% of a drug’s users who are dependent
US, 1999

- Nicotine: 80*
- Heroin
- Cocaine
- Sedatives
- Stimulants
- Marijuana
- Hallucinogens
- Pain relievers
- Alcohol
- Tranquillisers
- Inhalants

Sources: EMCDDA, 2000 Annual Report; US Food & Drug Administration; SAMHSA National Household Survey on Drug Abuse

*1996
Chronic Illness

- Relapsing & Remitting in Course
- Genetic Predisposition
- Individual Choice a Factor
- Environmental Influence
- Potentially Fatal If Untreated
- Prevention Is Possible
- Properly Managed Can Lead Normal Life
Response Rates

- Drug and Alcohol Treatment
  - 40-60% abstinent at 1 year (vary with drug)
  - Best outcomes in those maintained in MMT or Participating in on-going Mutual Support
- Diabetes, Hypertension, Asthma
  - 40-60% medication compliance
  - <30% adherence with diet and risk reduction
  - 50% symptoms require medical intervention within 1 year

Cocaine – Effects

- Blocks Catecholamine Reuptake
  - Dopamine, Noradrenalin, Adrenaline
  - Euphoria
  - Increased Energy
  - Insomnia
  - Anorexia
  - Hypertension and Tachycardia
- Often combined with Alcohol to Prolong Effect
Cocaine – Problems

- **Multiple Organ Systems Damaged**
  - By Restriction of Blood Flow and Increased Metabolic Demand
  - Myocardial Infarct or Arrhythmias
  - Multiple Small Cerebral Infarcts
  - Frequently Increased Sexual Risk Behaviour

- **Risks Associated with Route of Use**
  - Smoking/Snorting
    - Respiratory Damage
    - Blood-Borne Illnesses passed by Sharing Implements
  - Injection
    - Local Sequelae including Infections
    - Systemic Infections (Bacterial, Fungal, Viral)
Activation of the reward pathway by addictive drugs

cocaine
heroin
nicotine

alcohol

heroin
on cocaine
Stroop Task Improvement During Methamphetamine Abstinence

Control (n = 141)

# correct in 45 sec

< 72 h
n = 86

3 Months
n = 19

*p < 0.05
Depression In Methamphetamine Abusers

Weeks of Abstinence

Control scores = 0 - 4

BDI Score

Weeks of Abstinence
Methamphetamine Abusers Show Impaired Attention

**Reaction Time**

**Accuracy**

* $p < 0.05$
Cingulate Cortex In Methamphetamine Abuse

Anterior Cingulate

Posterior Cingulate
Reaction Time Correlated To Angular Gyrus Metabolism In Methamphetamine Abusers

**Glucose Metabolism** (mg/100 g/min)

**Reaction Time** (msec)

**CONTROL**

- $r = -0.17$

**METHAMPHETAMINE**

- $r = 0.92$
- $p < 0.05$
Emergency Management of Intoxication

- Stabilize Vital Signs (ABC’s)
- Rule Out or Treat General Medical Conditions
  - Diabetic Coma
  - Subdural Haematoma
  - Seizures
  - Pneumonia
  - Meningitis
  - GI Bleeding
Subacute Management of Intoxication

- Provide a Reality Base
  - Use names often
  - State location repeatedly
- Non-Verbal Support
  - Frequent, brief eye contact
  - Relaxed posture
  - Constant Subdued Lighting
  - Never leave alone
- Always Check for Pregnancy
  - Opiate Withdrawal in pregnancy can precipitate miscarriage
Pharmacological Treatment of Withdrawal (General Approaches)

- Symptomatic relief
- Cross-tolerance with longer half-life agent
- Less reinforcing and less dangerous mode of delivery of drug
Withdrawal Management and Treatment

- Treatment of Withdrawal is Not Treatment
- Patients with Substance Dependence requiring withdrawal management all require treatment
  - Outpatient Counseling
  - Intensive Day Treatment
  - Intensive Residential Treatment
  - Short-Term Residential Transitional Treatment
  - Long-Term Residential Treatment
  - Supportive Housing
Pharmacotherapy For Continuing Care (Broad Strategies)

- Pharmacological Avenues
  - Aversion
  - Decreased Appetite
  - Decreased Reinforcement and Extinction
  - Relapse Prevention
  - Antagonist maintenance
  - Long Acting Agonist Maintenance
  - Prevent Complications In Face of Use
Oral Amphetamine Maintenance for Cocaine Dependence

- Pilot Study for 14 weeks (16 Pts. 60 mg/day; 14 Placebo)
- Treatment retention was equivalent between group
- Cocaine-positive urine samples
  - treatment group declined from 94% to 56% compared
  - no change in the placebo group (79% positive).
- treatment group
  - reduced self-reported cocaine use (P= 0.02)
  - reduced criminal activity (P=0.04)
  - reduced cravings (P<0.01)
  - reduced severity of cocaine dependence (P<0.01)
- no within-group improvements found in the placebo group

Pilot Studies of Medications for Cocaine Dependence in Heroin-Assisted Treatment

Topiramate for Cocaine Dependence

Poor compliance with medication
Limited benefit
Modafinil for Cocaine Dependence

Original Paper

Modafinil in the treatment of crack-cocaine dependence in the Netherlands: Results of an open-label randomised controlled feasibility trial

Mascha Nuijten¹, Peter Blanken¹, Wim van den Brink² and Vincent Hendriks¹

Poor compliance with medication
Limited benefit unless high adherence
Summary

- Cocaine is highly reinforcing
- Dependence can be devastating to function but most users do not progress to dependence
- Treatment is challenging
- Relies on Psychosocial Interventions
- Medications should be primarily within context of clinical trials until proven effective