The South Australian Drug Early Warning System (SADEWS) – A 'room with a view' to drug trends

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Background

Since the early 2000s there has been increasing concern about emerging novel drugs. More recently national approaches to surveillance have been developed with the establishment of the National Centre for Clinical Research on Emerging Drugs(i) and Emerging Drugs Network Australia(ii) .

Early work in South Australia between 2004 and 2006 with the Designer Drug Early Warning System(iii) resulted in the establishment of a network of agencies including the Royal Adelaide Hospital and Flinders Medical Centre Emergency Departments, Forensic Science SA and Drug and Alcohol Services South Australia (DASSA) to carry on the collaborative aspect of this project despite cessation of funding for toxico-surveillance.

This loose affiliation of agencies was formalized in 2010 under the banner of the South Australian Drug Early Warning System (SADEWS) with the intention of ensuring that relevant information about emerging substances detected by any agency, was shared. Membership has expanded to include SA Pathology, the Emergency Departments of Lyell McEwin and Queen Elizabeth Hospitals, South Australia Police (SAPOL), the University of South Australia and the University of Adelaide, and the South Australian Ambulance Service(iv). SADEWS has a set of underlying Guiding Principles. (see inset) These enable free but confidential discussions regarding emerging drugs, informing members of concerning trends and newly emergent drugs, collaboration in research and system improvements, and seeking resources to enable more comprehensive detection of emerging drugs across SA.

Sources of information now include wastewater analysis, Forensic Science SA analysis of SAPOL seizures and coroner-requested postmortems, SAPOL intelligence, Emergency Department presentations and related toxicology, SAAS presentations, and DASSA's network of Needle and Syringe Programs, consumer communities and its Alcohol and Drug Information Service, as well as voluntarily surrendered illicit drugs through the Royal Adelaide Hospital's Emergency Department.

SADEWS meets face to face twice per year, with the majority of communication via email.

Model of Care/Intervention

This study describes activities of SADEWS over the past 14 years through analysis of developed email threads, and meeting minutes.

Email threads
Nature/category of communication

Emails originating within SADEWS between 2010 and August 2024 which were of a clinical/toxicological nature were analysed (n=106). Data extracted included date, principal drug, secondary drug/s, source of the information, and outputs. Categories of communication were developed by one author (CH) and validated by a second (AC). These categories included cluster toxicity (24), ED presentations of concern (15), police seizure data for information (14), high level local concern re toxicity (14), local trends including wastewater (13), information from interstate or overseas, post mortem (LM(1) toxicology of concern (7), system improvements (5). These categories made up over 85% of content.

Other categories included: festival toxicity (2), government policy input or briefings (2), request for corroboration between different agencies' experiences (1), request for medical specialist advice/information (2), and non-ED presentations of concern (1).
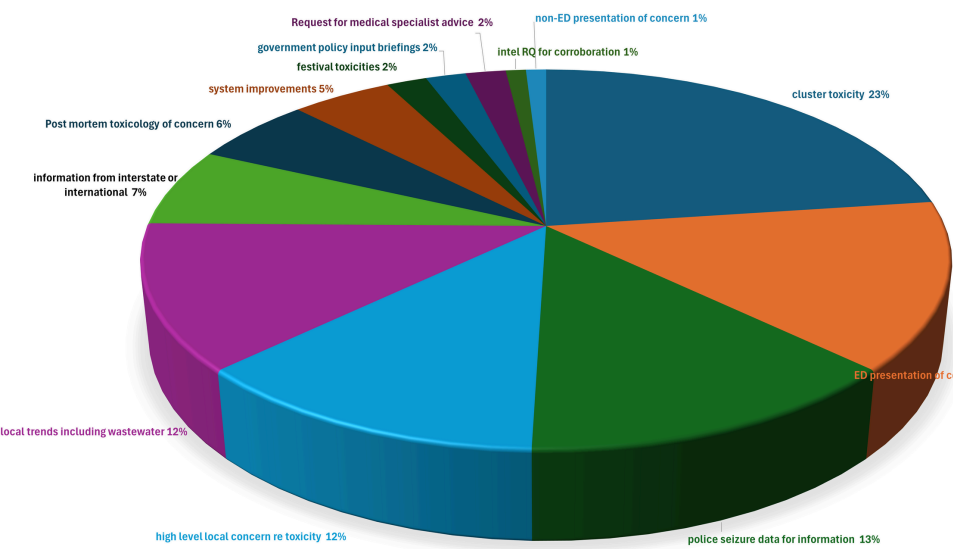

Figure 1. Types of communication by proportion

Substance/drug or toxidrome focus

Substances/toxidromes included amphetamine type substances (ATS: methamphetamine, MDMA and analogues), benzodiazepines, synthetic cannabinoids, cathinones, cocaine, fentanyl, GHB and precursors, ketamine, NBOIMe's, nitazines, toxicity with low GCS (LM(2) (etiology uncertain in some instances), and other(v).

Over the 13 years there were definite trends, as demonstrated in diagram 2. ATSs including MDMA and cathinones were a particular focus between 2011 and 2016, NBOMEs 2012-2015, fentanyl 2014-2017, GHB since COVID, cocaine in the past 2 years, and nitazines in the past 18 months.
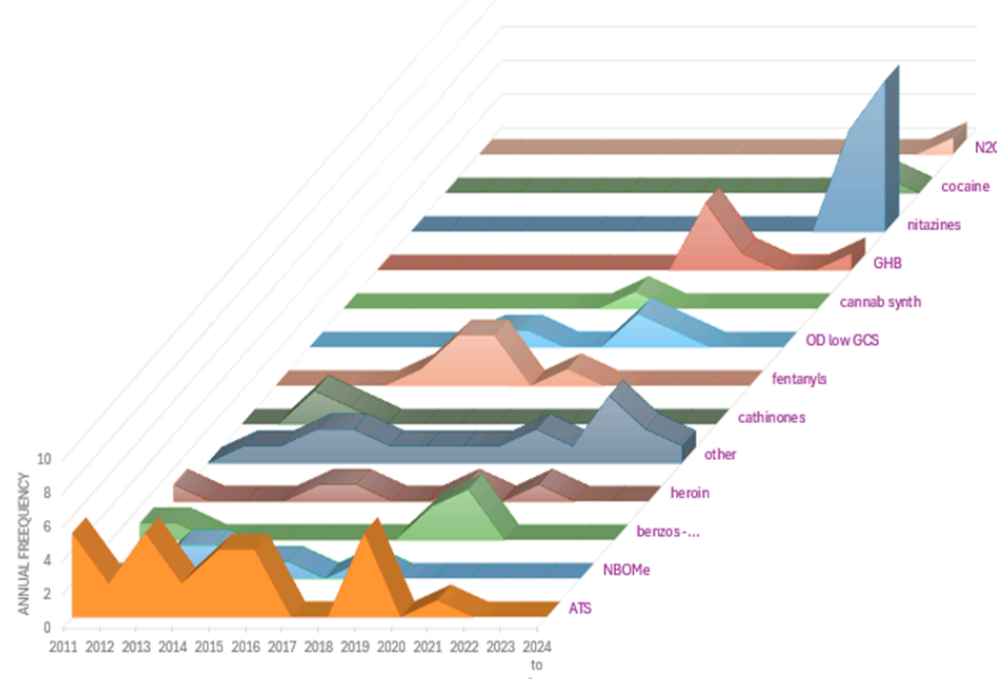

Figure 2. Substance trends since inception

Meeting minutes

In addition, minutes from the SADEWS meetings (n=28) were analysed by major topics addressed at the meetings, as well as the particular substances discussed in the "trends" standing agenda item. Over the 14 years of operation of SADEWS, there have been 2 meetings per year, with the exception of 2020, at the height of COVID.

Meeting minutes were largely focused on programs aimed at improving toxicological surveillance and early warning systems in South Australia. Of note were:

- Project XTC which analysed surrendered drug samples from a nightclub in Adelaide CBD; this project morphed into Project SCAN where surrendered drugs at the Royal Adelaide Hospital Emergency Department are analysed.
- The state's Wastewater Project first developed in South Australia(vi), which then expanded into the National Wastewater Drug Monitoring Program(vii). (LM(3) SA data are still reported bimonthly.
- Mechanisms for expanding SADEWS to include representatives from the major hospital Emergency Departments.
- Toxicological analysis of samples from drug-toxicity related ED presentations. The first iteration of this was the Designer Drug Early Warning System (D2EWS) project (preceding the establishment of SADEWS), then the South Australian Emergency Department Admission Blood Psychoactive testing program (EDABPT) (viii)and finally the current Emerging Drugs Network of Australia program (EDNA). (ix)
- Involvement in the national Prompt Response Network (x).
- Attempts at developing an early warning system based on Coronial outcomes – this was not pursued for various reasons including time lag with Coronial findings, and confidentiality issues.
- A system titled the Targeted Early Warning System which attempts to formalise the communication of higher-level concerns out to affected agencies and consumer groups.

Other areas of discussion included the Australian Analogue Drug Workshop, the ICE Taskforce and Strategy(xi) and the Peer Administered Naloxone program(xii).

Since 2012 there has been an agenda item titled "Trends" where patterns of data or recent changes of note are raised.

The categories of drugs discussed largely reflect the content and timing of the email thread analysis.

Interestingly however cathinones continue to feature, as do the synthetic cannabinoids. GHB has been a notable topic over the past 12 years, but more so recently since COVID.

The emergence of the fentanyls (LM(4) since the mid-20-teens, and nitazines more recently have generated wider discussion not only because of the risk for users, but due to the hazards they potentially present for first responders and ED staff.

Outputs

SADEWS routinely shares information internally amongst its member agencies. This includes the Emergency Departments of the major hospitals in Adelaide, SAPOL, Forensic Science SA, DASSA, and SA Pathology. (LM(5)

External communications have included the following over 14+ years:

- Targeted early warnings 7
- Media releases 6
- Public health alerts 4
- Ministerial briefing 1
- Input into Federal parliamentary enquiry 1
- Input into federal regulation/legislation 1
- Agency training 1
- Notification of local regional hospitals 1
- Peer reviewed paper detailing SADEWS in Forensic Science journal 1

Targeted early warnings are triggered by situations where there is a public health risk. These include high purity heroin, high potency synthetic opioids, emerging psychoactive substances with potential for severe toxicity (MDPV, NBOMEs, α-PVP, PMA), high toxicity synthetic cannabinoids(xiii). The warnings may include public health alerts, media releases, and direct communication with user groups via a range of mechanisms.

Overall observations

The analysis of both email threads and meeting minutes demonstrates a focus on continuous quality improvement, often over protracted time periods. Improvements are sometimes delayed for years and experience breakthroughs as funding opportunities arise, political priorities change and capacity within agencies increase (example expansion of SADEWS to include other EDs, funding for targeted analysis of ED clinical presentations). At other times intrinsic roadblocks have not enabled opportunities to be pursued (for example, using Coronial data to inform real time trend analyses of overdose frequencies).

Also evident in the threads was a high level of respect for each agency's ability to contribute information due to privacy and confidentiality concerns, or organizational policy constraints.

Communications and emerging actions occurred in relatively short timeframes.

Decisions regarding Public Health alerts and targeted communications to user groups were collaborative and efficient.

There are good established pathways for warnings to injecting drug user groups, through state government funded needle syringe programs, and Non-Government Organisations.

Concerns about emerging drugs have evolved over the past 14 years as different drug groups come and go or persist. Amphetamines (including MDMA) and analogues were of particular concern in the early years of SADEWS, NBOMEs emerged quickly and seem to have been discontinued. GHB has been present for the lifespan of SADEWS, but has become more prevalent over 2018 and 2019, and then escalated significantly during COVID in response to supply issues in other parts of the illicit market(xiv). Synthetic high potency opioids such as fentanyl and more recently the nitazines have emerged and generated high level responses to inform first responders and emergency department clinicians, as well as consumers.

Discussion

SADEWS has been established for nearly 15 years. Its origins were based on collaboration between agencies involved in early toxico-surveillance projects in the mid-2000s.

South Australia now has several sources of toxicological surveillance data. These enable characterization of emerging drugs pre-consumption (project STOP, police seizure analyses), post consumption (wastewater analysis) and post consumption causing harms (Emergency Department presentations – through EDNA, ambulance presentations and post mortem analyses).

One of the objectives of a toxico-surveillance system is to prevent harms by identifying potentially toxic substances entering into the market pre-consumption, not waiting for harms to occur. Further opportunities could include the expansion of sampling through drug testing facilities (either fixed site using mostly established systems) or mobile on site at festivals. Previous evidence demonstrates significant differences between police seizure data analyses, and analyses of drugs provided voluntarily at venues for testing(xv).

While there are good established pathways for getting information out to people who inject drugs, at risk consumers using drugs by non-injecting means, and occasional users not identifying with "drug user groups" continue to be a gap in current efforts to inform users early. For example, the emergence of nitazines in counterfeit oxycodone, MDMA, ketamine and cocaine, all of which may be consumed through non-injecting pathways. The NBOME group of potent hallucinogens have been consumed by largely non-injecting drug users. GHB with its narrow "therapeutic window" presents particular risks to a group of consumers who often do not inject. These consumer groups will not be able to be accessed through established needle and syringe programs. (LM(6)

Despite these shortcomings in the South Australian early warning system, SADEWS has been able to achieve much, with no additional funding, with just in-kind support from the member agencies. Its longevity is partially a product of these factors, being independent of fixed term program funding subject to macro-economic drivers and political priorities.
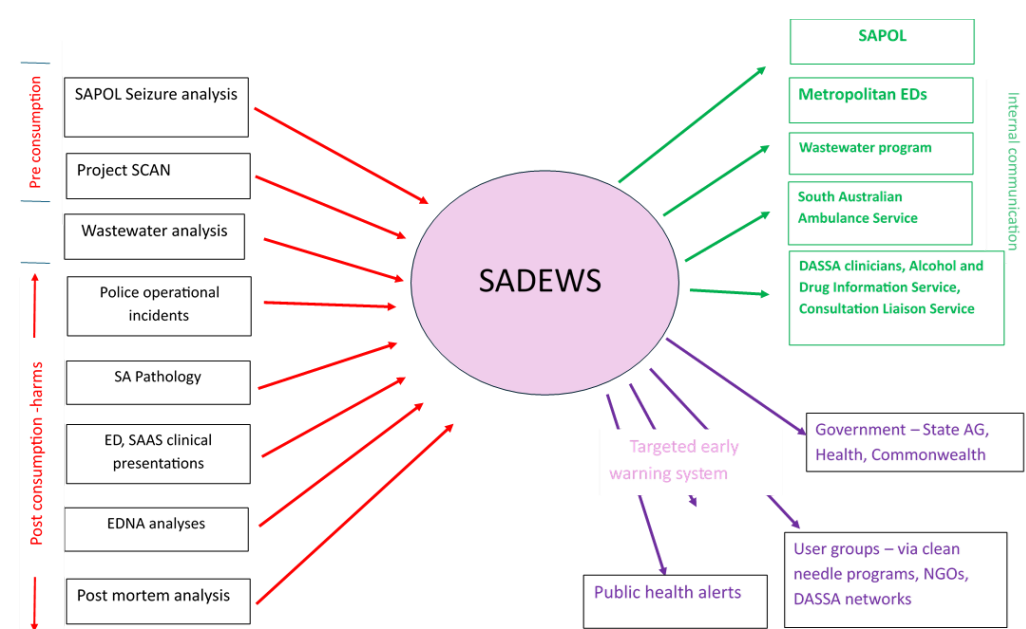

Figure 3. Communication flow