

# **THE DEVELOPMENT OF MATERIALS ON ECSTASY AND RELATED DRUGS (ERDS) FOR HEALTH CARE PRACTITIONERS**

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## ABBREVIATIONS

5-HTP	5-hydroxytryptophan
ACT	Australian Capital Territory
ADHD	Attention deficit hyperactivity disorder
ADRAC	Adverse Drug Reactions Advisory Committee
BDI	Beck Depression Inventory
BZP	Benzylpiperazine
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPDP	Continuing Professional Development Program
DMT	Dimethyltryptamine
DXM	Dextromethorphan
ERDs	Ecstasy and related drug(s)
FRACGP	Fellowship of the Royal Australian College of General Practitioners
GHB	Gamma-hydroxybutyrate
GP	General practitioner
HATS	Hunter Area Toxicology Service
IT	Information technology
LSD	<i>l</i> -lysergic acid
MAO	Monoamine oxidase
MAOI	Monoamine oxidase inhibitor
MDA	3,4-methylenedioxyamphetamine
MDMA	3,4-methylenedioxymethamphetamine
NARI	Noradrenaline reuptake inhibitor
NASSA	Noradrenaline and specific serotonin antagonist
NCIS	National Coroners Information System
NMS	Neuroleptic malignant syndrome
NSW	New South Wales
NT	Northern Territory
PCP	Phencyclidine
PMA	Paramethoxyamphetamine
QLD	Queensland
REU	Regular ecstasy user(s)
RIMA	Reversible inhibitor of monoamine oxidase
SA	South Australia
SDS	Severity of Dependence Score
SNRI	Serotonin-noradrenaline reuptake inhibitors
SPSS	Statistical Package for the Social Sciences
SSRI	Selective serotonin reuptake inhibitor
TAS	Tasmania
TCA	Tricyclic antidepressants
VIC	Victoria
WA	Western Australia

## EXECUTIVE SUMMARY

The amphetamine derivative 3,4-methylenedioxymethamphetamine (MDMA) or 'ecstasy' is a widely used illicit drug. Research consistently shows that extensive polydrug use is the norm among ecstasy and related drug (ERDs) users and that a range of pharmaceuticals (e.g. benzodiazepines, sildenafil) and supplements (e.g. 5-hydroxytryptophan (5-HTP), St. John's wort) are deliberately combined with ecstasy, often for contradictory purposes. This practice is of concern as the popularity of ecstasy is continuing to increase in Australia and a number of ecstasy-pharmaceutical combinations can have serious health consequences. One of the emerging harms associated with ecstasy use is serotonin toxicity, commonly referred to as serotonin syndrome.

Generally, doctors are well positioned to respond to patients with drug-related issues because of their accessibility, credibility and likely frequent exposure to patients with substance use problems. Evidence also suggests that people prefer a response to substance use problems to come from their general practitioner (GP). Unfortunately, there is evidence that the involvement of GPs in screening for illicit drug use is limited, and consequently many problems may remain undetected or be misdiagnosed. Little is known about the extent of screening for ERDs use when young people are prescribed pharmaceutical drugs by their GP. Furthermore, among Australian healthcare professionals in general practice and hospital settings, there is a lack of research exploring the awareness of ERDs and the potential harms of concomitant use of pharmaceutical drugs. The present study grew from these concerns, and aimed to:

- Identify gaps in knowledge among GPs about the effects and harms of ERDs use and the management of young people who are prescribed pharmaceutical drugs.
- Identify gaps in knowledge among frontline (e.g. Emergency Department) healthcare professionals about the effects and harms of ERDs use.
- Identify the patterns of use related to the practice of combining ecstasy with pharmaceutical drugs, in particular antidepressants, and to explore the experiences of ERDs users when visiting a GP.
- Inform the development of resource materials on ERDs for healthcare practitioners.

### Serotonin toxicity

The view that serotonin toxicity is a drug-induced toxic state caused by an excess of serotonin within the central nervous system has been well supported over several decades. A comprehensive review of the literature reveals that numerous substances have been implicated in serotonin toxicity including a range of illicit drugs (e.g. ecstasy, methamphetamine, cocaine, *d*-lysergic acid (LSD)), antidepressants (e.g. *Nardil*, *Prozac*, *Aurorix*, *Efexor*), opiate analgesics (e.g. tramadol), migraine medications (e.g. dihydroergotamine) and supplements (e.g. St. John's wort, 5-HTP). When these substances are used with ecstasy, there is a demonstrated potential for increased toxicity.

### **Survey of general practitioners**

A random sample of 2000 GPs stratified to include metropolitan and non-metropolitan areas across Australia were surveyed. Questionnaires were returned by 199 GPs. The mean age of GPs was 54 years and the majority were male.

This study identified numerous deficits in relation to GP's knowledge of ERDs and associated problems. Among GPs there was a self-reported lack of knowledge about ecstasy and ecstasy-related problems, and subsequently, a majority reported they did not feel well prepared to discuss the health risks associated with ecstasy use. Only half of GPs reported having a clear idea of their responsibilities in helping patients who were using ecstasy. A relatively small minority of GPs agreed they had a working knowledge of other drugs such as methamphetamine and gamma-hydroxybutyrate (GHB). There was a strong demand for ERDs-related resource materials among GPs.

ERDs-related presentations were commonly reported by GPs. Approximately half of the GPs surveyed mentioned that they saw such presentations on a yearly or more frequent basis. GPs were more likely to see methamphetamine-related presentations than ecstasy-related presentations. Presentations related to GHB were very rarely seen by GPs in their practice.

Among GPs overall, there was limited evidence of screening for ecstasy use when prescribing antidepressants or sildenafil (e.g. *Viagra*) to young patients (i.e. aged less than 30 years). Only a small minority routinely (e.g. always) screened for ecstasy use when prescribing antidepressants. Younger GPs, and those who saw ecstasy-related presentations more frequently, were more likely to screen for ecstasy use when prescribing antidepressants to young patients. Of further concern is that on those occasions when GPs prescribed antidepressants, few routinely discussed the complication of serotonin toxicity with their patients. Acute presentations of serotonin toxicity were seen very infrequently by GPs.

### **Survey of frontline healthcare professionals**

An additional arm of this project included the delivery of a presentation on current trends in ERDs and associated problems to interested frontline healthcare professionals at 12 hospitals in major centres across Australia. Attending healthcare professionals completed a survey which aimed to identify gaps in knowledge about the effects and harms of ERDs use, the incidence of ERDs-related presentations and resource development.

In contrast to the findings from GPs, a substantial majority of frontline healthcare professionals agreed they had a working knowledge of ecstasy, methamphetamine, GHB, cocaine and ketamine (in the context of illicit use). Subsequently, a large majority felt prepared to discuss the health risks associated with the use of these drugs. There was a strong demand for ERDs-related resource materials among frontline healthcare professionals, particularly in relation to the clinical management of ERDs users.

ERDs-related presentations were seen with greater frequency in the hospital setting than in general practice. Among frontline healthcare professionals, acute presentations related to methamphetamine were most commonly reported, this was followed by ecstasy- and GHB-related presentations. Contrary to reports in the popular media, only a relatively small proportion of frontline healthcare professionals saw ERDs-related presentations on a daily basis. As would be expected, acute presentations of serotonin toxicity were more

commonly reported by frontline healthcare professionals at major hospitals than by GPs in their practice.

### **Interviews with ERDs users**

Evidence that healthcare professionals in general practice and the hospital setting regularly manage patients with ERDs-related problems suggested a need to explore, in more depth, the experiences of ERDs users when they use serotonergic drugs and substances. In-depth interviews were conducted with 30 ERDs users who had recently combined ecstasy and antidepressant drugs.

The mean age of participants was 34 years and the majority were male. Participants reported the recent use of ecstasy and a wide range of other licit and illicit drugs, several of which have been implicated in serotonin toxicity. The majority of participants had recently used the powdered ('speed') or crystalline ('ice') form of methamphetamine and all reported an extensive history of cannabis use. Consistent with selection criteria, a large proportion of participants were regularly taking antidepressant drugs for a current health condition. Participants, on average, reported low levels of depressive symptoms.

There was generally a high incidence of the use of prescription pharmaceuticals with ecstasy among participants. This included the use of antidepressant drugs for non-medical purposes to counteract the negative after-effects of ecstasy, and to a much lesser extent, the use of antidepressants putatively to intensify and lengthen the ecstasy 'high'. Benzodiazepines (e.g. *Valium*) or sleeping tablets were typically used with ecstasy to assist with sleep during the 'comedown' period. Sildenafil and other similar drugs were frequently used with ecstasy to counteract the erectile dysfunction secondary to ecstasy use. This practice is of some concern as the use of sildenafil and other similar drugs in this way may lead to an increased likelihood of sexual risk-taking while intoxicated. Other substances taken before, during or after ecstasy use included methylphenidate (e.g. *Ritalin*), 5-HTP, St. John's wort and multivitamins.

It was not uncommon for pharmaceutical drugs to be attained without prescription, and friends were the main source of prescription drugs attained in this way. The second most common source of pharmaceutical drugs was from drug dealers. Benzodiazepines, sildenafil and antidepressants were the drugs most commonly acquired from these sources.

The majority of participants had told their GP about their use of ecstasy and the GP's response in most cases was reported to be professional and non-judgemental. For many, the nature of the therapeutic relationship was such that they would feel comfortable raising questions about ecstasy and other drugs with the GP they saw regularly.

During consultations where participants were prescribed pharmaceutical drugs such as antidepressants, sildenafil, benzodiazepines and sleeping tablets, few mentioned that the GP asked them about their use of ecstasy, however, in many cases, the GP already knew of their ecstasy use. Based on participants' experiences when they visit a GP, prior to being prescribed benzodiazepines, sleeping tablets or antidepressants, most were assessed for symptoms of anxiety, sleeplessness or depression respectively. When prescribed sildenafil and other similar drugs, however, only a small minority reported being screened for erectile dysfunction. In cases where GPs prescribed benzodiazepines and sleeping tablets, it was encouraging to find that they frequently discussed with patients possible alternatives to taking the pharmaceuticals prescribed.

## Recommendations

This study highlights that a wide range of drugs and supplements have serotonergic properties and have been implicated in serotonin toxicity. When used with ecstasy, many of these substances have a demonstrated potential for increased toxicity, this is particularly the case with some antidepressants. As perhaps would be expected, ERDs-related presentations were found to be more common in the acute hospital setting than in general practice. Nevertheless, in both settings there was a strong demand for ERDs-related resource materials. There is convincing evidence that, among GPs, screening patients for ecstasy use is rarely carried out. In-depth interviews with ERDs users revealed a group of polydrug users potentially at risk of serious health consequences. In regard to the findings presented here, a number of recommendations are enunciated below:

### *General practitioners*

It is important that GPs are well informed of the effects of ERDs and the harms associated with their use. A strong demand for such information has been demonstrated and resources which focus on the following are likely to be of benefit to GPs:

- Management of ERDs users in general practice
- Referral of ERDs users
- Effects and harms of ERDs
- Effects and harms of ERDs and the concomitant use of pharmaceutical drugs
- Harm minimisation strategies for ERDs users
- Specific information on ecstasy, methamphetamine, GHB and ketamine
- Screening of patients who present to GPs with symptoms related to ERDs use

Methods of resource delivery which are likely to be effective in the general practice setting may include:

- Pamphlets and booklets
- Fact-sheets and bulletins
- Continuing Professional Development Programs (CPDP)
- Internet-based resources (e.g. *Medical Director*)
- Seminars/workshops

Collaboration with organisations such as the Fellowship of the Royal Australian College of General Practitioners (FRACGP) or the Australian Medical Association (AMA) would help facilitate the development and implementation of a series of ERDs-related seminars or workshops specifically tailored to the needs of GPs.

In addition, information may be disseminated through existing publications for medical practitioners (e.g. *Medical Observer*, *Australian Medicine*). This could be in the form of a series of ERDs-related articles appearing over several weeks or months. Consideration should also be given to purchasing space within these publications where bulletins or fact-sheets pertaining to ERDs can be published.

GPs are ideally placed to respond to people who present with drug-related problems. There is evidence that screening for ecstasy use was limited among GPs. This strongly suggests a need to increase awareness among GPs of the importance of screening for ERDs use, especially among younger patients, and to develop a screening tool that will improve the screening of patients who present to GPs with ERDs-related symptoms.

There is also scope for developing an ERDs-related training module suitable for graduate medical programs. Collaboration with tertiary institutions may help to facilitate this.

#### *Frontline healthcare professionals*

Frontline healthcare professionals have a set of needs in relation to resources on ERDs which vary somewhat from those of GPs. For this group, resources which focus on the following are likely to be of benefit:

- Clinical management of ERDs users in the acute care setting
- Referral of ERDs users
- Effects and harms of ERDs
- Effects and harms of ERDs and the concomitant use of pharmaceutical drugs

An internet or web-based resource would be easily accessible to frontline healthcare professionals who frequently work in a busy clinical environment. A resource with a focus on the clinical management of ERDs users in the hospital setting would be particularly well received. Attention should be paid to providing information on methamphetamine and GHB, as acute presentations to hospitals are frequently associated with these drugs.

The development of a brief intervention, with proven efficacy, which can be administered by frontline healthcare professionals prior to the discharge of a patient who has presented with ERDs-related problems is essential. Such a brief intervention may also help to increase the referral of people with ERDs-related problems to drug and alcohol treatment services. Developing a brief intervention for people who have presented to hospital after GHB overdose is a priority.

Given the success of the ERDs presentations delivered to frontline healthcare professionals as part of this study, consideration should be given to the development of a formal series of ERDs-related presentations that could be delivered to healthcare professionals in the hospital setting.

Potential also exists to adapt the Ecstasy and Related Drug Trends Bulletin, published quarterly by NDARC as part of the Ecstasy and Related Drug Reporting System (EDRS), for GPs and frontline healthcare professionals and distribute it to interested clinicians.

#### *Ecstasy and related drug users*

The use of a wide range of licit and illicit substances by ERDs users is of concern. There is a need to more clearly delineate strategies which will inform users of the potential harms of this practice. It is crucial that resources targeting ERDs users, and young people who may be more likely to experiment with ERDs, be developed which focus on the following:

- Strategies to prevent ERDs use

- Harms associated with ERDs use
- Potential harms of combining ERDs with pharmaceutical drugs
- Strategies to minimise the harms associated with ERDs use
- Accessing drug and alcohol treatment services

The following approaches are likely to be effective in accessing ERDs users:

- Pamphlets and booklets
- Internet and web-based sites aimed at young people
- Internet and web-based sites aimed at ERDs users
- Fact-sheets (linked to internet and web-based sites)

Forming partnerships with organisations that maintain existing, popular, youth-oriented internet sites (e.g. *Enlighten*) may be a way to further disseminate relevant health information to ERDs users.

Peer-led education interventions play an important role in propagating health messages to young people about the harms associated with ERDs use. Collaboration with established peer-led education organisations (e.g. *KIS*, Manly Drug Education and Counselling Centre, NSW; *Save-a-mate*, Red Cross, Australia) is vital.

There is scope to develop ERDs-related learning modules specifically for peer-led organisations. These modules could then be offered to peer-led education organisations and subsequently integrated into the training these organisations provide for their peer educators on ERDs.

In addition, collaboration with relevant government departments (e.g. Department of Education, Science and Training; DEST) will aid the development and implementation of best practice policies in education and training related to ERDs. For example, findings from this study could be used to enhance school-based resources such as the Resilience Education and Drug Information (REDI) resources, part of the National School Drug Education Strategy (NSDES), which focuses on preventing and reducing drug related harm in young people.

#### *Further ERDs-related research*

As large gaps still remain in knowledge about the effects of ERDs and their potential to interact with pharmaceuticals, supplements and each other further research into this area is essential. There is a pressing need to explore the long-term effects of ERDs use and a prospective study, preferably utilising a large cohort of ERDs users, would be valuable and contribute greatly to current knowledge.