

Analysis of Nightclub Urinal Samples
A novel way of knowing what drugs are being used in nightclubs
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Recreational drug use

- Common within the night-time economy
 - Clubbers recent drug use: 40-50% 'ecstasy', cocaine, mephedrone
 - Recent surveys in London clubs: 41% used mephedrone on the night of the survey
- Significant changes in the drugs used in recent years
 - Population level decrease in cocaine use
 - Increasing use of novel psychoactive substances

Sources of Information on Drug Use

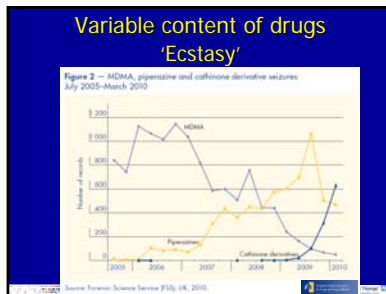
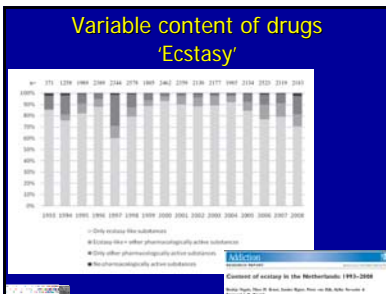
Surrogate Markers

- Amnesty bin and/or on-site analysis (e.g. DIMS)
- Test purchases (Internet, head shop, street)
- Police / border agency seizures

Direct sources

- Population / subpopulation surveys
- Web mapping projects
- Deaths
- (ED presentations)

Dependent on self-report
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Significant variation in content of drugs

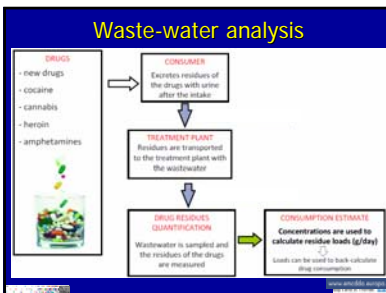


Variable content of drugs Novel Drugs

Having 'legal' recreational drugs does not mean that you are not breaking the law

Original papers

- Purchasing 'legal highs' on the internet – is there consistency in what you get?
- Analysis of second-generation 'legal highs' in the UK: initial findings



Waste-water analysis

- Can provide useful data on drug use at a population level for classical drugs
- Unknowns for novel drugs
 - Stability of drugs in waste water
 - Impact of bacterial metabolism
 - Knowledge of human metabolism to allow back calculation to parent drug(s)

Could we therefore collect samples one step earlier?

Aims

- To determine the feasibility of collecting pooled urine from a portable urinal at a nightclub venue
- To determine whether recreational drugs and in particular novel drugs could be detected
 - To determine whether metabolites could be detected

Methods

Sampling site

- Large south London night club in July 2011
- Participation was anonymous and voluntary
- Clubbers could use the study urinal or club toilets
- Conducted on same nights as nightclub surveys
 - No cross linking of urinals / survey data
 - No information was collected on those using the urinal
- Discussed with Ethics Committee

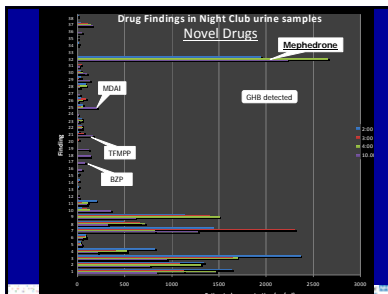
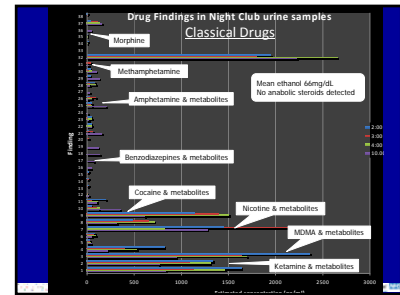
Methods

Sample collection

- Portable study standalone four-person urinal
- Separate collections from 2 consecutive night club events
- Pooled urine samples were collected using a manual vacuum pump at each promotion
- Urine subsequently stored at 4°C

Sample analysis

- LC-MSMS and TOF-MS
- 870 drugs and metabolites screened for



Additional findings

Adulterants

- Levamisole
 - Found in 65% of UK powder cocaine at street level
- Lidocaine
 - Found in 10% of UK powder cocaine at street level
- Diltiazem
 - Found in 5% of UK powder cocaine at street level

Possible adulterants

- Caffeine
 - cocaine, novel drugs ... or drinks
- Quinine
 - heroin ... or tonic water

Additional findings

Potentially misused prescription drugs

- Benzodiazepines
 - Nordiazepam
 - Oxazepam
 - Temazepam
 - Zopiclone
- Sildenafil (viagra)

Prescription/OTC drugs

- Including
 - Antivirals
 - Antimalarials
 - Antihistamines
 - Corticosteroids
 - Paracetamol
 - PPIs
 - Antidepressants (SSRIs)

Conclusions

- Pooled urine collection from a nightclub urinal
- Feasible
- Can detect both classical & novel recreational drugs
- Has the potential to identify new agents
 - TFMP not previously detected in human urine
 - No previous confirmation of MDAI use
- Provides reliable data on drugs *actually* being used
 - Complimentary to questionnaire studies
 - Better than waste-water analysis for novel drugs

Conclusions

Limitations

- Urine only collected from males
- Not all urine in nightclub collected
- No data on the number of individuals using the urinal
- Not able, in this study, to back extrapolate to user amounts

Conclusions

Next Steps

- Automation of sample collection
 - Portable and fixed urinals
- Extension of sample collection
 - Geographical areas across towns/cities
 - Music festivals, schools/colleges
- Comparison of complimentary data from
 - Self-reported questionnaire surveys
 - Data on ED presentations with acute toxicity
 - Waste-water analysis