Characteristics of acute ecstasy-related toxicity in multiple Dutch medical settings

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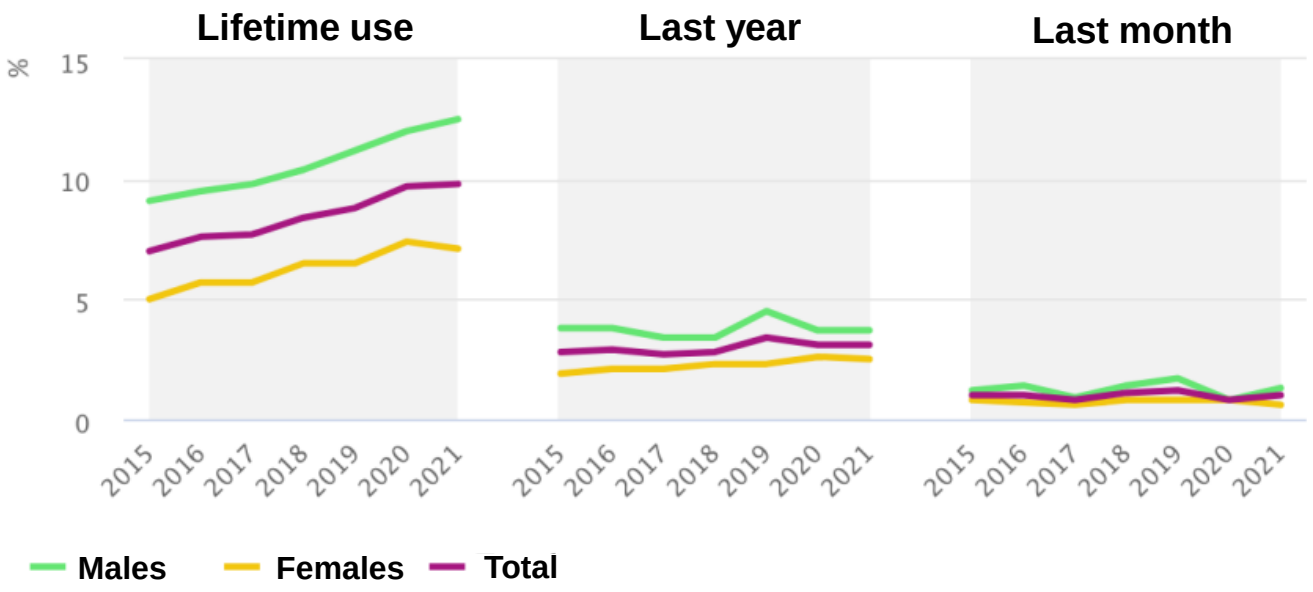
Males, **tourists** & **polysubstance users**
at increased risk for serious ecstasy-related harm

Ecstasy

- 3,4-Methylenedioxymethamphetamine (MDMA)
- Ecstasy tablets or MDMA crystals
- Empathogenic & stimulating effects (euphoria)
- Popular drug in electronic dance music (EDM) scene

Increased prevalence



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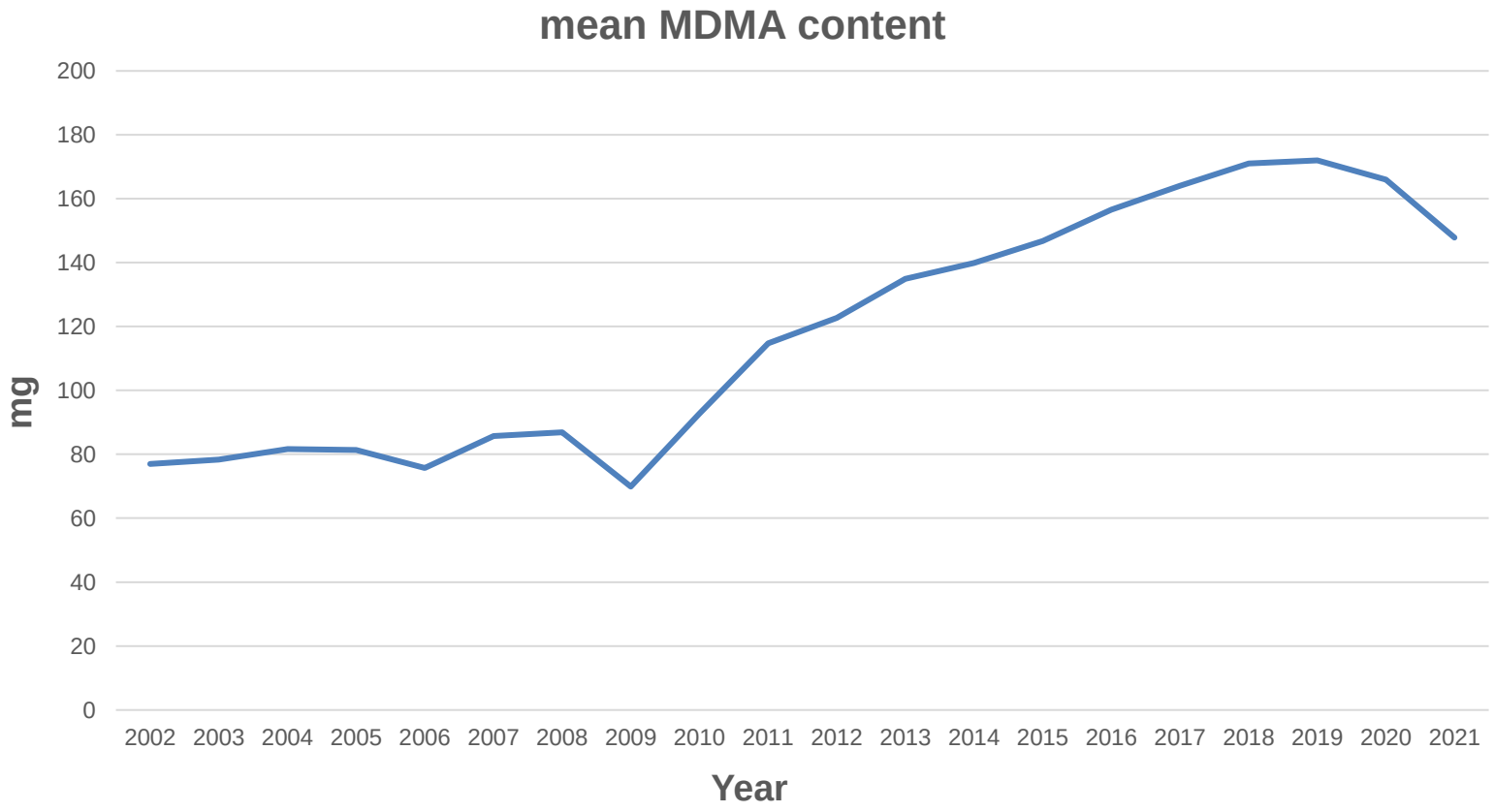
High MDMA content



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Public health concern

- Sympathomimetic toxidrome
  - Hypertension
  - Tachycardia
  - Tachypnea
  - Hyperthermia (→ hyperpyrexia)
- Acute hyponatremia
- Seizures
- Psychosis
- Excited Delirium Syndrome

Rationale

- Single-setting case reports/ (small) case-series

- **Emergency Department** presentations
  - Biased towards more serious intoxications
  - Relatively uncommon
- **First Aid Stations** at EDM events
  - Largely moderate intoxications
  - High rates of ecstasy-related harm

- → *Characteristics of a **large sample** of patients with acute ecstasy-related toxicity in **multiple medical settings***

Methods

Monitor
Drugs
Incidenten

Sentinel regions

- Emergency departments (EDs)
- Ambulance services
- Forensic medicine services

National level

- First Aid Stations (FAS)

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Methods

- Retrospective analysis
- Time period: January 2017 – December 2021
- Severity of Intoxication (SoI)
  - **Mild**
    - Well-responsive
    - Minimal vital disruption
    - Mild, transient symptoms
    - No medical intervention
  - **Serious**
    - Insufficiently responsive
      - Impaired consciousness
      - Extreme agitation/psychosis
    - Disturbed vital parameters
    - Treatment with sedatives, oxygen support, IV fluids, intubation

Results - cohort

Drug emergencies reported to MDI
(*N* = 21,407)

Excluded
- No ecstasy consumed (*n* = 15,740)

Patients eligible for inclusion
(*n* = 5,667)

Excluded
- No recreational use
  - -Accidental intoxication in children (*n* = 2)
  - -Tentamen suicidii (75)
  - -Reason of presentation is withdrawal (*n* = 185)

Included patients
(*n = 5,405*)

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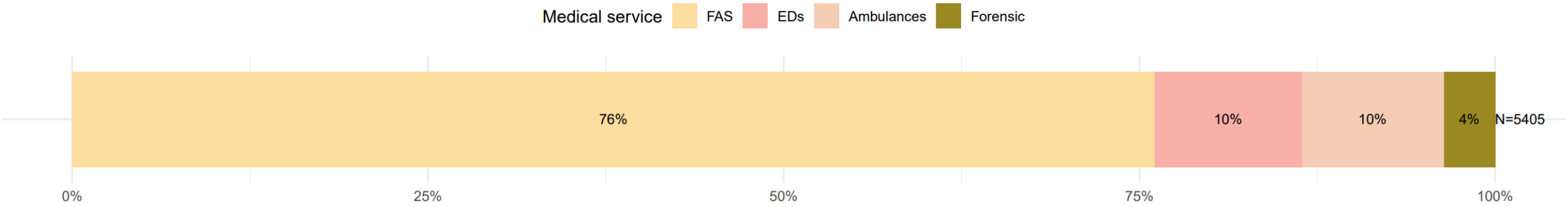
Results - cohort



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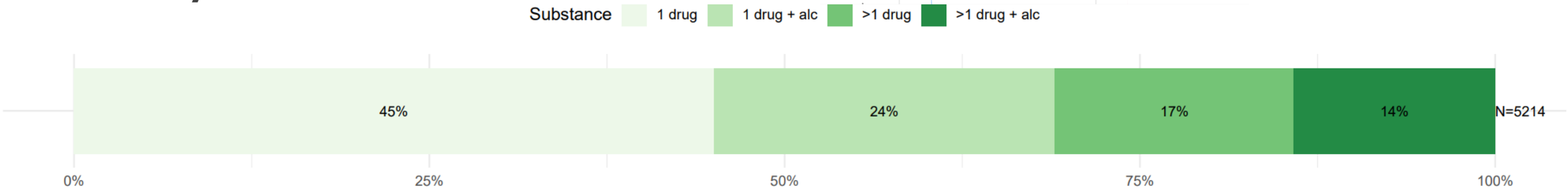
Results - cohort

- **Gender**: 63% male
- **Age**: 24 years (median, IQR: 20-29)
- **Tourists**: 18%
- **Polysubstance use**: 55%



- Alcohol (38%)
- GHB/GBL (9%)
- Cocaine (9%)
- Amphetamine (8%)
- Ketamine (5%)
- 4-fluoramphetamine (3%)
- Other/unknown substance (4%)

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Results – Severity of Intoxication

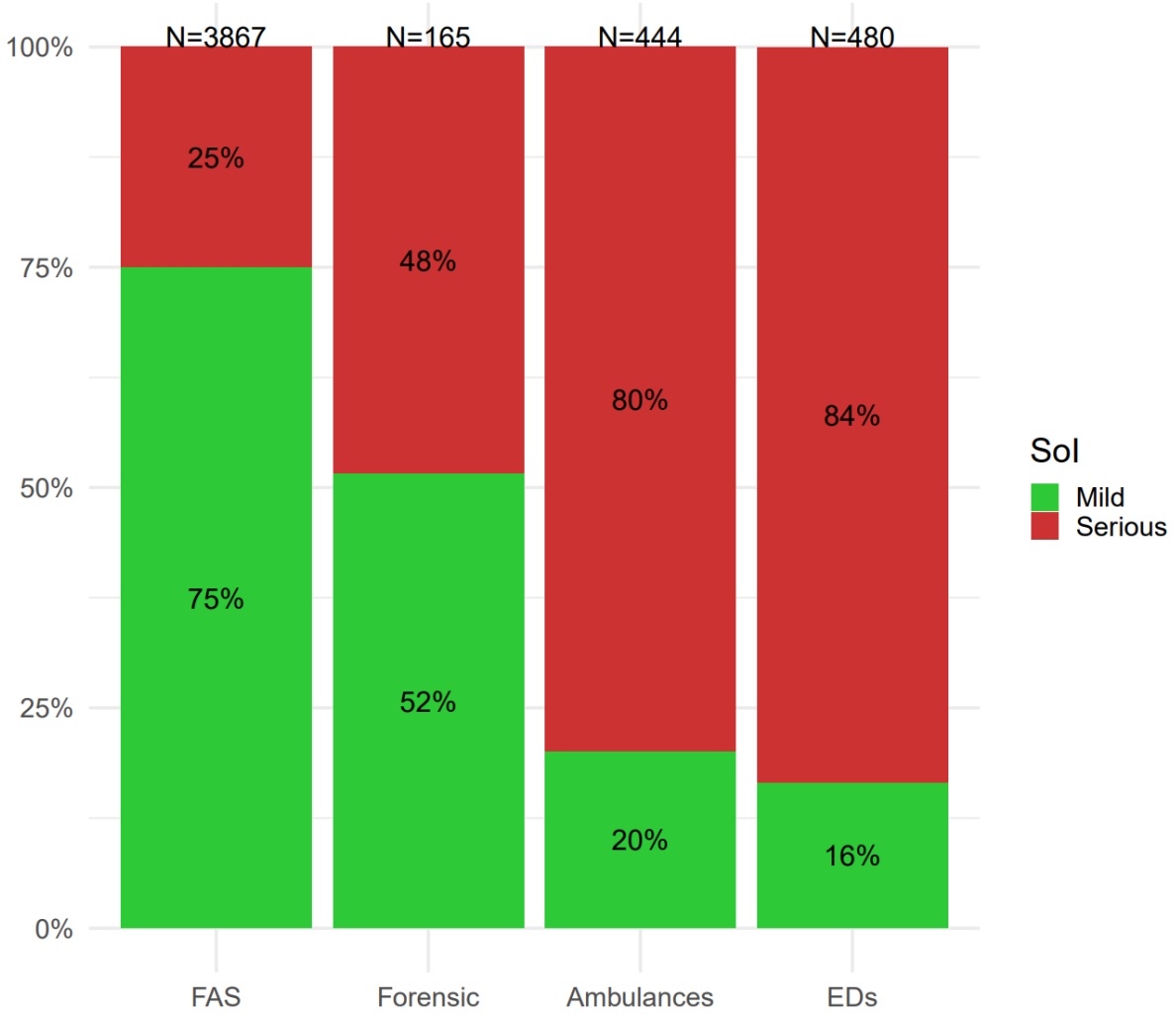
64% Mild

- Well-responsive
- Minimal vital disruption
- Mild, transient symptoms
- No medical intervention

36% Serious

- Insufficiently responsive
  - Impaired consciousness
  - Extreme agitation/ psychosis
- Disturbed vital parameters
- Treatment with sedatives, IV fluids, intubation

→ 8 deaths



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Results – SoI predictors

Question
Which (patient) characteristics increase the risk of a serious ecstasy intoxication?

SoI ~ medical setting + gender + age + tourist + [co-used substances]

Predictive variable	*Odds ratio*	*95% CI*
Medical setting		
FAS	-	-
Ambulance	**8.57**	**5.79 – 12.98*** **
EDs	**11.41**	**8.67 – 15.20*** **
Forensic	**10.57**	**1.44 – 213.64***

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Results – SoI predictors

Question
Which (patient) characteristics increase the risk of a serious ecstasy intoxication?

Predictive variable	*Odds ratio*	*95% CI*
Alcohol	**1.96**	**1.69 – 2.29*** **
Prescription drugs	n.s.	n.s.
GHB/GBL	**3.70**	**2.83 – 4.87*** **
Amphetamine	**1.33**	**1.00 – 1.76***
Cocaine	**1.33**	**1.02 – 1.74***
4-fluoroamphetamine	**1.60**	**1.05 – 2.39***
Cannabis	**1.59**	**1.14 – 2.22** **
Ketamine	**2.23**	**1.63 – 3.04*** **
Other	n.s.	n.s.

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Discussion - Characteristics

- High prevalence of ecstasy intoxications at FAS
- 36% vital disruption and/or impaired consciousness
- High-risk profile for ecstasy users:
- **Males**
  - More prone to vital disturbance after ecstasy use (blood pressure)
  - Less self-harm reduction
- **Age**
  - Minors: High risk behavior
  - >30 years: Co-morbidity
- **Tourists**
  - High risk behavior
  - Drug testing (DIMS)
  - National awareness campaigns

Discussion - Characteristics

- **Polydrug use**
  - **GHB/GBL** strongest predictor
    - Prolonged & more intense ‘high’
    - Prolonged unconsciousness
  - **Alcohol** combined in 38%
    - Prevalent among ectasy users
    - Potentiation of MDMA effects (hyperthermia)
  - **Cocaine**, **amphetamine** & **4-fluoroamphetamine**
    - Sympathomimetic stimulation
    - Cardiovascular risks
    - Increased disruption of thermoregulation (heat production & dissipation)
    - Agitation, aggression, anxiety, psychotic episodes
  - **Ketamine**
    - ‘Kitty flipping’
    - Potential for increased risk behavior through dissociative & anesthetic effects
  - **Cannabis**
    - Reduce ‘come-down’

Discussion - Implications

- Polysubstance use & harm widespread among ecstasy users
- Polysubstance users <u>less likely</u> to employ harm reduction behaviors
  - Drug testing services
  - Set limits on quantities
  - Avoid mixing 'downers'
  - Dose appropriately (avoid double-dropping)

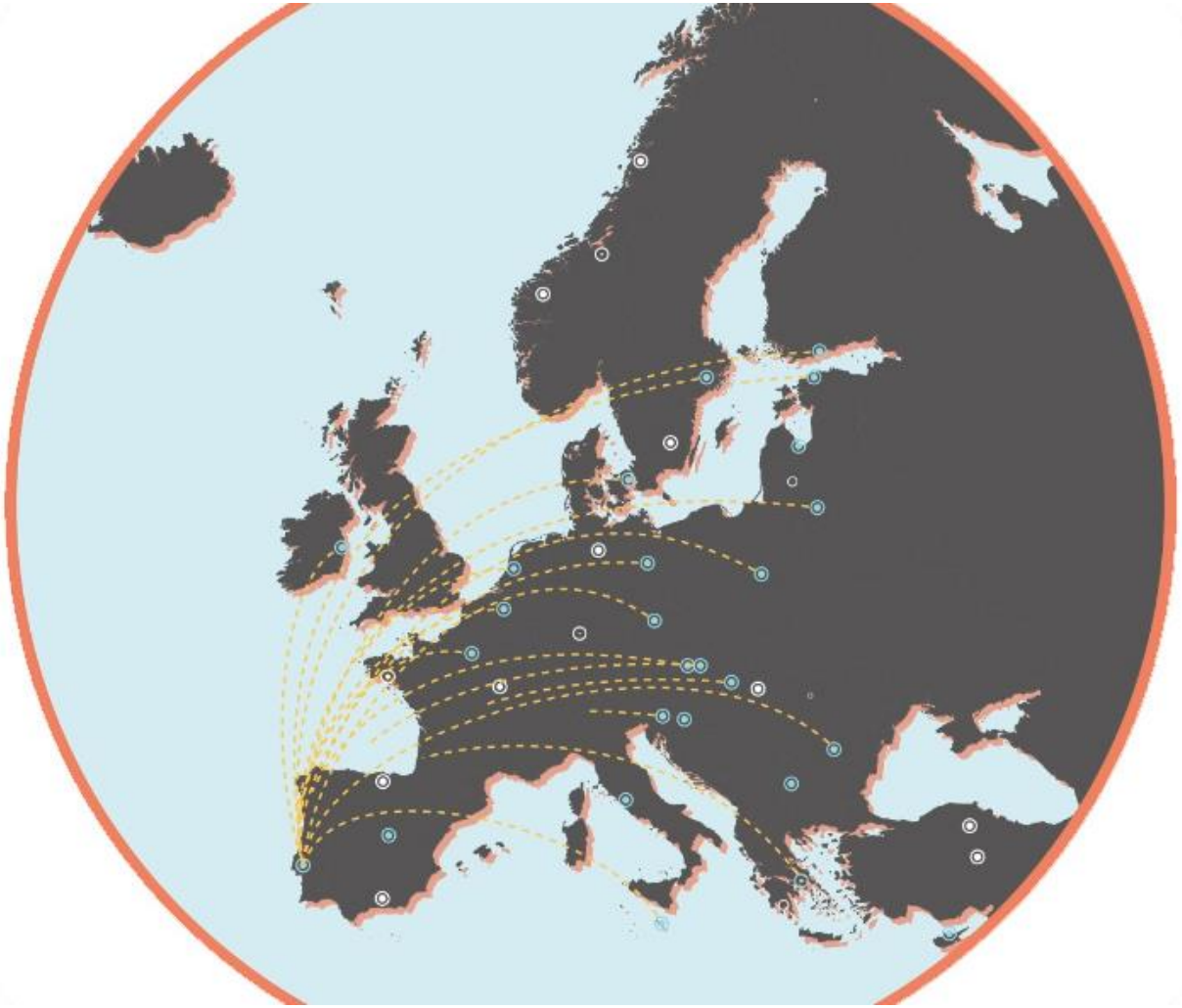
- Alcohol
  - OR 1.96!
  - Training for bar personnel
    - Identify drug use

Conclusion

- Risk factors for serious ecstasy-related harm in
  - Largest sample of ecstasy patients
  - First multicenter & multi setting study
- Polysubstance use prevalent
  - Increased risk for acute health incidents
- Tourists, men & young and older users
- Sole ecstasy use carries significant risks!

Thank you!

The Trimbos Institute is the Dutch focal point for the EMCDDA

The Trimbos Institute is a member of the European Information Network on Drugs and Drug Addiction (REITOX)

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