The Fast and Furious: Cocaine, Amphetamines and Harm Reduction

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Presentation overview

► Stimulants: Cocaine and Amphetamines
► Stimulant use in the European Community
► Harms associated with stimulant use
► Treatment for problem stimulant use
► Harm reduction for problem stimulant use
► Discussion
Stimulants: Cocaine and Amphetamines

- Distinct central nervous system stimulants with similar effects
- Can produce increased wakefulness, focus and confidence, elevated mood, feelings of power, and decreased fatigue and appetite
- Can also produce nervousness or anxiety and, in some cases, psychosis and suicidal thoughts
- Little evidence that stimulants cause physical dependence, but tolerance may develop upon repetitive use and withdrawal may cause discomfort and depression
- ‘Coke or speed binges’ alternated with periods of withdrawal and abstinence

Life Time Prevalence in EU
- Cocaine: 3.9% (adult population, 15–64 years)
- Amphetamine 3.3%
- Ecstasy: 3%

Variations in prevalence and patterns between countries, demographic and social groups, and specific settings (EMCDDA, 2009)

Mode of drug administration: a social (WE) and a geographic (CEE) divide

XTC: Almost exclusively taken orally; Most users well-integrated; Few seek treatment

Potential for harm of ecstasy use not fictional, but reported burden of harm is very low in the EU compared to cocaine and amphetamines
Adverse (health) consequences associated with use of stimulants

- Blood-borne viruses
- Other infectious complications
- Neurologic effects
- Cardiovascular effects
- Pulmonary and other health effects
- Overdose
- Pregnancy and parenting
- Mental health and social problems
Blood-borne viruses

- Transmission of blood-borne viruses consistently associated with stimulants
- HIV, HCV transmission among stimulant injectors: higher use (injecting) frequency, needle sharing and risky sexual behaviours
- Frequent cocaine injection is a factor in the failure of selected syringe exchange programs to prevent HIV transmission
- HCV rates very high, even among recent initiates to cocaine injection
- CEE: home-produced stimulants
  - Methamphetamine & methcathinone
  - Methcathinone injected up to 10 times daily
  - Stimulant use associated with increased sexual activity as well as sharing of equipment in home drug preparation
- In comparison to heroin users, stimulant users are more likely to have
  - unstable social situations
  - larger drug using social networks
  - riskier injection practices (e.g. increased frequency, chaotic drug preparation, injecting in unstable settings)
  - increased sexual activity
Cocaine smoking

- Distinct risk factor for blood-borne virus transmission, even when adjusted for injection behaviour, primarily due to an association with risky sexual behaviour, with HIV prevalence estimates from 7.5-23.0%
- Sex work is more frequent among cocaine smokers compared to other drug users and women cocaine smokers are particularly vulnerable as they are exposed to multiple risks associated with both sexual and drug use behaviours, contingent on broader gender relations
- While sexual transmission of HIV among cocaine smokers is mainly through unprotected intercourse, other routes include oral sores and cracked lips from hot pipes in the setting of unprotected fellatio
- Collective use of glass smoking utensils ("crack pipes" or "stems") as a potential risk factor for HCV transmission
  - HCV is present in gingival fluid, nasal secretions, saliva, and crack pipes
  - Crack pipes can get extremely hot, have jagged edges, may break (clenching jaws)
  - Result: Oral sores and burns on lips → small blood droplets deposit on the stem of the pipe → possible transmission of HCV to others with similar sores
  - One study reported that up to 81% of all cocaine smokers had shared their crack pipes in the previous month
Other infectious complications

- Increased incidence of many sexually transmitted diseases
  - syphilis, gonorrhoea, chancroid; bacterial infections tuberculosis.
- Cocaine use independently associated with human papillomavirus infection and progression to cervical lesions
- Skin and soft tissue infections (SSTIs) affect 10-30% of Injection drug users (IDUs)
  - associated with loss of venous access and reliance on intramuscular or subcutaneous injection
- Injecting crack, vint or boltushka (home-made meth-cathinone) is particularly damaging to veins
  - due to the uninformed and unskilled use of chemicals for preparation
  - injected with large-bore needles that rapidly damage veins
Other infectious complications

- Femoral vein injecting: 45% of IDUs in English cities
- Associated with public use of crack and speedballs
- Now common among new initiates and housed IDUs, not just older and homeless users
- Shift from “risk boundary” to “acceptable risk”

- Cocaine injectors, as well as women, those with unstable housing, and those who require help injecting, are independently more likely to have SSTIs

- “Coke Bugs” or “Meth Mites”, delusional parasitosis, associated with MRSA, streptococcal, and polymicrobial SSTIs
Neurologic effects

- **Heavy cocaine use:**
  - Principal neurologic effects related to its cardiovascular effects: strokes, haemorrhages, and blood clots
  - Persistent vasoconstriction → reduced brain perfusion and associated cognitive deficits (may or may not resolve with abstinence)

- **Heavy methamphetamine use:**
  - dopaminergic plasticity
  - reduced dopaminergic activity
  - neuropsychiatric deficits in memory, attention, and executive function
  - Alterations in brain structure and chemistry documented but clinical implications remain uncertain

- **Studies of long-term prescribed amphetamines → no lasting psychiatric or neurologic deficits**
Neurologic effects: CEE region

► home production of stimulants
  ▪ Methamphetamine (*Vint*); methcathinone (*Jeff*)
  ▪ Residues of processing chemicals
    ► potassium permanganate, gasoline, toluene or tetrachlorethylene, hydrochloric acid
  ▪ "Toxic Shit!"
  ▪ “amphetamine-induced movement disorder”
  ▪ declines in cognitive function and memory similar to dementia

► Pseudoephedrine restrictions → use of more hazardous precursors (phenylpropanolamine)
  ▪ Cathinone (*Boltushka*)
  ▪ PPA: associated with hemorrhagic stroke
Cardiovascular effects

- Cardiovascular toxicities of cocaine well-established
- Adrenergic activation (norepinephrine) and Clot formation (activation of platelets) → increased cardiac oxygen demand; coronary artery spasm; coronary artery thrombosis
- “Cocaine chest pain” (usually not cardiac ischemia)
- Increased risk of/associations with:
  - myocardial infarction; Cardiomyopathy
  - aortic dissection; coronary artery dissection
  - sudden cardiac death
  - endocarditis
  - Etc.
- Concomitant alcohol use → cocaethylene: increases cardiotoxic effects of both drugs
- Toxicity of amphetamines less well studied
  - Substantial increases in blood pressure and heart rate (injecting)
Pulmonary and other health effects

► Cocaine smoking: “crack lung”
  ▪ Difficult to differentiate from several other associated and life-threatening restrictive, granulomatous, infectious, and hematologic pulmonary diseases
  ▪ Frequently requires open-lung biopsy to diagnose

► Vasoconstrictor effects in chronic cocaine smoking → pulmonary hypertension

► Inhaled stimulants: asthma exacerbations and eosinophilic pneumonias

► Concomitant tobacco smoking may worsen pulmonary outcomes among stimulant smokers

► Intranasal cocaine → septal necrosis and perforation

► Dental disease ("Meth Mouth") → direct toxicity versus diet/hygiene?

► Renal diseases related to stimulants

► Gastroschesis (slowed gastric food processing)

► Intestinal ischemia
Overdose

► Opioids source of most overdose death globally

► Combined use of cocaine and opioids substantially increases the risk of both nonfatal and fatal overdose
  - high prevalence cocaine regions (New York City, Sao Paolo), cocaine use contributes, often in conjunction with opioids, to the majority of overdose deaths

► Extreme overdose on stimulants → profound hyperthermia → risks for rhabdomyolysis, seizures, and death

► Amphetamine-related deaths, Belgium:
  - cardiopulmonary arrest and trauma most common direct causes of death
  - drug metabolite levels variable
Mental health and social problems

► Chronic stimulant users: High levels of psychiatric and social comorbidity; dependence and addiction:
  ▪ Psychosis (usually transient; occasionally occurring after discontinuation)
  ▪ Suicide; suicidal ideation
  ▪ Depression
  ▪ Post-traumatic stress disorder
  ▪ Several personality disorders

► (Meth)amphetamine:
  ▪ Anti-social personality disorder; mania, bipolar mood disorder
  ▪ Impulsive or violent behaviour (no causal relationship established)
  ▪ ADHD

► Crack (Cf. cocaine): higher levels of anxiety, depression paranoia, and psychosis (intensity of use, physical health, and concurrent social situation)

► Pre-existing psychotic symptoms can be greatly exacerbated by amphetamine initiation
Responses to problem stimulant use

- Are stimulants *too fast* and *too furious*?
- Stimulants require rethinking many traditional strategies
- Behavioural and pharmacologic interventions
- Harm reduction interventions
Treatment interventions for stimulant users

- Primary goal of treatment → inducing abstinence and preventing relapse ("cure")
- If abstinence is not (yet) feasible → reducing/stabilizing use and consequences ("care").
- Lenitive treatment → alleviating suffering ("palliation").
- All stages:
  - crisis intervention
  - treatment of intoxication and withdrawal
  - improving health, psychological and social functioning
  - Self-evident! (Health Council of the Netherlands)
Behavioural interventions

► 1st Line Tx.: Outpatient psychosocial interventions
  - cognitive behaviour therapy (CBT)
  - contingency management (CM)
  - motivational interviewing (MI)

► CM rewards well-described target behaviour whenever the demonstrated
  - Most effective with cash (as opposed to vouchers) and higher-value incentives
  - Effects diminish after intervention is discontinued
  - Effects of incentives demonstrated up to 12 months

► No Golden Bullets in treatment of problem stimulant use!
Pharmacologic interventions

► No proven effective pharmacological treatment for stimulant use
  ▪ In spite of the large number of studies, wide array of pharmaceuticals and massive funding)

► 3 potentially effective compounds (CREST)
  ▪ Cabergoline
  ▪ Reserpine
  ▪ Tiagabine

► Larger trials: tiagabine, reserpine not effective in reducing cocaine use compared to placebo.

► Vaccine → needs improvement/ethical issues

► From abstinence to substitution treatment
  ▪ Dexamphetamine (SR); modafinil; Coca products
Harm reduction for stimulant users

- Aimed at reducing adverse (health) consequences associated with stimulant use
- Blood borne viruses
- STDs, bacterial infections and other complications
- Neurologic effects
- Cardiovascular effects
- Pulmonary and other health effects
- Overdose
- Mental health problems
- Pregnancy and parenting
Blood borne viruses

- Relies heavily on the evidence for HIV prevention among heroin injectors
- Demands consideration of the unique setting of stimulant injection
  - High injection frequencies
  - Increased sexual risk behaviours
  - Chaotic injecting behaviour
  - Home production
  - Younger ages
- Easy access to large volumes of sterile injection equipment, means of sexual protection
  - Liberal exchange and distribution policies (multiple outlets)
  - Extended opening hours
  - Outreach activities in injecting and sexual risk environments
  - One-for-one syringe exchange policies should be avoided
  - Proper injection kits should include a range of materials
  - Based on local assessment of drug use patterns and the social situation of injectors
  - Innovation, but not \textit{Rocket Science!}
No table manners without silverware!

- Silverware
- Guidance on table manners

Source and copyright images: www.exchangesupplies.org
Blood borne viruses

- Associations with higher coverage of IDU populations and lower rates of risk behaviour:
  - Longer opening hours for NSPs and liberal exchange policies
  - Political activism and public funding

- United States: Increased coverage was followed by substantial reductions in HIV prevalence and incidence among IDUs

- Traditional harm reduction programs may fail to reach problem stimulant users
  - Opiate-centred services
  - Social barriers to young or female users

- Outreach, secondary exchange, or peer driven strategies are needed to reach those not attending established services
Blood borne viruses

- Shifts to smoking drugs in many EU countries
- Public health efforts remain almost exclusively focused on IDU
- BBV prevention programmes for cocaine smokers
  - distribution of “crack kits” (Canada, Netherlands, U.S.)
  - Several EU DCRs include rooms for smoking cocaine
  - Managing a smoking room similar to an injection room
- Programs targeting smokers should emphasize women
  - Gender-sensitive programmes (developed, but few evaluated)
  - Consider biological, behavioural, psychological and social characteristics of women in programming
  - combine individual and community support measures
  - support increased autonomy of women over their drug use and sexuality to minimize exposure to BBVs
STDs, bacterial infections and other complications

- Less common
- Ample supply of injection and sexual protection supplies may also contribute to reducing STDs and bacterial infections
- Proper injection techniques, anti-bacterial crèmes and ointments and rotation of injection sites may help reduce vein loss and effectively treat minor SSTIs
- Basic hygiene (hand washing, short nails) and vein care as well as simple wound care and training in safer injection may prevent infections in stimulant injectors
- Wound and abscess Tx. services within NSPs may increase patient–clinician interactions, providing opportunities for referrals to services such as HIV counseling and testing, medical care, and drug treatment at an estimated cost at $5 per patient
- No consensus on whether groin injection should be actively discouraged or safer techniques provided
- Transitions to groin injection or crack injection should be discouraged
Neurologic effects

- Much less common
- Efforts primarily related to use of club drugs
- Reducing frequency of use most common strategy for reducing the delayed “comedown” of stimulants, depression, and concerns about neurologic damage
- “Pre-loading” or “post-loading” with vitamins, foods, antidepressant medications, sleeping tablets, or amino acids
  - no data evaluating the effect of these common methods
  - Combination of amphetamines and anti-depressants: risk of serotonin syndrome (life-threatening)
- Websites (e.g. http://www.cocaineinfo.nl/) providing information and advice on neurological problems (“Coke Shuffle”)
- Benzodiazepines prescribed to problem cocaine users (mostly for sleep) may also alleviate joint, muscle pains
Cardiovascular effects

- Less, less common
- Likely powerful harm reduction strategies (same as for general population):
  - Routine cardiovascular care, involving diet and exercise
  - management of high blood pressure and cholesterol
  - reducing other risk factors such as tobacco use
- reduce cardiovascular toxicities:
  - Reducing dosage and frequency of stimulant use
  - reducing concomitant alcohol consumption
  - Patients maintained on amphetamines and Andean users of low-potency coca products → only mild to moderately increased risk (no controlled studies/specific interventions conducted)
- Reducing or discontinuing use with onset of the cardiovascular disease that comes with age is paramount to reducing the harm of these drugs
Pulmonary effects

- Increasing attention?
- Marijuana can be filtered for particulate matter
- Filtering stimulant drugs is less likely to reduce the impact of these drugs on pulmonary tissue
  - Providing filters may reduce oropharyngeal exposure to hot embers, thus reducing burns to the mouth and throat
  - “crack kits” (Pyrex pipes, rubber mouthpieces, high quality "Brillo")
- Mainline, Amsterdam: lung, blood and heart measures, safer smoking advice and self-regulation training
  - Roll-out of the methodology in mainstream drug services proved challenging
- Other strategies to reduce pulmonary damage
  - Vaporisation?
  - Other means to filter out talc and other particles.
  - Sufficient hydration contributes to lip, skin and other organ health
  - Pneumococcal vaccination
  - Tuberculosis prevention, diagnosis, and treatment
Overdose

► Attention is needed

► Cocaine overdose frequently cardiovascular (i.e. heart attack, fatal arrhythmia, or stroke)
  ▪ Demands rapid and sophisticated medical management.

► Concomitant use of opioids, alcohol or other depressant drugs is tightly associated with cocaine overdose
  ▪ Limiting other drug use while using cocaine may reduce the risk of overdose

► Cardiopulmonary resuscitation by bystanders improved outcomes in opioid overdose and may translate to stimulant overdoses.

► Naloxone will not reverse a stimulant overdose

► Ensuring rapid access to nonjudgmental medical care without police intervention is essential to reducing fatalities
Mental health problems

- Increasing attention
- Many mental health problems associated with stimulant use are dose, frequency and mode of administration related
  - might be mitigated by specific harm reduction measures
- Care providers should use a sensitive, respectful approach toward stimulant users, even when chaotic
  - treat people with signs of drug toxicity, such as cocaine-induced psychosis
- A randomized-controlled trial of Assertive Community Treatment for chronic crack users in Rotterdam
  - Good program compliance
  - Improvements in physical and mental health
Mental health problems

- Brief interventions among recreational amphetamine users
  - Include information about potential mental health problems/regular use
  - more than weekly use or injection should be discouraged
- Cessation of cocaine injecting or smoking may be necessary for recovery from cocaine-related mental health morbidity
- Self-regulation to control use may also prove helpful
- Self-medication with heroin or other downers to control side effects of anxiety and irritability
- Acupuncture, Reiki, other alternative treatments
- Acupuncture (of little use as monotherapy) may reduce cocaine craving when provided as an adjunct treatment and retain users in care
Mental health problems

► Practical suggestions for dealing with the behavioural peculiarities of stimulants:
  ▪ Immediate and flexible walk-in services
  ▪ Offering a calming, tranquil environment, similar to ‘chill-out’ rooms at dance parties
  ▪ “Tagesruheräume” (daytime rest rooms) in Frankfurt am Main, Hamburg)

► Explicit harm reduction flyers with tips for managing mental health risks, and controlling use, of cocaine
  ▪ HIT, Liverpool, Lifeline, Manchester, Mainline, Amsterdam

► Focus of several innovative programs, but rarely published in the scientific literature
Discussion

- Research established the rationale for many harm reduction interventions for stimulant and other drug users
  - 900 grams of Harm Reduction...
- Scientific literature overwhelmingly weighted toward harms of stimulants, minimal literature on harm reduction
- Investigations frequently consider stimulants users a subset, rather than the target population of a study
- Several interventions for stimulant users, such as providing materials for safer crack smoking or safer groin injection training, remain controversial or illegal and thus systematic evaluations are lacking
- Funding mechanisms for evaluating new interventions are also limited partly due to the reliance of most investigators on HIV funding streams
Potential harms addressed by harm reduction interventions

- The effectiveness of pharmacological and psychosocial interventions for stimulant users is limited.
- Interventions to stabilise and minimize the negative consequences of ongoing stimulant use are of paramount importance.
- The evidence suggests that there are no fundamental challenges in adjusting regular harm reduction interventions towards BBV prevention among problem stimulant users.
- However, a wide range of health and social problem associated with stimulant use are largely unaddressed by current services.
Harms still to be addressed

- Literature suggests a need to extend the harm reduction philosophy
- Innovative service development paired with critical evaluation is necessary in translating the successes of harm reduction towards heroin to stimulant use
  - enhance the ability of stimulant users to manage their intake levels, chaotic behaviour and mental health problems
  - Pulmonary, cardiovascular and other problems
- Risk environment
  - Groin injection: “you can do it under a camera”
Implications for future intervention development, research and policy

► Remove regulatory barriers (1-for-1 exchange policies and laws that impede harm reduction programs from distributing other safer use supplies—crack pipes and smoking foil) should be reconsidered.

► Independent distribution and collection schemes should be developed

► Base volume of injection equipment or condoms provided to clients on assessment of clients’ needs and network characteristics

► Paradigm shift in service provision—from institutional provider-client relationships to facilitation of peer prevention in user networks
  ▪ peer based outreach
  ▪ Secondary distribution/exchange
Implications for future intervention development, research and policy

► Safer injecting and smoking education; route of administration interventions; overdose prevention; medical care of vein, skin and other infections should become standard features of DCRs and NSPs, and moved into the mainstream of harm reduction.

► NSPs and DCRs should not only create a healthy atmosphere, but also one amenable to the pleasurable, and indisposed to the negative drug effects of stimulants; emphasize more controlled and less frenetic use

► Reduce sleep deprivation!!!
Implications for future intervention
development, research and policy

► Problem stimulant use requires innovative, integrated and multidisciplinary medical and social services, but also drug and social policies that do not exacerbate the already considerable potential for harm of stimulants

► At present, international drug and other public policies emphasize maximizing harm to reduce casual drug use
Implications for future intervention development, research and policy

Stimulant and other drug users must enjoy the fundamental human right to health protection, as stipulated by Article 25 of the Universal Declaration of Human Rights

General Assembly of the United Nations, 1948

“The role of the state is not to make people happy but to relieve avoidable suffering”

Sir Karl Popper—The Open Society and Its Enemies (1945)

For the state and his agents to live up to these calls is amongst the principal challenges of harm reduction.
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