CCREM
Centre for Clinical Research in Emergency Medicine

RECREATIONAL DRUGS IN THE EMERGENCY DEPARTMENT: *The inside story*

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THE UNIVERSITY OF WESTERN AUSTRALIA

HARRY PERKINS INSTITUTE OF MEDICAL RESEARCH


RECREATIONAL DRUGS

The Sunday Times

PERTHNOW.COM.AU | PRICE $2.70 | EXMOUTH N-W E.STATES $3.90 NT $4.75 *INC GST | AUGUST 23, 2015

Nine staff restrain one ice addict

In an extraordinary report, **Paul Toohey** and photographer **Gary Ramage** spent a month travelling across Australia to uncover the true extent of the ice epidemic.

PAGES 14-16


Sat May 6 2006 05:09:24 AM
POLICE


Wed Aug 23 2006 08:06:17 PM


LINEN
BAGS
CURITY
select

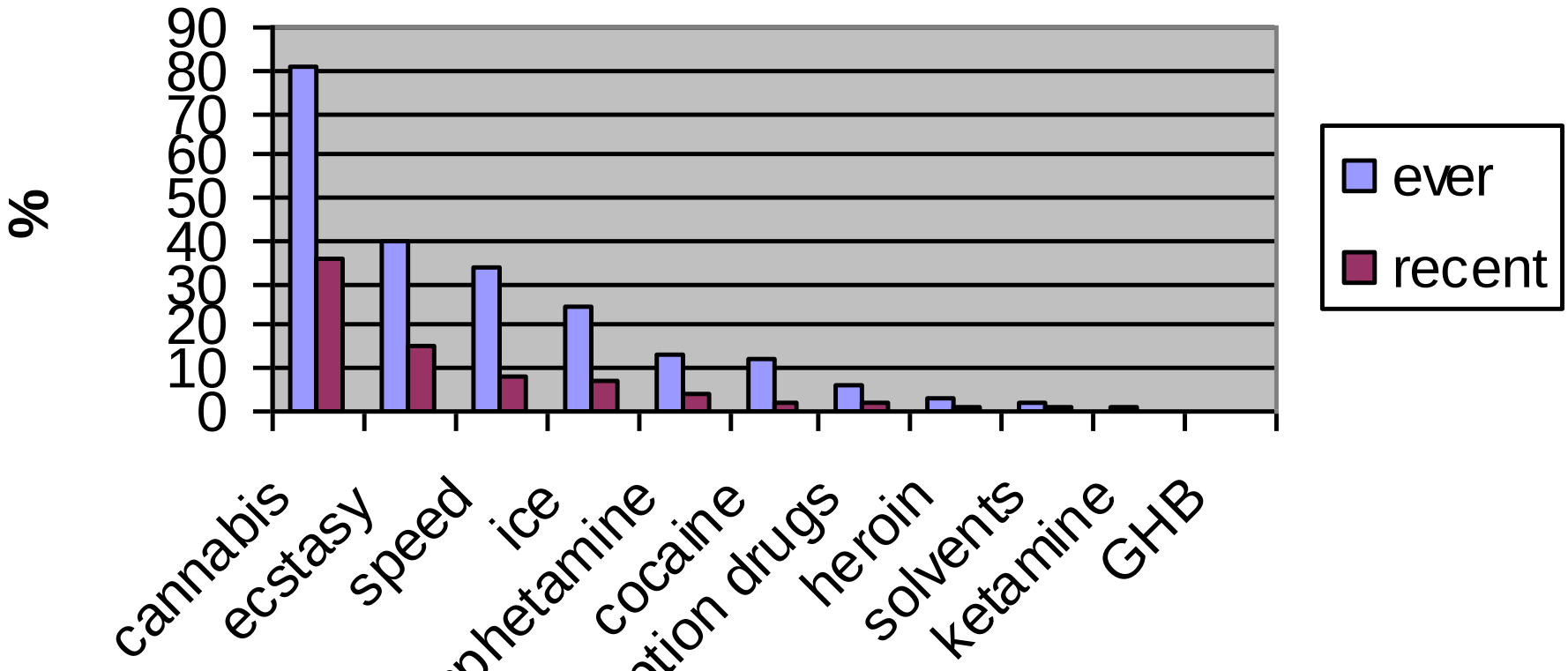
National survey data

	Recent (%)	Ever (%)
Marijuana/cannabis	10.2	34.8
Ecstasy	2.5	10.9
Meth/amphetamine	2.1	7.0
Cocaine	2.1	8.1
Hallucinogens	1.3	9.4
Heroin	0.1	1.2

Overall use of illicit drugs

- 1 in 7 Australians in the last year
- 42% have ever used an illicit drug
- People aged 20-29 were most likely
- Reasons for use:
  - *Want to feel different or better*
  - Experimental/recreational/situational/dependent
- Survey reasons for use:
  - Curiosity
  - Do something exciting
  - Enhance an experience

Illicit drug use, ever vs recent (n=567)



62% (502/804) ever used
Mean age started using 16.0 ± 2.6 yrs
(range 7-24)
1 in 8 have injected drugs

METHYLAMPHETAMINE CONSUMPTION

Capital city sites in **Tas** and the **ACT** showed the **lowest** levels nationwide.

SA capital city sites **exceed** levels in SA regional sites.

Monitored **Qld** and **SA** sites show a consistent pattern of **increasing levels** (for at least the last five years).

WA has the highest levels, with both city and regional sites **far exceeding** national averages.

High levels seen at several regional sites in **Qld**, **Vic** and **Tas**.

COCAINE CONSUMPTION

NT regional levels **lowest** across all participating regions.

While capital city **NSW** levels **dominated** the national landscape, **ACT** and capital **NT** sites showed **higher levels** compared to other states.

MDMA CONSUMPTION

Apart from one capital city site in NT and one regional site in Tas, **consumption levels** nationally were **unremarkable**.

NATIONAL WASTEWATER DRUG MONITORING PROGRAM

AUSTRALIAN CRIMINAL INTELLIGENCE COMMISSION

INTERNATIONAL COMPARISONS

Of the European countries with comparable reported data for the four common stimulants considered (MDMA, cocaine, amphetamine and methylamphetamine), **Australia** has the **second highest** total estimated consumption **overall**.

Australia ranks **second** of the **18 countries** for consumption of **methylamphetamine**.

'Legal highs': the lowdown on a law enforcer's nightmare

ASHER MOSES
July 21, 2010 - 1:21PM

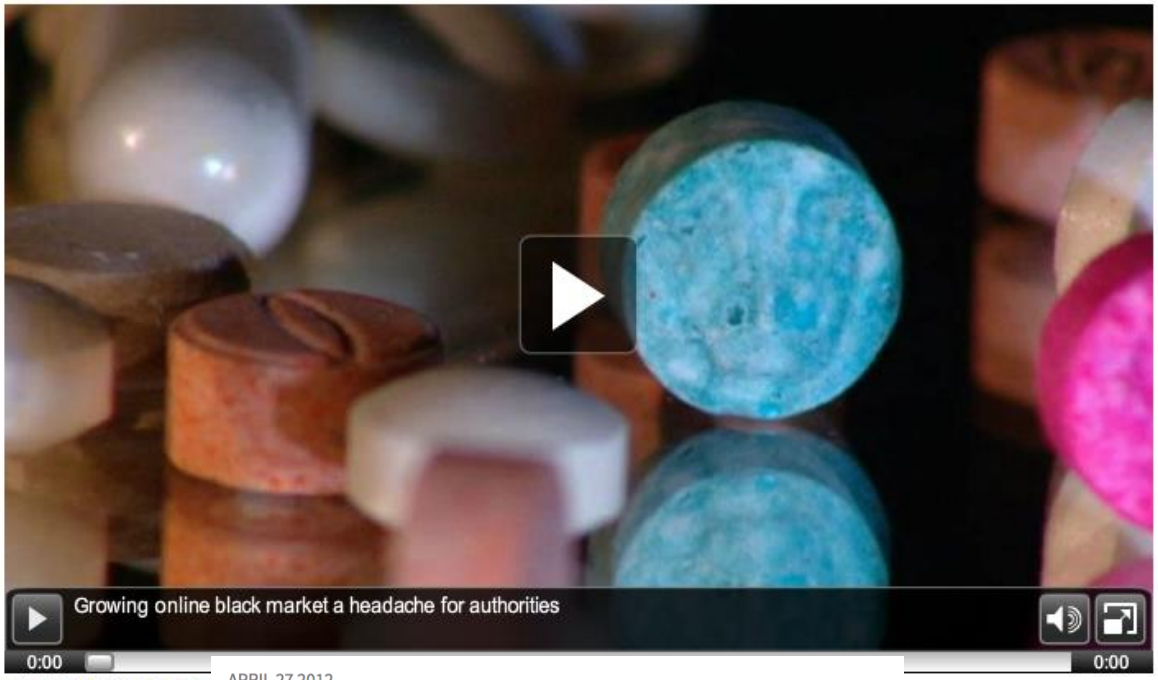
Comments 43

Examples of some of the "legal highs" sold online. *Photo: Craig Sillitoe*

Dealers shed light on dark internet's drug trade

7.30 By Conor Duffy

Updated Wed Dec 5, 2012 8:15pm AEDT



VIDEO: Growing online

APRIL 27 2012

The drug's in the mail

More Australians are buying illegal drugs from internet websites and having them delivered by regular post straight to their door. Eileen Ormsby reports on the new frontier of drug dealing.

Users of the dark i
their illegal trades
market, which is h
Australians to buy

w Enforcement and the

A number of sites c
customers across t

through the post to

CRYSTAL METH

ICE

ROCK

SPEED

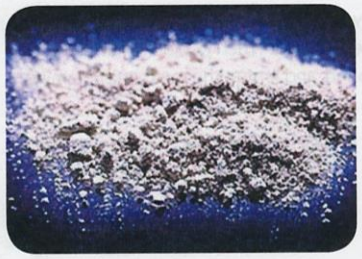
WHIZZ

UPPERS


FOTOSEARCH.com

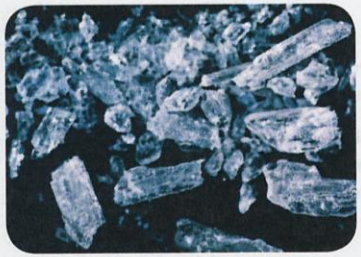
Methamphetamine: Forms and Use Patterns

Methamphetamine, also called methylamphetamine, is a synthetic stimulant drug that is sold under various street names including 'speed', 'base', 'meth', 'ice', 'crystal' or 'crystal meth', 'amphetamines', 'whiz' and 'goey'. There are four recognised ways of marketing methamphetamine at a street level which are explained below.



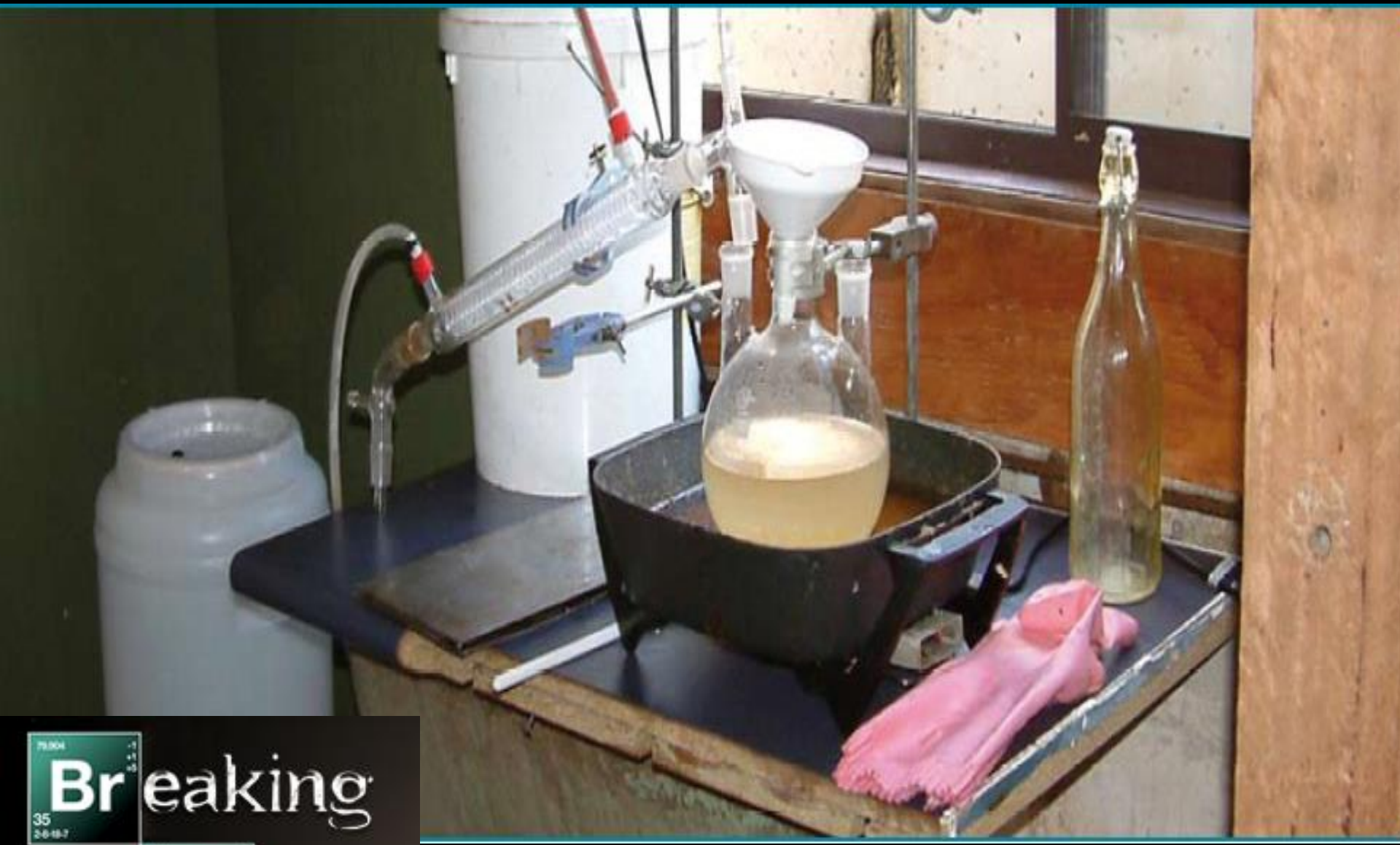
Powder – a white or off-white powder generally known as 'speed', typically of low purity, which can be snorted, injected or taken orally. The powder form of methamphetamine is usually adulterated with glucose.

Base – a damp or oily substance with a white to yellow or brown colour with a higher purity than powder. It can vary a lot in its appearance and is known by a range of terms, including 'pure', 'paste', and 'wax'. This form is typically injected and sometimes swallowed. Base is sold in 'points', which weigh about 0.1 grams.



Ice – also known as 'crystal meth' is methamphetamine in its purest form. It has a translucent to white crystalline appearance. Ice is usually smoked or injected, and is typically sold in 'points' (0.1 grams).

Pills – methamphetamine has also been sold in pill form on the ecstasy market. These pills contain only a small dose of methamphetamine, which is often combined with ketamine to give an ecstasy-like effect. Pills are swallowed.


Br
35
eaking
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Dopamine

Increased release

Increased energy

Altered perception

Serotonin

Increased release

Altered perception

Stereotypical behaviour

Noradrenaline

Increased release

Increased alertness

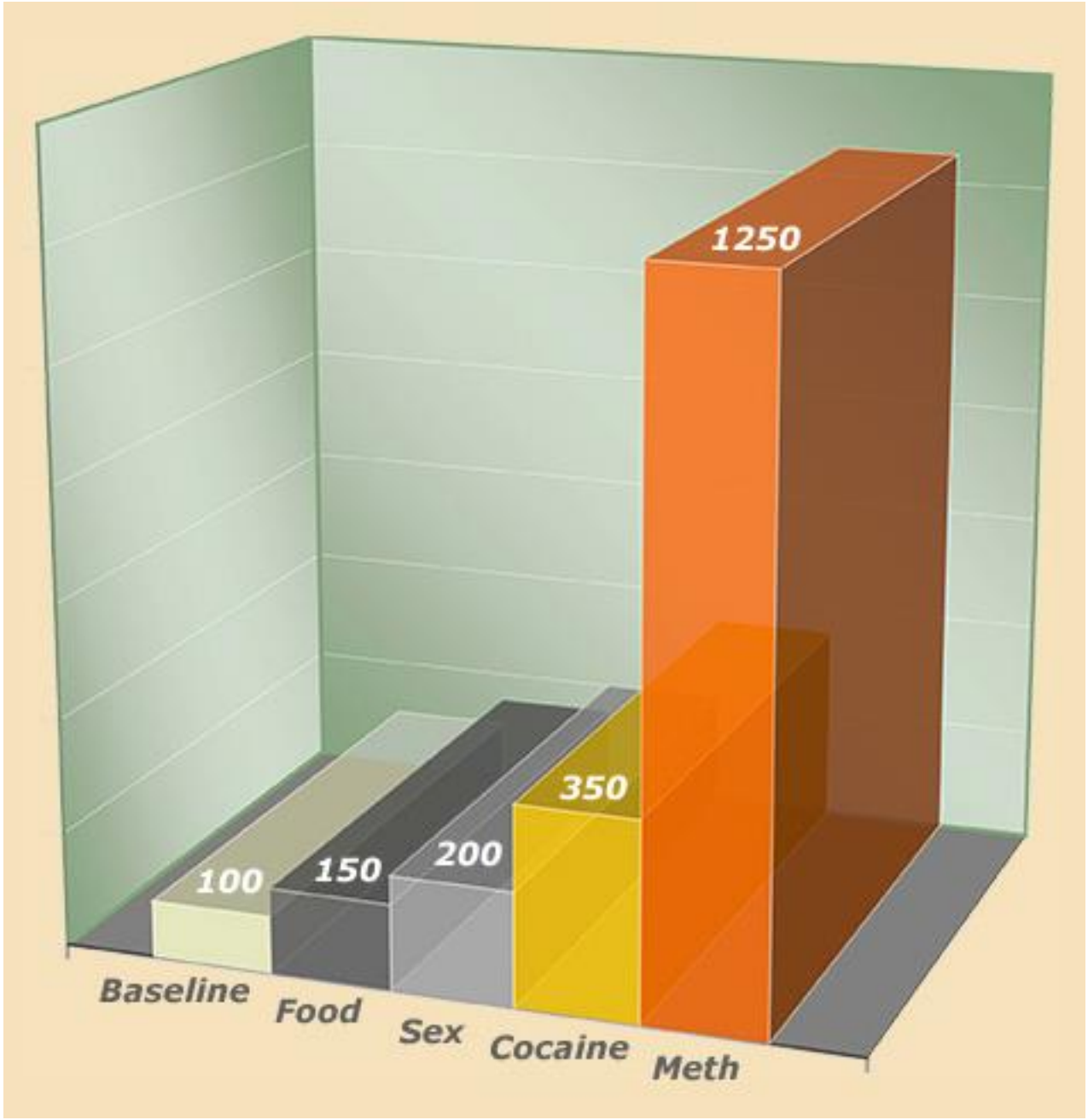
Increased energy

Hyperthermia

SHORT-TERM EFFECTS	SHORT-TERM EFFECTS OF HIGHER DOSES	LONG-TERM EFFECTS
• irritability	• sweating	• malnutrition and weight loss
• suspiciousness	• headaches	• reduced resistance to infection
• anxiety	• pale skin	• violent behaviour
• increased alertness	• restlessness	• emotional disturbances
• threatening manner	• dizziness	• periods of psychosis
• increased confidence	• feelings of being powerful or superior	• paranoia
• panic attacks	• shaking	• delusional thoughts and behaviour
• increased energy	• repetitive movement	• mood swings
• talkativeness	• irregular breathing	
• inability to sleep	• very rapid or irregular heartbeat	
• reduced appetite	• hostility	
• increased breathing rate	• aggression	
• enlarged pupils	• hallucinations	
• increased pulse rate	• delusions	
• increased blood pressure	• jaw clamping/teeth grinding	

Bell DS. The experimental reproduction of amphetamine psychosis. Arch Gen Psychiatry 1973;29:35-40

The pleasure/reward circuit's role in addiction



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FOR YOU
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pillreports.com BETA

Ecstasy Test Results Database by Enlighten

Regions

- Africa
- Asia
- Australia & NZ
- Europe
- Middle East
- North America
- South America

User Options

- Search Comments
- Search Reports

Account Options

- Change E-mail
- Re-send activation link
- Reset Password

Sites We Like

- www.counsellingonline.org.au
- www.enlighten.org.au
- www.bluelight.ru
- www.erowid.org
- www.ecstasydata.org

PillReports Ecstasy Test Results Database

Pillreports is a global database of "Ecstasy" pills based on both subjective user reports and scientific analysis. "Ecstasy" is traditionally the name for MDMA based pills, however here we also include closely related substances such as MDA, MDEA, MBDB. Pills sold as "Ecstasy" often include other, potentially more dangerous, substances such as methamphetamine, ketamine and PMA.

By identifying dangerous adulterants, Pillreports performs a vital harm reduction service that can prevent many of the problems associated with "Ecstasy" use before they happen. Prevention is always better than cure, as you cannot cure death.

Please Note: Pillreports.com exists as a harm reduction tool and does not condemn or condone ecstasy use.

enlighten

Pillreports is brought to you by Enlighten Harm Reduction.

Latest News

September 20, 2012-BBC3 Documentary looking to interview young people

Posted by johnboy @ 12:42 pm GMT

Blast! films are making a new documentary for BBC3 about young people's attitudes towards recreational drugs such as mephedrone, GHB and ketamine. The film will take an honest look at the highs, the lows and everything in between.

We are looking to talk to people as part of our research who are under 25 and have had some experience with these or other 'party drugs'. If you're living in and around Leeds and willing to have a chat on the phone please email bfreedman@blastfilms.co.uk with your phone number and a good time to talk. These conversations will be in confidence, you can remain anonymous, with absolutely no commitment to being involved in the documentary.

September 19, 2012-Win an iPad with Australian National Youth Survey on Drugs

Adulterated Results

Adulterated pills in your area

Brown Heart
NSW - 29/10/12
Suspected Contents: **2C-B**

White Dolphin
Melbourne, vic - 28/10/12
Suspected Contents: **Unknown**

White Clover
Melbourne, vic - 28/10/12
Suspected Contents: **Unknown**

more results >>

Pillreports contains **30,455** reports with **2** added worldwide today.

SHORT-TERM EFFECTS	SHORT-TERM EFFECTS OF HIGHER DOSES	LONG-TERM EFFECTS
• nausea	• irrational behaviour	• depression
• sweating	• agitation	• drowsiness
• hot and cold flushes	• convulsions	• muscle aches
• jaw clenching	• dehydration	• loss of appetite
• teeth grinding	• urinary retention (hypernatraemia)	• insomnia
• feeling of wellbeing	• vomiting	• loss of concentration
• anxiety	• hallucinations	• irritability
• increased pulse rate	• excessive thirst	
• increased blood pressure	• rhabdomyolysis (muscle meltdown)	
• high body temperature		
• exaggerated confidence		
• dry mouth		
• insomnia		
• poor concentration		

WA ecstasy is cocktail of chemicals

LUKE ELIOT CHIEF CRIME REPORTER, The West Australian
July 13, 2010, 2:15 am

Supplied by Subject / Unknown ©

Perth drug users are being exposed to dangerous chemicals, with almost half the ecstasy pills seized in WA in the past year containing none of the key ingredient - MDMA.

ChemCentre chemist Hannah Crisp said yesterday analysis on seized pills showed many had chemicals known as piperazines such as benzylpiperazine and trifluoromethylphenylpiperazine.

These are also illegal and have similar effects to methylenedioxymethamphetamine, or MDMA.

Police say BZP can cause paranoia, schizophrenia, diarrhoea, vomiting, headaches and even death and TFMPP is generally used with BZP.

"In Perth we're seeing a trend where a lot of the ecstasy tablets coming in for analysis don't actually contain any MDMA," Ms Crisp said.

"We're not aware if the users know they are not taking MDMA but a large majority of the tablets we are seeing contain these drugs (piperazines)."

The shift to ecstasy without MDMA could be from a worldwide shortage of MDMA but despite this, ecstasy use in WA is soaring.

A Crime Commission report found WA had the nation's cheapest ecstasy, with pills from $17. WA rated second only behind NSW for ecstasy seizures in the 2008-09 financial year.

Ms Crisp said ecstasy pills frequently had caffeine, a stimulant and "bulked-up" the quantity of drug sold.

She said cocaine sold in WA frequently contained levamisole, a pesticide used to de-worm animals; diltiazem, a common vasodilator; and lignocaine, a dental anaesthetic.

Levamisole and diltiazem are believed to be added to raw cocaine from the source countries.

National Drug Research Institute director Steve Allsop warned that users could never know what they were consuming.

"Every time you take ecstasy it's of variable potency and certainly of variable purity," Dr Allsop said. "In terms of purity, a lot of the stuff that is in it can be relatively inert but some of it can be really dangerous."

Dr Allsop said common bulking agents included mephedrone, commonly called "miaow miaow", and paramethoxyamphetamine, which was linked to a string of fatal overdoses across Australia.

Amphetamine-related presentations to an inner-city tertiary emergency department: a prospective evaluation

Suzanne D Gray, Daniel M Fatovich, David L McCoubrie and Frank F Daly

ABSTRACT

Objective: To describe the prevalence, characteristics and outcomes of amphetamine-related presentations to a tertiary hospital emergency department (ED).

Design, setting and participants: Prospective observational study of amphetamine-related presentations to the ED of the Royal Perth Hospital (RPH), an adult, inner-city, tertiary referral hospital, between 3 August and 2 November 2005. For all patients presenting to the ED, the treating doctors were automatically prompted by the computerised data entry system to consider amphetamine use.

Main outcome measures: Proportion of ED presentations related to amphetamine use; demographic features and usage practices of amphetamine users; characteristics of presentations and admissions; associated psychiatric illnesses and use of other drugs.

Results: Over the study period, there were 13 125 presentations, of which 156 (1.2%) were judged to be causally related to amphetamine use. Of those 156 patients, over half were habitual drug users (89 [57.1%] used amphetamines at least weekly), and the majority were men (111 [71.2%]). The mean age was 28 years (range, 16–55 years). Presentations were of high acuity: 104 patients [66.7%] were rated 1, 2 or 3 on the Australasian Triage Scale; 50 (32.1%) arrived by ambulance; and 25 (16.0%) arrived with police. The mean time spent in the ED was 6 h (range, 0.5–24 h). Fifty patients (32.1%) required sedation, and the likelihood of requiring sedation increased almost threefold if the heart rate was over 100 beats/min on presentation. Sixty-two patients (39.7%) were admitted and 58 (37.2%) required psychiatric evaluation. Repeat attendance was common, with 71 patients (45.5%) having previous amphetamine-related presentations to the RPH ED.

Conclusions: Amphetamine-related presentations comprise 1.2% of all ED attendances and have a major impact on hospital EDs. Patients are often agitated and aggressive, require extensive resources, and frequently re-attend. The burden of amphetamine-related illnesses on EDs is likely to increase in the future.

MJA 2007; 186: 336–339

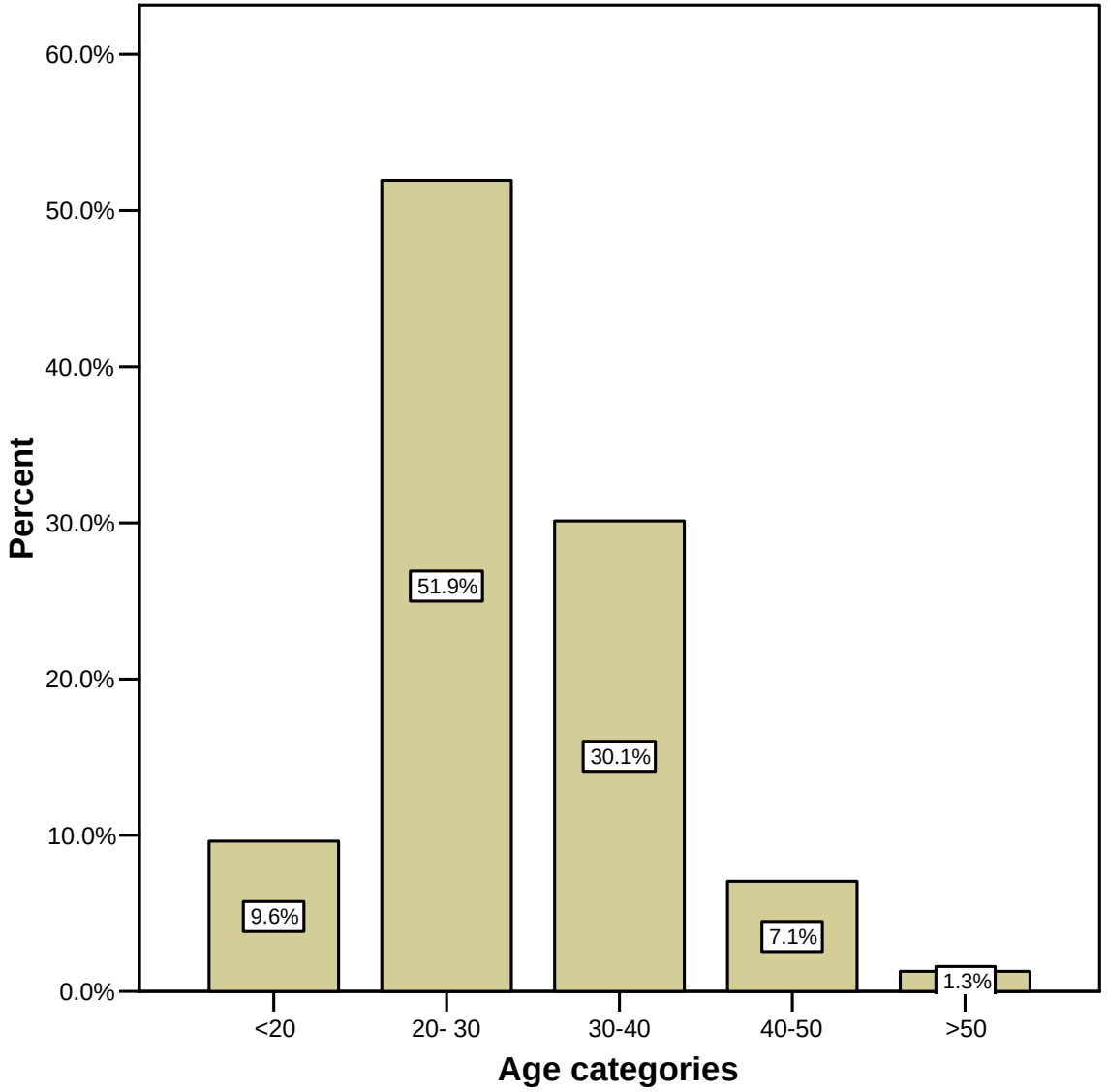
The illicit use of amphetamines in the community as recreational drugs and drugs of addiction is increasing.[1] Amphetamine intoxication appears to be a common reason for presentation to emergency departments (EDs), but, to our knowledge, there are no published data describing the prevalence and characteristics of amphetamine-related presentations to EDs. Our aim was to describe these features in the setting of the ED at the Royal Perth Hospital (RPH), Western Australia.

METHODS

A prospective observational cohort study was undertaken over a 3-month period from 3 August to 2 November 2005 at the RPH, an adult, inner-city, tertiary referral hospital. The ED has an annual census of about 53 000, with an admission rate of 42%.

A mandatory diagnostic prompt in the ED computerised data information system (inserted for the purpose of our study) ensured that each presenting patient was assessed for amphetamine use. Doctors were asked, "Is this presentation related to amphetamines?" The possible responses were "yes", "no" or "unsure". Amphetamine-related problems were considered to be any

Age distribution of amphetamine-related presentations RPH ED 2005



1 Characteristics of patients presenting to the Emergency Department (ED), Royal Perth Hospital, with amphetamine-related conditions, Aug–Nov 2005 ($n = 156$)

Demographic characteristics	Number (%) of patients
*Age in years**	
< 20	15 (9.6%)
20–29	81 (51.9%)
⩾30	60 (38.5%)
Male	111 (71.2%)
White	134 (85.9%)
Marital status single	113 (72.4%)
Presentations, admissions and discharges	
Time of presentation†	
00:00–06:00	38 (24.4%)
06:00–12:00	31 (19.9%)
12:00–18:00	37 (23.7%)
18:00–24:00	50 (32.1%)
Referral/mode of arrival	
Self-referred	57 (36.5%)
Arrived by ambulance	50 (32.1%)
Arrived with police	25 (16.0%)
Unspecified, or arrived with family or friends	24 (15.4%)
Admissions	
Total number of patients admitted	62 (39.7%)
To ED observation ward	31 (50.0%‡)
To psychiatric ward	12 (19.4%‡)
To general ward	15 (24.2%‡)
To intensive care unit	3 (4.8%‡)
Discharges from the ED	
Discharged home by hospital staff	76 (48.7%)
Self-discharged against medical advice	11 (7.1%)
Taken into police custody after medical clearance	7 (4.5%)

Use of amphetamines	Number (%) of patients
Mode of amphetamine use preceding presentation	
Intravenous injection	110 (70.5%)
Ingestion	30 (19.2%)
Smoking	16 (10.3%)
Place of amphetamine use	
At home	66 (42.3%)
At a friend's place	26 (16.7%)
In a public venue	26 (16.7%)
Unspecified	38 (24.4%)
Amphetamine use alone or with friends	
Alone	85 (54.5%)
With friends	53 (34.0%)
Unspecified	18 (11.5%)
Associated psychiatric illness	
Depression	27 (17.3%)
Personality disorder	22 (14.1%)
Schizophrenia	13 (8.3%)
Previous drug-induced psychosis	25 (16.0%)
Coingestions at time of presentation	
Alcohol	57 (36.5%)
Marijuana	34 (21.8%)
Benzodiazepines	13 (8.3%)
Opioids	9 (5.8%)

* Mean age, 28 years (range, 16–55 years; SD, 7.5 years). † Median time from amphetamine use to ED presentation, 12 h (interquartile range, 4–24 h); mean time spent in ED, 6 h (range, 0.5–24 h); median time spent in ED, 4 h 40 min. ‡ Represents proportion of the number of admitted patients. ◆

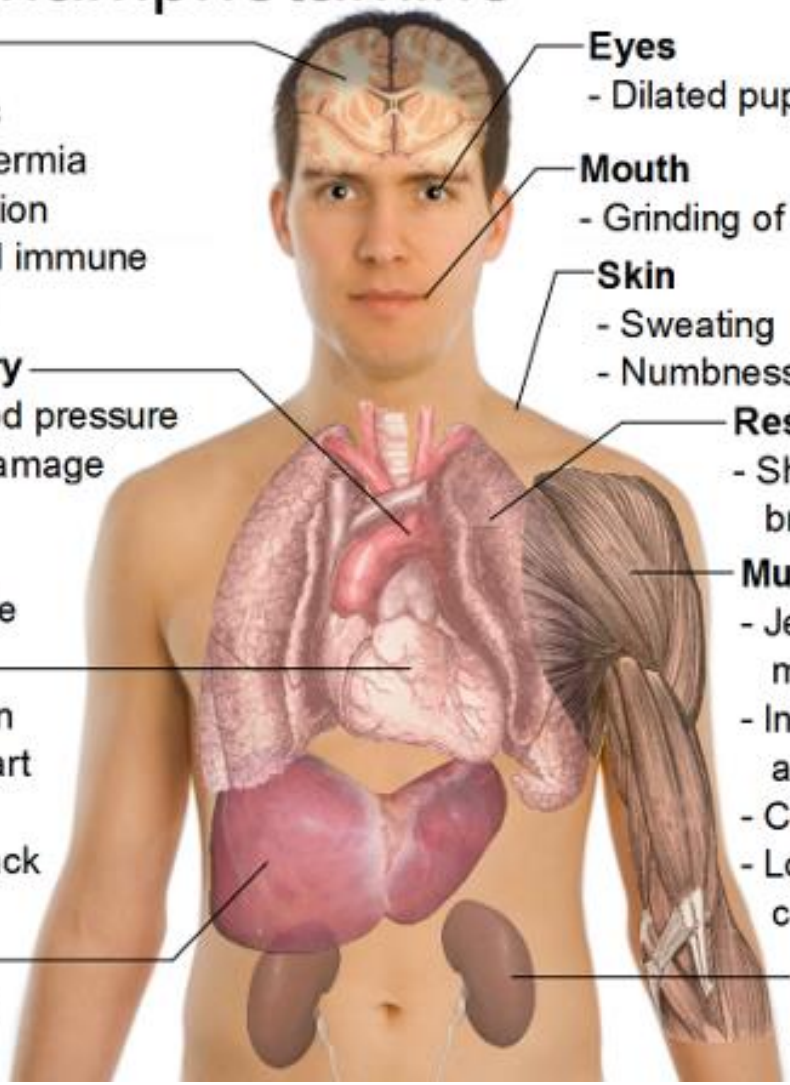
2 Principal reasons for presentation to the Royal Perth Hospital Emergency Department after amphetamine use

	Number (%) of patients ($n = 156$)
Sympathomimetic agitated delirium	31 (19.9%)
Acute psychosis	19 (12.2%)
Assault	13 (8.3%)
Injury	12 (7.7%)
Suicidal thoughts or actions	10 (6.4%)
Infection at injection site	9 (5.8%)
Chest pain	7 (4.5%)
Polysubstance overdose	6 (3.8%)
Seizures	6 (3.8%)
Vomiting	6 (3.8%)
Palpitations	5 (3.2%)
Motor vehicle accident	5 (3.2%)
Miscellaneous*	27 (17.3%)

* For example, general unwellness, headache, collapse, self-harm, depression, numbness, rigors, thirst, abdominal pain. ◆

Adverse (negative) effects of

Methamphetamine



Psychological
- Insomnia
- Aggressive behavior
- Paranoia
- Incessant conversations
- Decreased appetite
- Increased alertness
- Irritability
- Slurred speech
- Dizziness
- Confusion
- Hallucinations
- Obsessive behaviors
- Depression
- Panic attacks

Systemic
- Hyperthermia
- Malnutrition
- Impaired immune system

Circulatory
- High blood pressure
- Vessel damage in brain
- Clotting and stroke

Heart
- Chest pain
- Rapid heart rate
- Heart attack

Liver
- Damage

Eyes
- Dilated pupils

Mouth
- Grinding of teeth

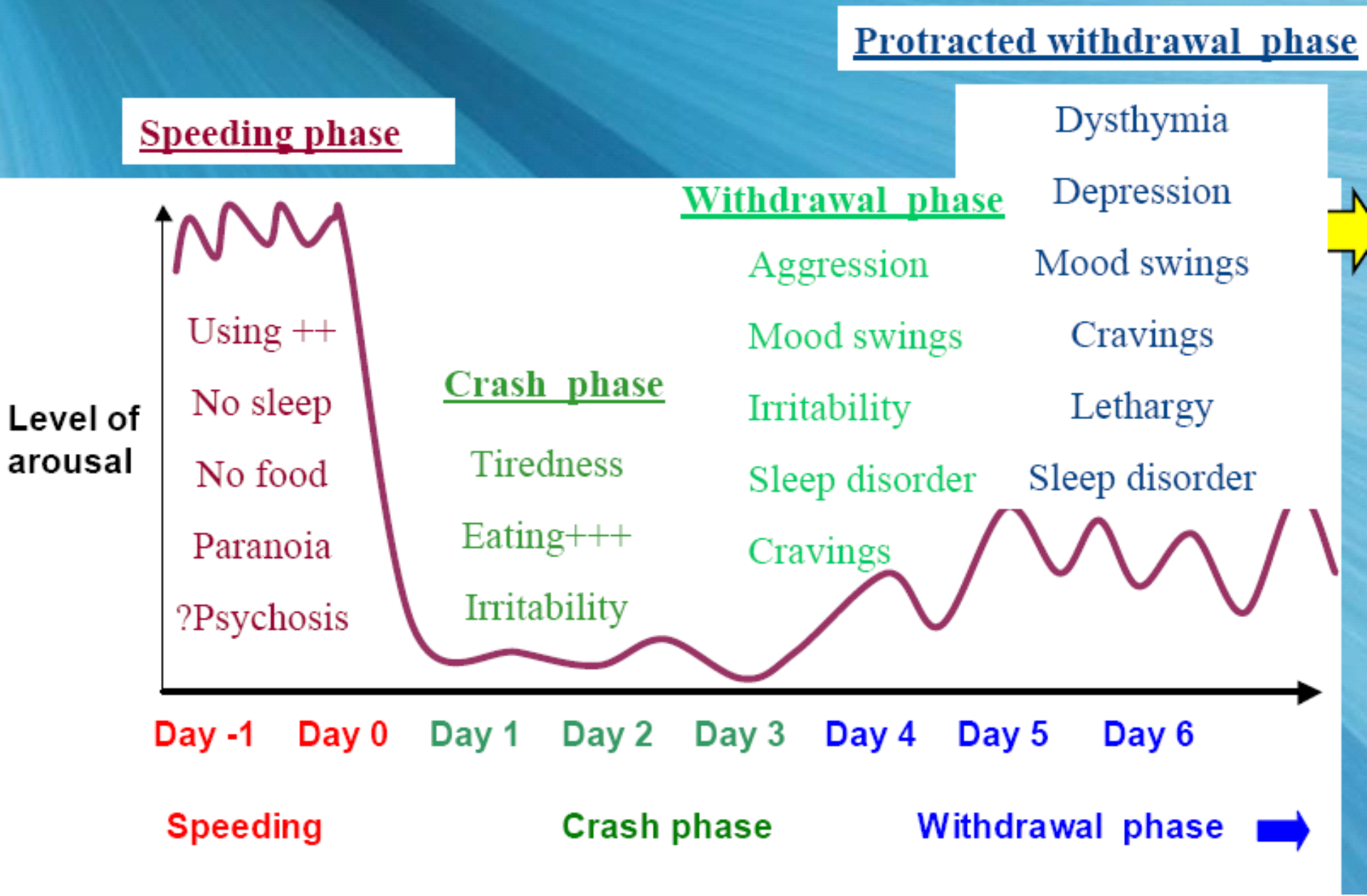
Skin
- Sweating
- Numbness

Respiratory
- Shortness of breath

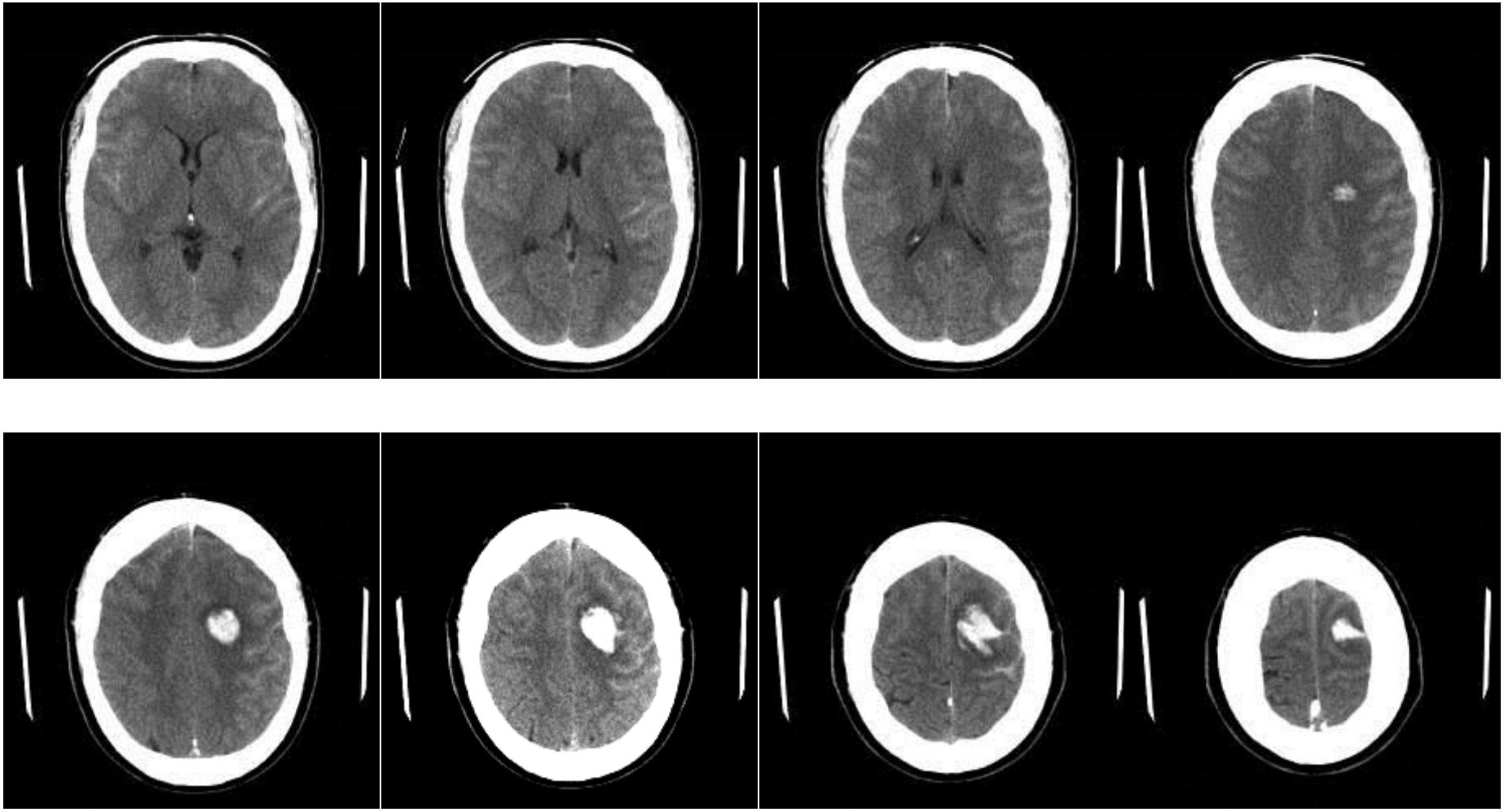
Muscular
- Jerky movements
- Increased activity
- Convulsions
- Loss of coordination

Kidneys
- Damage

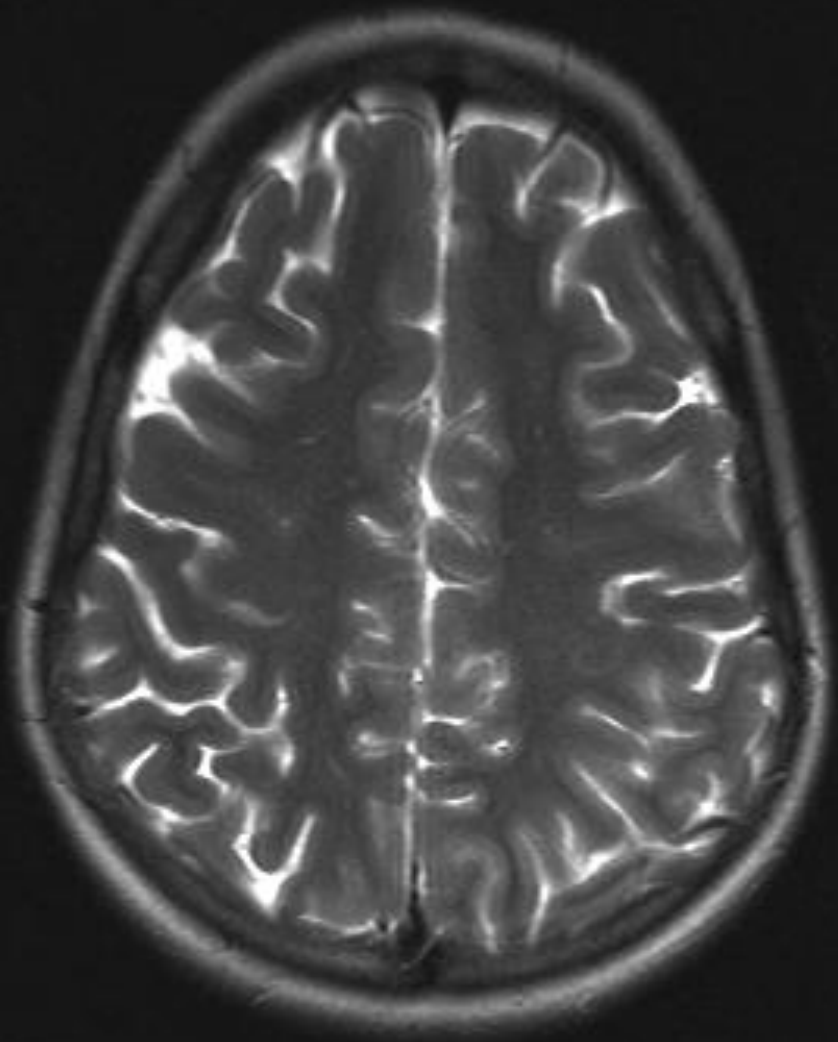
The amphetamine withdrawal syndrome



32 yo man IV ice



17 yo teenager, one ecstasy



MRI brain in amphetamine users

N = 30 (19 male, 63%; 19 required admission to hospital)

	mean	range
age	27 yrs	19-41
Age first used	18 yrs	13-26
Days used/last 30 days	11	1-30
Amount MA used	2.5g/wk	0.4-7
Years used	8	1-22

Problems with:

mood	70%
concentration	63%
General health	50%
memory	47%
Admission to psychiatric hospital	30%
depression	47%
psychosis	23%
Prisoner in jail	20%

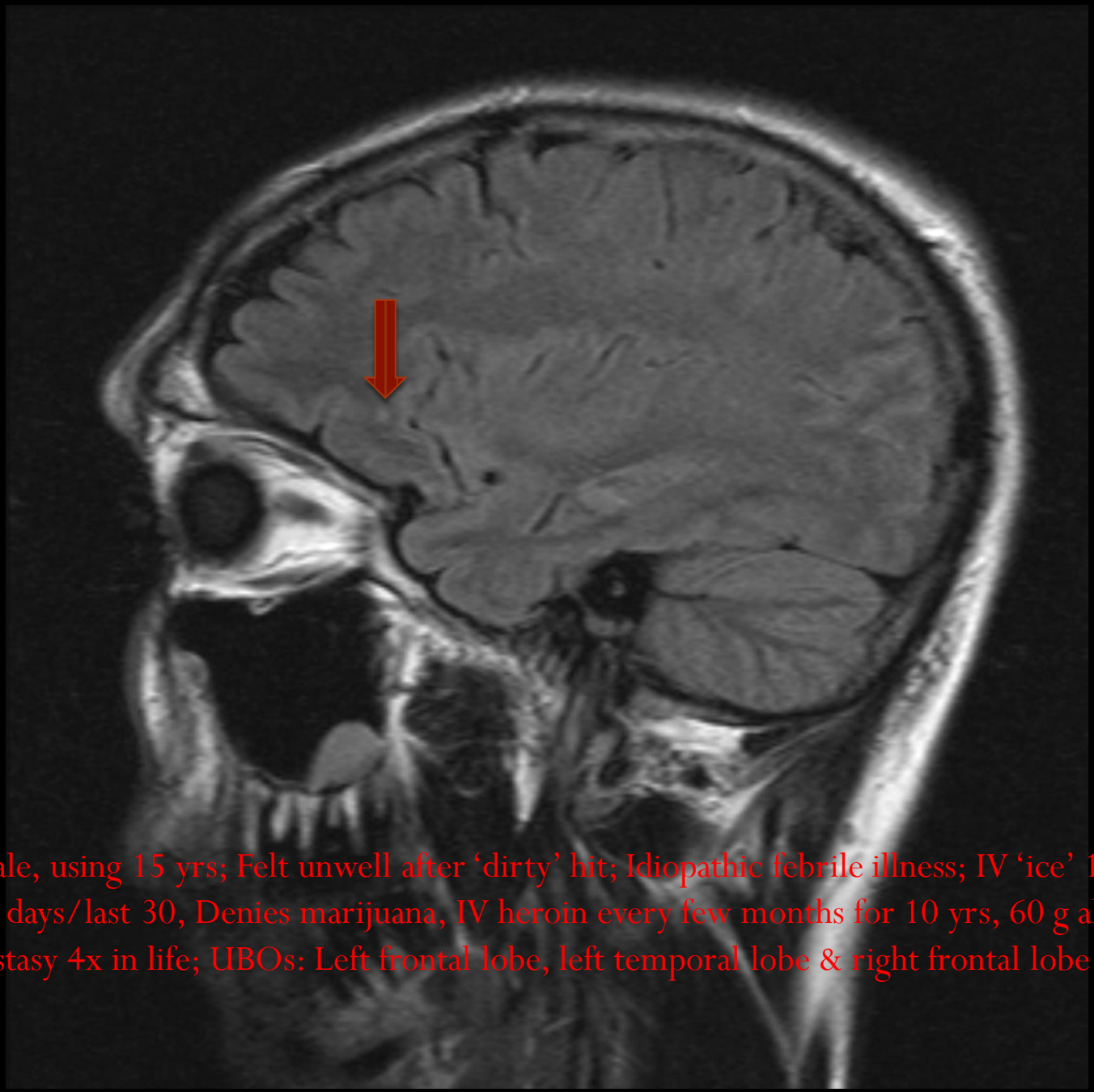
Primary endpoint

- 6/30 (20%, 95%CI 8.4-39.1%) had an abnormal MRI

- The most common abnormality (n=4) was unidentified bright objects (UBOs):
  - T2 hyperintensities in subcortical white matter without a corresponding diffusion weighted imaging abnormality
  - 3/4 in frontal lobe
- 1 cortical atrophy
- 1 hippocampal oedema & sclerosis

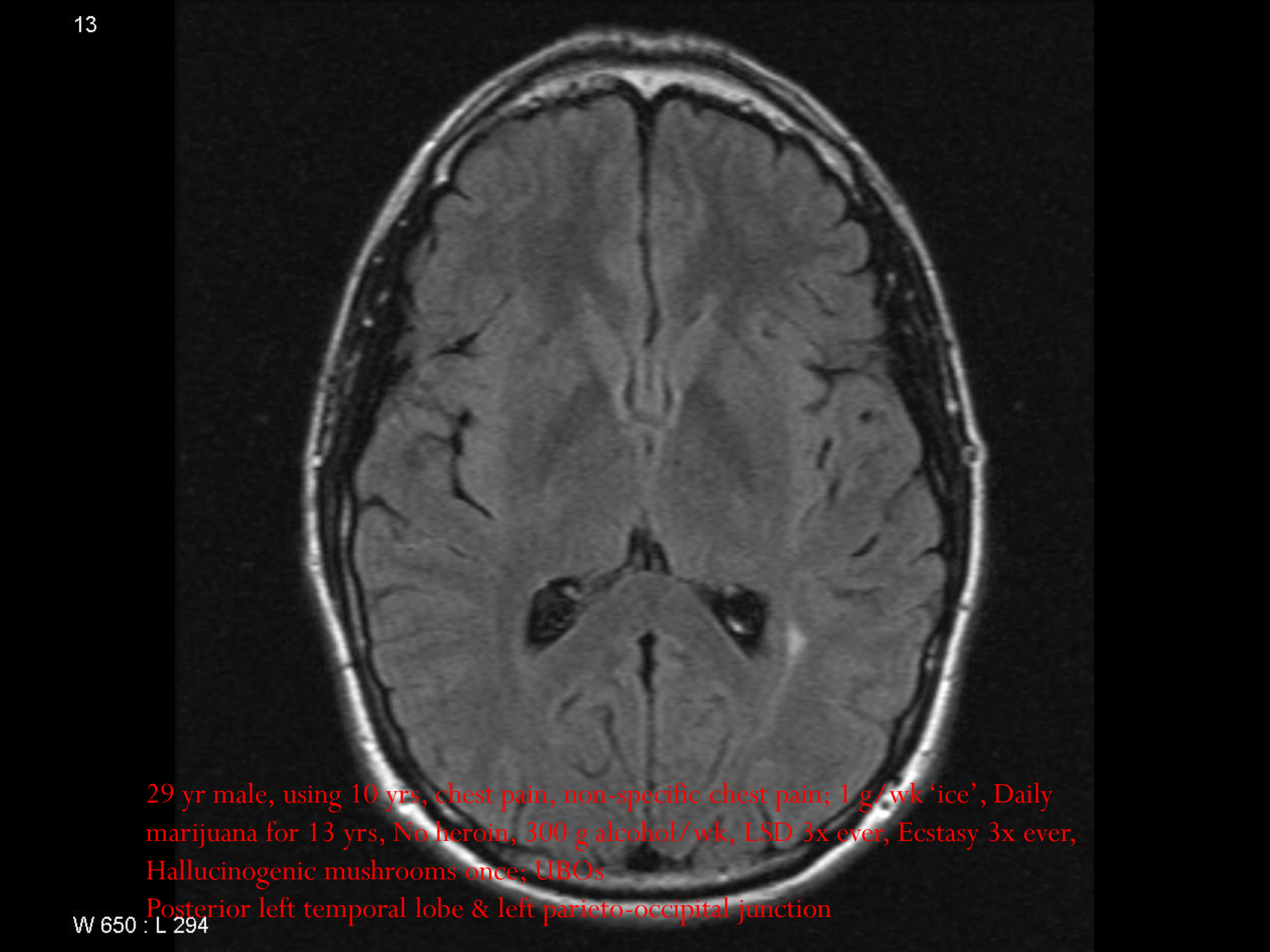
- 5/23 (22%, 95% CI 8.3-44.2%) serious users had an abnormal MRI

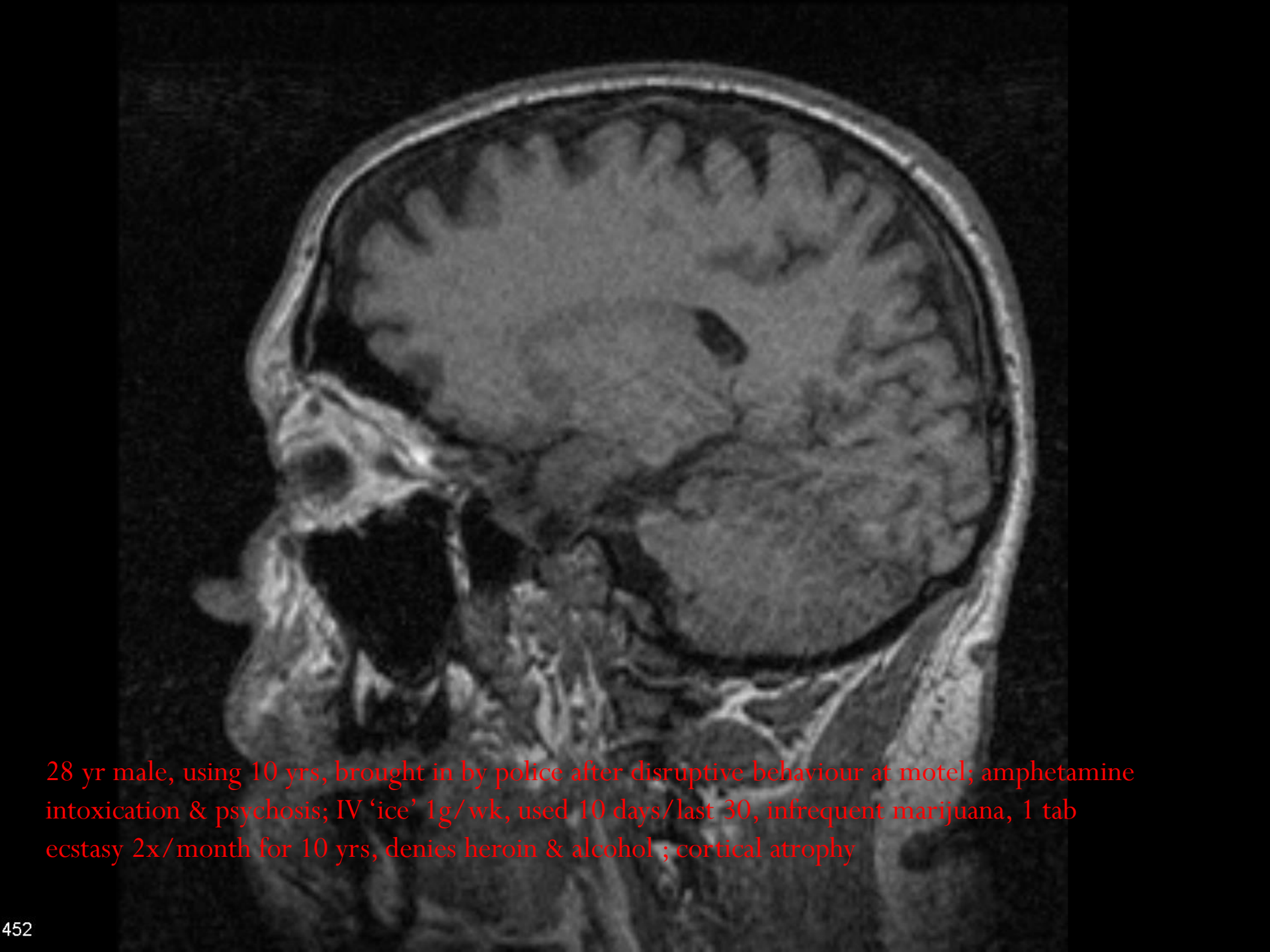
6



38 yr male, using 15 yrs; Felt unwell after 'dirty' hit; Idiopathic febrile illness; IV 'ice' 1g/wk, Used 15 days/last 30, Denies marijuana, IV heroin every few months for 10 yrs, 60 g alcohol/wk, Used ecstasy 4x in life; UBOs: Left frontal lobe, left temporal lobe & right frontal lobe

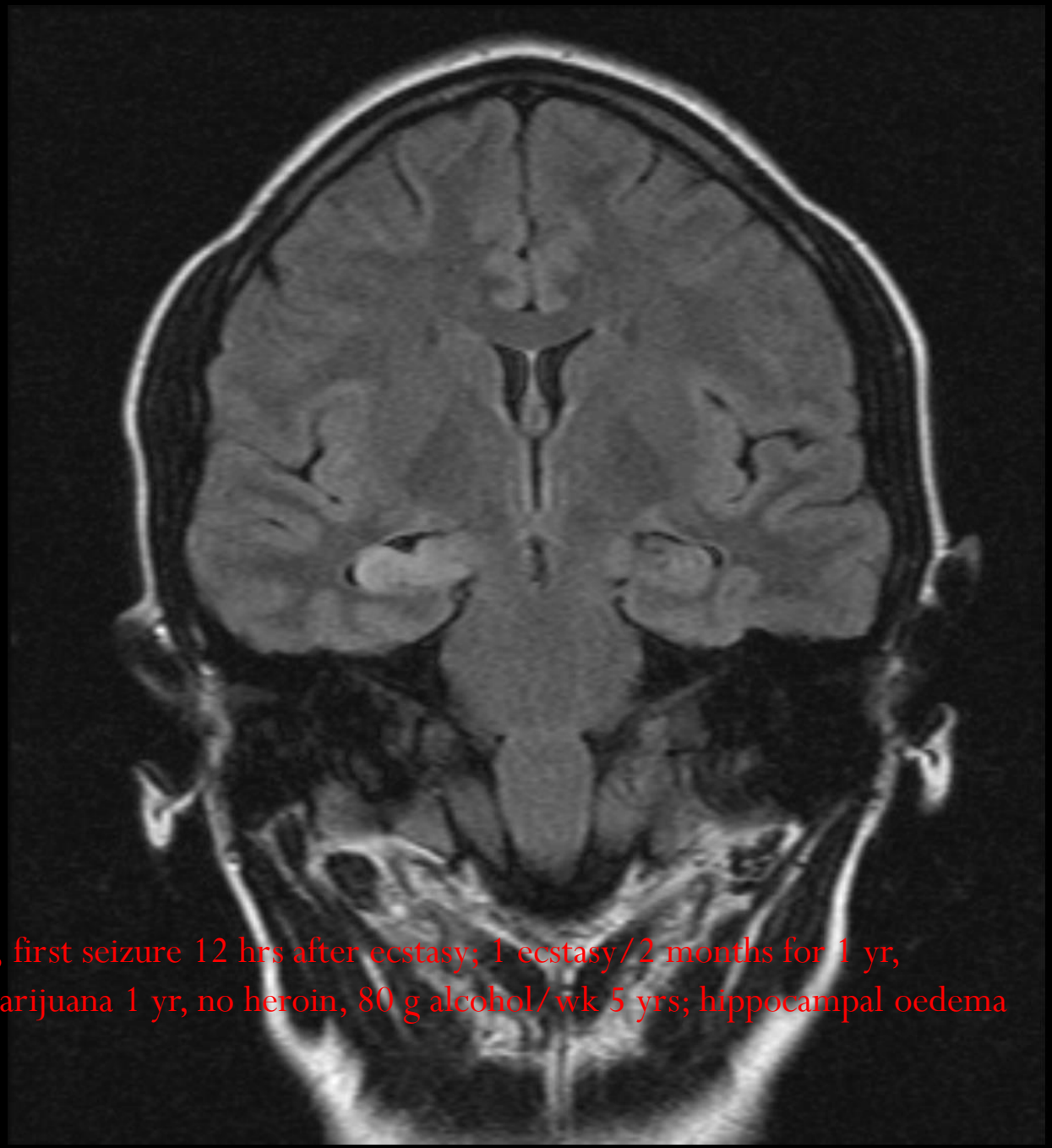
W 685 : L 300


13
29 yr male, using 10 yrs, chest pain, non-specific chest pain; 1 g/wk 'ice', Daily marijuana for 13 yrs, No heroin, 300 g alcohol/wk, LSD 3x ever, Ecstasy 3x ever, Hallucinogenic mushrooms once; UBOs
Posterior left temporal lobe & left parieto-occipital junction
W 650 : L 294



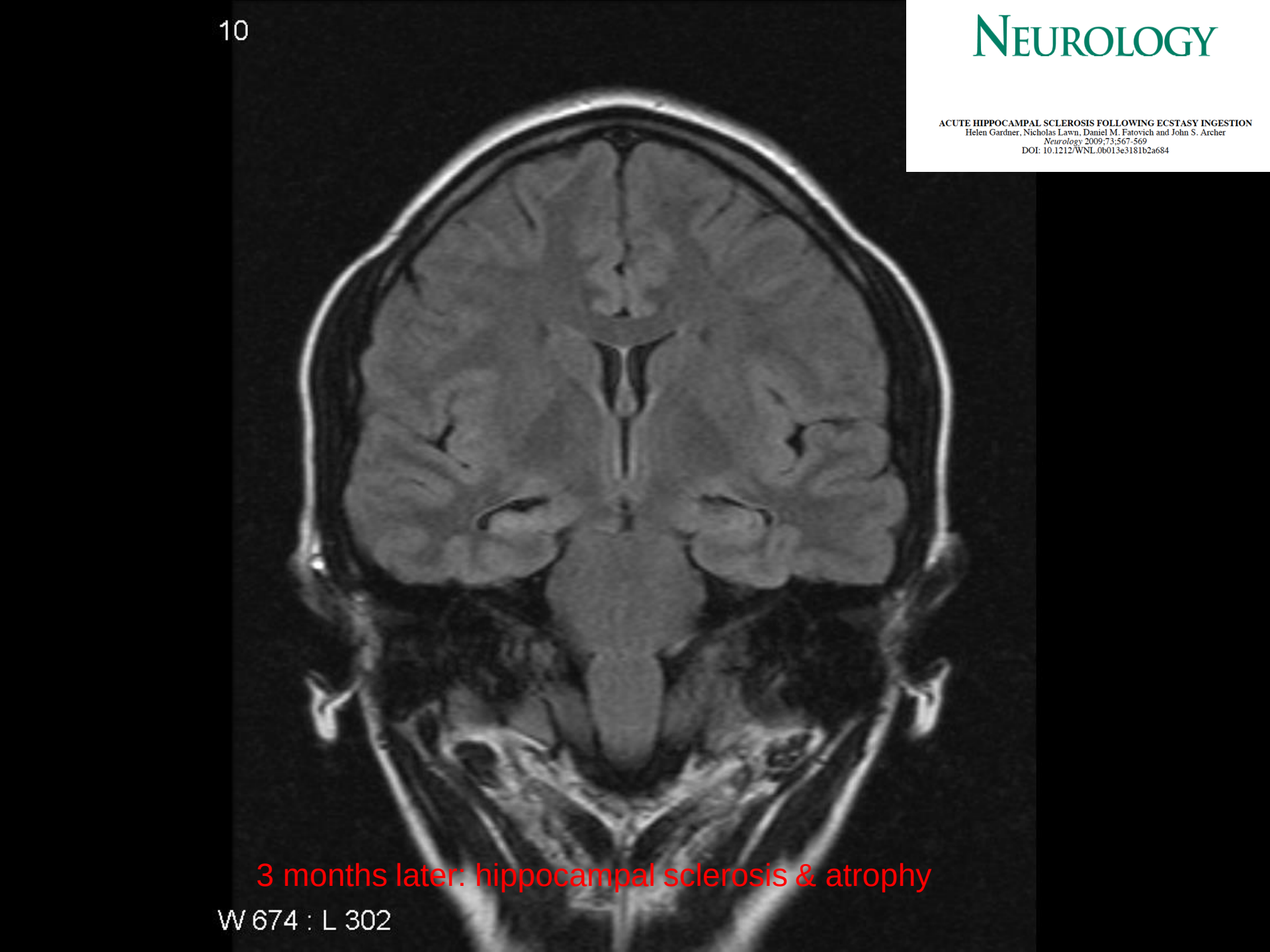
28 yr male, using 10 yrs, brought in by police after disruptive behaviour at motel; amphetamine intoxication & psychosis; IV 'ice' 1g/wk, used 10 days/last 30, infrequent marijuana, 1 tab ecstasy 2x/month for 10 yrs, denies heroin & alcohol ; cortical atrophy

12



21 yr female, first seizure 12 hrs after ecstasy; 1 ecstasy/2 months for 1 yr, bimonthly marijuana 1 yr, no heroin, 80 g alcohol/wk 5 yrs; hippocampal oedema

W 687 : L 305



NEUROLOGY

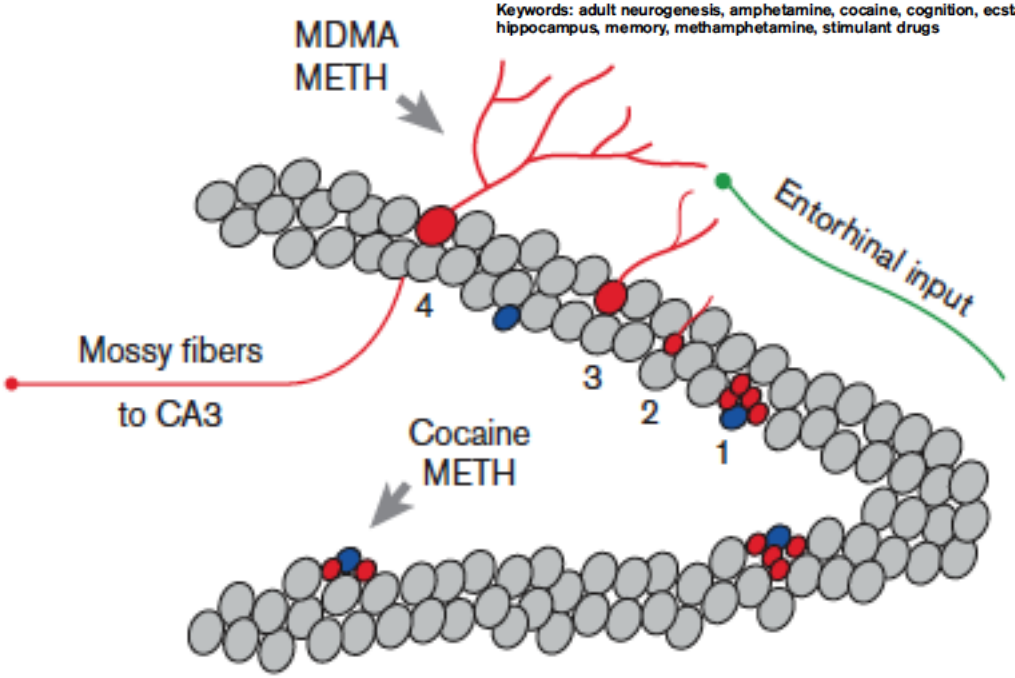
ACUTE HIPPOCAMPAL SCLEROSIS FOLLOWING ECSTASY INGESTION
Helen Gardner, Nicholas Lawn, Daniel M. Fatovich and John S. Archer
Neurology 2009;73;567-569
DOI: 10.1212/WNL.0b013e3181b2a684

Comparative neuroscience of stimulant-induced memory dysfunction: role for neurogenesis in the adult hippocampus

Juan J. Canales

Behavioural Pharmacology 2010, 21:379–393

Keywords: adult neurogenesis, amphetamine, cocaine, cognition, ecstasy, hippocampus, memory, methamphetamine, stimulant drugs



Schematic representation of neurogenic processes in the DG of the hippocampus. Progenitor cells (blue cells) give rise to immature precursor cells (red cells) in the subgranular zone of the DG (1). Precursor cells migrate into the deep granular layers of the DG (2), growing dendritic branches that are contacted by axons of the perforant path (3, 4) and extending axons deep into the CA3 area of the hippocampus. In general, evidence accrued in animal models of stimulant abuse indicates that cocaine exerts negative effects on proliferation rates (Dominguez-Escriba *et al.*, 2006), 3,4-methylenedioxymethamphetamine (MDMA) principally affects the survival of neuronal precursors (Hernandez-Rabaza *et al.*, 2006) and methamphetamine (METH) alters both proliferation and survival (Mandyam *et al.*, 2008). Grey arrows indicate the processes affected by stimulant exposure.

UBOs, unidentified bright objects

Age (yrs)	Prevalence
Our study 4/23 serious users, mean age 31	17%
30	0.5%
64	11-21%
82	94%

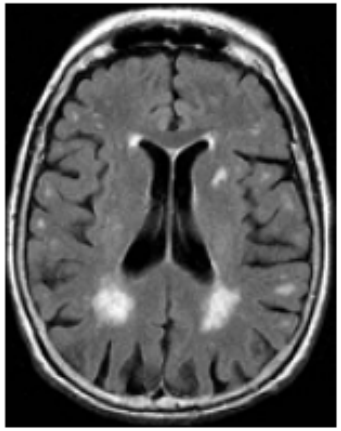
Fatovich D, McCoubrie DL, Song SJ, Lawn N, Daly FF. White matter hyperintensities on MRI: Lesions are seen in young users of stimulant drugs. *BMJ 2010;341:c5636.*

Debette S, Markus HS. The clinical importance of white matter hyperintensities on brain magnetic resonance imaging: systematic review and meta-analysis. *BMJ*2010;341:c3666.

Katzman GL, Dagher AP, Patronas NJ. Incidental findings on brain magnetic resonance imaging from 1000 asymptomatic volunteers. *JAMA*1999;282:36-9.

Do white matter hyperintensities on MRI matter clinically?

Yes, and they should prompt detailed screening for stroke and dementia risk factors



RESEARCH, p 288

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Small vessel disease in the brain is one of the most common of all neurological disorders.[1] It is often present even in young otherwise healthy people,[2] and it leads to neurodegeneration, vascular cognitive disorder, and disability.[3] As yet, small vessel disease cannot be directly measured. However, a specific clinical syndrome or white matter lesions identified on imaging (such as white matter hyperintensities on magnetic resonance imaging) can be used as surrogate markers of small vessel disease. In the linked systematic review, Debette and Markus assess the association between white matter hyperintensities and the risk of stroke, cognitive decline, dementia, and death.[4]

Small vessel disease comprises different pathological processes mainly affecting arterioles that supply the deep part of the brain. The lack of anastomoses in the vascular architecture of the deep part of the brain makes tissue more susceptible to disease and easily compromised during haemodynamically unfavourable conditions.[5]

The most common small vessel disease in the brain is arteriolosclerosis with concentric hyaline thickening of the vessel wall associated with deep white matter lesions.[6]

Several mechanisms could account for the association of white matter hyperintensities with dementia. The authors' two most favoured causes are direct damage to the cortical-subcortical neuronal networks and an interaction between white matter lesions and related neuropathological changes, which would imply that the presence of one type of lesion accelerates the expression of the other.

Unexpectedly, the association with dementia was found only in the general population, not in hospital inpatients. The authors argue that once the disease has become clinically apparent the effect of white matter lesions may be less important, and that other factors such as Alzheimer related neuropathology may be more important in this phase of the disease. However, white matter hyperintensities only partially identify underlying white matter pathology but are associated with lesions developing in surrounding tissue, as measured by sensitive measures such as diffusion weighted imaging.[8] Thus, techniques that are better at detecting ongoing tissue damage may predict cognitive impairment also when the disease has become clinically evident.


Faces of Meth
3 years, 5 months later

EMA
Emergency Medicine Australasia

doi: 10.1111/j.1742-6723.2012.01542.x

Emergency Medicine Australasia (2012) **24**, 339–342

CASE REPORT

Ecstasy-induced acute coronary syndrome: Something to rave about

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Abstract

Ecstasy or 3,4-methylenedioxymethamphetamine is a commonly used illicit recreational drug, enjoying popularity for its stimulant effects. Although acute coronary syndrome is recognized after cocaine and methamphetamine use, association with Ecstasy use has rarely been reported. We report three cases of significantly delayed acute coronary syndrome and ST elevation myocardial infarction related to ingestion of Ecstasy.

Key words: *designer drug, emergency medicine, myocardial ischaemia.*

EMA Emergency Medicine Australasia

doi: 10.1111/j.1742-6723.2012.01590.x *Emergency Medicine Australasia* (2012) **24**, 553–559

PUBLIC HEALTH

Morbidity associated with amphetamine-related presentations to an emergency department: A record linkage study

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Abstract

Objective: Amphetamine use is a global public health problem. We examined hospitalisations in a cohort of 138 patients who presented with an amphetamine-related problem to an ED in 2005.

Methods: A record linkage study, using the morbidity, ED and mortality databases in the Data Linkage Unit of the Department of Health, Western Australia. The main outcome measures were hospital separations and length of stay (LOS) 5 years before and 4 years after entry into the cohort.

Results: One hundred and thirty patients (94%) with an amphetamine-related presentation had a link with the hospital morbidity dataset. The most common diagnosis before and after cohort entry was mental disorders (before: F00-F99; 405 separations, total LOS 2570 days; after: 309 separations, total LOS 3671 days). Injury and poisoning was the next most common in both time periods. Men had an increased relative risk (RR) for all days of psychiatric care (RR 2.12, 95% CI 1.04–4.35). After adjusting for age and sex, the highest risks of increased LOS occurred within 1 year before (RR 2.22, 95% CI 1.01–4.91) and 2 years post entry into the cohort (RR 4.21, 95% CI 1.87–9.46 and RR 2.82, 95% CI 1.25–6.34). There were four (2.9%, 95% CI 0.9–7.7%) deaths, which occurred within 2 years post cohort entry.

Conclusion: Amphetamine-related presentations to the ED are associated with a significant cluster of hospitalisations around that episode. This is most prominent for psychiatric diagnoses, with a large increase in the total LOS in the year following cohort entry. Counselling less risky behaviour might decrease the burden of illness.

BEIGE

SMACK

HORSE

WHITE

HAMILER

Journal of Substance Use, October 2008; 13(5): 299–307

informa
healthcare

ORIGINAL ARTICLE

A PROSPECTIVE STUDY OF NON-FATAL HEROIN OVERDOSE

D. M. FATOVICH[1], A. BARTU[2], & F. F. S. DALY[1]

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Abstract

Aims: We aimed to study the prevalence, characteristics and outcomes of patients presenting with non-fatal heroin overdose.
Design: Prospective observational study.
Setting: Emergency Department (ED).
Participants: Patients attending with non-fatal heroin overdose.
Intervention: Nil.
Measurement: Descriptive and epidemiological data.
Findings: Two-hundred-and-forty-nine overdoses in 224 patients (61.2% male, range 15–49 years). Mean reported age of first heroin use was 18.8 years (range 10–42). Forty-two per cent reported a previous heroin overdose requiring hospital intervention. Co-ingestants included benzodiazepines (61, 27.2%), alcohol (35, 15.6%), cannabis (25, 11.1%), amphetamines (13, 5.8%) and hallucinogens (3, 1.3%). Most patients experienced a benign course; 81 of 115 ambulance presentations (70.4%) received prehospital naloxone and 23 (9.2%) received naloxone in the ED; 67.9% had no investigations and complications were uncommon (two aspiration, one hypoxic brain injury). Median length of stay was 180 min (15 min to 48 h). Only 29 (11.6%) presentations required admission. There were 15 individuals (6.7%) who had 40 (16.1% of the total) repeat presentations.
Conclusions: Heroin overdose tends to occur in experienced users who commonly co-ingest other drugs. There is a trend of overdose occurring with increasing frequency in teenage females. Repeat overdosing is common. However, while morbidity is low, these patients require considerable resources.

Keywords: *Heroin overdose, emergency department, naloxone.*

SHORT-TERM EFFECTS	SHORT TERM EFFECTS OF HIGHER DOSES	LONG-TERM EFFECTS
• pain relief	• breathing becomes even more depressed	• dependence
• shallow breathing	• pupils narrow to pinpoints	• loss of appetite
• nausea and vomiting	• skin is cold to touch	• chronic constipation
• constipation	• the central nervous system can be depressed to the point where heart rate and breathing stop and possibly lead to death	• heart, chest and bronchial problems
• feeling of wellbeing		• women often experience irregular menstruation and are susceptible to infertility
• sleepiness		• men can experience impotence
• loss of balance		
• reduced coordination		

Emergency Medicine Australasia (2010) **22**, 240–245 doi: 10.1111/j.1742-6723.2010.01290.x

TOXICOLOGY

EMA

Morbidity associated with heroin overdose presentations to an emergency department: A 10-year record linkage study

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Abstract

Introduction: To examine hospitalizations in a cohort of 224 patients who presented with non-fatal heroin overdose to an ED.

Methods: A record linkage study, using the morbidity, mental health and mortality databases in the Data Linkage Unit of the Department of Health, Western Australia. The main outcome measures were hospital separations 5 years before and after entry into the cohort.

Results: Before entry into the cohort, 199 (89%) patients had an admission to mental health services. These 199 had a combined total of 1367 separations, most commonly for a mental health condition, injury or poisoning. Women had more than twice the relative risk (RR) of men for all separations (RR 2.35, 95% confidence interval [CI] 1.96–2.82, $P < 0.001$) and for injury and poisoning separations (RR 2.04, 95% CI 1.56–2.66, $P < 0.001$). The highest concentrations of separations occurred within 1 year before and 1 year after entry into the cohort. There were 12 (5.4%, 95% CI 2.9–9.4%) deaths, most commonly from overdose.

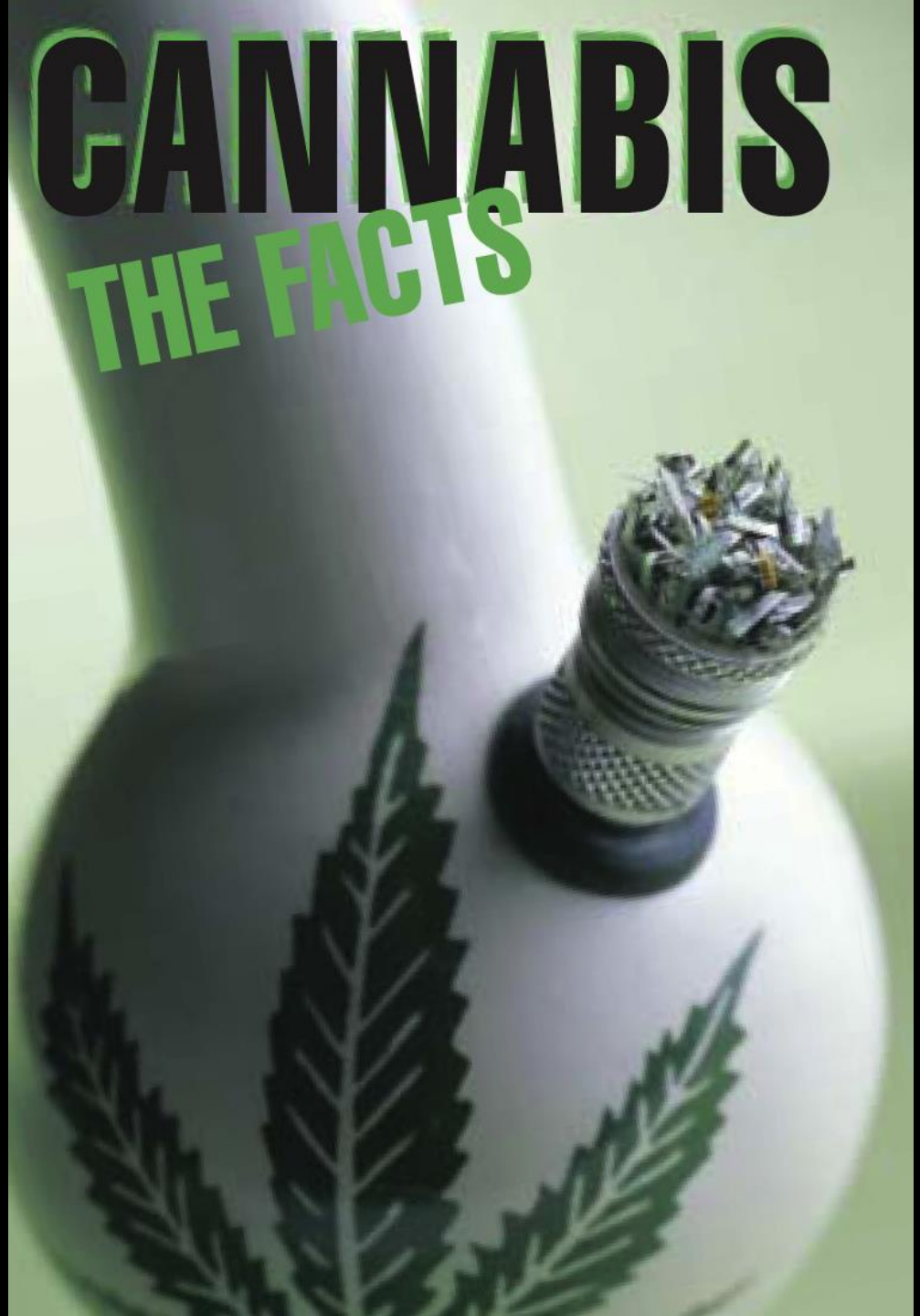
Conclusion: Non-fatal heroin overdose ED presentations are associated with a cluster of hospitalizations around that episode, likely to be related to heroin availability. Presentation to hospital by heroin users represents an opportunity to counsel less risky behaviour.

Table 1. Frequencies of Principal diagnosis by ICD chapter and sex for all separations within the study period

ICD chapter	Male	Female	Total
Infectious diseases	17	7	24
Neoplasms	1	3	4
Diseases of blood	1	1	2
Endocrine disorders	12	3	15
Mental disorders	210	246	456
Diseases of nervous system	5	5	10
Diseases of ear and mastoid process	0	1	1
Diseases of circulatory system	6	1	7
Diseases of respiratory system	10	17	27
Diseases of digestive system	22	15	37
Diseases of skin	16	9	25
Diseases of musculoskeletal system	18	9	27
Diseases of genitourinary system	10	29	39
Complications of pregnancy	0	140	140
Congenital anomalies	0	2	2
Symptoms/signs and ill-defined conditions	26	28	54
Injury and poisoning	203	258	461
Supplementary classifications	10	26	36
Total	567	800	1367

CANNABIS

THE FACTS



SHORT-TERM EFFECTS	SHORT-TERM EFFECTS OF HIGHER DOSES	LONG-TERM EFFECTS
• loss of concentration • impaired balance • loss of inhibitions • reduced coordination • feeling of wellbeing • increased heart rate • reddened eyes • increased appetite • talkativeness • tunnel awareness - where a person focuses their awareness on one thing	• confusion • restlessness • detachment from reality • excitement • hallucinations • anxiety • panic attacks • respiratory problems • mental health problems in those who are vulnerable	• bronchitis • lung cancer • decreased concentration • decreased memory and learning abilities • dependence • interference with sexual drive and hormone production • mental health problems in those who are vulnerable

Science News

Long-Term Cannabis Users May Have Structural Brain Abnormalities

ScienceDaily (June 3, 2008) — Long-term, heavy cannabis use may be associated with structural abnormalities in areas of the brain known as the hippocampus and amygdala, according to a new article.

See Also:

Health & Medicine
- Controlled Substances
- Chronic Illness
- Pharmacology

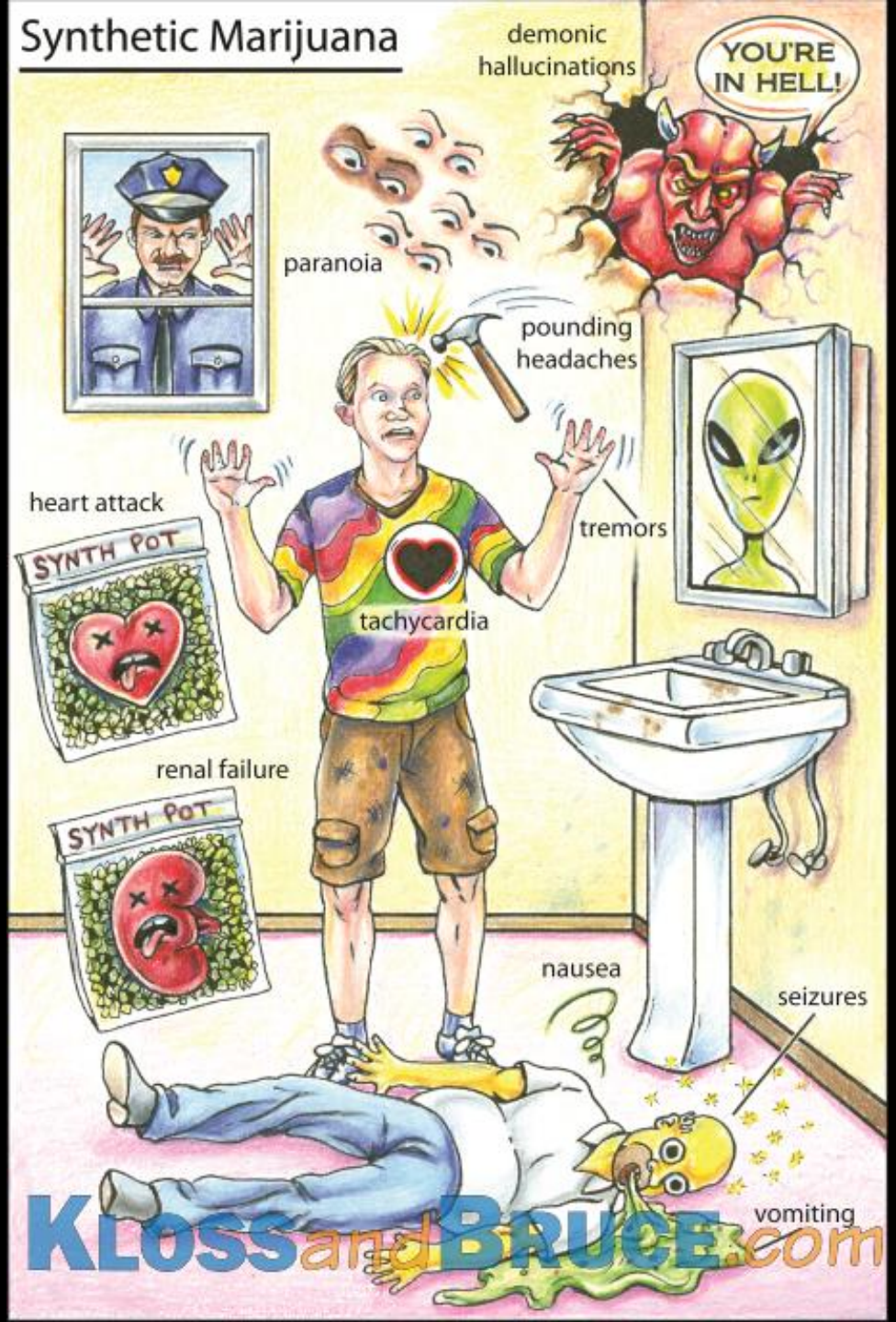
Mind & Brain
- Marijuana
- Brain Injury
- Intelligence

Reference
- Cannabis

Conflicting evidence exists regarding the long-term effects of cannabis use, according to background information in the article. "Although growing literature suggests that long-term cannabis use is associated with a wide range of adverse health consequences, many people in the community, as well as cannabis users themselves, believe that cannabis is relatively harmless and should be legally available," the authors write. "With nearly 15 million Americans using cannabis in a given month, 3.4 million using cannabis

The hippocampus, thought to regulate emotion and memory, and the amygdala, involved with fear and aggression, tended to be smaller in cannabis users than in controls. (Credit: iStockphoto/Yasmin Gahtani)


3
Kronic


Synthetic Marijuana
demonic hallucinations
YOU'RE IN HELL!
paranoia
pounding headaches
heart attack
SYNTH POT
tremors
tachycardia
renal failure
SYNTH POT
nausea
seizures
vomiting
KLOSS and BRUCE.com

Freeman M. Ischemic stroke after use of the synthetic marijuana "spice." Neurology 2013;81:2090-3

Spike Nation

Cheap, unpredictable and hard to regulate, synthetic marijuana has emergency responders scrambling to save lives.

By STEVE FEATHERSTONE JULY 8, 2015

CRACK

CHARLIE

COKE

C

FREEBASE

SHORT-TERM EFFECTS	EFFECTS OF HIGHER DOSES	LONG-TERM EFFECTS
• increased breathing rate	• intense anxiety and cold sweats	• dependence
• increased pulse rate	• sleeplessness	• tolerance
• high body temperature	• heart seizures	• aggressive or violent behaviour
• increased blood pressure	• uncontrollable tremors	• loss of appetite
• reduced appetite	• arms and legs may feel heavy	• irritability or emotional disturbances
• anxiety	• aggressive behaviour	• restlessness
• increased alertness	• depression	• paranoia
• irritability	• confusion	• periods of psychosis
• feeling of wellbeing	• fainting	• auditory hallucinations
• suspiciousness	• hallucinations	• convulsions
• exaggerated feelings of confidence and energy	• overdose	• weight loss
• enlarged pupils	• sensations of insects crawling on or under the skin	• malnutrition
• inability to sleep	• burst blood vessels in the brain	• reduced resistance to infection
	• psychosis (a serious break with reality, hallucinations and delusions)	

LETTER TO THE EDITOR

Cocaine dependence: a fast-track for brain ageing?

Molecular Psychiatry advance online publication, 24 April 2012; doi:10.1038/mp.2012.31

Cocaine-dependent individuals anecdotally appear aged and their mortality rates are estimated up to eight times higher than in the healthy population.[1] Psychological and physiological changes typically associated with old age such as cognitive decline, brain atrophy, or immunodeficiency are also seen in middle-aged

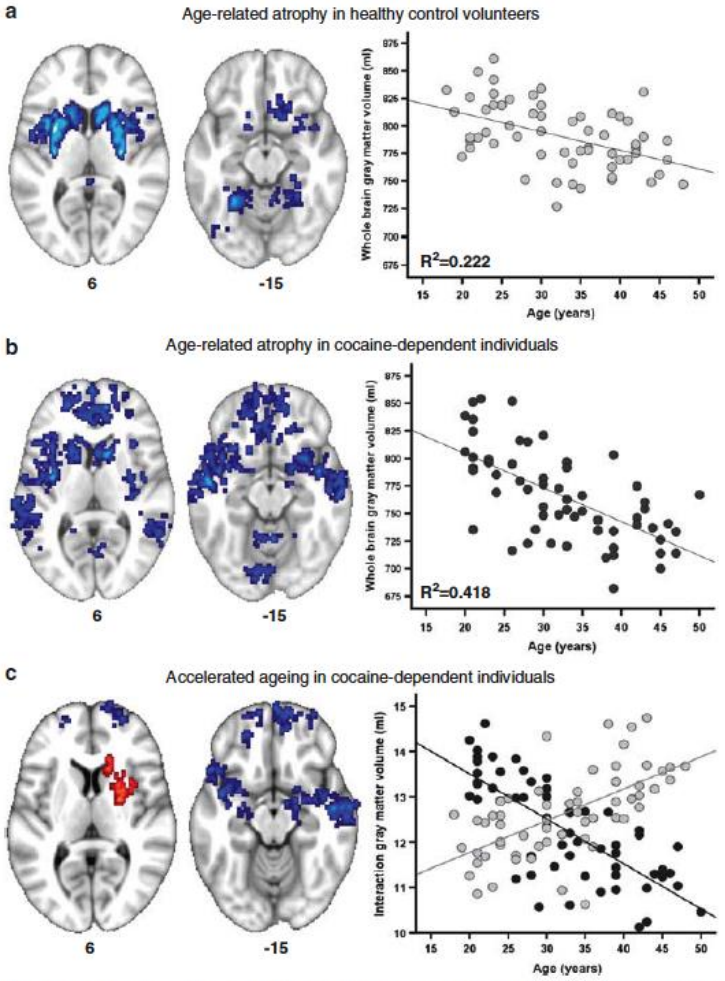


Figure 1. Age-related changes in gray matter volume in 60 healthy volunteers and 60 cocaine-dependent individuals. The brain maps show regions of age-related gray matter volume loss separately in healthy volunteers (**a**) and cocaine-dependent individuals (**b**); the scatter plots next to the brain maps show age versus the gray matter volume in these regions for each participant in each group (black circles, cocaine-dependent individuals; gray circles, healthy volunteers). (**c**) A direct comparison of age-related gray matter decline between the two groups revealed a significant group-by-age interaction such that cocaine-dependent individuals showed significantly greater atrophy in prefrontal and temporal-brain regions (blue regions) compared with controls and they showed a lack of normal age-related volume loss in the striatum (red regions). The scatter plot shows the mean volumes of brain regions where there was a significant group-by-age interaction. Left side of the brain is shown on the left side of each slice; the numbers denote *z*-coordinates for each slice in standard stereotactic space.

ACID

TABS

LSD

TRIPS

MAGIC MUSHROOMS


CHILL PILL
FATHER OF LSD
ALBERT HOFMANN
1943 1995
2000
Curious George
Erowid.org
Erowid.org
Erowid.org
Erowid.org
Ha

SHORT-TERM EFFECTS	LONG-TERM EFFECTS
• dilation of the pupils	• flashbacks – a spontaneous and unpredictable recurrence of a prior drug experience (tripping) without taking the drug. Flashbacks may occur days, weeks or years after the drug was last taken. They can be triggered by the use of other drugs, stress, fatigue, and physical exercise or for no apparent reason.
• increase in heart rate and blood pressure	• increased risk of developing severe mental disturbances in those who have a predisposition to the condition
• increase in body temperature and sweating	• impaired memory and concentration


"HEAVEN"
(THE ORIGINAL U.S.A.)
GHB
PURE
ECSTACY

GHB

1 2 3 4

GHB is a central nervous system depressant with hypnotic, amnesic and sedative effects. GHB is available in powder, liquid, capsule or tablet form. It can be administered orally or through intranasal or injection methods.

GHB or Gamma-hydroxybutyrate

GHB is a drug commonly found in the dance scene and is sometimes referred to as liquid ecstasy due to its stimulating, euphoric and supposed aphrodisiac qualities. Chemically-speaking, it is not related to MDMA at all. Mildly salty in flavour, yet colourless and odorless, it's also used a date-rape drug – when mixed with alcohol, it can intoxicate quickly.

Other names include: Fantasy, grievous bodily harm (GBH), liquid ecstasy, liquid E, G.

More detailed information is available on GHB as well as the facts at a glance below.

GHB facts at a glance

The signs and symptoms of using GHB can include:

- Drowsiness
- Induced sleep
- Nausea
- Reduced inhibitions
- Dizziness
- Headache
- Confusion and agitation

The consequences of using GHB may include:

- Extreme drowsiness/grogginess
- Hallucinations
- Difficulty focussing eyes
- Vomiting
- Impaired movement and speech
- Reduced muscle tone
- Disorientation
- Convulsions/seizures
- Coma
- Respiratory distress
- Slowed heart rate
- Lowered blood pressure
- Amnesia
- Death
- Can be addictive with prolonged use

A bolt out of the blue: the night of the blue pills

Public warnings about clusters of cases ... should be issued on the basis of clinical presentations rather than of definitive analyses

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doi: 10.5694/mja14.01317

Clinical record

A cluster of 10 patients presented during the night of 31 December 2013 to the emergency department of Royal Perth Hospital with states of agitated delirium or exhibiting unusual behaviour. Eight of the patients had attended an open-air dance party in the city close to the hospital, and nine had arrived by ambulance. All except one admitted to taking non-prescription drugs in tablet form, most believing they were consuming ecstasy (3,4-methylenedioxymethamphetamine, MDMA) in the form of blue or grey pills, in several cases imprinted with a lightning bolt. Media warnings had already been issued in response to similar cases involving acute psychosis reported by another metropolitan emergency department (Fremantle Hospital).[1,2]

The median age of the patients in our cluster was 20 years (interquartile range [IQR], 18–22 years). The median initial heart rate was 115 beats per minute (IQR, 84–155 beats per minute). Four patients were febrile (temperature ≥ 37°C) but only one had a temperature greater than 38°C. All patients had dilated pupils (median width, 6 mm [IQR, 5–7 mm]). Five patients required intravenous sedation, and in two cases more than 50 mg diazepam was required.

The patients had posed a significant risk to themselves before attending the emergency department: one had been found collapsed on the dance floor, another had wandered through vehicular traffic, and a third had fallen after climbing an 11 metre-high lighting rig.

The clinical syndrome included a state of agitated delirium, with labile mood, tachycardia, dilated pupils, sweating and, in several patients, involuntary movements. Clonus was present in only one case. One patient tried several times to hit staff members, while another spat at them. The most severely affected patient developed status epilepticus, and required intubation and admission to the intensive care unit. After recovery, he stated it was only the second time he had used non-prescription drugs.

The cluster of patients had a significant impact on emergency department resources. They comprised 10 of the 83 patients who presented to the department in the 7-hour period between 19:55 and 02:55. Many required intensive nursing care and intravenous sedation. One patient flipped over the safety railing of his trolley and landed on his head, but was not significantly injured. The median hospital length of stay was 5.4 hours (IQR, 3.0–11.9 hours).

Emergency treatment of the patients followed standard procedures for a sympathomimetic syndrome,[3] and included oral or intravenous administration of benzodiazepines and fluids, observation and, in one case, intubation and cooling for status epilepticus. In patients for whom benzodiazepines were indicated, unusually large doses were needed to achieve adequate sedation.

Blood samples were taken from nine of the patients when intravenous cannulae were inserted as part of routine clinical care. Retrospective analysis of stored plasma samples using liquid chromatography–mass spectrometry was undertaken 40 days later by ChemCentre forensic laboratories (Perth, WA) to attempt to identify the substances responsible for the patients' symptoms. Results were compared with a large library of conventional and novel recreational drugs.

No novel synthetic agents were identified, but methamphetamine was detected in samples from two patients. The clinical syndrome observed and the absence of evidence for conventional drugs of misuse in all but two of the samples aroused suspicions of unidentified synthetic drugs. As analysis of drugs recently seized by police indicated that many "ecstasy tablets" contained high amounts of caffeine, caffeine levels were assessed in our samples, but were found to be uniformly low. Most of the tablets taken by the patients had been marketed as ecstasy, but no MDMA was detected in any of the plasma samples. Interestingly, lactate levels were elevated in all patients (median concentration, 3.1 mmol/L; IQR, 2.5–3.8 mmol/L), and all samples but one contained high levels of ethanol (median concentration, 180 mg/100 mL; IQR, 140–220 mg/100 mL).

Discussion

The continued emergence of novel synthetic recreational drugs is a growing problem in many countries, and the short- and long-term effects of these compounds are poorly understood. There have been recent deaths in Australia linked with such substances.[4] Little reliable information is readily available to inform either users or clinicians.

There are several possible technical reasons why new synthetic

Lessons from practice

- The use of novel synthetic drugs is an increasing problem.
- There is little reliable information to inform users or clinicians about these drugs.
- The optimal use of the media to warn potential users is yet to be defined.
- Future storage and analysis of substances should take into account their potential instability and low plasma concentrations.

SOCIAL DETERMINANTS OF HEALTH

Social determinants of health are considered the complex, integrated and overlapping social structures & economic systems that are responsible for health inequities.