicines since 2023. Oxycodone was only reported once before 2023, and since then has only been reported in the Palestinian and Israeli centres.

Figure 10 shows the evolution of reported alcohol co-ingestion over the four years of the study per centre. When looking more closely at the centres, there was large reduction in reported alcohol use from 2023 to 2024 in Ramallah, Hebron, Bethlehem and Qalqilia (all in Palestine).

Table 6. Comparing data from 2024 with the previous years' data

	2024	2023	2022	2021
Number of centres	12	11	5	7
Number of presentations	987	952	571	741
Deaths (number and proportion)	56 (5.7 %)	40 (4.2 %)	2 (0.4 %)	3 (0.4 %)
Top 5 substances reported in deaths	Heroin (1)	Heroin (1)	Cocaine (1)	Cannabis (1)
	Oxycodone (2)	Amphetamine (2)	MDMA (2)	Unknown opioid (2)
	Cocaine (3)	Methadone (3)	Heroin (2)	Pregabalin (2)
	Methadone (4)	Cocaine (4)		Tramadol (2)
	Tramadol (5)	MDMA (5)		Heroin (2)
Male presentations (%)	85.8	79.9	83.0	80.4
Median age (IQR), years	32 (24–40)	32 (24–40)	28 (23–35)	30 (23–37)
Illicit drugs (%)	59.9	54.6	61.7	59.5
Prescription medicines (%)	35.9	40.3	31.4	36.1
New psychoactive substances (%)	2.5	2.3	0	0
Top 5 substances	Cocaine (1)	Cannabis (1)	Cocaine (1)	Cannabis (1)
	Cannabis (2)	Cocaine (2)	Cannabis (2)	Cocaine (2)
	Amphetamine (3)	Amphetamine (3)	Heroin (3)	Heroin (3)
	Heroin (4)	Heroin (4)	MDMA (4)	Pregabalin (4)
	Pregabalin (5)	Unknown benzodiazepine (5)	Unknown benzodiazepine (5)	MDMA (5)
Top 5 illicit drugs	Cocaine (1)	Cannabis (1)	Cocaine (1)	Cannabis (1)
	Cannabis (2)	Cocaine (2)	Cannabis (2)	Cocaine (2)
	Amphetamine (3)	Amphetamine (3)	Heroin (3)	Heroin (3)
	Heroin (4)	Heroin (4)	MDMA (4)	MDMA (4)
	MDMA (5)	MDMA (5)	Amphetamine (5)	Amphetamine (5)
Top 5 prescription medicines	Pregabalin (1)	Unknown benzodiazepine (1)	Unknown benzodiazepine (1)	Pregabalin (1)
	Methadone (2)	Methadone (2)	Pregabalin (2)	Methadone (2)
	Tramadol (3)	Pregabalin (3)	Methadone (3)	Clonazepam (3)
	Diazepam (4)	Tramadol (4)	Diazepam (4)	Benzodiazepine (4)
	Oxycodone (5)	Oxycodone (5)	Unknown opioid (5)	Buprenorphine (5)

Figure 10. Percentage of presentations reporting alcohol co-ingestion, 2021–2024



There are differences in the number and rate of reported deaths in 2021 (3; 0.4 %) and 2022 (2; 0.4 %) versus 2023 (40; 4.2 %) and 2024 (56; 5.7 %). Most deaths occurred in the emergency department in 2023 (32/40), while in 2024 the majority occurred after initial admission to hospital (32/56).

In 2023, heroin was involved in 67.5 % of the deaths (27/40), 55.0 % (22/40) involved amphetamines, 52.5 % (21/40) involved methadone, 47.5 % involved cocaine (19/40) and 42.5 % involved MDMA (19/40). In 2024, heroin was involved in 53.6 % of the deaths (30/56), 41.1 % involved oxycodone (23/56), 33.9 % involved cocaine (19/56), 30.4 % involved methadone (17/56) and 28.6 % involved tramadol (16/56). The inclusion of data from the Palestinian centres since 2023 has increased the number of fatalities reported. The five Palestinian centres reported 35 deaths (87.5 % of the annual total) in 2023 and 45 deaths (80.4 % of the annual total) in 2024.

Issues encountered

Beirut (Lebanon) reported that only two patients had presented with acute drug-related toxicity during the data collection period. This appears to be a very low number. However, similarly low numbers were reported in 2021 (5 presentations) and 2023 (7 presentations). While there may be low numbers of presentations, it is possible that other factors have contributed to this low number. One factor is stigma related to the use of drugs and associated harms, so that patients do not want to disclose drug use when they present to the emergency department with acute toxicity and so the presentation is not coded as drug-related.

Similar to last year, it is difficult to determine whether the Gaza conflict may have impacted on the use of drugs and associated drug-related harm, as well as the ability of clinicians to collect data during the data collection period. The coordinators are very grateful in this context for the ongoing participation of these centres and their engagement with the project and data collection. There were considerably fewer presentations reported by the Palestinian centres in 2024 compared to 2023 (199 presentations compared to 345 respectively). This reduction may have occurred due to changes in how individuals access different hospitals/emergency departments due to the closure of hospitals and the instigation of random checkpoints, especially in the evening and night-time, which change where individuals can travel to. Of note was that the use of cannabidiol (CBD) was reported for the first time, with almost all of the cases located in Palestine.

The centre in Haifa, Israel, reported that their high number of unknowns (19.1 %) is thought to have occurred as there was an increase in number of patients who were too unwell to communicate what they had taken. This is alongside the fact that individuals are not keen on disclosing the substances that are taken due to legal, cultural and social implications. An example is that the presence of relatives during the consultation means that patients deny the use of drugs.

As with all data entry registries, some data fields were not completed, which may mean that the data were not entered in the patient's medical records or that the clinician entering the data failed to enter the information from the patient's medical records. Where possible those entering the data are reminded to ensure that data fields are not left blank but that missing data are appropriately coded in the data collection tool.

Currently, to facilitate centres participating in the project, data collection covers a 6-month period rather a full 12-month period. There have been ongoing discussions about the potential for some centres to expand data collection to 12 months, which, over time, would provide information on seasonal trends in acute drug-related harms and the drugs involved. The data from IPA8/EU4MD II centres is entered into Excel spreadsheets, whereas the wider Euro-DEN Plus project moved to data entry into an online REDCap database in 2023. Those entering data into REDCap have reported that this is easier than using the Excel spreadsheet; it is also easier for data management by the EUDA and the coordination centre. There is ongoing consideration of whether those IPA8/EU4MD II centres could transfer to using REDCap for data entry; the main block at the moment is that the wider Euro-DEN Plus project captures a larger dataset, particularly the inclusion of information on clinical features, which are not collected by IPA8/EU4MD II centres. Work is ongoing to see if these differences in data variables can be resolved.

Conclusion

Overall, the demographics and drugs involved in the presentations remained similar, but there were some important differences. There has been an increase in presentations involving prescription opioids, in particular tramadol and oxycodone, highlighting the need for continued monitoring, particularly as oxycodone is an uncommon drug in European Euro-DEN Plus presentations. There is global awareness of the harms associated with the opioid epidemic in North America, particularly related to prescription opioids such as oxycodone. The identification of this signal in countries bordering the European Union warrants further consideration to determine whether strategies are required to prevent similar issues occurring within other countries in Europe and in the European Union. New psychoactive substances were not reported in 2021 and 2022 but have been reported in a similar proportion of presentations in 2023 and 2024. Given the rapidly changing drug market, it is important that this data collection in the EU4MD II and IPA7/8 countries continues; triangulation with other indicators and other data sources will increase the public health relevance of these data.

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Appendix 1. Hospitals and staff contributing data for the report

EU4MD II countries

Country	City	Organisation	Contributors
Algeria	Bab El Oued	Emergency Department, Mohamed Liamine Debaghine Hospital, Bab El Oued University Hospital Centre	Prof Choubane Nabila
Israel	Haifa	Rambam Health Care Campus, The Rappaport Faculty of Medicine, Technion-Israel Institute of Technology	Dr Asaad Omary
Lebanon	Beirut	Emergency Department, American University of Beirut Medical Centre	Dr Tharwat El Zahran Dr Eveline Hitti Dr Aline Khalil
Palestine ([1])		Director, Opioid Agonist Therapy (OAT), Anti-Narcotics & Psychoactive Drugs Unit Palestinian Ministry of Health	Dr Saed Belbaisi
Palestine	Ramallah	Emergency Department, Palestine Medical Complex (PMC)	Dr Saeb Bazzar Nurse Anas Horoub
Palestine	Hebron	Emergency Department, Alia Hospital	Dr Salah Itmaiza Nurse Saddam Basam Akal
Palestine	Bethlehem	Emergency Department, Beit Jala Hospital	Dr Jalal Gazal Nurse Bara'a Tawfiq Odeh
Palestine	Qalqilia	Emergency Department, Darwish Nazal Hospital	Dr Iyas Alsaleh Nurse Abdulmalik Azem
Palestine	Nablus	Emergency Department, Al Watani Hospital	Nurse Anas Odeh
Tunisia	Tunis	Emergency Department, Centre Mahmoud Yacoub d'assistance médicale urgente	Prof Hafedh Thabet

([1]) This designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual positions of the Member States on this issue.

IPA8 countries

Country	City	Organisation	Contributors
Albania	Tirana	Emergency Department, University Hospital 'Mother Teresa'	Dr Esmeralda Thoma
North Macedonia	Skopje	University Clinic of Toxicology, Ss Cyril and Methodius University	Assoc Prof Zanina Pereska Assoc Prof Natasha Simonovska Asst Prof Aleksandra Babulovska
Serbia	Belgrade	The National Poison Control Centre, Military Medical Academy	Prof Jasmina Jovic-Stosic Dr Vladan Lukic

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