Addressing cocaine problems - an Argentinian perspective

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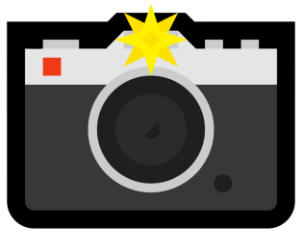

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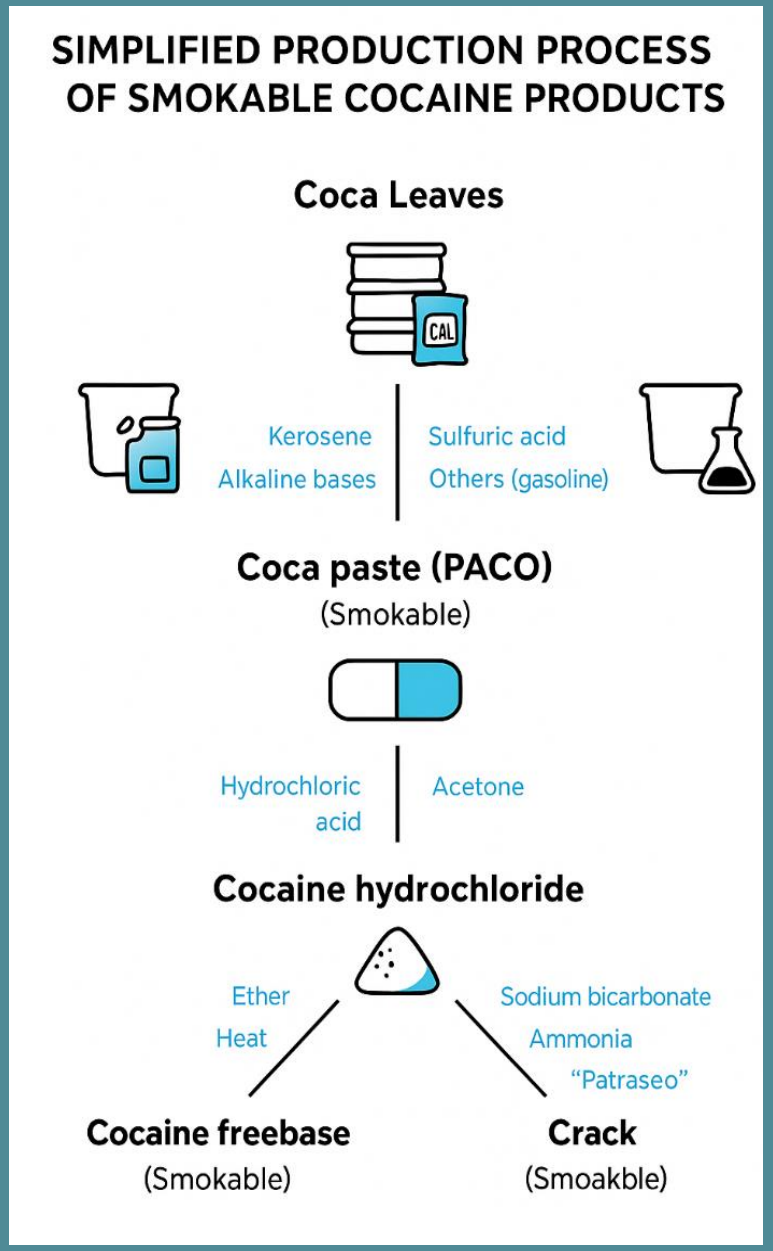
I declare that I don´t have conflict of interest

Cocaine is a highly potent illicit stimulant

Made from the leaves of the Erythroxylon **coca plant**, native to South America.

- After years of decreasing prevalence, cocaine use **has been increasing since 2012** (Gangu et al., 2022; John and Wu, 2017; Mustaquim et al., 2021; Schneider et al., 2018).
- **Cocaine-involved overdose deaths** have increased since 2014 (National Institute on Drug Abuse, 2024).
- **Can be inhaled, rubbed on the gums, injected, or smoked.**

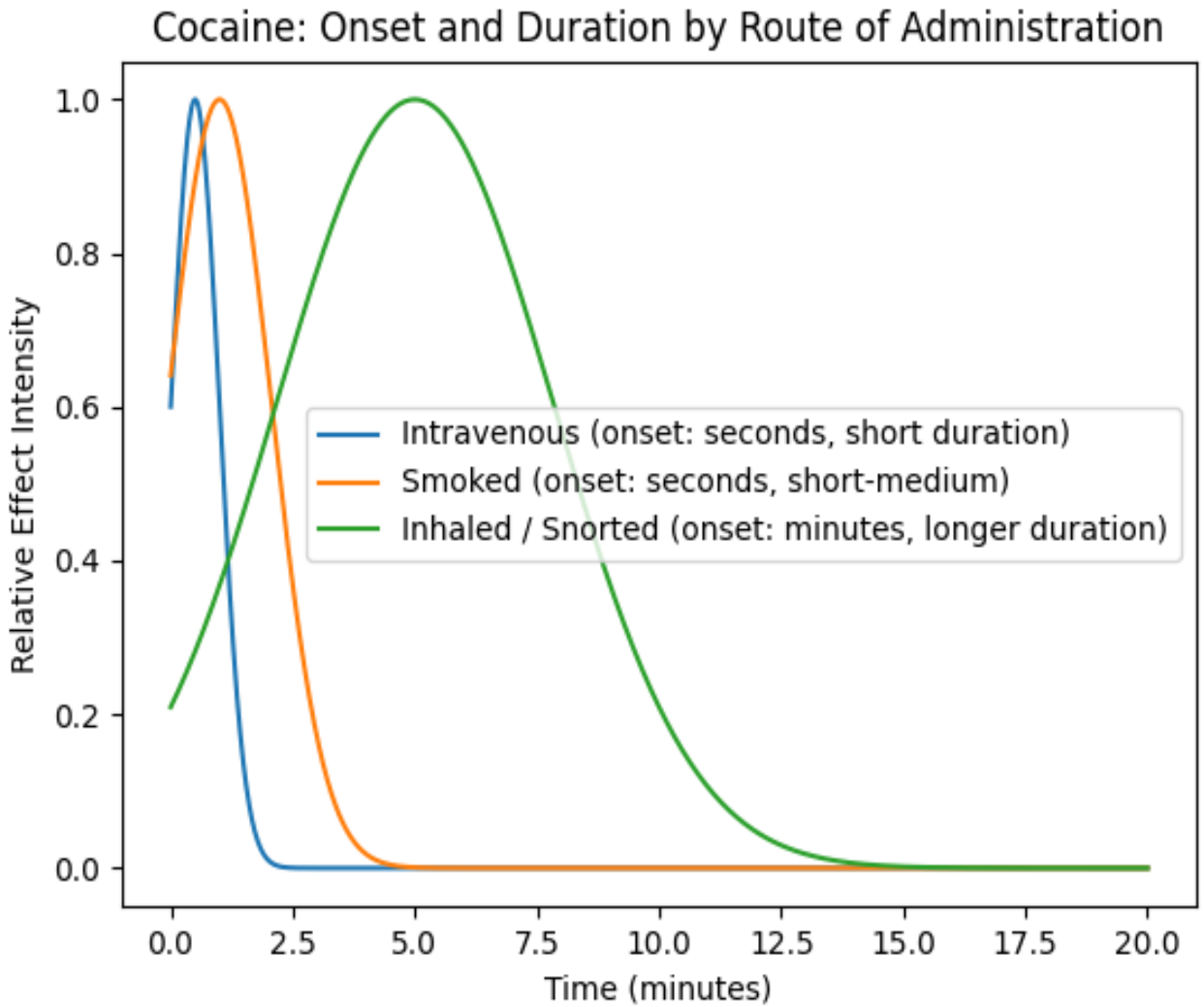


- **Cocaine hydrochloride** (water-soluble acid salt): Intranasal or IV
- **Cocaine base (cocaine sulfate) and Crack**: Smokable/inhaled

Crack (1980s USA)
The most addictive form of cocaine

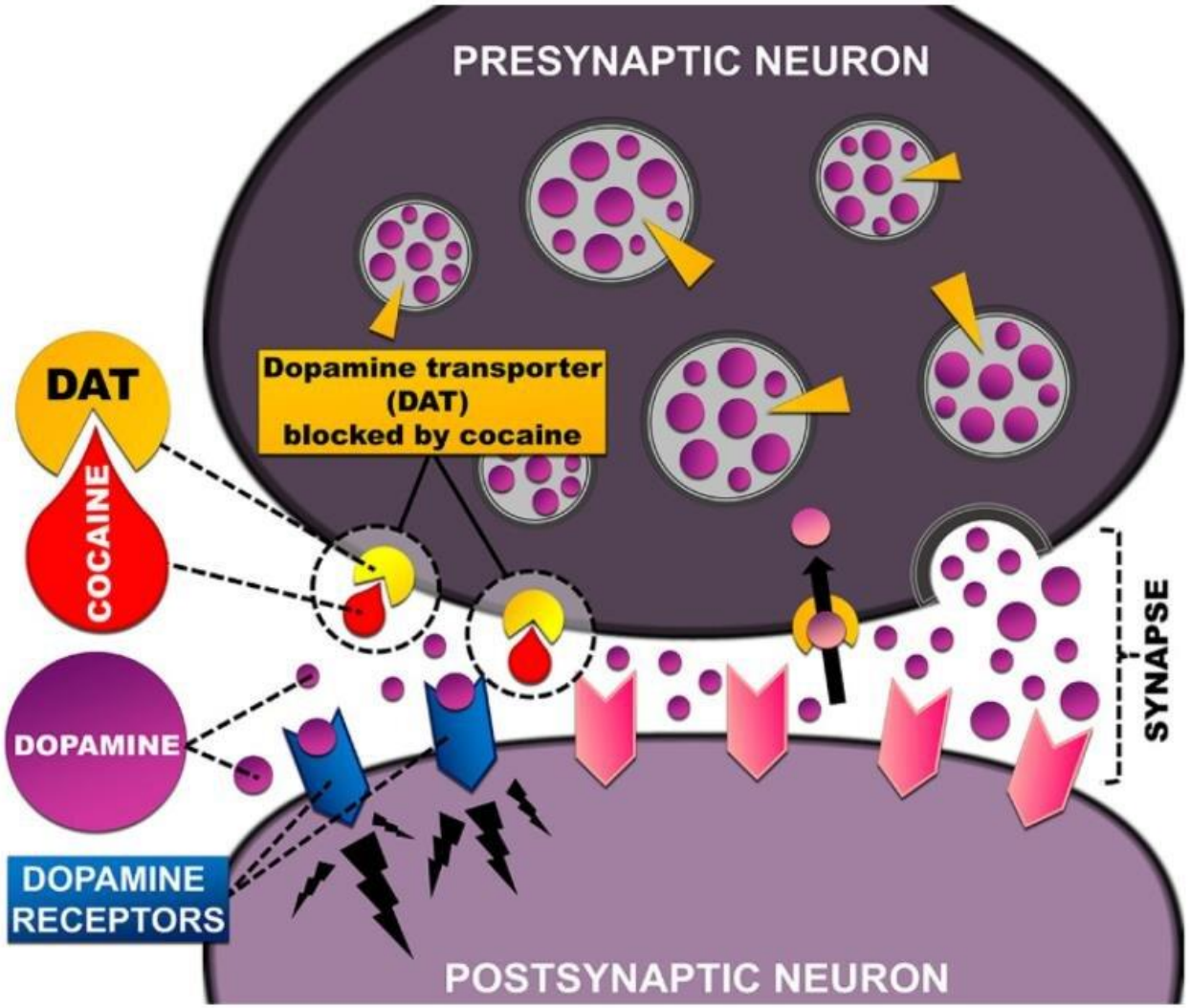
The speed with a drug reaches the brain is a critical determinant of its addictive potential

The intense and sudden DA release reinforces drug-seeking behavior



Duration of effect:
IV/ Smoke: 15 to 30 minutes
Inhaled/ Snorted: 1 hour

Neurochemical disruptions

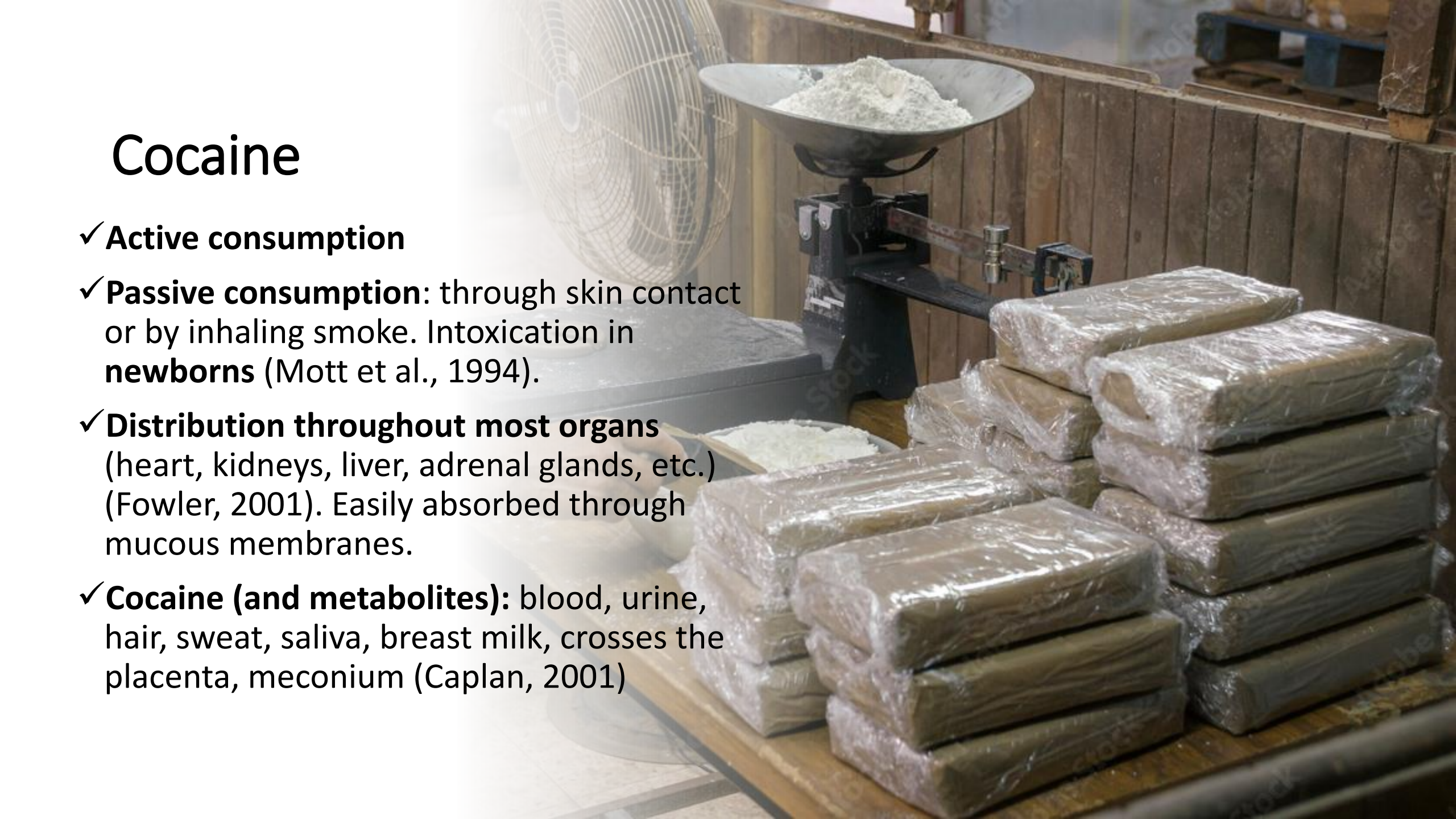


Glutamate System dysregulation (oxidative stress, celular damage, neuroinflamation)

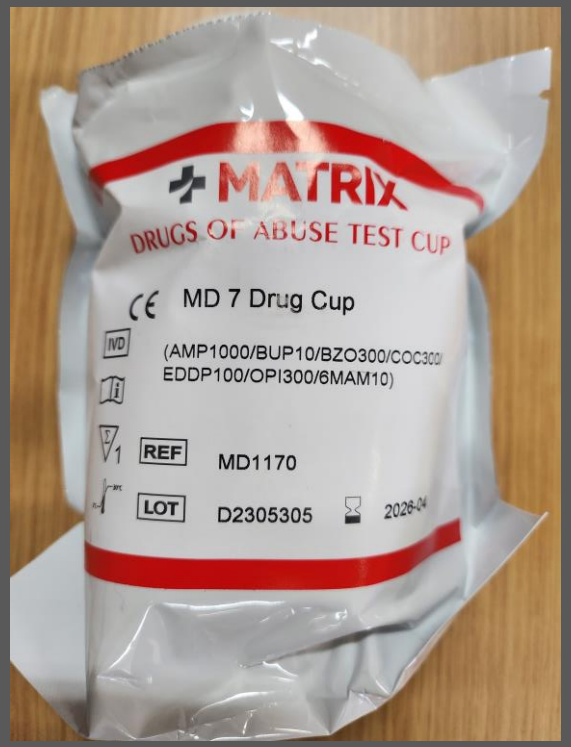
Dopaminergic dysregulation (D2 downregulation)

Cocaine

- ✓**Active consumption**
- ✓**Passive consumption**: through skin contact or by inhaling smoke. Intoxication in **newborns** (Mott et al., 1994).
- ✓**Distribution throughout most organs** (heart, kidneys, liver, adrenal glands, etc.) (Fowler, 2001). Easily absorbed through mucous membranes.
- ✓**Cocaine (and metabolites):** blood, urine, hair, sweat, saliva, breast milk, crosses the placenta, meconium (Caplan, 2001)



How to spot a cocaine?



- **Urine drug screening** (3h retention): main metabolite benzoylecgonine: detection window from 2-3 days after consumption up to 2 weeks of intensive consumption (Preston, 2002)
- **Blood test:** detect after 20 hours after consumption
- **Saliva:** 1- 2 days after consumption
- **Hear test:** till 3 month

cobalt thiocyanate

Cocaine Use Disorder (CUD) DSM-5

- Tolerance
- Dependence
- Withdrawal syndrome
- Biopsychosocial deterioration
- Increased risk of infections, hepatitis, risky sexual behavior, etc.
- Loss of control and decision-making, affecting work/studies, interpersonal relationships, family responsibilities, and all areas of life

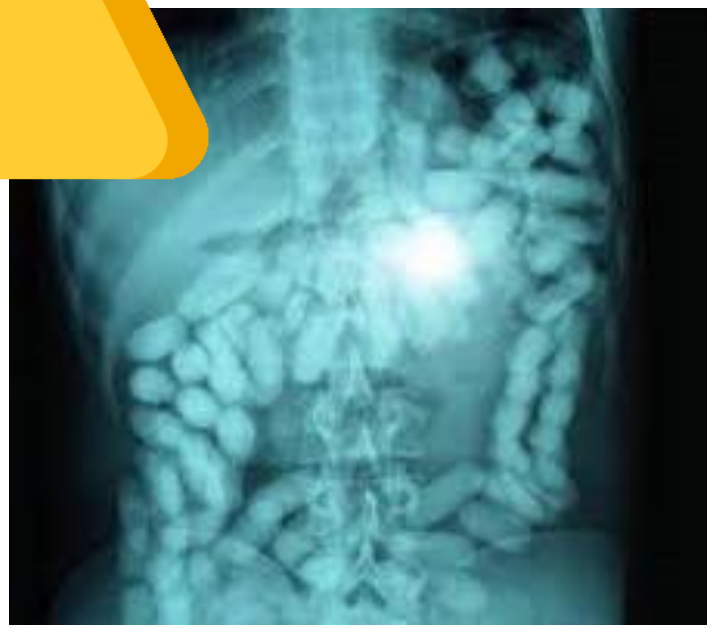
Why recognizing cocaine addiction is so important?

Desired vs. Undesired Effects

Euphoria, increased energy and alertness. >Sociability.

Decreased fatigue and need for sleep.

Loss of contact with reality.



- ✓ **Psychiatric: mood swings, irritability, aggression, paranoi psychosis, panic attacks**
- ✓ **Neurological: seizures, migraines, stroke.**
- ✓ **Cardiovascular: increased blood pressure, arrhythmias, cardiomyopathy, left ventricular hypertrophy, myocardial infarction**
- ✓ **Digestive: Anorexia, nausea, vomiting, diarrhea, gastrointestinal ischemia.**
- ✓ **Pulmonary: tachypnea, pulmonary edema (crack).**
- ✓ **Others: mydriasis, vertical nystagmus, conjunctivitis, loss of incisor teeth ("paco")**
- ✓ **Sudden death.**

Cocaine metabolism

- 95% hepatic metabolism (hydrolysis)
- 5% C P450, transformed into Norcocaine (active metabolite)

Cocaethylene

(Norcocaine + alcohol)

-More severe and longer-lasting toxic effects

-Hepatotoxic

Cocaine Use Disorder Treatment

1.Behavioral Therapy

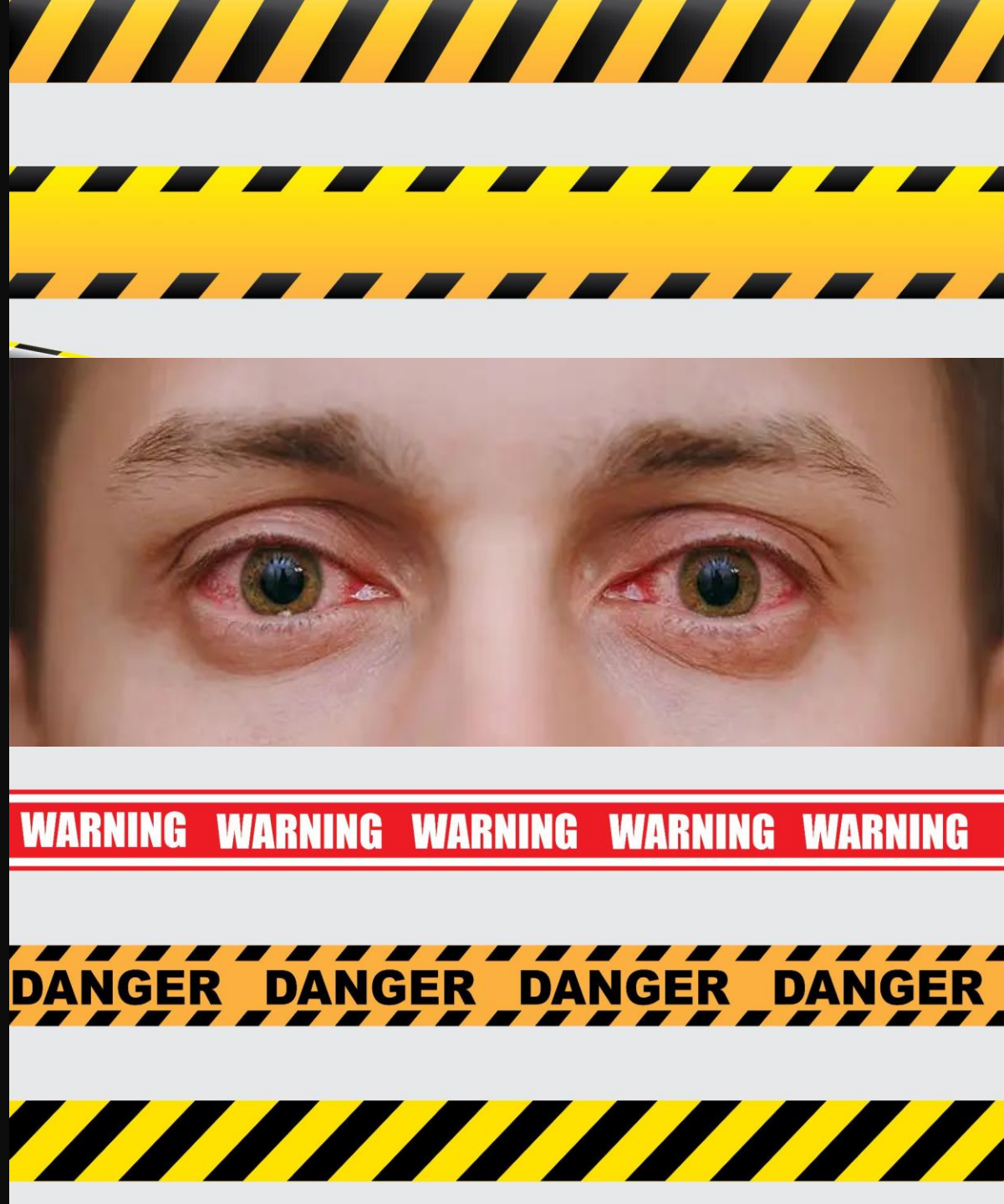
2.Pharmacological Treatment

3.Support Groups

4.Family Support

Acute Intoxication (Sympathomimetic syndrome)

- Tachycardia, high blood pressure, mydriasis, sweating, anxiety, agitation (psychic and motor)
- Symptomatic treatment: benzodiazepines, typical and atypical antipsychotics
- Avoid non-selective beta-blockers (risk of coronary vasoconstriction)



Sympathomimetic syndrome- Medication Dosage

a) Benzodiazepines

- Lorazepam (PO or IM) 2 mg. Repeat every 2 hours if necessary. Maximum dose: 12 mg/day.

- Diazepam (PO or IM — deltoid): 10–20 mg. Repeat every 2 hours if necessary. Maximum dose: 60–80 mg/day.

b) Typical antipsychotics

- Haloperidol (PO or IM) 1.5–5 mg. May be repeated after 15 minutes. Maximum dose: 20 mg/day. Monitor QTc (prolongation).

If IV route is chosen, the maximum daily dose is 5–10 mg, with continuous ECG monitoring.

c) Atypical antipsychotics

- Risperidone (PO) 1–2 mg. May be repeated after 2 hours. Maximum dose: 6 mg/day.

- Olanzapine (PO) 5–10 mg. May be repeated after 2 hours. Maximum dose: 20 mg/day.

Withdrawal syndrome

- Dysphoria
- Depression with suicidal ideas
- Anxiety
- Increased appetite and REM sleep
- Weakness
- Nonspecific musculoskeletal pain
- Craving
- Cardiac ischemia (1st week)

Management: emotional support, sleep higiene, psychoterapy, HOSPITALIZATION if there is SUICIDE RISK or severe comorbidity

Pharmacological treatment

There is no FDA or EMA-approved medication specifically for CUD

Detoxification

States of extreme agitation

Seizures

Cardiac arrhythmias

Toxic hepatitis

Rhabdomyolysis
(increased CPK)

Lines of research

Investigational drugs

Vaccines

Transcranial Magnetic Stimulation (TMS)

New behavioral therapies

Pharmacological options (experimental evidence)

- Disulfiram: may reduce craving and use (requires medical monitoring).

-Mirtazapine and naltrexone/bupropion combination

- Modafinil, topiramate, bupropion, lamotrigine: moderate evidence.

- SSRIs: only if comorbid depression.

- Atypical antipsychotics: for cocaine-induced psychosis or bipolar comorbidity.

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journal homepage: www.elsevier.com/locate/jpsychires

A randomized clinical trial of disulfiram at higher doses for the treatment of cocaine use disorder among methadone-stabilized patients☆

Alison H. Oliveto [a,*], Janette McGaugh [b], Mohit P. Chopra [c], Jeff Thostenson [d], Michael J. Mancino [a]

CUD during methadone maintenance

- (n: 55- 14 wk-Double blint)
- Disulfiram may be efficacious at 250–375 mg/day and contraindicated at 500 mg/day

This efficacy appears very limited

Medium and Long- term treatment

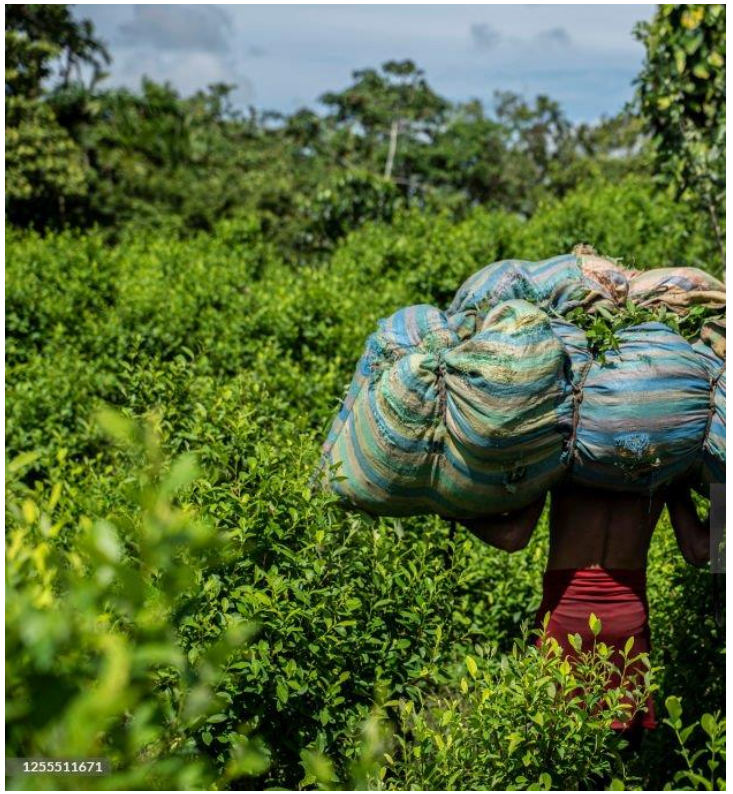
Hospitalization criteria

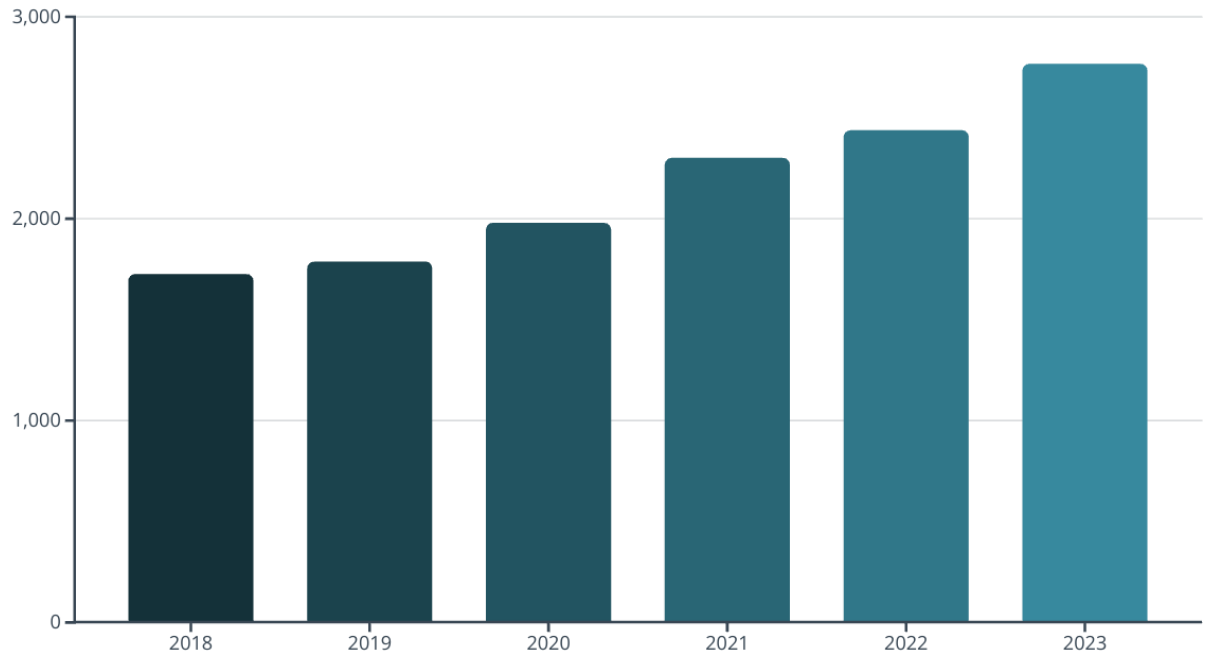
- Suicidal or self-harm risk
- Cocaine-induced psychosis or severe agitation
- Failure of outpatient treatment
- Severe medical comorbidity

Cocaine Crisis – South America

The coca cultivation area has expanded significantly since 2015

Consistent upward trend of production, representing a 61% increase from 2018 to 2023





UNODC World Drug Report 2024

Cocaine Crisis – South America

South America has some of the highest homicide rates globally (cocaine trafficking mainly))

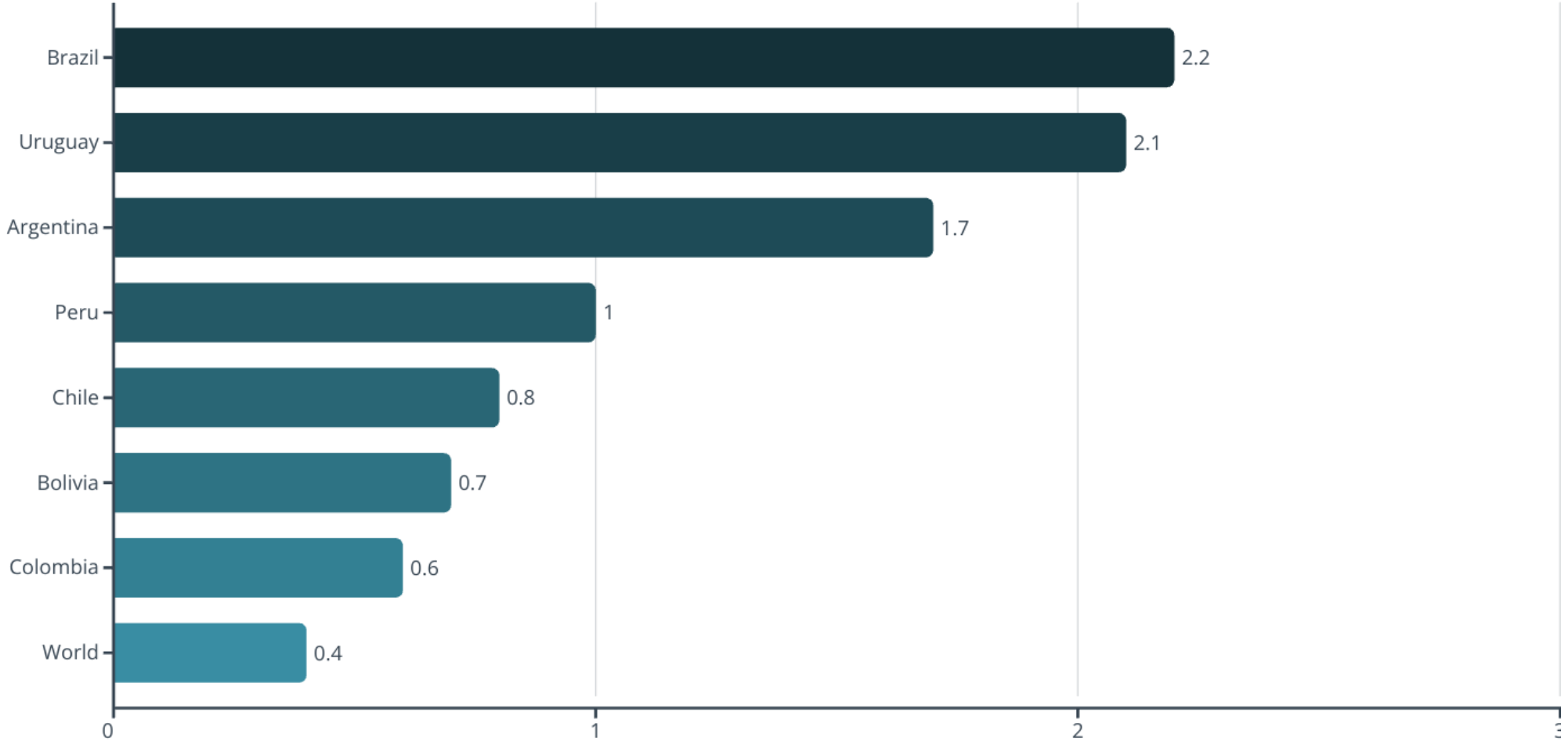
Homicide rate: **19.7 per 100,000** in Latin America and the Caribbean (World: **5.2** per 100,000)

2019: The burden of CUD was higher than the global average (**19 vs 7** per 100,000)

Prevalence of CUD increased in the 2000s.

UNODC, Inter-American Development Bank (IDB);
Castaldelli-Maia et al. 2023; Mauro, et al 2023

2024 prevalence of Cocaine Use in South America



*No data were found for Paraguay and Suriname

UNODC World Drug Report 2024

Annual prevalence of psychoactive substance use

	Anfetaminas	Cannabis	Cocaína	Éxtasis	Opiáceos	Opioides
Argentina	N/A	8,13	1,67	0,33	0,07	0,19
Bolivia	0,10	2,06	0,69	0,06	0,07	N/A
Brasil	0,30	2,50	1,00	0,20	0,10	N/A
Chile	0,08	13,33	1,42	0,27	0,00	1,10
Colombia	0,03	3,27	0,70	0,19	0,03	N/A
Costa Rica	0,00	5,18	1,33	0,46	0,04	0,79
Ecuador	0,20	0,67	0,08	0,01	0,02	N/A
El Salvador	0,38	2,03	0,37	0,02	0,11	0,14
México	0,20	2,10	0,80	0,10	0,10	0,38
Panamá	1,20	0,77	0,10	0,04	N/A	N/A
Uruguay	0,10	14,60	2,10	0,90	0,10	0,18
África	0,53	6,40	0,19	0,26	0,21	0,87
América	1,30	8,80	1,49	0,51	0,38	1,86
América del Sur	0,25	3,50	0,95	0,18	0,08	0,20
Centroamérica	0,21	2,90	0,66	0,17	N/A	N/A
Caribe	0,87	3,60	0,62	0,23	N/A	N/A
América del Norte	2,11	13,80	2,10	0,89	0,74	3,96
Asia	0,47	1,80	0,06	0,38	0,72	0,98
Europa	0,53	5,40	0,87	0,54	0,59	0,66
Oceanía	1,34	10,90	1,65	1,68	0,16	2,48
Estimado global	0,31	3,80	0,37	0,41	0,59	1,08

ONUDD, 2020; SEDRONAR 2017; RevIISE | Vol. 23, Año 18 | Abril 2023 - septiembre 2023 | Artículos Libres ISSN: 2250-5555 | Argentina | www.reviise.unsj.edu.ar

Cocaine Crisis – South America

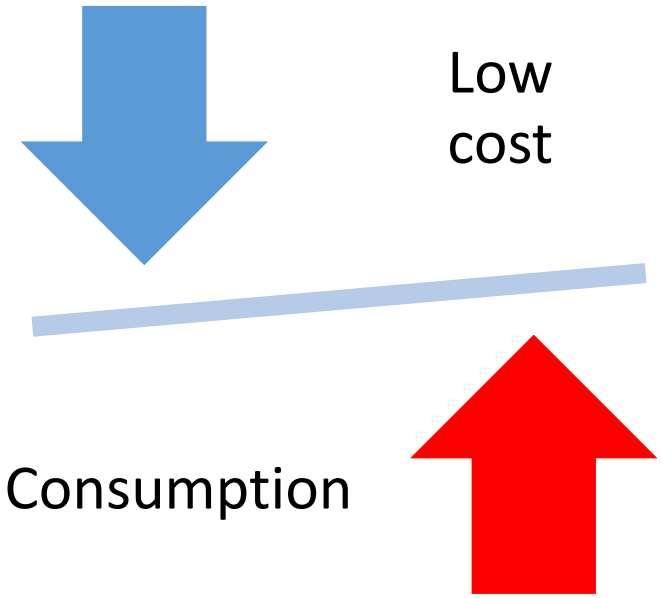
- High prevalence of cocaine use
- Huge treatment gap: 15-30% in Chile, Argentina, and Uruguay
- Treatment facilities are concentrated in urban areas
- Stigma plays a big role in poor access to healthcare

Castaldelli-Maia et al. 2023; Mauro et al. 2023

Cocaine in Argentina

- In 2006 become cocaine producers (clandestine laboratories)
- Argentina ceased to be just a place of trade and trafficking only

March 5, 2026 [Gendarmería Nacional Argentina | Argentina.gob.ar]



Revista de la Asociación Médica Argentina, Vol. 135, Número 3 de 2022 / 7 Pasta base de cocaína (paco): estado de situación desde un enfoque global Dr Pedro Cófreces y col.

Cocaine in Argentina

There is a notable lack of systematic data on the availability, accessibility, cocaine quality

5.3% of the population between 12 and 65 **used cocaine at some point**

Compared to 2010, lifetime use among **adolescents tripled.**

Males

The highest rates are found among those aged **18 to 24**

SEDRONAR, 2024

Cocaine base paste ("PACO")

- It is a highly addictive and toxic cocaine derivative widely used in marginalized populations in Argentina.
- Its consumption increased significantly after the 2001 economic crisis and is associated with severe neuropsychiatric, medical, and social consequences.
- PACO differs from cocaine hydrochloride due to its impurities and rapid, short-lived psychoactive effects, which reinforce compulsive use patterns.

“PACO” characteristics

- Low-cost cocaine derivative
- Smoked, producing rapid onset and short duration
- Contains toxic (e.g., kerosene, sulfuric acid) and adulterants
- High addictive potential and rapid deterioration

Cofreces, P., Azzato, F., & Milei, 2024; Cofreces, P. et al., 2022; Castilla Lozano et al, 2020; CONICET,2019

Clinical aspects of PACO

- Euphoria stage
- Dysphoria stage
- Stage of uninterrupted use
- Stage of psychosis
- Effects on the body

Meikle et al. 2009; Negrin et al. 2009;Castaño et al. 2000; Pascale A. 2005; Pascale et al. 2014. https://www.researchgate. net/publication/266654249

Clinical and Social Impact

PACO use is associated with severe addiction, cognitive impairment, psychiatric symptoms (e.g., psychosis, aggression), and strong links to social exclusion, poverty, and marginalization.

Public Health Relevance

The spread of PACO reflects structural inequalities, lack of access to healthcare, and inadequate drug policies. It disproportionately affects adolescents and young adults in vulnerable contexts.


BANK OF CHINA

Cocaine +Carfentanil

Cocaine was adulterated with carfentanil, causing 24 deaths in Argentina (BBC, February 2022).

A synthetic opioid 10.000 times more potent than morphine and 100 times more potent than fentanyl (US Drug Enforcement Administration - DEA).

Can be lethal even upon contact.

Elephant sleep drug.

Available in various forms: powder, tablets, and spray.

Manufactured in China and distributed through the black market.

Lethal dose

Heroin:75 a 375 mg Fentanyl: 2 mg Carfentanil: 0.02 mg (20 ug)

Health outcomes associated with CUD

- Strong association with psychiatric disorders, including psychosis and severe anxiety
- Cocaine is implicated in acute cardiovascular events, and stroke
- Cocaine is involved in a significant proportion of stimulant-related overdose deaths, often with alcohol or opioids
- Injection of cocaine contributes to HIV, hepatitis and sexual transmission risks

Conclusions Cocaine Use Disorder

Cocaine abuse has become a serious problem in Argentina and worldwide

Prevention and fight against drug trafficking

Public policies are urgently at a global level and in each country

Developing and testing novel strategies for treating cocaine use disorder is vital.

Many Thanks!!!

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