



Why have pill testing when most ecstasy deaths are from normal doses of MDMA?

Eight central issues for the Australian Greens

1. There are no mysteries about party pill deaths in Australia. Almost all, according to the many Coroner's reports, are from ecstasy itself
2. Very few party pill deaths in Australia have been from unknown other drugs contained in ecstasy pills, and the only Australian study on ecstasy-related deaths mentions no Coroner-reported deaths from other contaminants or impurities
3. Ecstasy overdose is rare, with most dying from MDMA used at normal recreational levels or in combination with other legal or illegal drugs. Many die because of something akin to an individual allergic reaction to MDMA
4. Pill testing's false sense of safety will only broaden the pool of MDMA initiates, which will *ipso facto* lead to many more users fighting for their lives in Australia
5. Pill testing is inadequate compared to ever-evolving substances potentially in party pills
6. Pill testing will not deter the use of party pills
7. European studies on the claimed 'success' of pill testing fail to demonstrate or even measure reduced mortality
8. There is likely another agenda behind the pill testing push – the normalisation and legalisation of illicit drugs in Australia

**Central Issues
&
Compiled Evidence**

NOTICE TO DECISION MAKERS

This paper has been prepared to inform the Australian Greens Party, (as well as any other political or other decision maker to whom it is sent), on what the medical literature and scientific literature and studies reveal concerning MDMA-related deaths in Australia. This information specifically seeks to address popular arguments heard in relation to whether Australia should support widespread pill testing initiatives particularly as it relates to the rationales given for the pill testing push in this country.

Drug Free Australia contends that there is sufficient reliable information in this document for decision makers to make informed judgments regarding the merits of pill testing. Such decisions should seek to protect those individual users risking death or hospitalisation from MDMA or MDMA when especially used in combination with other legal or illegal drugs.

Drug Free Australia contends that the medical and scientific literature clearly supports the proposition that the risk of actual MDMA-related deaths will be increased far beyond any deaths that may accrue from impurities or other unknown substances upon the introduction of pill testing in Australia, numerically far outweighing any actual deaths that may accrue within the Australian context from impurities or unknown other drugs in party pills or party drugs.

DRUG FREE AUSTRALIA

Eight Central Issues for the Australian Greens

1. There are no mysteries about party pill deaths in Australia. Almost all, according to the many Coroners' reports, are from ecstasy itself

The only study to date on ecstasy-related deaths in Australia shows that of the 82 deaths between 2001 and 2005, 23% were solely from the MDMA in ecstasy pills, with another 59% caused by ecstasy taken in combination with other legal or illegal drugs. 82% of the 82 deaths were attributed to MDMA. The other 18% were "primarily due to pathological events/disease or injury, with MDMA a significant contributing condition."

Analysis of more recent deaths, such as the five NSW festival deaths over the summer of 2018/2019 confirm the same - MDMA is implicated in each.

It is notable that pill testing in the ACT used waivers in case of death, making it clear that pill testing advocates are aware that MDMA is not safe even at lower intakes.

2. Very few party pill deaths in Australia have been from unknown other drugs contained in ecstasy pills, and the only Australian study on ecstasy-related deaths mentions no Coroner-reported deaths from other contaminants or impurities

The three January 2017 deaths in Melbourne from what was purported to be ecstasy pills were rather caused by the drugs 4-FA and 25C-NBOMe, which regular pill testing equipment would read as MDMA. Only the most sophisticated equipment is able to detect these drugs, with samples being sent to Spain for verification. Such equipment is not feasible for on-site testing.

The 20 GHB drug users hospitalized in Melbourne in February 2017 knew they were purchasing GHB, and these should not be confused with MDMA-related hospitalisations. Dr David Caldicott, a pill testing advocate, then said that testing GHB liquid would likely not have stopped those overdoses.

3. Ecstasy overdose is rare, with most dying from MDMA used at normal recreational levels or in combination with other

legal or illegal drugs. Many die because of something akin to an individual allergic reaction to MDMA

Two drug liberalisation organisations in the US, Dancesafe and the Drug Policy Alliance, drug liberalisation organisations with which Australian advocates are ideologically aligned, clearly assert the truth that MDMA overdoses are rare. Medical literature observes that users can take massive amounts of MDMA and live. **At the same time, users die with less than 1/8th the MDMA blood levels (0.1mg/litre) of the average Australian fatality (0.85mg/litre) making pill testing purity assessments of nominal effect in reducing MDMA fatalities.**

Many deaths can be attributed to something akin to an allergic reaction, where four friends can ingest identical MDMA pills purchased from the same dealer but only one die. This was exactly the case with Anna Wood, Australia's first MDMA death in 1995. Some have correctly likened ecstasy use to playing Russian roulette.

The very fact that many users ingest the same MDMA pill, where negative effects are experienced by only some individuals and not others logically implies that substance purity is not the central issue. Most users are unaffected by higher purity within the normal range of recreational use.

The argument that pill testing personnel can enhance safety, advising users to take half or quarter a pill where MDMA purity is high, may be as safe as doctors telling those suffering anaphylactic shock from a peanut allergy that they should eat quarter instead of the whole.

4. Pill testing's false sense of security will only broaden the pool of MDMA initiates, which will *ipso facto* lead to a larger number of users fighting for their lives in Australia

Numerous media stories promoting pill testing position ecstasy use as thereby safer after testing than before. But if almost all MDMA-related deaths are from MDMA itself, rather than impurities or other unknown drugs in the tablet, and if very few are from literal overdose, then pill testing in Australia will hardly make ecstasy use any safer.

Yet greater safety has been openly espoused by major pill testing advocates here in Australia as is witnessed by the very nomenclature of the ACT pill testing trial – STA-SAFE.

The greater safety promised by pill testing will broaden the pool of prospective users, thus leading to increased deaths.

**PILL TESTING WILL INEVITABLY LEAD TO MORE DEATHS
IN AUSTRALIA.**

5. Pill testing is inadequate compared to the ever-evolving substances potentially in party pills

Because of rapid advances in the synthesising of new recreational drugs, pill testing cannot possibly keep pace. While on-site pill testing may identify some unknown other drugs in pills or powders at festivals, a growing list of several hundred other substances may elude detection.

6. Pill testing will not deter the use of party pills

Once any tested pill is pronounced dangerous, users will still want to use drugs, as the harm reduction lobby continues to assert, and will simply ask friends where the good ones can be purchased (but still, regardless, open themselves to the real dangers of taking MDMA).

The claim that pill testing allows medical personnel to advise users that pills can contain bath salts or methamphetamine is easily countered. Flashing signs at the entrance to any festival can achieve the same.

It is claimed that pill testing tents at a festival make the risks of drug use real. A deterrent effect is more easily produced by the visible presence of medical personnel and well-equipped medical stations, not to mention the net effect in reducing hospitalisations and the likelihood of death.

7. European studies on the claimed ‘success’ of pill testing fail to demonstrate or even measure reduced mortality

Current reviews of pill testing in other countries only survey user opinions on the advisability of pill testing. There are no scientific studies showing that pill testing reduces mortality.

8. There is likely another agenda behind the pill testing push – the normalisation and legalisation of illicit drugs in Australia

Google the names of Australia’s most publicised pill testing advocates alongside “cannabis legalisation” and the possibility of a very different agenda is suggested – the normalisation and legalisation of currently illicit drugs.

The evidence supporting each of the eight central issues nominated here is found in the following pages.

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CENTRAL ISSUES FOR THE AUSTRALIAN GREENS - 1

There are no mysteries about party pill deaths in Australia. Almost all, according to the many Coroners' reports, are from ecstasy itself

The only study to date on ecstasy-related deaths in Australia shows that of the 82 deaths between 2001 and 2005, 23% were solely from the MDMA in ecstasy pills, with another 59% caused by ecstasy taken in combination with other legal or illegal drugs. 82% of the 82 deaths were attributed to MDMA. The other 18% were "primarily due to pathological events/disease or injury, with MDMA a significant contributing condition."

Analysis of more recent deaths, such as the five NSW festival deaths over the summer of 2018/2019 confirm the same - MDMA is implicated in each.

It is notable that pill testing in the ACT used waivers in case of death, making it clear that pill testing advocates are aware that MDMA is not safe even at lower intakes.

Coroners complete reports on all pill deaths

For each drug death there is a coroner's report containing a toxicology analysis establishing the cause of death. This happens in every State of Australia, thereby leaving no mysteries as to whether a pill death has been caused by constituents other than MDMA.

Coroner's reports, particularly for deaths at Rave parties or music festivals, are frequently reported on by the Australian print media, although Google appears to now be burying these media reports which were once readily found.

Only Australian study on MDMA deaths shows ecstasy is the killer

The August 2009 study by Sharlene Kaye, Shane Darke and Johan Dufou **Methylenedioxymethamphetamine (MDMA)-related fatalities in Australia: demographics, circumstances, toxicology and major organ pathology** published in the journal *Drug and Alcohol Dependence* 104(3):254-61 is summarized as per its following Abstract:

Methylenedioxymethamphetamine (MDMA)-related fatalities in Australia: Demographics, circumstances, toxicology and major organ pathology

Sharlene Kaye ^a, Shane Darke ^a, Johan Dufou ^b

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<https://doi.org/10.1016/j.drugalcdep.2009.05.016>

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Abstract

Aim

To examine the **demographic characteristics**, circumstances, **toxicology** and major organ pathology of MDMA-related deaths in Australia.

Methods

Retrospective review of cases in which **MDMA** was a **cause of death**, as identified from the National Coronial **Information System**.

Results

82 cases over a 5-year period were identified. The majority of decedents were male (83%), with a median age of 26 years. Deaths were predominantly due to drug toxicity (82%), with MDMA the sole drug causing death in 23% of cases, and combined drug toxicity in 59% of cases. The remaining deaths (18%) were primarily due to pathological events/disease or injury, with MDMA a significant contributing condition. Cardiovascular pathology, typically **atherosclerosis**, was detected in 58% of decedents, with moderate–severe atherosclerosis in 23% of cases. The prevalence of such pathology is higher than that expected among similarly aged members of the general population. **Cerebrovascular pathology**, primarily **cerebral haemorrhage** and hypoxic damage, was present in 12% of cases.

Conclusions

MDMA has contributed to a clinically significant number of deaths in Australia. The prevalence of cardiovascular pathology was similar to that among **methamphetamine** and **cocaine fatalities**. Whilst cardiovascular pathology may reflect the use of other **stimulants**, the cardiotoxic properties of MDMA have been well-documented. Future studies examining MDMA-related **morbidity** and mortality in the context of other risk factors are recommended. Overall, the current study highlights the need to educate users about the potential harms of MDMA use, particularly that in conjunction with other stimulants, **opioids** and alcohol, which are known to increase overall toxicity.

<https://www.sciencedirect.com/science/article/pii/S0376871609002014?via%3Dihub>

What is evident from this study is that roughly a quarter of Australian MDMA deaths from 2001 – 2005 were solely due to MDMA, while almost 60% were due to MDMA being used with other legal and illegal drugs, with MDMA directly responsible for 82% of the 82 deaths. Other deaths were due to accidents or disease.

One thing is clear – there are many more MDMA-related deaths than are reported in the media. Most deaths, according to this study, are not at large music festivals, but rather at home. This then means that pill testing at music festivals would only reach a tiny percentage of those at risk of death from party pills.

Ecstasy deaths under-reported

82 deaths in 5 years is a significant number of drug-induced deaths within Australia over a 5 year period. Most of these deaths would not have received any media attention, perhaps leading to the false impression that there are very few deaths caused by MDMA.

The National Drug and Alcohol Research Centre (NDARC) responsible for the study on MDMA-related deaths expressed concern in a media release that MDMA deaths are indeed under-reported.

<http://www.smh.com.au/articles/2006/03/07/1141493647883.html>

MDMA again implicated in more recent deaths

During the spring and summer of 2018/19 there were five deaths at NSW music festivals, all of which gained enormous publicity due to the current push for pill testing.

The Daily Telegraph has, however, taken an editorial position backing the NSW Premier, Gladys Berejiklian, who has made a stand against pill testing on the grounds that individual users all react differently to drugs, and most particularly to MDMA.

In a January 22, 2019 article on the music festival deaths, NSW Health Minister Brad Hazzard confirmed what NSW Poisons Information Centre toxicologist Professor Andrew Dawson had already suggested on January 15, that all deaths investigated to date were MDMA related.

“Tragically, we have had five deaths at festivals in six months, *with MDMA implicated in all of them*, so we have strengthened our emergency manpower and messaging,” Mr Hazzard said.

<https://www.dailytelegraph.com.au/news/nsw/medical-staff-to-deal-with-potential-festival-drug-overdoses-over-australia-day-weekend/news-story/829801a2659ed1750ddf236135c7c99c>

ACT waiver – no mention that ecstasy is responsible for most deaths

Harm Reduction Australia and various other entities involved in the STA-SAFE consortium used the voluntary waiver form below for all who used their pill testing facility.

What is notable about the waiver is that it offers the expected general disclaimer that no drug use is entirely safe, while failing to inform users that levels of ecstasy appropriate to normal recreational use, the very substance and levels Harm Reduction Australia has continued to green-light as being made safer by pill testing, is responsible for most deaths.

APPENDIX 3: WAIVER FORM

Patron Pill Testing Liability Waiver

To be signed by any patron before commencing pill testing.

I, the person signing this document (**I/me**), agree that in consideration of receipt of the pill testing service carried out by Harm Reduction Australia (**HRA**) at the 'Groovin the Moo' festival (**Festival**) on 29 April 2018 at The University of Canberra (**Services**), to release and discharge HRA, its employees, directors, contractors and volunteers and any other person connected with the provisions of the Services from any liability for personal injury or death suffered by me arising or connected in any way from the Services.

By signing I confirm having read and understood the contents of this waiver.

NAME: SIGN HERE DATE:

No test results regardless of findings:

- 1) Provides evidence of purity
(Drugs are almost always adulterated)
- 2) Provides evidence of safety
(no drug is completely safe, even if it is pure)
- 3) Provides evidence of dose
(you never know how weak or strong the effects will be)
- 4) Provides information about how you will respond to the product being tested, today.

I understand that the advice provided does not constitute any recommendation to consume drugs, and has been provided for the purposes of preventing drug related harm.

All drug use carries with it an inherent risk.

The only way to guarantee, 100%, that you are not harmed by consuming drugs is not to consume drugs.

Sample Number: Initial:

<https://www.harmreductionaustralia.org.au/wp-content/uploads/2018/06/Pill-Testing-Pilot-ACT-June-2018-Final-Report.pdf>

CENTRAL ISSUES FOR THE AUSTRALIAN GREENS – 2

Very few party pill deaths in Australia have been from unknown other drugs contained in ecstasy pills, and the only Australian study on ecstasy-related deaths mentions no Coroner-reported deaths from other contaminants or impurities

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The 20 GHB drug users hospitalized in Melbourne in February 2017 knew they were purchasing GHB, and these should not be confused with MDMA-related hospitalisations. Dr David Caldicott, a pill testing advocate, then said that testing GHB liquid would likely not have stopped those overdoses.

The only study on MDMA deaths - no mention of impurities as cause

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<https://www.sciencedirect.com/science/article/pii/S0376871609002014?via%3Dihub>

This study found that roughly a quarter of Australian MDMA deaths from 2001 – 2005 were solely due to MDMA, while almost 60% were due to MDMA being used with other legal and illegal drugs, with MDMA directly responsible for 82% of the 82 deaths. Other deaths were due to accidents or disease.

Significantly, there are no Coroners' reports that nominate any MDMA-related death as being caused by a bad batch of pills. As a result, there appears to be no deaths caused by impurities contained in ecstasy pills, nor by unknown other drugs contained in the batch.

Nevertheless impurities and unknown other drugs in the pill constitute one of the two rationales sold to politicians, the media and the public as to why pill testing is urgent. But it is mostly not backed by the science.

Consequently pill testing should be seeking to confirm that a pill contains normal recreational levels of MDMA, and on that basis pill testing personnel would best direct that greater safety be attained by discarding the normal MDMA pill in the amnesty bin. More lives are sure to be saved this way.

On-site pill testing could not have stopped three Melbourne deaths

In January 2017 a genuine bad batch of ecstasy killed three users and hospitalised another twenty. However a leaked police memo indicates that the unknown other drugs cut into the purported MDMA pill contained “a cocktail of illicit substances, including 4-Fluoroamphetamine (4-FA) and 25C-NBOMe.”

According to the report at https://www.vice.com/en_au/article/3dp5pk/leaked-police-memo-reveals-what-was-in-melbournes-deadly-batch-of-mdma normal pill testing would have interpreted these drugs to be MDMA. From the article:

"The reason why [an MDMA cap containing] NBOMe is so dangerous is that if you do a reagent test, even if you're really careful about it, it'll tell you it's just MDMA," says Will Tregoning, the executive director of Unharm. Additionally, he says it's unusual that NBOMe was being sold as MDMA at all, especially in an international context.

After the Chapel Street deaths, Dr Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) arranged for a sample of the bad batch to be sent to Energy Lab in Barcelona for testing. She explains they found the same ingredients as Victoria Police. "The tests we've done in Spain last week match what we now know that the police already knew, which is that the capsules contained 25C-NBOMe and 4-FA," Dr Barratt says. "You've got pretty strong circumstantial evidence, although it's impossible for us to say that it's exactly the same."

On the forum Bluelight, Dr Barratt warned users about the small amount of MDMA found in the caps. "This may be an indication that the manufacturers were hoping to fool reagent test kits by including enough MDMA to produce a positive result," **she wrote**. Essentially, to pick up the 4-FA and 25C-NBOMe, you would've needed equipment like an Alpha Bruker and gas chromatography mass spectrometry (GC/MS)—both of which Victoria Police have in their laboratories.

What is apparent from this media release is that the three Chapel Street deaths of January 2017 required a sophistication of equipment that is not practical for on-site testing.

Further, a number of deaths from a single batch of pills is not the norm within Australia, whereas deaths from MDMA are commonplace.

Those hospitalised for GHB knew they were buying GHB

In February 2017 more than 20 people were hospitalised using the drug GHB. However this report from the ABC makes it clear that users thought that they were buying GHB, not ecstasy.

<https://www.abc.net.au/triplej/programs/hack/arrest-statistics-show-ghb-date-rape-drug-is-back/8287342>

GHB was blamed - one of the biggest overdoses of the drug since 10 people collapsed outside at a Gold Coast nightclub in 1996.

"It's back again," exclaimed Dr David Caldicott, a Canberra-based emergency department doctor who was in Adelaide when GHB hit in the '90s.

"I thought we managed to explain to people it was a stupid drug to take. Around Australia there will be emergency doctors everywhere holding their heads in their hands going, 'Oh God!'.

A new generation has started learning the mistakes all over again."

Dr Caldicott was an expert witness in one of the most high profile GHB cases - the death of Dianne Brimble on a P&O cruise in 2002. The 42-year-old mother of three died from a combination of alcohol and GHB, and her body was found on the floor of a cabin belonging to four men.

Over the next 10 years, use of GHB among regular drug users dropped steadily, according to research by the National Drug and Alcohol Research Centre (NDARC).

In 2016, it suddenly ticked up again.

According to Dr David Caldicott, as well as Professor George Braitberg, head of emergency at Royal Melbourne Hospital where some of the patients were admitted, the drug that caused the overdose at Electric Parade may not have been GHB.

Instead, it may have been GBL - a chemically similar 'clone' that has a slower release time in the body and can seem to unwitting users like a weak batch of GHB.

"So people take more," Professor Braitberg told *Hack*.

Professor Braitberg began receiving calls from his emergency department on Saturday night as the first overdose patients were admitted. He said there was a suggestion going around "we picked up from the paramedics" that the overdose was GBL.

"Because there were so many casualties at the event - either it was a very potent batch going around, or it was something other than what people were expecting to take."

Dr Caldicott said pill testing may not have helped

From the same ABC article <https://www.abc.net.au/triplej/programs/hack/arrest-statistics-show-ghb-date-rape-drug-is-back/8287342>, Dr David Caldicott said that pill testing may not have prevented the overdoses.

It is notable though that Caldicott still promoted pill testing as an avenue for people to be educated about the dangers of taking GHB.

Drug Free Australia suggests that this very same education that Caldicott espouses can be delivered to prospective users via social media or other forms of on-site education, a much less risky approach than pill testing, where users will die regardless.

Caldicott's statements are copied below.

Pill testing may not have helped

Following the overdose there were renewed calls for pill testing at festivals. But Dr Caldicott, one of the principal exponents of pill testing in Australia, said that, because GHB is already so potent, confirming this through a test may not have prevented the overdose.

The dosage of a liquid drug is also more variable than caps or pills.

"This is one of the few drugs on the market that's a liquid. While you could do drug checking, the vast majority of people faced with the liquid would say, 'It's GBL'.

It wouldn't have made a difference here."

But he added that if there was pill testing the users may have also been educated about the dangers of overdosing on GHB.

"You would never have a pill testing program without a lot of support structure.

"The vast majority of people who would approach with GHB would be taken aside and told, 'You need to be really careful here'."

CENTRAL ISSUES FOR FEDERAL LEGISLATORS – 3

Ecstasy overdose is rare, with most dying from MDMA used at normal recreational levels or in combination with other legal or illegal drugs. Many die because of something akin to an individual allergic reaction to MDMA

Two drug liberalisation organisations in the US, Dancesafe and the Drug Policy Alliance, drug liberalisation organisations with which Australian advocates are ideologically aligned, clearly assert the truth that MDMA overdoses are rare. Medical literature observes that users can take massive amounts of MDMA and live. **At the same time, users die with less than 1/8th the MDMA blood levels (0.1mg/litre) of the average Australian fatality (0.85mg/litre) making pill testing purity assessments of nominal effect in reducing MDMA fatalities.**

Many deaths can be attributed to something akin to an allergic reaction, where four friends can ingest identical MDMA pills purchased from the same dealer but only one die. This was exactly the case with Anna Wood, Australia's first MDMA death in 1995. Some have correctly likened ecstasy use to playing Russian roulette.

The very fact that many users ingest the same MDMA pill, where negative effects are experienced by only some individuals and not others logically implies that substance purity is not the central issue. Most users are unaffected by higher purity within the normal range of recreational use.

The argument that pill testing personnel can enhance safety, advising users to take half or quarter a pill where MDMA purity is high, may be as safe as doctors telling those suffering anaphylactic shock from a peanut allergy that they should eat quarter instead of the whole.

Ecstasy overdose is very rare

'Ecstasy overdose' is the second rationale used by pill testing advocates to justify pill testing. The claim is that unknown purity leads to users overdosing on MDMA.

The medical literature does not support this rationale. Considering that a normal recreational dose of MDMA might be 100-150 mg in a pill, the LD50 (the lethal dose required to kill 50% of an experimental population) for various rodents ranges from 100-300 milligrams per kilogram <https://www.tandfonline.com/doi/abs/10.1080/02791072.1986.10472361>. That is a lot of MDMA. There can only be speculation regarding the LD50 for humans. However the level must be high, according to the information below.

What is significant in the text below from the British Journal of Anaesthesia <https://academic.oup.com/bja/article/96/6/678/326917> is the enormous range of MDMA in blood levels at time of death, versus significantly higher blood levels for users who have not died from much higher intakes.

'Typically, after oral ingestion (75–150 mg), desired effects begin within 1 h and last 4–6 h.⁶⁸ Blood levels in asymptomatic users and those with serious side-effects are often similar, suggesting that adverse reactions are likely to relate to the circumstances in which the drug is taken, and that *there may also be an idiosyncratic component* (our emphasis).²⁸ **A number of fatalities have been reported with blood levels of 0.1–2.1 mg litre⁻¹.**³¹ However, a case of a deliberate overdose of MDMA in which the blood level reached 4.3 mg litre⁻¹ with no more than mild sinus tachycardia and a degree of somnolence has been reported.⁵⁴ **Another analytically documented overdose resulted in a plasma MDMA of 7.72 mg litre⁻¹, the highest recorded in a surviving patient, with just a 'hangover', tachycardia and hypertension.**³¹ The highest level reported in association with multi-organ failure in a subsequent survivor was 7 mg litre⁻¹.⁶

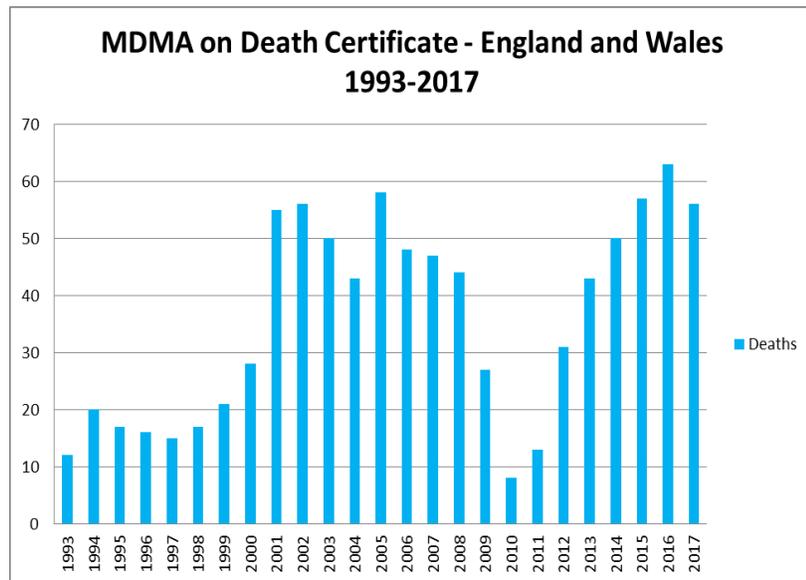
Clearly, there are MDMA users who have taken 77 times more MDMA than the level at which other users have died, and yet are very much alive, (but not necessarily well). Therefore overdose deaths where there are no other aggravating factors such as "circumstances in which the drug is taken" and "an idiosyncratic component" are rare.

Recent increases in purity don't explain previous MDMA mortality spikes

Claims that recent increases in MDMA purity in ecstasy pills are causing increased MDMA-related deaths fails to explain previous peaks in MDMA deaths in previous decades.

Taking the MDMA mortality data for England and Wales as an example, (see following graph) where increased ecstasy use in line with other European countries has been noted, http://www.emcdda.europa.eu/publications/edr/trends-developments/2017/html/prevalence-trends/mdma_en increased purity provides

a less suitable explanation for mortality than increasing use and concomitant use of other drugs.



ABC's Four Corners – no problems taking 22 MDMA capsules

The transcript from the ABC's Four Corners program, "Dying to Dance", which screened on 15 February 2016 promoted the notion that unknown purity of MDMA in pills created a substantial probability of an MDMA-related death.

Yet within that program was footage of 'John' who boasted of taking 22 MDMA capsules on his 22nd birthday, as from the transcript below:

Meanwhile, festival-goers are dancing the day away. We find John in the middle of the crowd.

(To John) Have you taken anything yet?

JOHN: Yeah, I've double-dumped.

CARO MELDRUM-HANNA: John has just swallowed two MDMA capsules at once. One hour later, he takes a third.

JOHN: You got to keep hydrated always: water and munt.

CARO MELDRUM-HANNA: Soon after: a fourth.

JOHN: ...fantastic. Erick Morillo's played an awesome set and I just dumped another.

CARO MELDRUM-HANNA: The amount of MDMA John has taken could be life threatening, but he's not fazed.

(To John) How are you feeling?

JOHN: How am I feeling right now? Great. Bit um, oh, I've got a bit of blurred vision but other than that I'm feeling happy.

CARO MELDRUM-HANNA: As far as quantity goes, four capsules in one day is nowhere near **John's record, set a couple of years ago. He celebrated his 22nd birthday by taking 22 pills.**

(To John) So you'd never do 22 in a day again?

JOHN: No. God, no. Everything's good in moderation. That's moderation: that's, that's gluttony.

What is clear from this exchange is that John had no problems surviving 22 MDMA capsules on his 22nd birthday, which was, according to the transcript, only a couple of years back.

It could be argued that John simply had a very high tolerance to MDMA from years of drug use, but his 4 capsules over a number of hours, while still experiencing the desired effect of the MDMA despite some level of tolerance, indicates that 22 capsules on his 22nd birthday was well beyond his normal use. This again adds weight to the argument that MDMA purity is not as important in fatalities as other factors to which we must return later.

Ingestion levels for MDMA toxicity similar to non-toxicity intakes

The aforementioned Australian study <https://www.sciencedirect.com/science/article/pii/S0376871609002014?via%3Dihub> had a median 0.85mg per litre for all deaths due to MDMA toxicity, which was not markedly different to the 0.65mg/L for deaths by accident or disease, as below:

The median concentrations of MDMA and MDA were 0.85 mg/L (range 0.03–93.0 mg/L) and 0.10 mg/L (range 0.01–1.0 mg/L), respectively (Table 4). There were no significant differences between cases of death due to drug toxicity and cases of death due to injury or disease in the median concentrations of either MDMA (0.85 vs. 0.65, $p = 0.40$) or MDA (0.1 vs. 0.08, $p = 0.25$).

When it is considered that MDMA levels for toxicity-related deaths is little different to deaths from accident or disease, overdose - where the levels should be multiples higher - is clearly not common.

Pill testing Dancesafe USA says “Stop calling them overdoses”

The pill testing advocate, Dancesafe, in the USA insists that overdoses are rare.

They say at <https://dancesafe.org/mdma-related-deaths-stop-calling-them-overdoses/>:

One of the most prolific—and most dangerous—pieces of media misinformation is the claim that MDMA-related deaths are the result of overdoses. This is not true, and this dangerous myth will be explained in a moment. First, however, it is important to understand what the word “overdose” actually means.

Overdosing means taking a higher than appropriate dose of a medicine or a drug. In other words, it simply means *taking too much* or taking a “dose” that is “over” the proper therapeutic or recreational amount. The association of the word “overdose” with “drug-related death” is primarily reflective of heroin and opiate-related deaths, where the majority of fatalities may, in fact, result of overdosing. However, MDMA-related deaths are rarely the result of an overdose, and calling them overdoses is dangerous and negligent. It sends the message that “you will be okay as long as you don’t take too much,” which is simply not true. *In the vast majority of cases of MDMA-related deaths, where no other drugs were found in the person’s bloodstream, the deceased had taken a dose within the normal range for appropriate therapeutic or recreational use.*

Mothership Drug Policy Alliance says MDMA overdoses are rare

The Soros-funded Drug Policy Alliance, which seeks the legalisation of illicit drugs and which is the virtual mothership to all drug liberalisation or legalisation organisations worldwide likewise takes the stance that MDMA overdoses are rare.

Most of MDMA’s potential harms derive from the setting of its use.¹⁴ Although few adverse effects have been reported, hyperthermia – a dangerously high increase in body temperature – is the most common problem related to ecstasy. Hyperthermic reactions result from physical exertion (such as dancing) in an overheated environment without replenishing fluids,¹⁵ which is why users take breaks and consume fluids like water or Gatorade.¹⁶ *Overdoses are extremely rare* (our emphasis) and are also usually linked to dehydration or mixing drugs, rather than as a direct result of using ecstasy.
https://www.drugpolicy.org/sites/default/files/DPA_Fact_Sheet_MDMA.PDF

Pill testing within Australia has been chiefly promoted by Australia21, as can be seen in the Four Corners report already cited above, and by Harm Reduction Australia, as seen in <https://www.harmreductionaustralia.org.au/wp-content/uploads/2018/06/Pill-Testing-Pilot-ACT-June-2018-Final-Report.pdf>. The fact that the Drug Policy Alliance, as the ideological mothership to both of these organisations, asserts ecstasy overdose as rare, yet both related Australian organisations promote pill testing on the threat of frequent overdose raises grave questions about the integrity of the Australian approach.

Journal studies are clear

Taking as an example of the medical literature, Khary Rigg and Amanda Sharpe's **Deaths related to MDMA (ecstasy/molly): Prevalence, root causes, and harm reduction interventions** in the Journal of Substance Use 23(3):1-8 · February 2018 sees the false representation of MDMA deaths as being overdoses to be a serious impediment to drug prevention and education.

Recent data show that MDMA (3,4 methylenedioxymethamphetamine) related deaths (MRDs) are on the rise in several countries. This rise in MRDs has caught the attention of public health officials and treatment practitioners. Although MDMA is not a new drug, *misinformation regarding the root causes of MRDs is still widespread. For example, MRDs continue to be reported as "overdoses" in the media and by government. This erroneously gives the impression that these deaths are caused by ingesting too high a dose, when in fact MRDs are usually due to factors such as hyperthermia, dehydration, drug interactions, or hyponaetremia.* (our emphasis) When the real culprits behind MRDs are obscured, we are left with an inaccurate picture about the extent and nature of the risk of consuming the drug. This also inhibits the implementation of effective drug education and risk reduction messages.

If not overdoses, then what?

This much can be concluded about MDMA overdose.

1. Deaths from MDMA overdose, where there are no other aggravating factors, are very rare.
2. The fact that friends usually buy from the same drug dealer yet one dies while the others are unaffected indicates purity is not the issue, or all would die.
3. The enormous range of MDMA levels in blood at time of death indicates that not enough is known about MDMA toxicity, therefore making judgments about MDMA purity in ecstasy pills superfluous particularly in light of the following.

Many deaths akin to an allergic reaction to ecstasy

While it may be unwise to push this analogy too far, it does appear that many MDMA deaths in the absence of other drugs are due to something akin to an allergic reaction to the substance. This can be understood as something similar to those who suffer anaphylactic shock after ingesting food containing peanuts. And there is some speculation that those who have died after ingesting MDMA, or have otherwise been hospitalised, may have an enzyme deficiency that renders them unable to metabolise MDMA. Some go so far as to nominate a faulty liver enzyme.

Anna Wood, Australia's first MDMA-related death in 1995, took precisely the same pill as three friends, purchased from the same dealer, yet only she died. This confirms the idiosyncratic component of MDMA fatalities.

What is indisputable though is that the wide range of MDMA blood levels, where some have died with less than 1/8th (0.1 mg/L) the level of MDMA of the Australian median for MDMA toxicity (0.85 mg/L), makes any statement about a safe level of MDMA use meaningless. The advice by some drug liberalisation organisations, such as Dancesafe or the International Drug Policy Consortium, to take one quarter of a pill as an 'allergy test' will still not ensure safety.

The broad range of MDMA blood levels is noted on p 259 in the Australian study as follows:

In accordance with previous research (Milroy et al., 1996; Gill et al., 2002; Gowing et al., 2002; Gable, 2004; Hall and Henry, 2006), cases displayed a wide range of MDMA concentrations. Moreover, MDMA/MDA concentrations did not significantly differ between toxicity-induced deaths and deaths due to injury or disease, nor between MDMA-only deaths and combined toxicity deaths. *There does not appear to be a clear dose-response for MDMA toxicity (Kalant, 2001; Gowing et al., 2002; Karch, 2002; Darke et al., 2007), with frequent overlap between lethal and non-lethal blood concentrations of MDMA (Kalant, 2001; Gowing et al., 2002; Karch, 2002). As such, MDMA concentrations should not be interpreted in isolation from other factors.* (our emphasis)

Thus the argument that pill testing personnel can enhance safety, advising users to take half or quarter a pill where MDMA purity is high, is likely as safe as doctors telling those suffering anaphylactic shock from a peanut allergy that they should eat quarter instead of the whole. This is further exacerbated by the fact that most MDMA deaths are caused by MDMA used in combination with other drugs, **for which no test can be devised.**

Most deaths from MDMA used in combination with other drugs

As has been noted already, 59% of MDMA-related deaths between 2001 and 2005 were from users combining MDMA with other legal or illegal drugs.

Polydrug use within Australia has been responsible for most of Australia's opiate mortality (http://atoda.org.au/wp-content/uploads/rp1_heroin_overdose.compressed.pdf see p xi) but is also clearly implicated in MDMA mortality. In the aforementioned Australian study (p 257):

The most common drugs present with MDMA in cases of combined drug toxicity were opioids (54%), methamphetamine (42%), benzodiazepines (23%) and alcohol (21%).

Table 4
Toxicological findings based on blood samples.

Drug detected	n = 68
Median blood concentrations	
MDMA (mg/L) (range)	0.85 (0.03–93.0)
MDA (mg/L) (range)	0.10 (0.01–1.0)
Presence of other drugs (%) ^a	
Methamphetamine/amphetamine	50
Morphine	32
Alcohol	30
Codeine	25
Benzodiazepines	20
Antidepressants	
THC	13
Cocaine/benzoyllecgonine	10
Methadone	3
GHB	3
Ketamine	2
Antipsychotics	0
Miscellaneous other drugs (e.g. antihistamines, paracetamol)	20

^a n = 69 (excerpt of toxicology results available from autopsy report for 1 case).

90% of MDMA users are polydrug users

According to the Global Drug Survey, most MDMA users are also polydrug users. At <https://www.globaldrugsurvey.com/past-findings/gds2017-launch/drug-checking-and-pill-testing-what-it-can-and-cannot-do-and-why-it-matters/> they note that:

Over 90% of people seeking Emergency Medical Treatment each year after MDMA have used other drugs (often cocaine or ketamine) and/or alcohol and more frequent use of MDMA is associated with the higher rates of combined MDMA use with other stimulant drugs and ketamine.

Pill testing cannot measure polydrug use

With 59% of MDMA-related deaths from 2001-2005 the result of MDMA used in combination with other legal and illegal drugs, pill testing does not address the greatest cause of party pill mortality. **Rather than pill testing, blood tests would better apply.**

Public information campaign better than pill testing

While pill testing advocates will claim that the pill testing setting allows medical personnel to better discuss the dangers of using MDMA in combination with other drugs, the normalisation of drug use presented by government-funded pill testing and the certain broadening of the pool of prospective users through the false

message of enhanced safety makes the pill testing avenue for information dissemination too risky and therefore not viable.

Nevertheless the same message can be adequately broadcast by government through social media or other advertising campaigns, including clear messages at the point of entry to music festivals or dance clubs.

CENTRAL ISSUES FOR THE AUSTRALIAN GREENS - 4

Pill testing's false sense of security will only broaden the pool of MDMA initiates, which will *ipso facto* lead to a larger number of users fighting for their lives in Australia

Numerous media stories promoting pill testing position ecstasy use as thereby safer after testing than before. But if almost all MDMA-related deaths are from MDMA itself, rather than impurities or other unknown drugs in the tablet, and if very few are from literal overdose, then pill testing in Australia will hardly make ecstasy use any safer.

Yet greater safety has been openly espoused by major pill testing advocates here in Australia as is witnessed by the very nomenclature of the ACT pill testing trial – STA-SAFE.

The greater safety promised by pill testing will broaden the pool of prospective users, thus leading to increased deaths. PILL TESTING WILL INEVITABLY LEAD TO MORE DEATHS IN AUSTRALIA.

Pill testing gives a false sense of security

By not telling the truth that most deaths within Australia are from MDMA itself, or from MDMA in a polydrug use setting, pill testing will lull users and prospective users into a false sense of security, thinking that an ecstasy pill that has been found to be normal will somehow be safer to use.

It is well established from surveys that if young people are led to believe that a drug is relatively safe to use, then more will use it.

Table 5.64 from the 2016 National Drug Strategy Household Survey indicates that 18% of Australians aged 14 years or older choose not to use drugs because of safety concerns. It is a reasonable conclusion that the 2.2% of Australians who were using ecstasy in 2016 (Table 5.4) could swell significantly with those from the 18% of all Australians who feared death as their safety concerns are dispelled by pill testing's false rhetoric.

The same Table indicates that another 31% of Australians do not use drugs because they are illegal. The normalising aura bestowed by pill testing, where a harm minimisation intervention that is sanctioned and financially supported by State Governments creates a picture of law enforcement capitulation to drug use will likely add to the pool of prospective users.

Table 5.64 follows:

Table 5.64: Factors influencing the decision never to try an illicit drug, people who have never used aged 14 years or older, 2007 to 2016 (per cent)

Factor	Persons			
	2007	2010	2013	2016
For reasons related to health or addiction	41.4	47.0	42.8	43.2
For reasons related to the law	22.5	28.6	29.1	31.1#
Didn't want anyone to find out	4.1	5.2	3.8	3.8
Didn't like to feel out of control	16.3	22.4	24.2	24.5
Pressure from family or friends	9.3	10.8	9.5	10.5
Didn't think it would be enjoyable	13.1	17.8	17.8	19.3#
Just not interested	63.1	73.3	76.1	73.4#
Financial reasons	5.1	6.7	5.2	6.4#
No opportunity or illicit drugs available	5.5	5.4	4.8	5.0
Religious/moral reasons	15.4	19.1	22.4	22.9
Fear of death	12.3	17.6	18.1	18.2
Other	6.7	2.9	2.1	2.7#
Don't know	0.2	4.2	3.9	5.3#

Statistically significant change between 2013 and 2016.

Notes:

1. Base is those who had never used an illicit drug in their lifetime.
2. Respondents could select more than one response.

Source: NDSHS 2016.

False message from advocates - pill testing = much greater safety

As the pill testing push has accelerated, it has been common to see those from Australia21 and Harm Reduction Australia promoting the 'substantially' safer use of drugs via pill testing, despite a context where deaths from impurities or unknown other drugs are not at all numerous in Australia, and where MDMA overdoses are rare.

Here are the words of Dr Alex Wodak, the most vociferous representative from Australia21:

In the current debate, ministers argue that the "best" we should aim for is that young people attending music dance events would lose their desire to take drugs at these events and that law enforcement would make these drugs virtually unavailable. A more realistic appraisal is that young people will continue to want to take drugs, police will continue to be unable to substantially reduce the availability of drugs *and that pill testing*

will substantially reduce, but not eliminate, the risks of drug taking (our emphasis).

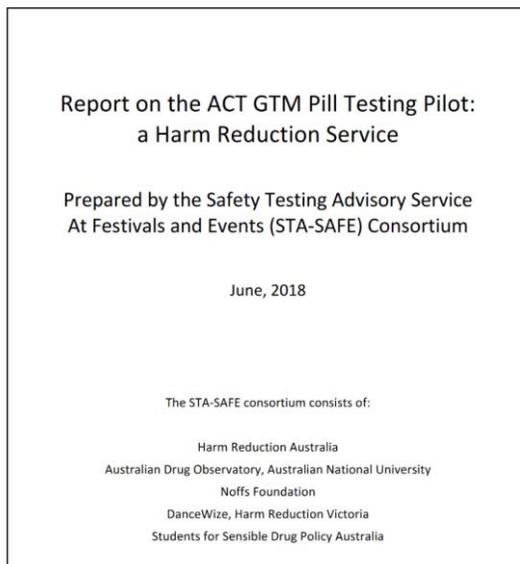
It is time that ministers approached decisions about pill testing as if they were attempting to protect their own children. The simple question ministers should ask themselves is "would they prefer their own children to attend a youth music event where pill testing was available or unavailable"? If they would want their own children to attend only a music dance event where pill testing was available, then they should allow the same protection for the rest of the community.

Governments have a responsibility to keep the community safe, especially our young people. Pill testing is no panacea. But it would save lives at very little risk.

<https://www.smh.com.au/national/the-simple-question-mps-opposed-to-pill-testing-should-ask-themselves-20180916-p50427.html>

Harm Reduction Australia alternately led the 'STA-SAFE' (the very nomenclature says much) consortium which ran the pill testing trial in the ACT. We argue that an aura of safety was likewise built into the description of their self-evaluation report, which was "Prepared by the Safety Testing Advisory Service At Festivals and Events (STA-SAFE) Consortium."

<https://www.harmreductionaustralia.org.au/wp-content/uploads/2018/06/Pill-Testing-Pilot-ACT-June-2018-Final-Report.pdf>



Dr David Caldicott, a chief advocate for pill testing involved in the ACT trial, also emphasises greater safety as the result of pill testing without mentioning that most deaths within Australia are from normal recreational doses of ecstasy.

This abstinence approach was echoed by NSW Premier Mike Baird, who told *Sunrise* earlier this year: "Don't do it. That is the best form of safety you can do. Don't take the pills and you'll be fine."

However, Dr Caldicott says this is an extremely outdated approach that's as practical as trying to get young people to abstain from sex before marriage. "We're kind of like the condoms of the harm reduction world. *We're trying to keep people safe,*" he explains.

https://www.vice.com/en_au/article/nnny3ax/pill-testing-is-to-be-introduced-at-music-festivals-around-australia

Drug Free Australia does recognise that in recent month all of the advocates mentioned have given stronger, more robust general disclaimers about the risks of drug use, making the point more prominently than before that no drug use is ever safe – see for example <https://www.smh.com.au/politics/nsw/we-are-not-giving-them-any-false-reassurance-busting-the-myths-of-pill-testing-20190122-p50sws.html> **Our concerns are that this later revisionism still does not address the crucially central message that most deaths in Australia are from normal recreational doses of ecstasy.**

CENTRAL ISSUES FOR THE AUSTRALIAN GREENS - 5

Pill testing is inadequate compared to the ever-evolving substances potentially in party pills

Because of rapid advances in the synthesising of new recreational drugs, pill testing cannot possibly keep pace. While on-site pill testing may identify some unknown other drugs in pills or powders at festivals, a growing list of several hundred other substances may elude detection.

New and deadly drugs synthesised on a weekly basis

One of the major rationales given by pill testing advocates is that unknown other drugs can be cut with MDMA into party pills.

However, John Lewis who is an honorary associate at the Centre for Forensic Science at UTS, wrote in the January 16 issue of *The Australian* (p10) that:

Consider this: in 2010 there were about a dozen synthetic “spice type” cannabinoids; by 2011 there were about 40; in 2012 there were 60. In 2015 four Australians died from PB22. By 2016 there were about 125 synthetic cannabinoids, more than 20 cathinones, 20 synthetic benzodiazepines, and by last year about 18 highly potent fentanyl derivatives were found in the US. There have been reported deaths because of the synthetic cathinone MDPV in Italy and carfentanil-laced heroin in Britain. Carfentanil is a fentanyl-like substance 10,000 times more potent as morphine and has been deemed responsible for inadvertent overdoses by regular heroin users.

Fitzgerald states that the risks of pill testing appear to be minimal. That is curious. In a recent toxicology publication, a leading forensic scientist reported that there was great concern in the US that these novel illicit substances typically are outside the scope of routine drug testing by hospitals and laboratories or below the sensitivity levels for detection. If major forensic facilities have difficulty in identifying these substances, it stands to reason that on-site pill testing could not adequately identify most of the potentially lethal components in a pill scraping,

Again, leading Australian forensic institutions using high-resolution mass spectrometry struggle to keep up with ever-increasing variations in synthetic substances. Pill testing may identify some of these within the

time and scope of the on-site facility, but the risk of an adverse or fatal episode remains with several hundred substances not detected.

If pill testing were trialled, you would need sophisticated instrumentation such as high-resolution mass spectrometry to rapidly analyse the contents of the unknown substance. Such instrumentation is not amenable to on-site music festival venues. Critically, operators of the instrumentation would need to ensure their database of compounds is up to date. As newer synthetic drugs are regularly entering the market, forensic laboratories are struggling to obtain appropriate and expensive analytical reference material to identify unequivocally all ingredients in a pill.

Pill scrapings not representative of the whole

John Lewis, in the same article as above, expressed the concern that the entire pill needs to be crushed and analysed, unlike pill testing's use of pill scraping.

He continues,

The issue of pill testing should be decided on forensic science. The ability to identify a wide range of components in a compound depends on the ability to test a representative portion of the substances, and that representation is incumbent on the pill being homogeneously mixed when produced. If the pill has not been manufactured to ethical pharmaceutical standards then there is a risk of the pill tester missing the more toxic ingredients of the substances.

MDMA being the major killer in Australia not addressed

For all the excellent advice in this article, John Lewis does not even seek to address the fact that ecstasy is still the most sought-after party drug in Australia, nor the fact that pill testers green-lighting normal doses of MDMA in a pill totally ignores normal doses of MDMA as the main cause of MDMA mortality.

On-site pill testing could not have stopped three Melbourne deaths

In January 2017 a genuine bad batch of ecstasy killed three users and hospitalised another twenty. However a leaked police memo indicates that the unknown other drugs cut into the purported MDMA pill contained "a cocktail of illicit substances, including 4-Fluoroamphetamine (4-FA) and 25C-NBOMe."

According to the report at https://www.vice.com/en_au/article/3dp5pk/leaked-police-memo-reveals-what-was-in-melbournes-deadly-batch-of-mdma normal pill testing would have interpreted these drugs to be MDMA. From the article:

"The reason why [an MDMA cap containing] NBOMe is so dangerous is that if you do a reagent test, even if you're really careful about it, it'll tell you it's just MDMA," says Will Tregoning, the executive director of Unharm. Additionally, he says it's unusual that NBOMe was being sold as MDMA at all, especially in an international context.

After the Chapel Street deaths, Dr Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) arranged for a sample of the bad batch to be sent to Energy Lab in Barcelona for testing. She explains they found the same ingredients as Victoria Police. "The tests we've done in Spain last week match what we now know that the police already knew, which is that the capsules contained 25C-NBOMe and 4-FA," Dr Barratt says. "You've got pretty strong circumstantial evidence, although it's impossible for us to say that it's exactly the same."

On the forum Bluelight, Dr Barratt warned users about the small amount of MDMA found in the caps. "This may be an indication that the manufacturers were hoping to fool reagent test kits by including enough MDMA to produce a positive result," **she wrote**. Essentially, to pick up the 4-FA and 25C-NBOMe, you would've needed equipment like an Alpha Bruker and gas chromatography mass spectrometry (GC/MS)—both of which Victoria Police have in their laboratories.

What is apparent from this media release is that the three Chapel Street deaths of January 2017 required a sophistication of equipment that is not practical for on-site testing.

Further, a number of deaths from a single batch of pills is not the norm within Australia, whereas deaths from MDMA are commonplace.

CENTRAL ISSUES FOR THE AUSTRALIAN GREENS - 6

Pill testing will not deter the use of party pills

Once any tested pill is pronounced dangerous, users will still want to use drugs, as the harm reduction lobby continues to assert, and will simply ask friends where the good ones can be purchased (but still, regardless, open themselves to the real dangers of taking MDMA).

The claim that pill testing allows medical personnel to advise users that pills can contain bath salts or methamphetamine is easily countered. Flashing signs at the entrance to any festival can achieve the same.

It is claimed that pill testing tents at a festival make the risks of drug use real. A deterrent effect is more easily produced by the visible presence of medical personnel and well-equipped medical stations, not to mention the net effect in reducing hospitalisations and the likelihood of death.

Once one pill is discarded, users will simply seek the good ones

Claims by pill testing advocates that the service reduces drug use as pills with (mostly non-deadly) adulterants are discarded are obviously not addressing human nature.

Most party pill users have purchased substances for the sake of the high they wish to experience. If a pill is deemed dangerous, they need only ask friends where the good ones can be purchased, whether at the present festival or the next.

The rationale used by pill testers works against itself. They claim that harm minimisation is needed because people will always seek out drugs. Likewise, in the absence of clear messages from government about the specific dangers of party pills, users will seek out drugs from an alternate but more trusted dealer.

Public information campaign, not pill testers, can warn of the dangers

Claims of the utility of pill testers walking users through the specific dangers of party pills is outweighed by the drug normalising context which pill testing presents to any individual.

The recent revisionist message added by some of Australia's most prominent pill testing activists in response to Drug Free Australia's current campaign which is emphasising normal doses of MDMA as the major cause of death, that:

“The first thing we say is that if you want to stay safe today from any harms associated with drug consumption, *you shouldn't use any drugs today*,” (our emphasis) he said. “The idea that in some way this is encouraging drug use is a nonsense.”

Dr David Caldicott, 22 January 2019

<https://www.smh.com.au/politics/nsw/we-are-not-giving-them-any-false-reassurance-busting-the-myths-of-pill-testing-20190122-p50sws.html>

or

There are more than half a dozen different techniques available for identifying the ingredients of the pill including detecting the presence of dangerous contaminants. *Experts then explain the results of the test, emphasising that the safest way to take the pill is not to take it.* (our emphasis)

Dr Alex Wodak, The Catholic Weekly 24 January 2019

<https://www.catholicweekly.com.au/pill-testing-arguments-for-and-against/>

is best promoted by government via a wide-ranging publicity campaign.

Good on-site medical facilities will better visually warn of the dangers

Claims by pill testing advocates that pill testing tents will provide visual warning of the dangers of party pills are outweighed by the drug normalising context which pill testing presents to the individual.

As is the case with the enlightened policies of the NSW Government currently, more than adequate on-site medical facilities and numerous medical personnel circulating at a music festival (paid for in future by the profiting organiser and not the taxpayer) will do exactly the same without the risks of pill testing broadening the pool of prospective users via a false sense of safety.

CENTRAL ISSUES FOR THE AUSTRALIAN GREENS - 7

European studies on the claimed 'success' of pill testing fail to demonstrate or even measure reduced mortality

Current reviews of pill testing in other countries only survey user opinions on the advisability of pill testing. There are no scientific studies showing that pill testing reduces mortality.

Current pill testing review – no evidence of reduced deaths

With all the evidence presented in this paper thus far the science from Europe, where pill testing goes back as far as 1992 in the Netherlands, would not be expected to show any reductions in deaths, given that the purported 'safety' of pill testing would be expected to broaden the pool of users, thus increasing deaths, matching any decreases in bad batches which appear to be more prevalent in Europe.

The 2018 Deakin University review in the Harm Reduction Journal titled '**Worth the test?** Pragmatism, pill testing and drug policy in Australia' by Andrew Groves <http://dro.deakin.edu.au/eserv/DU:30107675/groves-worththetest-2018.pdf> (see also the full paper at Appendix A) offers the following Abstract:

Abstract

Background: Recent deaths of young Australian music festival attendees from 'party-drug' overdoses have sparked debate about the effectiveness of drug policies. Australia is widely lauded for its harm minimisation approach to drugs, and yet, over the last 30 years, it can be argued its policies have been fragmented, sometimes inconsistent and contradictory. The present article examines the root of this inconsistency, using it as a foundation to advocate for drug policy reform. In keeping with the goals of the National Drug Strategy to promote policy innovation, there is an opportunity to learn from international studies which have shown promising findings in the reduction of party-drug use and its harms through application of pill testing.

Method: This paper evaluates Australia's National Drug Strategy and pill testing through a lens of pragmatism, to determine whether there is space for testing practices in contemporary policy. Specifically, the

paper analyses current drug policy literature and research studies, examining a range of key drug use indicators, social and political debate and research evidence.

Results: The need for policy reform, attitudinal and cultural shifts and development of stronger cross-sectoral partnerships is highlighted, to ensure a rational and logical approach that genuinely tackles drug policy-making and strategy from a broad public health perspective.

Conclusions: Using a theoretical frame of pragmatism and drawing from national and international research evidence, this paper recommends the integration of pill testing into Australia's harm minimisation strategy.

While this paper has been used in Australia as evidence of pill testing's success, a closer look at its evidence shows only surveys of opinions and attitudes, rather than real objective scientific results.

From the start, the review admits that there are no controlled studies to evaluate the effectiveness of European pill testing. It states that:

Like most debates about policy reform, a key question in the rationale for pill testing is whether it 'works'. The literature is complicated and, to date, no studies have fully tested in a controlled way, whether pill testing reduces harms.

Like much of the harm reduction 'science' for many other interventions, studies to date are about subjective views and opinions. The review goes on to state that:

Most evaluations concern attitudinal change (e.g. what people *would do* [20]), legal issues and the integrity of various analytic procedures, with others describing program features or contextually relevant praxis [76], so although not within the scope of this paper, a large, multi-site systematic review of testing practices is needed.

What this review tells us is that there is almost nothing to answer the question, "Does pill testing work?" but that there are plenty of self-report, non-objective studies saying that users love pill testing because they think it does something positive.

The only hint of any objective results is on page 7 of the document, where it asserts:

Another benefit has been, over time, the composition of tested pills has begun to more closely correspond with expectations [32, 76], increasing overall drug-quality, *while alleviating some of the strain on under-funded healthcare and support agencies by reducing the prevalence of overdoses and hospital admissions* [15].

Unfortunately, the above reference #15 takes the unwitting reader to:

Ritter A, McLeod R, Shanahan M. Government drug policy expenditure in Australia - 2009/10. Drug policy modelling program, monograph 24 Sydney: National Drug and Alcohol Research Centre; 2013. Available from: <https://ndarc.med.unsw.edu.au/resource/24-government-drug-policy-expenditureaustralia-200910> . Accessed 12 Jan 2017.

which cannot be found at the address given but rather at this address <https://dpmp.unsw.edu.au/sites/default/files/dpmp/resources/DPMP%20MONO%2024.pdf>. A search of the document for words such as 'pill', 'testing', 'hospital', 'admission', or 'ecstasy' yields not one sentence that has anything to do with reduced overdoses or admissions. Ultimately this review offers not one study to show that pill testing objectively works.

This same review does make a claim about Portugal using pill testing as part of its comprehensive decriminalisation changes since 2001 and states that this overall approach has reduced problem drug use as below:

This also supports evaluations of the reforms in Portugal, where pill testing, as part of a wider public health approach, in fact reduced problematic use, related harms and burden on the justice and healthcare systems [79, 80].

This statement fails to recognise that drug use has risen 59% in Portugal since its decriminalisation experiment began in 2001 (see https://drugfree.org.au/images/pdf-files/homepagepdf/Portugal_vs_Tough_on_Drugs_Dec_2018.pdf) and that pill testing does not in any way alleviate problem drug use, which mainly consist of users of opiates, cocaine and amphetamine.

Pill testing advocates such as Dr Alex Wodak make similar claims:

As is often the case with messy public health type interventions, evaluation is more complicated than for clinical interventions. When the results of multiple different kinds of studies are considered together, it is clear that pill testing reduces but does not eliminate deaths and hospital admissions. <https://www.catholicweekly.com.au/pill-testing-arguments-for-and-against/>

While Drug Free Australia does in fact agree that any objective study most likely cannot be formulated to show that pill testing reduces deaths, we do deplore any false appeal to assertions of reduced deaths, which could not, in our estimate, be possibly verified.

Misleading claims of 95% reductions in hospitalisations

Given that the ingestion of normal recreational doses is sure to incur numerous medical interventions for MDMA users, the recent claim of 95% less hospitalisations since last year due to pill testing at the Cambridgeshire Secret Garden Party requires some scrutiny.

The claim is that last year there were 19 hospitalisations, while this year there was but one. <https://www.theguardian.com/society/2018/dec/08/testing-drugs-festivals-lifesaver-study>

What is not revealed in the study is whether on-site medical treatment was radically improved after the previous year's horrific 19 hospitalisations, which any off-the-cuff surmise would fully expect given possible litigation.

Referencing the 95% claim, Dr David Caldicott said the following at <https://www.buzzfeed.com/lanesainty/pill-testing-evidence-australia-music-festival-deaths>:

"People are far more judicious in their approach to drug consumption because they're being made to think about it," he said.

He also cited a recent research paper from the United Kingdom that showed a 95% reduction in hospital attendances at music festivals with pill testing. (our emphasis)

"It is terribly difficult to turn around and say absolutely, pill testing, I can show you here now on this piece of paper that pill testing has saved lives," Caldicott said.

"I'd be the first to admit that. But it's medically and scientifically disingenuous to say that it's even possible to design an experiment to prove that.

"If pill testing is reducing harm, the worst harm you can experience is actually dying. And all of the harms that lead to death — in between not using drugs and dying — are affected in a positive way by pill testing."

Drug Free Australia has demonstrated in this document that most MDMA deaths are from normal recreational doses of MDMA which pill testing will never deter. Pill testing will not reduce harm but increase it in the Australian situation where deaths from impurities are unknown, deaths from unknown other drugs cut with MDMA are few, and where overdoses are rare. It will increase harm by making MDMA use more attractive under its prompted aegis of greater drug use 'safety' which false reports like this 95% claim will only encourage.

CENTRAL ISSUES FOR THE AUSTRALIAN GREENS - 8

There is likely another agenda behind the pill testing push – the normalisation and legalisation of illicit drugs in Australia

Google the names of Australia’s most publicised pill testing advocates alongside “cannabis legalisation” and the possibility of a very different agenda is suggested – the normalisation and legalisation of currently illicit drugs.

If pill testing doesn’t save lives, what is the agenda?

Drug Free Australia, in this document, has demonstrated that pill testing will increase MDMA related deaths via the proffered ‘safety’ it misleadingly offers. Additional users will make themselves vulnerable to the unpredictable effect of MDMA, whether they are using MDMA alone or in conjunction with other legal or illegal drugs and there will be more deaths.

If pill testing does the opposite of saving lives, why is it promoted?

A question that has been asked is whether there is another agenda. On 27 January 2019 David Pemberthy wrote in the Sunday Mail that,

It is conceivable that rather than saving lives, it (pill testing) could cost more, as it has the effect of normalising drugs so dramatically that other kids like Anna Wood could conclude that surely one pill can’t kill you. I mean, I tested it, right?

While nobody truly knows the motives of the Australia21 and Harm Reduction Australia representatives at the forefront of the pill testing push better than themselves, Pemberthy’s possibility is not without evidence.

Simply Google the names of the most prominent pill testing representatives and then type “cannabis legalisation” beside each, and Google gives results such as these.

Dr David Caldicott – Harm Reduction Australia

Dr David Caldicott, the clinical lead at the ANU’s Australian Medicinal Cannabis Observatory told [The RiotACT](#) a bill like Mr Pettersson’s could limit the drug’s availability to underage consumers and undermine the illicit drug market in the ACT.

“From a public health perspective, there are merits to an argument of a regulated market. It is likely to be met by howls of abuse from more conservative commentators who probably don’t understand the policy implications,” he said.

“The likelihood is that overall it will reduce the harm from drugs. Very few people would argue that increased availability of cannabis would make the city a healthier environment but it is entirely possible that regulating the environment will make cannabis less available.”

<https://www.news.com.au/lifestyle/health/bill-to-legalise-recreational-marijuana-in-act-has-overwhelming-support/news-story/19712dfb54be37c49864327a52ad4aec>

Dr Alex Wodak – Australia21

“If regulated MDMA was produced, MDMA sold legally, we’d hardly hear of it from one year to the next in terms of casualties. There’d still be some casualties but they’d be pretty uncommon,” he claimed.

Dr Wodak said the “proper regulation” of cannabis and MDMA would lower the risks of the drugs and pharmacies could be a place to sell the pills.

<https://www.dailytelegraph.com.au/news/nsw/drug-reform-campaigner-dr-alex-wodak-wants-mdma-to-be-regulated-and-sold-in-stores/news-story/89fe87513583d2805ed4e069b20b6922>

Gino Vumbaca – President, Harm Reduction Australia



Expert endorsement for Just Legalise It

The health, social and economic harms of our current approach to cannabis cannot be underestimated – every year more than 80,000 people are arrested for the possession or use of cannabis. Each conviction providing untold long-term harm to careers, travel and family. Given millions of Australians have used, and many continue to use cannabis, surely the goal of this harmful criminalisation approach cannot be to arrest and ruin the lives of millions of Australians?

The level of harm inflicted on so many people, for so many years, just for using cannabis simply has to stop.

Harm Reduction Australia welcomes the sensible and evidence-based approach of the Greens to cannabis.

Gino Vumbaca
President of Harm Reduction Australia

<https://drugs.org.au/just-legalise-it/>

Mick Palmer – Australia21

A former Australian Federal Police commissioner has backed prominent harm minimisation advocate Alex Wodak’s call to regulate MDMA.

Mick Palmer, who had a distinguished 33-year career as a police officer, said he was in favour of the cautious regulation of drugs such as ecstasy and cannabis.

“Unless we find ways to regulate the sale of illicit drugs and turn the current black market into a white market, we’ll never get on top of this problem, there’s no doubt about that,” Mr Palmer said.

<https://www.canberratimes.com.au/national/former-top-cop-backs-dr-alex-wodak-s-call-to-regulate-mdma-20190130-p50ugj.html>

Harm minimisation as pathway to drug legalisation

Dr Alex Wodak of Australia21, one of the foremost advocates for pill testing, is on record as stating that harm minimisation is part of the same continuum as the legalisation of all drugs and is a first phase. The following page was displayed on Wodak's ADLRF website up until a decade ago (see underlined):

Australian Drug Law Reform Foundation 

What's New
The past, present and future of harm reduction: decades of misunderstanding.

The past, present and future of harm reduction: decades of misunderstanding.

A paper presented at the 15th International Conference on the Reduction of Drug Related Harm

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Abstract:

Harm reduction enjoyed a long history well before AIDS but was rejuvenated in the 1980s when the enormity of AIDS, the centrality of HIV among injecting drug users and the imperative need for pragmatic and effective measures to control HIV among and from injecting drug users was recognised. The 'risk compensation hypothesis' in psychology and the notion of 'moral hazard' in economics and finance demonstrates the need in many disciplines for measurement of costs and benefits of policy options which directly reduce adverse consequences and thereby introduce the possibility of compensatory increased risk behaviour. The intellectual debate about harm reduction as the preferred drug policy option is now over as existing evidence is incontrovertible. The political debate will continue for some time. Opposition continues and will do so for the foreseeable future as most opponents are little influenced by data. Misunderstanding about harm reduction is widespread and largely willful. However, the definition of harm reduction has been poorly articulated and ambiguity about the role of prevention of drug use is still common. In many countries it is time to move from the first phase of harm reduction - focusing on reducing adverse consequences - to a second phase which concentrates on reforming an ineffective and harm generating system of global drug prohibition.

Introduction:

Harm reduction has been and continues to be widely misunderstood, often wilfully. If harm reduction is to continue to advance in the future, its supporters have to clarify these misunderstandings and also more clearly spell out their goals for the future. As Yogi Berra once said, "You've got to be very careful if you

<http://www.adlrf.org.au/documents/harmreduction1.htm>

20/04/2005

Drug Free Australia also notes that there is nothing evidence-based about a strategy which sees harm-minimisation as a first stage leading to a second stage – drug legalisation.

Drug legalisation is an ideology based not on an empirical science of harms but on an ideal which is commonly denoted as ‘human rights’. However the human right to use drugs is not found anywhere within the United Nations’ list of such commonly agreed rights, and is idiosyncratic to a very small number of adherents.

Spurious claim of a failed War on Drugs

The central rationale for drug legalisation, which notably is also used as a rationale for pill testing, is the spurious claim that there has been a War on Drugs in Australia that has failed.

Australia has never had a War on Drugs - for the last 34 years Australian drug policy has done everything to facilitate drug use. For years we’ve handed free needles to drug users, maintained users on methadone for up to 40 years and given them injecting rooms.

If there has been a failure, it must be slated home to our overarching harm reduction drug policies,¹ which by definition do not aim to decrease drug use.²

Because policing has failed to eradicate drugs, the lobby says we should abandon the pursuit. Policing “blitzes” in the “war” on speeding have likewise failed, as with ‘wars’ on rape and stealing but we won’t be legalising them, as with drugs. Policing is for the purpose of containment, not elimination of drug use.

“They’re doing it anyway” provides zero justification

As the Dalgarno Institute has so incisively noted:

Faced with such overwhelming statistics pro-drug lobbyists use inevitability mantras such as, “they’re doing it anyway” to sway public opinion toward legalisation; but fail to apply the same arguments to other societal abuses such as paedophilia, obesity, gambling, domestic violence, alcohol or tobacco.

Contradiction in Australian Greens principles needs resolving

Drug Free Australia notes that the third principle of the Australian Greens’ drug policy is that all policy should be evidence-based. We therefore respectfully request the Australian Greens to nominate the Australian evidence-base for pill testing which is seen to overwhelm the evidence Drug Free Australia has presented here.

¹ <https://csr.arts.unsw.edu.au/media/CSRHFile/SRB07.pdf>

² <https://www.hri.global/what-is-harm-reduction>

APPENDIX A - 'Worth the test?' Pragmatism, pill testing and drug policy in Australia

Following is the Australian pill testing review referenced at page 32.

RESEARCH

Open Access



'Worth the test?' Pragmatism, pill testing and drug policy in Australia

Andrew Groves

Abstract

Background: Recent deaths of young Australian music festival attendees from 'party-drug' overdoses have sparked debate about the effectiveness of drug policies. Australia is widely lauded for its harm minimisation approach to drugs, and yet, over the last 30 years, it can be argued its policies have been fragmented, sometimes inconsistent and contradictory. The present article examines the root of this inconsistency, using it as a foundation to advocate for drug policy reform. In keeping with the goals of the National Drug Strategy to promote policy innovation, there is an opportunity to learn from international studies which have shown promising findings in the reduction of party-drug use and its harms through application of pill testing.

Method: This paper evaluates Australia's National Drug Strategy and pill testing through a lens of pragmatism, to determine whether there is space for testing practices in contemporary policy. Specifically, the paper analyses current drug policy literature and research studies, examining a range of key drug use indicators, social and political debate and research evidence.

Results: The need for policy reform, attitudinal and cultural shifts and development of stronger cross-sectoral partnerships is highlighted, to ensure a rational and logical approach that genuinely tackles drug policy-making and strategy from a broad public health perspective.

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Keywords: Pill testing, Harm minimisation, Pragmatism, Australian drug policy, Party-drug use

Background

Young people have long been associated with drug consumption, often displaying patterns of use distinct from the general population [1–3]. Like many other countries, the emergence of dance-music culture and 'raves' in Australia in the 1970–1980s bolstered the relationship between drugs and youth, creating dynamic settings in which consumption of so-called 'party-drugs' such as methamphetamines, ecstasy and other psychoactive substances has become common [4, 5]. For many young people (i.e. 18–29 years old), attendance at dance-parties and music festivals is a rite of passage within a hedonistic lifestyle where identity and social capital are built, pleasure is 'consumed' and alcohol and other drugs (AODs) are ubiquitous. However, youth party-drug use is typically

viewed by politicians, criminal justice professionals and the community as deviant, linked to risk-taking, transgression and individual corruption [6], manifest in a range of physical, psychological and social harms [1]. Indeed, there have been several deaths of young music festival attendees in Australia [7–9], which have held youth party-drug use at the forefront of political, social and media agendas. However, notwithstanding the tragic loss of young lives, what is concerning is that these fatal overdoses, and several 'near-misses', may have been avoided through more pragmatic and amoral drug policy and practice. Pill testing offers an alternative, yet it remains at the fringe of policy debate, shrouded by punitive praxis and government reticence despite support in the community.

Policy and practical 'problems'

Similar to recent experiences in the UK [10, 11] and Europe [12], Australian AOD policy is at a significant

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uncture. At the policy level, the implementation of the seventh iteration of the National Drug Strategy (NDS) demonstrates commitment to consistent, ongoing national drug policy [13] in response to the problem of drugs, both illicit and illicitly used (i.e. pharmaceuticals, alcohol and tobacco), under the philosophy of harm minimisation. The NDS outlines a series of principles addressing this philosophy, which prioritise delivery of evidence-informed responses, collaborative interdisciplinary partnerships and a trifurcated approach targeting demand, supply and harm reduction [13]. With regard to party-drugs, however, the application of this policy is contested. While the NDS claims the 'balanced adoption of effective demand, supply and harm reduction strategies' ([13]:1), in practice, the distribution of resources, action and policy reform across its 'three pillars' falls short of this claim. As discussed below, there are considerable funding gaps in AOD treatment [14], zero-tolerance remains the bastion of public policy and resources are principally expended on law enforcement [15, 16]. While in practice, it is not an either/or approach to supply, demand and harm reduction, nor are these domains mutually exclusive, clearly a balanced approach has not yet been achieved.

At the practical level, problems exist regarding the capacity of policy to recognise and respond to emerging patterns of problematic use, where novel, unknown drugs have entered markets [17] at a time when regular users have increased consumption of more potent forms, such as ice (crystal methamphetamine) and MDMA (3,4-methylenedioxymethamphetamine) [18, 19]. The current framework does not fully capture these nuances, constrained by hegemonic notions of abstinence. Instead, the goal should be to reduce the harms that occur when people use these unknown or more potent drugs, given the serious risks. Notably, despite law enforcement efforts and legislative changes [20], current harm reduction initiatives have been largely ineffective [21, 22], evident in monitoring data where certain groups of young people appear to resist social controls by continuing to use party-drugs. As noted in previous studies [23–25], this is because many young people see drugs as playing a normative and peripheral role in their lives, revealing an important transition in patterns of use, where party-drugs have become more mainstream, used by a heterogeneous cohort of ordinary young people [25]. This apparent normalisation has occurred alongside a trend where some users are unaware of what they are taking, engaging in 'opportunistic' purchases of drugs at clubs or music festivals rather than prior to events from more trusted networks [26].¹ Although no use is 'safe', these ad hoc practices substantively increase the risks as suppliers are more likely to be strangers, who may have a greater propensity to adulterate drugs with cheaper

and/or alternative substances [28, 29]. Reports have increased of ecstasy pills containing large amounts of methamphetamine [30] and other toxic substances (e.g. rat poison), with others recorded as very high-purity [18], which could seriously harm users. In combination, the rise in problematic patterns of use, the emergence of novel substances and imbalanced policy highlight the need for targeted and more pragmatic responses to youth drug use.

Pill testing/drug checking

Pill testing is a harm reduction strategy used internationally, also known as drug checking or adulterant screening [31, 32], which emerged in the early 1990s in the Netherlands [33] where it is now part of official national policy. Similar initiatives have since been implemented in other European nations including Sweden, Switzerland, Austria, Germany, Spain and France, albeit primarily administered and funded privately [12, 34]. Organisations such as *DanceSafe* also operate in the USA focused on harm reduction through peer-education, where a language of pragmatism has been established [34, 35]. Testing involves dance-party and music festival attendees volunteering a sample of their drugs for analysis by scientists, who provide information concerning composition and purity [32]. In Europe, this is typically undertaken in mobile facilities located near or inside venues to allow timely feedback to users (approx. 30 min). Results are then 'posted' anonymously on information boards or event websites (often using red/yellow/green colour-coding), so users can review feedback clearly and discreetly. These practices are possible through partnerships between event promoters, healthcare services and local police and a strong harm reduction philosophy [36, 37]. Most importantly, this approach has the capacity to influence consumption behaviour where, in contrast to relying on the strength of broad anti-drug campaigns, testing *in situ* can alter behaviour at the time of consumption, primarily shaped by peers and social networks [38], including health workers [39, 40]. Testing can also involve offsite analyses prior to events, encouraging planning among users, though it is less common as these services often require users to provide identification, increasing the perceived risks of being identified by police [41].

Pill testing is well supported at the local level in Europe, with self-report data from users, accounts from key stakeholders (including police) and wider community endorsement that it provides 'safer' drug settings by warning users about harmful and/or unexpected substances [34, 41]. Although research on its effectiveness is mixed (discussed below), there is practical evidence that pill testing has helped to reduce overdose frequency, improve healthcare services, and increase knowledge of

harm reduction principles [34, 41, 42]. Increased publicity for support services, advocacy for public health campaigns and opportunities for monitoring and research are further benefits observed internationally, which have fostered evidence-informed and more effective prevention and treatment [34, 36]. These outcomes have also served to extend discussion beyond notions of individual criminality and morality to encompass social, economic and welfare debates, challenging conventional thinking about concepts like harm, risk and social responsibility by considering social contexts of drug use to understand the relationship that individuals and environments have on drug-related harms [43]. It is important, however, to emphasise that drug use is dangerous and cannot be conceptualised as risk-free, nor is pill testing a ‘silver bullet’, with some well-documented concerns [44]. Instead, this article argues that pill testing needs to be viewed through a lens of pragmatism, where for certain users in certain settings, it is about providing young people with information about drugs and their use so they can make more informed choices to limit the associated harms, as well as making important practical changes to the settings in which drugs are used.

As discussed herein, such thinking appears confronting within the Australian drug policy landscape, where current discourse is dominated by dogma, moral conflict and criminal justice debate. Yet, this has not always been the case, as Australian drug policy has a fragmented history [45–47], shaped by the changing vagaries of various political, social and moral forces. The aim therefore is to determine whether pill testing ‘fits’ within this larger narrative and lay the foundation for more cogent drug policy, providing a valuable national framework that may be applicable to other international policy settings. Through this lens, the article examines Australia’s drug policy framework, evaluating a range of key indicators, current social and political debates, and contemporary research evidence. Together with discussion of previous examples of rational policy-making, this data will be used to offer support and provide a roadmap for implementation of pill testing as a more pragmatic strategy and to contribute to discussion of harm minimisation.

Methods: The National Drug Strategy: fragmentation, contradiction and pragmatism?

The question of how pill testing would fit within the NDS is thought-provoking because arguably, it could already. The NDS outlines Australia’s response to alcohol, tobacco and other (illicit) drugs and provides a national framework for coordinated action to limit their use and associated harms [1]. The strategy has been committed to this approach since its inception in 1985, established then as the National Campaign Against Drug Abuse (NCADA). As noted in the introduction, the

overarching focus and language of the NDS has been the improvement of public health and minimisation of harms associated with drug use [1, 19]. This was a substantive ideological shift away from traditional conceptualisations of drug use and drug users, which prior to the 1980s were often viewed in terms of disease metaphors (i.e. as ‘sick’) or as the behaviour of a deviant underclass [48]. In this way, harm minimisation was a pragmatic response that sought to shift debate (and policy-making) away from moral judgements about drug use [49]. It was a pivotal moment in Australian policy, signifying the recognition that because drugs have become a persistent feature of contemporary society, an innovative approach was needed to reduce drug-related harms, rather than simply criminalise users. Demonstrating this, one of the priorities of the 2017–2026 strategy is to prevent and reduce adverse health, social and economic consequences associated with AOD use, by

‘providing opportunities for intervention amongst *high prevalence or high risk groups and locations*, including the implementation of *settings-based approaches to modify risk behaviours*...systems to facilitate greater diversion into health interventions from the criminal justice system, particularly for... *young people* and other at-risk populations who may be experiencing disproportionate harm...[and a]... focus on evidence-based strategies shown to reduce alcohol and other drug hospital presentations, reduce the spread of blood-borne virus, decrease road trauma...and *decrease overdose risk*, with translation of this evidence to address new and emerging issues’ ([13]:23, emphasis added).

Many of these goals are consistent with the rationale for pill testing. So, while their achievement using this approach would not be without difficulty and would require cooperation between law enforcement, health and community sectors, such interdisciplinary partnerships, are already claimed as a success of the previous iteration of the NDS [13], as well as initiatives in other countries [41]. Why then, is there reticence among policy-makers to integrate pill testing into current Australian policy and practice?

This conservatism is symptomatic of a larger malaise in Australian crime control, where in recent decades, drug policy can be described as fragmented and contradictory [45–47]. Similar to the penal policies in the UK and USA in the late 20th century, Australian policy has been increasingly volatile and incoherent, fluctuating—often abruptly—between what Garland ([46]:450–9) characterises as adaptive strategies, focused on prevention and partnerships, and strategies of denial, which stress enhanced state control and expressive punishment. These

swings are the result of the normalisation of high crime rates and the state's acknowledgment of their inability to remedy this problem, creating a predicament for governments [46, 47]. As explored by O'Malley ([45]:181), this predicament is shaped by a 'recurring ambivalence' where governments seek to divest themselves of the chief responsibility for the delivery of crime control but recognise the political consequences of doing so. This is an enduring dilemma that helps to explain the fragmented and contradictory nature of recent policy. Indeed, the essence of Garland's argument remains as valid as it did more than 20 years ago as contemporary governments continue to struggle with various 'crime problems' (e.g. illicit drugs), in a politicised policy and social landscape where the state is 'confronted by its own limitations' ([46]:462), manifest in the perceived failure of criminal justice agencies and the state generally to control crime.

Garland's framework resonates further with Australian drug policy where, in an attempt to decentralise control but without undermining law and order agenda, politicians and other key actors have altered the discourse of drug policy and criminal justice debate by focusing on the effects of drug use rather than its causes [45, 47]. For example, a recent national campaign features content illustrating the effects of illicit drugs on victims, describes the costs for the community and draws on community fears of crime [50]. This discursive shift has several implications for how drug use is understood and regulated by the state. Firstly, this approach shows that while adaptive strategies are possible, such as prevention initiatives and partnerships between police and health-care providers, for certain groups of offenders (i.e. drug users), they are often 'politically difficult and institutionally radical', susceptible to moral opposition, failures of political will and conflicts of partisan politics ([47]:348, [51]). This results in policy that is inconsistent and vulnerable to changing political and public interests.

Secondly, by focusing on the effects on victims and the community and exposing debate to the vagaries of politics and the media, this approach positions the needs of society against those of the individual. Bull and colleagues [52] argue that this sets a path for policy where the objectives of support services and police conflict, and where harm minimisation goals become linked to more intensive, zero-tolerance policy, reinvigorating the debate about drugs as a problem of moral values. Placing the harms to society in opposition to, or above the harms to users, has the added consequence of the exclusion or 'othering' of drug users, in effect curtailing notions of social citizenship [46]. This has a much broader bearing on our understanding of crime and its control, not merely drug policy, as it creates a tension between two contradictory criminologies: of 'the self' (where the offender is rational and unremarkable) and of

'the other' (who is the dangerous outcast) [45, 47]. This duality produces two distinct but related possible responses by the state: denial of responsibility for the problem and the increased use of punishment as evidence of 'doing something'. This article shows that the Australian Government appears to have employed both responses in relation to the problem of party-drugs, with consequences for pill testing initiatives.

The challenges posed by pill testing reflect broader difficulties faced by policy-makers in balancing the goals and perceptions of public health and criminal justice responses to drugs. These stem partly from the duality of Garland's criminologies, where despite conceptualisation of the ordinary, rational offender, for certain crimes such as drug use the field of crime control is largely shaped by a 'collective experience of...insecurity' regarding the 'other' ([47]:347). Policy then, is often emotive, dominated by campaigns displaying graphic imagery of abuse, dependence and addiction [50, 53]. Similarly, calls for reform are often used by politicians and the media as opportunities to (re)activate moral debates. A legacy of the 20th century is that the drug problem is seen as a 'war' to be won [24], so in-line with increased anxiety about crime generally, drug policy has become a political tool through which zero-tolerance principles have flourished. For instance, research evaluations of recent advertising campaigns reveal most participants reported abstinence as the primary message conveyed [51]. The government has, in effect, displaced responsibility to users and their families to reduce drug-harms by avoiding 'bad choices' or 'just saying no'. This has followed a period of largely conservative policy-making overwhelmed by supply reduction strategies, with far greater funding (65%) directed to law enforcement (e.g. roadside testing, diversion), compared with harm reduction initiatives (2.2%) [15]. In relation to party-drugs, this has meant that while some valuable programs have been implemented, including the provision of 'chill-out' spaces and medical services at events [54], overall, programs for users have been limited. Moreover, while there is merit in an economic argument, the power of this data is its demonstration of an inability to control crime, the exclusion of users and a punitive approach that, despite evidence of its ineffectiveness [55, 56], is 'too inscribed and too politically potent to be easily dismantled by rational critique' ([46]:450). However, historically, pragmatic reform in the area of Australian drug policy is possible.

Pragmatism: looking back to move forward?

As noted in the introduction, Australia's drug policy domain is contested. In contrast to punitive criminal justice strategies, there have been initiatives successfully trialled and implemented nationally that follow principles of harm minimisation and public health. These examples

are central to the arguments presented herein, because they demonstrate effective praxis, as well as give shape to the theoretical lens through which this paper is viewed. Specifically, they address what Rhodes terms the 'risk environment' [43], that is, the need for emphasis on public health to drive discourse and action away from exclusively targeting theories of individual pathology, toward recognition of the social and environmental influences on behaviour and how problematic activities such as drug use might be better managed through more pragmatic means and cooperation. Drawn from research on HIV infection, Rhodes' framework [43] is particularly instructive because it can be used to better understand both the epidemiology of drug use, as well as how policy-makers, practitioners and the community might work together to reduce the associated harms. It highlights the need to share responsibility for tackling drug use across the community, given that drug-related harm intersects with criminal justice issues, health, vulnerability and various social problems—complex challenges faced by young people that require interdisciplinary and comprehensive responses. For example, while not without its own criticisms, the introduction of the Illicit Drug Diversion Initiative (IDDI) in 1999 officially signalled the utility of an operational relationship between police, health and support agencies [57]. The IDDI was created to reconcile tensions between these sectors, establish a more positive relationship and develop best-practice in responding to drug use. Among a range of rehabilitation and support programs, the IDDI also fostered development of several harm reduction-oriented policing strategies for local law enforcement, including Arrest Referral Schemes, where police refer minor drug offenders to assessment and education services, in lieu of criminal conviction, which research indicates is beneficial for police and leads to subsequent harm reductions (e.g. fewer days in incarceration) and increased support-seeking behaviour among drug users [52, 58, 59].

Another positive collaboration was marked by the introduction of Needle Syringe Exchange Programs (NSEPs) and the Medically Supervised Injecting Centre (MSIC) in Sydney, the largest capital city in Australia, located in New South Wales (NSW). The NSEPs were first trialled in 1986 [60], with the MSIC established in 2001 [52]. While, historically, there was conflict between police and health workers linked to these initiatives, legislative reforms and changes to NSW police operating procedures encouraged police to 'exercise discretion; work collaboratively and develop a positive relationship with local NSEPs; and promote the legal operation and positive outcomes of NSEPs to the wider community' ([52]:311). These changes complemented policy reform within NSW police, where overdose policies were amended to consider community interest and avoid pursuit of minor possession charges in non-fatal overdoses,

reforms subsequently adopted by all other states and territories [52]. This has contributed to arguably more effective responses to drug use (see p.12). However, these strategies are not without fault, nor does reform occur in a vacuum, often affected by economic, social and welfare policies and community attitudes within a wider political context. Consequently, making assumptions about the value of pill testing based solely on the introduction of the NSEP and MSIC is inappropriate. While indicative of more pragmatic responses to drug use (e.g. heroin), there were specific conditions that led to their introduction, which are temporally distal from the current context and argument presented. Primarily, the motivation for these initiatives came from general concerns regarding public health and the threat posed by HIV, related to the lack of access to safe injecting equipment and/or spaces and harms associated with needle-sharing [61]. These policies were not necessarily about supporting drug users, but avoiding an HIV epidemic. It is crucial then to acknowledge that similar momentum has not developed for pill testing, where drug use remains an 'us and them' problem and users are socially excluded.

Nonetheless, these are examples of pragmatic responses that sought to reduce drug-related harms, as well as foster cross-sectoral partnerships. Moreover, there is evidence some of these initiatives and reforms occurred during the 'Howard era', whose term of Liberal-National coalition (centre-right liberal conservative) government spanning more than 10 years (1996–2007) is usually associated with zero tolerance [62]. Alex Wodak, Director of the Alcohol and Drug Service at St Vincent's Hospital in Sydney, argues the 'tough on drugs' narrative and opposition to harm reduction that came to be associated with the Howard Government did not unilaterally translate into practice [63]. While Commonwealth funding was increased for abstinence-oriented treatment and support services [64], the Howard Government contemporaneously delivered—albeit discreetly—enhanced funding for NSEPs [63]. The lessons learned from the NSEPs are discussed further below, but it is clear that, ideologically, much more can be garnered from this and other examples. The message is that, although challenging, it is possible to pragmatically respond to drug use within a heavily politicised policy environment, by better understanding the nature of the problem and the responsibility to address it.

Results: Key indicators of the need for a more pragmatic approach

Since the emergence of dance-music culture in Australia, a variety of drugs including ecstasy and methamphetamines have been associated with this scene, used by young people to enhance their experiences [65]. The most recent National Drug Strategy Household

Survey (NDSHS) report in 2016 revealed 11.2% of Australians aged 14 years and over have ever tried ecstasy with 2.2% reporting use in the last 12 months [19]. Data are similar for use of methamphetamines with 6.3% reporting lifetime use and 1.4% revealing recent use [19]. Although these figures are lower than other western nations [44, 66], and demonstrate stable or declining rates of use, they reveal that more than 2.2 million Australians have used ecstasy, and more than 1.3 million have used methamphetamines in their lifetime. However, it is not the numeric value but the location and nature of use and associated harms that are of most concern. Firstly, although not representative, a sample drawn from the Ecstasy and Related Drugs Reporting System (EDRS) identified that up to 70% of this use occurs within clubs, dance-parties and music festivals [26]. This is supported by the representative NDSHS data, confirming them as important sites of analysis [19].

Secondly, there appear to be significant shifts in the forms of drug use in the dance-party scene, particularly among youth. This follows national trends, where those aged 20–29 are the most likely to have consumed illicit drugs generally, with more than a quarter (28%) reporting use in the previous 12 months [19]. Internationally, the prevalence of ecstasy and methamphetamine use among youth attending dance-parties is greater than general population rates [37, 42], which also describes the Australian experience [3]. Indeed, while overall rates of use of both substances reported in 2013 and again in 2016 represent a decline from peaks in 2007, these results mask the level of drug use among specific youth subgroups which has remained stable or increased. Sindicich and Burns [26] report that although recent users of ecstasy largely reported consistent use, typically two or three times a month, a quarter of the sample reported an increase to weekly use. During this period, similar patterns were identified among current methamphetamine users, with the use of the more potent ‘ice’ more than doubling, and a comparable increase observed in the proportion of users who consumed daily/weekly [65]. Although ecstasy use has not reached the levels observed in 2007, methamphetamine use has surpassed these benchmarks [19]. Again, the value of these findings is less in the absolute numbers and more about the behavioural patterns they suggest: chiefly, increased use of more potent substances, concentrated among a novel youth subgroup.

Equally important is the capacity of monitoring systems to respond to changes in drug markets, in order to track and respond to new groups of users. The primary form of monitoring in Australia is the EDRS, which compares interviews with regular ecstasy and other drug users and key professionals, with several key indicators to map trends in drug use, price, purity and availability.

In 2015, the EDRS revealed that ecstasy and methamphetamines were readily available and primarily of moderate quality/purity [26]. For ecstasy, although a third of users reported purity as moderate (35%), with a further 20% reporting high-purity pills, more than a quarter perceived levels to be fluctuating (29%). For methamphetamines, the data followed national trends with a shift toward ice, which was far more accessible (97% reported either ‘easy’ or ‘very easy’) and where purity was rated as either moderate (34%) or high (46%), although this form also experienced the greatest perceived fluctuation (15%) [26]. These figures describe accessible drugs that vary markedly in quality/purity, which is problematic as even moderate variations exacerbate already significant risks. Caution must be taken when interpreting these figures though, as they relate to relatively new and capricious drug use settings (e.g. music festivals). The EDRS also relies on data from sentinel groups of regular users (approx. 800 in 2016), as well as professionals (e.g. GPs, police, treatment providers) who interact with them, to determine consumption patterns [26]. Previous research [24, 25] has revealed that party-drug users, however, are a heterogeneous group of consumers, many of whom are educated, socially and economically stable and who rarely come into contact with criminal justice, treatment or support services. Many do not consider themselves more than ‘occasional’ users [25], so are not captured by existing data collections. In addition, although cross-sectional surveys are effective in evaluating users’ perceptions of consumption habits and online marketplace analysis (e.g. the recently shutdown ‘Silk Road’) [67] has emerged as a contemporary method to track drug sales, because drug samples are not scientifically tested, these perceptions and sales cannot be linked with what is actually consumed [68].

Wastewater analysis is another nascent form of monitoring used in the last decade in Australia [69, 70] which provides data about the level and type of drug use through testing of excreted drug residues in sewage/wastewater. This process is similarly limited in its scope to fully examine and minimise the harms associated with party-drug use. To date, these tests have focused primarily on defined geographical areas and broad population analyses (e.g. large catchment areas in capital cities and rural areas [69]), which prevents the linking of compositional data to what young people think they are taking, and sensitivity to changes in consumption trends of particular groups. Although wastewater analysis has been undertaken at Australian music festivals [71], again, only small-scale population data can be collected as this method is unable to record finer demographic detail. For example, data on gender, age and ethnicity of users, differences in route of administration, the number of users (i.e. occasional use by many or heavy use by a few)

and the different forms of drug used (e.g. ice versus speed) cannot be distinguished using wastewater analysis [72]. This method is further constrained by lag-times in data collection and analysis, incomplete databases and its retrospective approach, occurring once drugs have been taken, making it less responsive to market changes and less preventative in terms of the harms experienced and individuals' decisions to use drugs [67].

Another concern relates to the threats posed by new psychoactive substances (NPS), which have emerged in Australia [30, 68] following rapid rises in Europe [12, 32, 73] and popularity at dance-parties and music festivals. These substances, also known as analogues or synthetics, are designed to mimic established drugs [17] and often comprise new, untested chemicals used by drug manufacturers to replace others either in short supply or banned through changes to possession, production and importation laws. This means their contents and effects are unpredictable, placing users and the community at further risk of harm due to an ever-increasing number of 'unknowns'. This risk is demonstrated in recent findings from the USA and Canada, where several studies identified the introduction of fentanyl in the illicit drug market [74, 75]. Specifically, evidence suggests a wide range of pills (e.g. MDMA) and other drugs (e.g. methamphetamine, cocaine) have been laced with fentanyl, highlighting the potential danger of relying solely on existing practices and technologies, as often local laboratories or other facilities (e.g. hospitals, police) do not have capacity for fentanyl testing or detection of new analogues [74]. While drug use cannot be conceptualised as 'safe', greater knowledge of these substances arguably improves policy and treatment options. In recognition of this, questions regarding NPS were first incorporated into the NDSHS in 2013, where approximately 80,000 (0.4%) of the population indicated lifetime use, primarily 20–29 year olds [67]. This population has increased steadily since [19], although levels of use are likely underreported as these substances are characterised by psychoactive properties that imitate existing drugs. Users may therefore be unaware of what they are taking, confounding both monitoring and treatment efforts. Although no deaths linked to fentanyl have been confirmed in Australia, the presentation of 10 drug-affected youth in one night at Royal Perth Hospital in 2013 [30] demonstrates the devastating consequences of new 'batches' of unknown substances. Pill testing then may serve as an additional mechanism through which to maintain pace with shifts in drug use trends and contribute to more effective prevention and treatment. Certainly, pill testing cannot be a stand-alone tool; rather, best practice would be its integration into the current NDS to provide both general data on consumption trends and market fluctuations and specific information to users to reduce drug-related harms.

Discussion: Research evidence: 'What works?'

Like most debates about policy reform, a key question in the rationale for pill testing is whether it 'works'. The literature is complicated and, to date, no studies have fully tested in a controlled way, whether pill testing reduces harms. Most evaluations concern attitudinal change (e.g. what people *would do* [20]), legal issues and the integrity of various analytic procedures, with others describing program features or contextually relevant praxis [76], so although not within the scope of this paper, a large, multi-site systematic review of testing practices is needed. Nevertheless, part of the paradox of pill testing comes from expectations of drug policy and practice generally, where effectiveness is often measured in language of abstinence. As a robust body of literature has shown [48, 77], however, abstinence is a goal that displays ignorance of reality. A much broader definition is needed, which demarcates effectiveness more pragmatically, as any strategy shown to improve public health or reduce the prevalence or severity of drug-related harms. For example, connecting users with support services, increasing education and awareness, monitoring market changes and encouraging avoidance of dependence are strategies shown to be effective in Europe [41, 77]. Despite this, like in the UK [10, 77], Australian policy-makers have appeared to take limited account of these findings. Only recently has meaningful debate begun on some of these issues in an unprecedented drug summit, convened in 2016 by the Australian Parliamentary Group on Drug Policy and Law Reform (APGDPDR). It is too early to gauge the full impact of the summit, other than its symbolic value in bringing together key stakeholders, and their collective agreement that the current approach is not working [78]. It is logical then, to seek further guidance on drug policy reform.

In many ways, Australia's experience mirrors recent trends in the Netherlands [41], Portugal [79], and Switzerland [37], particularly in terms of rates of ecstasy and methamphetamine use and the emergence of NPS. Over the last 20 years, the political landscapes in these countries have similarly been characterised by growing concerns over the social exclusion and marginalisation of drug users, sparking substantive policy reforms. Although policy transfer is not 'one-size-fits-all', influenced by community attitudes, individual rights, broader political structures, and the different ways (drug) problems are experienced [77], much can be learned from these examples. In Portugal, for instance, pill testing was implemented alongside comprehensive changes to policy, discourse and philosophy about their drug problem. Personal possession of all drugs was decriminalised in 2001, following radical shifts in social thinking (akin to Rhodes' approach [43])—that conceptualised drugs as a public health concern, leading to increased resourcing

of prevention, treatment and social reintegration programs [80]. Although attitudes to drugs are more liberal in Europe [41], suggesting caution in any comparative analyses, the literature indicates that, in particular settings, pill testing can reduce the prevalence of harms for users, influence youth decision-making and positively impact drug markets. In terms of the latter, pill testing has been shown to affect the manufacture and distribution of pills [41, 81]. By accurately identifying drug content and purity/potency, the Netherlands' Drug Information and Monitoring System (DIMS), for example, has informed national warning campaigns, which has pushed dangerous, low-quality substances from the market [41, 81]. Another benefit has been, over time, the composition of tested pills has begun to more closely correspond with expectations [32, 76], increasing overall drug-quality, while alleviating some of the strain on under-funded healthcare and support agencies by reducing the prevalence of overdoses and hospital admissions [15].

Most notably, pill testing has been shown to positively affect users' behaviour, contradicting claims often used as the rationale for criminalisation that 'soft' options encourage increased uptake and use, particularly among youth [68, 82, 83]. Evaluation of the *chEckiT* project in Austria reported approximately half of users whose drugs were tested indicated that information about quality/purity would influence their decision to take them [36]. If presented with a negative result, two thirds reported they would not consume their drugs and would also warn friends against consumption [36, 76]. This corresponds with research from the Netherlands [37], which revealed no increases in the use of most party-drugs (or poly-drug use) because of pill testing and provision of drug information. This also supports evaluations of the reforms in Portugal, where pill testing, as part of a wider public health approach, in fact reduced problematic use, related harms and burden on the justice and healthcare systems [79, 80]. Similarly, when users access testing sites (e.g. at festivals), it allows health and support workers to establish contact with this hard-to-reach population and provide advice about the support available [34]. This is crucial as it is often the first interaction these young people have with any type of support service [31, 37], given they represent a diverse and well-balanced cohort, who are less likely to come into contact with the criminal justice or healthcare systems. Furthermore, party-drug users appear to be highly receptive to harm reduction and prevention measures and/or messages when they are delivered face-to-face and by more trusted sources [42], even among dependent and poly-drug users [37]. As found by several studies, the contact users have with support workers, combined with factual information concerning

individual drug purchases and other market information, provide a strong foundation for subsequent health-conscious behaviour [41, 84]. Because young drug users often dismiss government messages as untrustworthy, they are also better persuaded by well-informed peers or professionals [40, 41]. This strategy has long-term benefits, shown to increase users' motivation for subsequent participation in follow-up counselling sessions [32, 37], providing impetus for support of peer-education and peer-led interventions.

A final feature of pill testing is that it enables monitoring of drug-forms, patterns of consumption and the characteristics of users [37]. The party-drug scene is typified by the use of a large range of substances, the composition of which is expectedly variable and inconsistent. Widespread testing within this setting enables collection of long-term trend data about what users are actually taking, useful for identification of current markets and drug-taking methods [32, 42]. This would in turn build academic research capacity, improve prevention planning and enhance knowledge and research methodology, through directly linking users' perceptions with their consumption rather than relying on self-report or broad population studies. This may also influence existing supply and demand reduction efforts where, for example, many users report reliance on online networks and/or websites that provide more comprehensive information on drug purity, availability and effects than is available through official sources [82]. The dissemination of more accurate drug information from pill testing, through these online channels (e.g. social media, online forums), could identify and force out of the market websites or dealers found to be sharing inappropriate and/or incorrect information, which is likely impact supply routes, helping police to direct their resources. Beyond this, compared with retrospective analyses (e.g. wastewater analysis), in situ pill testing has the capacity to act as an early warning system to identify the emergence of new drugs more quickly, which is critical given the recent surge in NPS [73, 85]. Overall, these factors allow policy-makers and support services to be more responsive to dynamic market shifts and build knowledge for the development of targeted prevention initiatives. In Australia, however, unquestionably drug policy debate is over-shadowed by philosophical and moral conflict, so for pill testing to be possible requires broader acceptance and a clear direction for its implementation.

Support in the Australian context

A number of policy models set out a way forward for the introduction of pill testing, which has, in fact, already been trialled in Australia, albeit briefly [86, 87]. In the 'Enchanted Forest' raves in South Australia from 2000 to 2001, a group of physicians with the backing of

the Australian Medical Association (AMA), several harm reduction non-government organisations (NGOs) and the 'understanding of local authorities' examined ravers' pills in an attempt to reduce consumption [88, 55]. Indicative of the contentious and fragile nature of drug policy though, these trials were terminated after only a short period by the Howard Government [86, 89]. Despite limited opportunity, the research was able to identify large variations in pill composition, emergence of new substances and discrepancies in police testing procedures [88], providing a platform for more comprehensive follow-up, as well as indication of local-level support from experts and health practitioners.

A wealth of empirical data also reveals considerable community support for pill testing, challenging punitive criminal justice responses to drug use. Several studies [76, 90] and the 2013 NDSHS report [65] suggest many Australians see little value in punitive sanctions (e.g. imprisonment, increased fines) for drug use. Instead, referral of users to treatment or education programs appears the preferred response (approx. 45%), with only drug manufacture and distribution perceived to warrant harsh penalties. Drawing from a large ($n > 2300$) internet survey of young Australians, Lancaster and colleagues [76] report the majority back the implementation of pill testing (82.5%), as well as other harm reduction initiatives (NSEPs 76%, 'chill-out zones' 65.6%). An even greater level of support was reported in a survey conducted at a major Australian music festival in 2016, where most participants (86.5%) believed testing services could help to reduce harm for users [3]. These findings describe a cohort that values information and seeks to engage in safer practices, regardless of whether they use drugs. Notably, many youth also appear to translate this drug knowledge into behavioural change, with an Australian study finding more than three-quarters of regular ecstasy users would not take an 'unknown pill' [91]. A similar result was identified in a more recent sample of users at Australian dance-parties or music festivals [29], where 90% reported seeking information about drug contents in the last 12 months. Most of these respondents (60%) had encountered unexpected substances or problems with drug purity during this period, which motivated them to alter their behaviour with more than half warning friends (51%), many deciding not to consume their drugs (39%) and more than a quarter reducing the amount they consumed (28%) [29]. Most respondents also reported they would use a form of self-testing (94%), onsite event testing (94%) or a fixed-site (i.e. 'drop-in') service, and valued services that provided comprehensive, individual feedback rather than only when dangerous results were found. This reinforces previous claims that young people can be persuaded to make rational decisions and are willing to use testing

services, which may elicit positive behavioural change at the time of use, reducing some drug-related harms [84].

If pill testing is to be discussed constructively, the final piece of the puzzle is the maintenance of cross-sectoral partnerships. Strong links must be (re)forged between government, police, AOD treatment services and research institutions, as well as with nightclub and music festival industries. There is already movement from within the latter for such partnerships [92, 93]. However, as noted by these groups, the success of any initiative is contingent upon the extent of support from key stakeholders—health, police and government—to serve as 'drug policy actors' [11], [5], [94]. These agencies need to lead innovation in thinking and practice, as there remains considerable political capital in the debate that will otherwise impede creation of better drug policy. For example, the police are a critical element in any approach, as to be meaningful, policy must avoid the trap of net-widening and tacitly supporting harm reduction, while allowing police to 'pick up' users elsewhere within the system [10, 79]. Harm reduction-oriented policing initiatives must also be clearly defined, well-resourced and widely supported given police play a complex role as an initial contact for many users and conduit for providing case management, links to drug treatment, job training, housing assistance, legal advocacy and counselling [60]. There have been examples of successful initiatives, one of which I will discuss briefly before concluding.

The aforementioned NSEPs and MSIC in Sydney are examples of positive law enforcement-health partnerships. Radical at the time, the trajectory of the relationships between police and healthcare and treatment providers, support services and NGOs provides fertile ground for discussion and the foregrounding of future reforms, as there was a discernible shift in thinking and application that led to positive outcomes for the community (e.g. reduced public drug use and associated 'litter') and for users (e.g. safer spaces and access to treatment and support). Indeed, the response to drug use in this particular context shifted from a situation of law enforcement opposition and policing practices that largely undermined the operation of these programs, to one where legislative reforms and organisational policy changes facilitated the effective operation of treatment and support services and their ongoing cooperation with NSW police [51]. For instance, possession of injecting equipment or drug paraphernalia was an offence, creating obvious risks for individuals seeking assistance, as well as the NSEPs or MSIC themselves, as organisations that dispense drug-related equipment and provide information regarding their use, while seeking to create a safer, supervised space for people to use their drugs without police interference. In NSW, the solution was

reform of the relevant drug control legislation [95], which permitted health and support service personnel within the NSEPs to provide equipment and information to users, or a supervised space in the MSIC without exposing them to prosecution under the *Drug Misuse and Trafficking Act* (NSW) 1985 [96]. A *Commissioner's Instruction* was also circulated in NSW in 1988, which shaped police operational practice to follow harm reduction principles, directing police to avoid unnecessary patrols of the areas surrounding the NSEPs and MSIC and to use discretion to prevent the discouragement of users seeking help, while ensuring dealers did not take advantage of the perceived leniency [51].

In summary, what was created was a more supportive, public health-focused environment where users were exempted from prosecution and legal constraints related to drug use and/or possession while on the premises and where discretion was applied in policing the surrounding area. To do otherwise would have undermined the purpose of these important and ongoing policy initiatives, analogues of which have since been implemented in most other jurisdictions. Though there are some clear differences in the rationale and application of these initiatives, the success of NSEPs and the MSIC suggests there is scope for a comparable response to party-drug use, with ongoing collaboration and engagement between law enforcement and health services facilitated through an integrated policy comprising pill testing.

Conclusion: worth the test?

The problem of drugs—both illicit and illicitly used—is a feature of contemporary social life, for which alternative strategies are needed to reduce the harms for users, their families and the wider community. From analysis of key data and the wider literature, it is evident certain forms of problematic party-drug use are concentrated among a small proportion of young club and music festival attendees, challenging the limits of current Australian drug policy and practice. In these dynamic spaces, party-drugs such as ecstasy and methamphetamines are readily available and widely used, with recent evidence of increased consumption of more potent forms (i.e. MDMA and ice) by young people. Pill testing is needed to monitor the quality/content of drugs used, as well as the rapid rise of NPS, which pose significant risks to users and those who share the social spaces of clubs and music festivals.

Pill testing is not a novel concept; in fact, its objectives are consistent with Australia's NDS, as well as several extant programs. Notwithstanding a strong philosophical rhetoric of harm minimisation, in practice, government policy remains conservative in its approach, prioritising law enforcement strategies and zero-tolerance policies. This is despite evidence of their limited effectiveness, as

well as growing support from experts, academics and the community highlighting the need for an alternative approach. Several national surveys and empirical studies have shown that although drug use is illegal, there is a widespread support that harm reduction and public health-focused strategies are, at least, equally worthwhile. Nevertheless, achievement of these goals requires movement beyond entrenched philosophical and moral arguments, which have historically played a part in producing fragmented and contradictory drug policy. Drawing from Garland [46, 47] and O'Malley [45], it is clear the Australian government is concerned that retreat from a tough stance represents a capitulation in an already failed 'war on drugs'. This article then shows the need to move away from the politics of drug policy toward more evidence-based strategies to maximise the safety of young people that choose to use drugs who, if given the opportunity to do so more safely, will likely 'grow out' of use, without the stigma and harms associated with criminalisation. While unambiguous, zero-tolerance messages are unrealistic and disregard contemporary patterns of youth drug use. In contrast, pill testing offers an alternative message; that drug use *is* dangerous, and informing users about what they are taking and the risks not only demonstrates social responsibility for this marginalised group but also that young people have the capacity for rational decision-making and may desist from drug use because they see the risks for the first time.

Taking a more pragmatic view of harm reduction by expanding measures of effectiveness beyond abstinence, to include increased awareness, reduced consumption and other behavioural changes (e.g. peer information sharing), this article has argued pill testing can be an effective harm reduction tool in a range of contexts, with support for its implementation in Australia and opportunities for its broader application in other countries and drug use settings. Evidence suggests pill testing offers several advantages, facilitating long-term data capture, contributing to knowledge on the nexus between consumption habits and perceptions of use, positively influencing drug markets and overall drug quality, while also enabling essential contact between users and support services. Pill testing also encourages cross-sectoral partnership, greater social inclusion and youth agency (including peer-education and engagement), where the task of harm reduction is understood as a shared social, public health responsibility. Indeed, Australian policymakers should look to and learn from other policy settings, notably Portugal, with the similarly broad aim of lessening the burdens on healthcare systems, overcrowded criminal justice institutions and families, while also reducing problematic use. In this way, pill testing serves as a platform for more nuanced discussion of

drug policy ideas and applications, particularly the need for innovative responses, to avoid the deaths of more young Australians. Australia is in the position to, at the very least, conduct comprehensive trials of pill testing and related strategies (e.g. DIY pill testing kits), to enable evidence-based decision-making. Pill testing cannot eliminate the harms of drug use, but it is not intended to. It represents a model that best functions as one part of a much wider harm reduction strategy, to provide less punitive and more pragmatic responses to drug use for the protection of a generation of young club and music festival attendees, clearly establishing its worth in the Australian drug context.

Endnotes

¹This is likely a response to the increased use of ‘sniffer-dogs’ at recent music festivals, despite considerable criticism and research evidence of their ineffectiveness [27].

Abbreviations

ACIC: Australian Criminal Intelligence Commission; AIHW: Australian Institute of Health and Welfare; AMA: Australia Medical Association; AOD: Alcohol and other drugs; APGDPLR: Australian Parliamentary Group on Drug Policy and Law Reform; DIMS: Drug Information Monitoring System; DIY: Do-it-yourself; EDRS: Ecstasy and Related Drug Reporting System; EMCDDA: European Monitoring Centre for Drugs and Drug Addiction; HIV: Human immunodeficiency virus; IDD: Illicit Drug Diversion Initiative; MDMA: 3,4-Methylenedioxyamphetamine; MSIC: Medically Supervised Injecting Centre; NCADA: National Campaign Against Drug Abuse; NDS: National Drug Strategy; NDSHS: National Drug Strategy Household Survey; NGO: Non-Government Organisation; NPS: New psychoactive substances; NSEP: Needle and syringe exchange program

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References

1. Ministerial Council on Drug Strategy (MCDS). National Drug Strategy 2010–2015: a framework for action on alcohol, tobacco and other drugs. Canberra: MCDS; 2011. Available from: [http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/DB4076D49F13309FCA257854007BAF30/\\$File/nds2015.pdf](http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/DB4076D49F13309FCA257854007BAF30/$File/nds2015.pdf)
2. Odgers P. Adolescent substance use. In: Hamilton M, Kellehear A, Rumbold G, editors. Drug use in Australia: a harm minimisation approach. Melbourne: Oxford University Press; 1998. p. 111–29.
3. Day N, Criss J, Griffiths B, Gujral S, John-Leader F, Johnston J, Pit S. Music festival attendees' illicit drug use, knowledge and practices regarding drug content and purity: a cross-sectional survey. *Harm Red J*. 2018;15:1–8.
4. Hando J, O'Brien S, Darke S, Maher L, Hall W. The illicit drug reporting system (IDRS) trial: final report. National Drug Strategy Monograph, no. 31AGPS: Canberra; 1996.
5. Laslett A, Rumbold G. The epidemiology of Australian drug use. In: Hamilton M, Kellehear A, Rumbold G, editors. Drug use in Australia: a harm minimisation approach. Melbourne: Oxford University Press; 1998. p. 30–47.
6. Kellehear A, Cvetkovski S. Grand theories of drug use. In: Hamilton M, Kellehear A, Rumbold G, editors. Drug use in Australia: a harm minimisation approach. Melbourne: Oxford University Press; 1998. p. 48–59.
7. Crouch B. Stereosonic drug deaths: should we be testing illegal drugs to see if they're safe? *The Advertiser*. [Internet] 6 Dec 2015. Available from: <http://www.adelaidenow.com.au/news/south-australia/stereosonic-deaths-call-for-inquest-into-deaths-at-music-festival/news-story/40bbeb4339e0f3af7c5f9fcb195baca4>. Accessed 1 Apr 2016.
8. McClellan B, Fyfe-Yeomans J. Stereosonic music festival: police despair as Sylvia Choi, 25, dies after taking ecstasy. *The Daily Telegraph*. [Internet] 30 Nov 2015. Available from: <https://www.dailytelegraph.com.au/news/nsw/stereosonic-music-festival-police-despair-as-sylvia-choi-25-dies-after-taking-ecstasy/news-story/2392528f4ed8d68497fe337fff05f9e>. Accessed 1 Apr 2016.
9. Kyriacou K, McCormack M. Mount Lindesay New Year's party turns deadly. *Courier Mail*. [Internet] 2 Jan 2017. Available from: <http://www.couriermail.com.au/news/queensland/mount-lindesay-new-years-party-turns-deadly/news-story/4d3f9d4f1058cd834cbe8741964acc45>. Accessed 30 Nov 2017.
10. Shiner M. Drug policy reform and the reclassification of cannabis in England and Wales: a cautionary tale. *Int J Drug Policy*. 2015;26:696–704.
11. Austen L. Police and crime commissioners: emerging “drug policy actors”? *Safer Communities*. 2016;15:4–10.
12. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). European drug report 2015: trends and developments. Lisbon: EMCDDA; 2015.
13. Department of Health. National Drug Strategy 2017–2026. Canberra: Department of Health; 2017.
14. Ritter A, Stoope M. Editorial: alcohol and other drug treatment policy in Australia. *Med J Aust*. 2016;204:138–9.
15. Ritter A, McLeod R, Shanahan M. Government drug policy expenditure in Australia - 2009/10. Drug policy modelling program, monograph 24 Sydney: National Drug and Alcohol Research Centre; 2013. Available from: <https://ndarc.med.unsw.edu.au/resource/24-government-drug-policy-expenditure-australia-200910>. Accessed 12 Jan 2017.
16. Ritter A, Chalmers J, Berends L. Health expenditure on alcohol and other drug treatment in Australia (2012/2013). *Drug Alcohol Rev*. 2015;34:397–403.
17. Bright S. Not for human consumption: new and emerging drugs in Australia. Prevention research Melbourne: Australian Drug Foundation; 2013.
18. Stafford J, Breen C. Australian trends in ecstasy and related drug markets 2016. Findings from the ecstasy and related drugs reporting system (EDRS). Australian Drug Trends Series No. 172 Sydney: NDARC. UNSW Australia; 2017.
19. Australian Institute of Health and Welfare (AIHW). National Drug Strategy Household Survey detailed report 2016. Drug Statistics Series No. 31 Canberra: AIHW; 2017.
20. Hughes C. The Australian (illicit) drug policy timeline: 1985–2016, Drug policy modelling program. Sydney: National Drug and Alcohol Research Centre; 2016.
21. Caldicott D. We can't eradicate drugs, but we can stop people from dying from them. *The Conversation*. [Internet] 16 Feb 2016. Available from:

- <https://theconversation.com/we-cant-eradicate-drugs-but-we-can-stop-people-dying-from-them-54636>. Accessed 23 Oct 2016.
22. Skeer M. Why it's important to just say no to bad drug policy. *The Conversation*. [Internet] 30 Mar 2017. Available from: <https://theconversation.com/why-its-important-to-just-say-no-to-bad-drug-policy-74799>. Accessed 8 Dec 2017.
 23. White B, Degenhardt L, Breen C, Bruno R, Newman J, Risk PP. Benefit perceptions of party drug use. *Addict Behav*. 2006;31:137–42.
 24. Groves A. Rethinking the methamphetamine situation: perceptions of risk and current policy dialogue. *Current Issues Crim Justice*. 2014;26:195–217.
 25. Groves A. Young People's perceptions of the risks of methamphetamine use in Adelaide nightclubs: a quantitative study. *Flinders Law J*. 2015;17:95–126.
 26. Sindich N, Burns L. Australian drug trends 2015: findings from the ecstasy and related drugs reporting system (EDRS). Australian drug trends conference, Sydney. Sydney: National Drug and Alcohol Research Centre; 2015.
 27. Hughes C, Moxham-Hall V, Ritter A, Weatherburn D, MacCoun R. The deterrent effects of Australian street-level drug law enforcement on illicit drug offending at outdoor music festivals. *Int J Drug Policy*. 2017;41:91–100.
 28. Coomber R. The adulteration of illicit drugs: what dealers do to illicit drugs, and what they think is done to them. *Addict Res*. 1997;5:297–306.
 29. Barratt M, Bruno R, Ezard N, Ritter A. Pill testing or drug checking in Australia: acceptability of service design features. *Drug Alcohol Rev*. 2018;37:226–36.
 30. McCutcheon D, Oosthuizen F, Hoggett K, Fatovich D. A bolt out of the blue: the night of the blue pills. *Med J Aust*. 2015;202:543–4.
 31. Ritter A. Six reasons Australia should pilot 'pill testing' party drugs. *The Conversation*. [Internet] 12 Nov 2014. Available from: <https://theconversation.com/six-reasons-australia-should-pilot-pill-testing-party-drugs-34073>. Accessed 12 Jan 2017.
 32. Ventura M, Noijen J, Bucheli A, Isvy A, van Huyck C, Martins D, Nagy C, Schipper V, Ugarte M, Valente H. Drug checking service: good practice standards. Europe: Nightlife Empowerment & Well-being Implementation Project (NEWIP); 2015.
 33. Winstock A, Wolff K, Ramsey J. Ecstasy pill testing: harm minimization gone too far? *Addiction*. 2001;96:1139–48.
 34. Kriener H, Billeth R, Gollner C, Lachout S, Neubauer P, Schmid R. An inventory of on-site pill-testing interventions in the EU. Vienna: EMCDDA; 2001.
 35. Dundes L. DanceSafe and ecstasy: protection or promotion? *J Health Soc Policy*. 2003;17:19–36.
 36. Kriener H, Schmid R. Check your pills. Check your life. ChEck iT! High quality on-site testing of illicit substances: information, counselling and safer use measures at raves in Austria. *DrugText*. [Internet] 2005. <https://www.pdf.investintech.com/preview/72856708-1d0a-11e8-b174-0cc47a792c0a/index.html>. Accessed 14 Jan 2017.
 37. Hungerbuehler I, Buecheli A, Schaub M. Drug checking: a prevention measure for a heterogeneous group with high consumption frequency and polydrug use—evaluation of Zurich's drug checking services. *Harm Reduct J*. 2011;8:16–22.
 38. Australian Institute of Health and Welfare. Young Australians: their health and wellbeing. (Cat. No. PHE 140) Canberra: AIHW; 2011.
 39. Gamma A, Jerome L, Liechti ME, Sumnall HR. Is ecstasy perceived to be safe? A critical survey. *Drug Alcohol Depend*. 2005;77:185–93.
 40. Murphy PN, Wareing M, Fisk J. Users' perceptions of the risks and effects of taking ecstasy (MDMA): a questionnaire study. *J Psychopharmacol*. 2006;20:447–55.
 41. Brunt T, Niesink R. The Drug Information and Monitoring System (DIMS) in the Netherlands: implementation, results, and international comparison. *Drug Test Anal*. 2011;3:621–34.
 42. Chinet L, Stephan P, Zobel F, Halfon O. Party drug use in techno nights: a field survey among French-speaking Swiss attendees. *Pharmacol Biochem Behav*. 2007;86:284–9.
 43. Rhodes T. The 'risk environment': a framework for understanding and reducing drug-related harm. *Int J Drug Policy*. 2002;13:85–94.
 44. Winstock A, Griffiths P, Stewart D. Drugs and the dance music scene: a survey of current drug use patterns among a sample of dance music enthusiasts in the UK. *Drug Alcohol Depend*. 2001;64:9–17.
 45. O'Malley P. Volatile and contradictory punishment. *Theor Criminol*. 1999;3:175–96.
 46. Garland D. The limits of the sovereign state strategies of crime control in contemporary society. *Brit J Criminol*. 1996;36:445–71.
 47. Garland D. The culture of high-crime societies: some pre-conditions of 'law and order' societies. *Brit J Criminol*. 2000;40:347–75.
 48. Lang E. Drugs in society: a social history. In: Hamilton M, Kellehear A, Rumbold G, editors. *Drug use in Australia: a harm minimisation approach*. Melbourne: Oxford University Press; 1998. p. 1–13.
 49. Rumbold G, Hamilton M. Addressing drug problems: a case for harm minimisation. In: Hamilton M, Kellehear A, Rumbold G, editors. *Drug use in Australia: a harm minimisation approach*. Melbourne: Oxford University Press; 1998. p. 130–44.
 50. Smethurst A. Anti-ice ads aimed at partying school leavers. *Daily Telegraph*. [Internet] 24 Sep 2017. Available from: <https://www.dailytelegraph.com.au/news/nsw/antiice-ads-aimed-at-partying-school-leavers/news-story/332c6e2df8d50e923d15482b1f1d50a6>. Accessed 8 Dec 2017.
 51. Stancombe Research & Planning. National drugs campaign 2015 research evaluation: quantitative research report. Prepared for the Australian Government Department of Health; 2015.
 52. Bull M, Denham G, Trevaskes S, Coomber R. From punishment to pragmatism: sharing the burden of reducing drug-related harm. *Chin J Comp Law*. 2016;4:300–31.
 53. Seear K, Fraser S. Beyond criminal law: the multiple constitution of addiction in Australian legislation. *Addict Res Theory*. 2014;22:438–50.
 54. Drug and Alcohol Services of South Australia and South Australia Police. Guidelines for safer dance parties. Adelaide: DASSA; 2006.
 55. West S, O'Neal K. Project DARE outcome effectiveness revisited. *Am J Public Health*. 2004;94:1027–9.
 56. Resiak D, Mpofu E, Athanasou J. Drug treatment policy in the criminal justice system: a scoping literature review. *Am J Crim Justice*. 2016;41:3–13.
 57. Hughes C. Evidence-based policy or policy-based evidence? The role of evidence in the development and implementation of the illicit drug diversion initiative. *Drug Alcohol Rev*. 2007;26:363–8.
 58. Bull M. Just treatment: a review of international programs for the diversion of drug related offenders from the criminal justice system. Queensland: QUT; 2003.
 59. Barry C. Fentanyl and the evolving opioid epidemic: what strategies should policy makers consider? *Psychiatr Serv*. 2017;69:100–3.
 60. Dolan K, MacDonald M, Silins E, Topp L. Needle and syringe programs: a review of the evidence. Canberra: Australian Government Department of Health and Ageing; 2005.
 61. Fry C, Fox S, Rumbold G. Establishing safe injection rooms in Australia: attitudes of injecting drug users. *Aust NZ J Publ Health*. 1999;23:501–4.
 62. Mendes P. Social conservatism vs harm minimisation: John Howard on illicit drugs. *J Econ Soc Policy*. 2001;6:1–15.
 63. Wodak A. Is the Howard government tough on drugs? *Soc Res Briefs*. 2004;7:1–2.
 64. Miller S. Evaluation and monitoring of the National Drug Strategy 2004–2009: final report. Kenmore: Siggins Miller; 2009.
 65. Australian Institute of Health and Welfare (AIHW). National Drug Strategy Household Survey detailed report 2013. *Drug Statistics Series No. 28* Canberra: AIHW; 2014.
 66. McCambridge J, Mitcheson L, Winstock A, Hunt N. Five-year trends in patterns of drug use among people who use stimulants in dance contexts in the United Kingdom. *Addiction*. 2005;100:1140–9.
 67. Burns L, Roxburgh A, Bruno R, Van Buskirk J. Monitoring drug markets in the internet age and the evolution of drug monitoring systems in Australia. *Drug Test Anal*. 2014;6:840–5.
 68. Butterfield R, Barratt M, Ezard N, Day R. Drug checking to improve monitoring of new psychoactive substances in Australia. *Med J Aust*. 2016;204(4):144–6.
 69. Lai FY, O'Brien J, Thai PK, Hall WD, Mueller JF. Trends in methamphetamine residues in wastewater in metropolitan and regional cities in south-east Queensland, 2009–2015. *Med J Aust*. 2016;204:151–2.
 70. Tschärke BJ, Chen C, Gerber JP, White JM. Temporal trends in drug use in Adelaide, South Australia by wastewater analysis. *Sci Total Environ*. 2016;565:384–91.
 71. Lai FY, Thai PK, O'Brien J, Gartner C, Bruno R, Kele B, Ort C, Prichard J, Kirkbride P, Hall W, Carter S, Mueller JF. Using quantitative wastewater analysis to measure daily usage of conventional and emerging illicit drugs at an annual music festival. *Drug Alcohol Rev*. 2013;32:594–602.
 72. Australian Criminal Intelligence Commission. National Wastewater Drug Monitoring Program: report 1. Canberra: ACIC; 2017.
 73. Vidal Giné C, Fornís Espinosa I, Ventura Vilamala M. New psychoactive substances as adulterants of controlled drugs. A worrying phenomenon? *Drug Test Anal*. 2014;6:819–24.

74. Klar S, Bordkin M, Gibson E, Padhi S, Predy C, Green C, Lee V. Fentanyl overdose events caused by smoking contaminated crack cocaine—British Columbia, Canada, July 15–18, 2016. *Health Promot Chron Dis Prev Can.* 2016;36(9):200–1.
75. McCall Jones C, Baldwin GT, Compton WM. Recent increases in cocaine-related overdose deaths and the role of opioids. *Am J Public Health.* 2017; 107(3):430–2.
76. Lancaster K, Ritter A, Matthew-Simmons F. Young people's opinions on alcohol and other drug issues: National Drug and Alcohol Research Centre. Canberra: Australian National Council on Drugs; 2013.
77. Babor T, Caulkins J, Edwards G, Fischer B, Foxcroft D, Humphreys K, et al. *Drug policy and the public good.* Oxford: Oxford University Press; 2010.
78. Australian Parliamentary Group on Drug Policy and Law Reform. (APGDPLR). *Parliamentary Drug Summit 2016*, 2 Mar 2016. Available from: <https://greens.org.au/sites/greens.org.au/files/Participant%20Pack.pdf>. Accessed 23 Feb 2017.
79. Hughes C, Stevens A. What can we learn from the Portuguese decriminalization of illicit drugs? *Brit J Criminol.* 2010;50:999–1022.
80. Murkin G. *Drug decriminalisation in Portugal: setting the record straight.* Bristol: Transform, Getting drugs under control; 2014.
81. Spruit I. Monitoring synthetic drug markets, trends, and public health. *Subst Use Misuse.* 2001;36:24–47.
82. Inciardi J. *The war on drugs IV: the continuing Saga of the mysteries and miseries of intoxication, addiction, crime and public policy.* Boston: Pearson; 2008.
83. Benschop A, Rabes M, Korf D. *Pill Testing-Ecstasy & Prevention. A scientific evaluation study in three European cities.* Amsterdam: Rosenberg Publisher; 2003.
84. Barratt M, Lenton S, Allen M. Internet content regulation, public drug websites and the growth in hidden internet services. *Drug Educ Prev Polic.* 2013;20:195–202.
85. European Monitoring Centre for Drugs and Drug Addiction and Europol. *EU drug markets report: in-depth analysis.* Luxembourg: EMCDDA–Europol Joint publications, Publications Office of the European Union; 2016.
86. Caldicott D. What is drug checking and why do we need it in Australia? *The Conversation.* [Internet] 1 Dec 2015. Available from: <https://theconversation.com/what-is-drug-checking-and-why-do-we-need-it-in-australia-51578>. Accessed 23 Nov 2016.
87. Purtill J. Will the Stereosonic drug death bring back pill testing? *TripleJ Hack.* [Internet] 1 Dec 2015. Available from: <http://www.abc.net.au/triplej/programs/hack/will-sylvia-choi%27s-stereosonic-death-change-pill-testing-policy/6991736>. Accessed 23 Nov 2016.
88. Camilleri A, Caldicott D. Underground pill testing, down under. *Forensic Sci Int.* 2005;151:53–8.
89. Caldicott D. We need to increase the chances of our kids surviving their unavoidable brush with drugs. *The Advertiser.* [Internet] 4 Dec 2015. Available from: <http://www.adelaidenow.com.au/news/opinion/david-caldicott-we-need-to-increase-the-chances-of-our-kids-surviving-their-unavoidable-brush-with-drugs/news-story/b325023bb1838945abdd589c0024be86>. Accessed 12 Jan 2017.
90. Hughes C, Ritter A, Chalmers J, Lancaster K, Barratt M, Moxham-Hall V. *Decriminalisation of drug use and possession in Australia—a briefing note.* Sydney: Drug Policy Modelling Program, NDARC, UNSW; 2016.
91. Johnston J, Barratt M, Fry C, Kinner S, Stooze M, Degenhardt L, George J, Jenkinson R, Dunn M, Bruno R. A survey of regular ecstasy users' knowledge and practices around determining pill content and purity: implications for policy and practice. *Int J Drug Policy.* 2006;17:464–72.
92. Dobbin M. Rainbow Serpent Festival wants to test ecstasy pills. *The Age.* [Internet] 2 Dec 2015. Available from: <http://www.theage.com.au/victoria/rainbow-serpent-festival-wants-to-test-ecstasy-pills-20151202-gldkrm.html>. Accessed 12 Oct 2016.
93. Aubrey S. Stereosonic music festival organisers support introducing pill testing. *News.com.* [Internet] 2 March 2016. Available from: <http://www.news.com.au/lifestyle/health/health-problems/stereosonic-music-festival-organisers-support-introducing-pill-testing/news-story/2a5f5dd47503c71e364e19bf0babd016>. Accessed 12 Oct 2016.
94. Seddon T. Explaining drug policy: towards an historical sociology of policy change. *Int J Drug Policy.* 2011;22:415–9.
95. *Drug Misuse and Trafficking Regulation 2000 (NSW) s. 2, cl. 4-6.*
96. *Drug Misuse and Trafficking Act 1985 (NSW) ss. 36A-36P.*

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