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Incorporating experiential reports provided by people who use drugs into drug-related early warning systems: benefits, risks principles and approaches

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ABSTRACT

Introduction: Drug-related early warning systems (EWS) comprise interdisciplinary networks that interpret data to detect and mitigate drug-related harms. The cross-disciplinary literature on EWS highlights the need for EWS to integrate community, scientific, and technical knowledges. Internationally, certain drug-related EWS collect incidental reports of noteworthy drug events provided by people who use drugs (PWUD). This qualitative study explored the potential benefits, risks, principles and approaches associated with implementing systematic mechanisms for community drug reporting, to inform the development of a nation-wide reporting system in Australia.

Methods: Data were drawn from 20 semi-structured interviews with Australian EWS practitioners plus three advisory meetings engaging 14 staff from community-based and peer-led organisations representing PWUD.

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Discussions focused on the prospect of collecting, analysing and sharing community data to support drug-related EWS. Thematic analysis was conducted on interview transcripts and advisory meeting minutes.
Results: Benefits ascribed to collecting incidental drug reports from communities included the faster detection of concerns and providing context for analytically verified data. Concerns were raised about data privacy and criminalisation, difficulty verifying community reports and spreading misinformation. It was suggested that community reporting initiatives should be led by PWUD; prioritise community engagement; be open to reports of benefits and harms, be underpinned by robust moderation, with data used to inform diverse harm reduction communications.
Conclusions: The systematic collection of and response to experiential reports provided by PWUD has potential to improve drug-related EWS. Such systems must be underpinned by strong governance, remain open to collecting reports of benefits plus harms and be led by communities.

Introduction

Drug-related early warning systems (EWS) draw together diverse actors who collect, share, and interpret data with the aims of detecting, preparing for, mitigating and responding to harms arising from unregulated drug markets (Cottler et al., 2020; Fielden & Marsh, 2007). The dynamic nature of contemporary drug markets, marked by the ongoing emergence of new psychoactive substances (NPS) (Peacock et al., 2019), adulterated or substituted supply (Di Trana et al., 2022) and overdose clusters (Killeen et al., 2024) underscores the need for credible and agile drug-related EWS. When such systems function well, they are able to detect and respond to concerns promptly with responses usually taking the shape of clinical alerts, public drug alerts and targeted harm reduction messaging (Freestone et al., 2025). The preventative capacities of drug-related EWS were recently exemplified in Dublin Ireland, where a cluster of nitazene-related overdoses was identified, prompting immediate public health messaging distributed via service settings and traffic control signs, effectively halting the circulation of adulterated supply (Killeen et al., 2024; NCCRED, 2024).

EWS are not unique to the drugs field; they also operate in other areas such as food security and environmental disasters (Fritz et al., 2019; United Nations Office for Disaster Risk Reduction, 2015). To enhance their effectiveness, certain EWS draw on the knowledges of communities, for example, many environmental EWS collect community-based data alongside scientific, technological and analytically verifiable data (Hermans et al., 2022; Macherera & Chimbari, 2016). The meaningful incorporation of experiential knowledge within EWS not only supports early detection of emerging concerns, but facilitates community self-determination, both of which enhance an EWS's responsiveness, credibility, reach and support efforts to mobilise communities for prompt response (International Federation of Red Cross & Red Crescent Societies, 2012; Ma et al., 2023; Macherera & Chimbari, 2016). When addressing the incorporation of community knowledge within an EWS, the environmental disasters literature presents a dichotomy between technical or scientific knowledge versus community knowledge. In doing so, this literature highlights epistemological tensions regarding what constitutes knowledge and how it is acquired (Hermans et al., 2022) however this subject is scarcely explored in the literature on drug-related EWS.

Incorporating community drug reports into drug-related EWS

A number of studies have highlighted PWUD knowledge of drug markets and harm reduction, and long-standing practices of gathering, centralising and sharing information for the benefit of collective safety (Kling et al., 2015; Soukup-Baljak et al., 2015; Soussan & Kjellgren, 2014). As such, incorporating community knowledges about, for example, the circulation of drugs of increased strength or clusters of overdoses, into drug-related EWS may offer a valuable opportunity to draw on the expertise and care practices of PWUD to bolster EWS (Bijlsma et al., 2019; Griffiths et al., 2000).

There have been recent calls for the greater involvement of PWUD in the development of policy, service provision and research (Askew et al., 2022; Brown et al., 2019). Such recognition avows the strength of a peer workforce which has increasingly enabled the lived-living experiences of PWUD to be incorporated within service settings (Chen et al., 2023; Piatkowski & Kill, 2024). However, the meaningful integration of the self-determined knowledges of PWUD within drug-related EWS has received less consideration. Recently published commentaries on drug-related EWS have highlighted that these systems often prioritise administratively or analytically confirmed data that can be analysed close to real time (Griffiths et al., 2025; Freestone et al., 2025). Such data sources include, but are not limited to, data from ambulance presentations, wastewater and syringe residue analyses, drug checking services or forensic analyses of seized samples (Griffiths. et al., 2025; Freestone et al., 2025).

However, across some jurisdictions globally, drug-related EWS proactively collect, interpret and respond to the experiential reports or observations of PWUD and other relevant communities. Systems operating in Scotland and New Zealand elicit experiential reports from PWUD, service providers, and wider communities on a reactive basis (High Alert, 2024; RADAR, 2022). Moreover, in the American state of Texas, digital platforms for community overdose reporting have been established and achieved engagement among harm reduction organisations (Claborn et al., 2022). Various drug-related EWS also engage PWUD or their organisational representatives within EWS networks. In these networks, PWUD collaborate with public health officials, clinicians, toxicologists and law enforcement representatives to interpret data and devise responses to emerging concerns (Buxton et al., 2019; Syrjanen et al., 2023). Further, PWUD have long shared drug experiences, harm reduction strategies and drug checking results on darknet forums and dedicated clearnet forums such as Bluelight and Pillreports (Bancroft & Scott Reid, 2016; Barratt et al., 2014, 2024). Additionally, certain drug checking services elicit experiential reports from PWUD, and such reports inform risk education at an individual or population level (Schiavone et al., 2025; Volpe & Barratt, 2025). While not an exhaustive account, the examples outlined in this paragraph provide an indication of the mechanisms through which community knowledges may be integrated into drug-related EWS. However, evidence regarding the benefits, risks, and implementation strategies surrounding approaches to systematically eliciting community reports to support drug-related EWS remains scarce.

Study context and aims

This study was jointly conceptualised by the Australian Injecting and Illicit Drug Users League (AIVL) and the Prompt Response Network (PRN). AIVL is Australia's national peer-led peak organisation representing a network of peer-based harm reduction organisations for PWUD. The PRN is an interdisciplinary and intersectoral national network of practitioners who contribute to drug monitoring and EWS across Australia's eight states and territories.

The PRN was shaped by an extensive co-design process (Siefried et al., 2025). Throughout this process, EWS practitioners across Australia signalled the potential value of the PRN establishing a secure, anonymous platform for PWUD and other community members to share

observations on emerging drug trends or concerning events to generate timely data in a resource-efficient manner (Siefried et al., 2025). Since the completion of the initial PRN co-design, the PRN has not further explored the prospect of establishing a nation-wide community drug reporting system. As such, our aim in conducting this study was to further explore the potential development of this system in Australia and in turn, inform practices across diverse EWS globally.

We define a 'community drug reporting system' as the collection, interpretation, and moderation of self-reported drug experiences, submitted on an incidental or responsive basis by community members to inform community care, harm reduction and EWS communications. In this study we aim to explore EWS practitioners and community representative perspectives on **i)** the potential value of a community drug reporting systems targeting PWUD; **ii)** the risks associated with such a system and **iii)** the key principles and approaches to design and implementation.

Methods

In line with the research aims outlined above, this study was situated within the contextual and generative domains of applied qualitative research (Ritchie et al., 2003). In conducting this research alongside community organisations, our approach was informed by co-design principles of prioritising relationships, sharing power, using participatory methods, and building capacity (McKercher, 2020). Simultaneously, we drew on methodological guidance pertaining to interviewing key informants in the context of applied qualitative research (Pahwa, Cavanagh & Vanstone, 2023).

Participant recruitment

Interviews were conducted with key informants involved in EWS activities to understand and explore their perspectives on the potential benefits, risks and approaches to collecting community reports in the context of an EWS. An advisory group of representative members from Australian community-based and peer-led organisations for PWUD was also formed. Advisory group members were study participants, and their role was to advise on approaches to developing a community drug reporting system rather than advising on this study's associated research protocols.

Across interviews and advisory groups, eligible participants were those residing in Australia who engage with Australian drug-related EWS as part of their employment. Participants were drawn from the PRN and AIVL's member base and were purposively identified by the study team for their expertise, knowledge of, and direct involvement in EWS activities. The sampling frame that guided the selection of interviewees stipulated that at least one person from every Australian state and territory be interviewed with secondary guiding criteria that participants span diverse EWS practitioner groups (Table 1). This approach sought nation-wide participation and aimed to capture varied institutional, sectoral and jurisdictional perspectives.

As is typical in key-informant research, our sampling frame was designed to emphasise heterogeneity and our recruitment was necessarily constrained by available time and resources. Unlike other types of qualitative research, recruiting participants up to the point of saturation is rarely applicable when interviewing key-informants, as experts are selected to provide distinct, non-overlapping perspectives (Pahwa, 2023). Advisory group participants (hereafter referred to as advisors) were selected for their lived-living expertise, and their employment within organisations that provide community-based services for and represent the interests of PWUD across Australia.

Interviewees and advisors were recruited separately via a formal invitation letter shared by email. This invitation specified the participants' intended role (either interviewee or advisory group member) and included a link to a corresponding consent form. Recruiting interview participants from Australian states and territories with few drug-related EWS personnel challenged our ability to adhere to our sampling frame. Consequently, one participant was dually an interviewee and an advisory group member. The interview offered this participant an opportunity to share perspectives on the potential benefits and risks of a community drug reporting system in their jurisdiction, while the advisory group enabled this participant to contribute to collective discussions regarding approaches to system design and implementation.

Table 1
An overview of participants, $n = 20$ interviewees and $n = 14$ advisors.

Jurisdiction	Interviewee ($n = 20$)	Advisors ($n = 14$)**
• National*	4	1
• New South Wales	3	3
• Australian Capital Territory	2	1
• Western Australia	2	2
• Queensland	1	2
• Tasmania	2	1
• Northern Territory	2	1
• Victoria	2	2
• South Australia	2	1
Organisation and role types		
• Peer-based community-led organisation for people who use drugs	4	14***
• Government public health *(jurisdictional drug and alcohol portfolio leads)*	5	0
• Forensic toxicology	3	0
• Drug checking service	3	0
• Advocacy based organisation	2	0
• Emergency department toxicology	1	0
• Police	1	0
• Drug and alcohol treatment services	1	0

* Participants coded as national reported working for organisations with a remit to cover all Australian states and territories.
** One advisor was also an interviewee.
*** All advisors were representatives of peer-led community organisations for people who use drugs.

Data collection

Semi-structured interviews, most lasting between 60–90 min, were hosted on Microsoft Teams and conducted by author JF between January and May of 2025. Interviews explored professional roles and contributions to jurisdictional EWS, plus previous experiences of collecting, interpreting, and moderating community drug reports. Interviewees were also asked about the acceptability, appropriateness and feasibility of developing a national community drug reporting system. Interviews were audio recorded, transcribed verbatim and de-identified.

In tandem, 14 advisors were engaged across three 90-minute sessions facilitated by authors MH, CZ, SK and JF. In these sessions, advisors were tasked with clarifying the aims of a community drug reporting system, and participated in discussions regarding principles, approaches and strategies that may support the establishment of such a system. Within these sessions, data moderation, interpretation and systemic outputs such as tailored communications were discussed.

Advisory meetings were hosted on Microsoft Teams. In response to feedback from community partners, who indicated they were more comfortable with meetings being minuted rather than recorded, and considering time and resource constraints, advisory meetings were not recorded or transcribed. In alignment with methodological guidance on the collection and analysis of observational evidence in qualitative research (Merriam & Tisdell, 2016) and drawing from data collection practices in community-based implementation research (Clark et al., 2023), data from these meetings were thoroughly minuted, with meeting summaries produced. Meeting minutes and summaries were cross checked by JF, CZ, MH & SK before being reviewed and endorsed by all advisors.

Data analysis

Interview transcripts and meeting minutes were imported into NVivo 12 and a thematic analysis was undertaken (Clarke & Braun, 2017). The process of thematically analysing meeting minutes alongside verbatim transcripts was informed by JF's previous experience of thematically analysing interviews and field notes for an evaluation of a peer-led substance use intervention (Freestone et al., 2025). Additionally, our analytic approach was guided by qualitative and implementation research literature describing the application of thematic and thematic framework analyses across multiple data types including interviews, meeting records, and other documentary sources (Gale et al., 2013; Nevedal et al., 2021).

Authors JF and CZ independently familiarised themselves with transcripts and minutes and completed an inductive coding exercise to group data into nodes and sub-nodes. Through an iterative process a thematic structure was collaboratively devised and refined with analytic memos used to document decisions. Data from interviewees predominantly informed themes relating to the opportunities and risks associated with community drug reporting systems, while data from advisory group meetings informed themes relating to design and implementation approaches (Table 3). Themes were discussed and interpreted jointly by authors JF, CZ, SK and MH. The key principles outlined in Table 3 were checked and endorsed by advisory group members and input sought from the wider research team at the stage of write up. Detailed results are discussed below, in three distinct subsections, illustrative quotes are exclusively attributable to interview participants, all of whom are assigned pseudonyms.

Ethical approval

This study received ethical approval from the University of New South Wales, HREC committee B, approval number: IRECS7626.

Results

As outlined in Table 1, this research engaged 20 interviewees and 14 advisors who predominantly supported the development of a community drug reporting system. Perspectives on the benefits of this system were commonly underpinned by the belief that including community reports in a drug-related EWS is a matter of principle. Community reporting was viewed in the context of a broader movement towards recognising experiential knowledge as rigorous and legitimate, and was thought of as a mechanism through which to value the self-determination and agency of PWUD. Benefits of a community drug reporting system to an EWS were described in relation to the potential for the system to expedite detection of concerns, contextualise risk assessment and shape more effective EWS communications. However, various challenges and risks associated with the proposed system were noted to require careful attention during design and implementation. To maximise benefits and minimise risks, advisors proposed that any system be community-led, safe, accessible, inclusive, and integrated into existing EWS infrastructures.

Benefits

Expediting detection, contextualising concerns and shaping EWS communications

Most interviewees reflected on their previous engagement with ad-hoc processes of collecting and responding to community drug reports in the context of either a drug-related EWS or the delivery of harm reduction programs more broadly. Interviewees and advisors spoke about the capacity of community reports to accelerate the identification of drug-related concerns to inform more effective EWS communications. Further, it was highlighted that systematising, previously ad-hoc, community reporting mechanisms may mitigate the fragility of reporting arrangements based on personal relationships. The systematic collection of community reports was also thought to potentially enable the detection of concerns that may be missed in traditional data sources. For example, it was suggested that community reports may enable the rapid identification of overdose clusters to then trigger a public health response.

Below, Jane describes a 2024 incident where a cluster of nitazene-related overdoses was detected after a peer-outreach worker shared their observations with government authorities.

> "They had all those overdoses about a year ago on nitazenes. And we managed to get a positive test for nitazenes. And so, we made the government aware of that and then an alert evolved from that. And they actually managed to get a confirmation by doing syringe testing. So, we actually had a peer worker in that area who advised us of it. So, you need like that connected source of information, you know. It could be NSP workers or peer workers."
>
> Jane – senior manager, community-based organisation for PWUD

Jane's account illustrates the potential value of community reports when individuals who identify a concern have a clear pathway to report it, triggering confirmatory testing and a timely response. Across interviews and advisory meetings, participants consistently emphasised the interdependent roles of community reports and laboratory confirmation. Several interviewees acknowledged that, although experiential reports can be highly responsive to shifts in drug supply and other emergent phenomena, they usually lack the accuracy, or the specificity needed to directly inform a response. Importantly, interviewees from government public health departments stated that drug alerts would not be issued because of community reports alone.

In addition to identifying specific events of concern, participants suggested that community reports may signal emerging trends before they are captured by formal data systems. For instance, interviewees and advisors described early community observations of elevated GHB use among individuals with no prior experience of the drug, accompanied by an increase in GHB-related overdoses, a trend now corroborated by multiple Australian data sources (Harris et al., 2024; Ogeil et al., 2023). Similarly, PWUD were said to have recognised growing harms associated with methamphetamine use in Australia well before these issues were acknowledged in official datasets.

In his quote below, James reflects on the prioritisation of technical and scientific knowledge and the dismissal of community knowledge in the context of escalating methamphetamine concerns in Australia and the resulting delay to public health responses.

> "It was PWUD who were saying like, "Something's going on here," well before the data started to show that actually the purity of, you know, methamphetamine has gone from 20 per cent to 85 per cent… And it, what was it? 2016 that the National Ice Action Strategy finally got out — or 2015… and the purity shift happened in kind of 2010; something like that. Like that's a pretty unimpressive learning curve, if you ask me…. But the thing is no-one was looking at it … And I even heard about some crazy things, you know, like different academics being asked to come and speak in local communities… being like, "Well, the data doesn't show anything." Like, "You're just imagining it," … And that didn't go down well, and it was wrong."
>
> James – government public health official

Interviewees and advisors also described the ways in which community reports may provide context to support the interpretation of analytically or administratively verified signals. The decision to issue an alert following the detection of a concerning substance involves a careful and nuanced risk assessment, and this assessment is often marked by uncertainty (European Monitoring Centre for Drugs & Drug Addiction, 2023). Below, Sarah suggests that community reports may provide useful context to assist EWS practitioners when navigating these complex assessments.

> "I can see anecdotal reporting coming in and being a really important kind of triangulation piece of information that would support us to issue messaging in the sense of, okay, we know there's concern in the community. This may be more widespread. Or there's concern in the community and, therefore, we need to, some clear messaging to allay concerns or give information."
>
> Sarah – government public health official

Like Sarah, other participants highlighted that the collection of community reports may create opportunities to address myths and misinformation through harm reduction education. Furthermore, advisors noted that the experiential reports from PWUD play a significant role in bridging knowledge gaps about NPS with an undocumented pharmacodynamic or pharmacokinetic profile.

Implementation challenges & risks

It was widely acknowledged that the design and implementation of a community drug reporting system would necessarily be accompanied by various risks requiring continuous management.

Broadly, concerns were related to the safety and wellbeing of individual reporters; risks to the effectiveness and sustainability of the reporting system itself; reputational risks for the organisations responsible for implementing the system; and risks to a wider drug-related EWS. These risks were framed as likely causing negative consequences if the reporting system was poorly designed, resourced, and implemented.

Data reliability

Participants near unanimously spoke about challenges associated with verifying community reports and reinforcing misleading reports through formally responding to or publicising them. Several advisors and some interviewees described how false information can rapidly spread among networks of PWUD and cautioned that a community drug reporting system may amplify myths and rouse false alarm. This risk was linked with concerns about damaging the community's trust in the organisations responsible for a community-led reporting system and diminishing the credibility of a wider EWS. In response, as illustrated by Mark below, most participants highlighted the imperative for systems to be supported by robust moderation.

> "I just wanna make sure that the Prompt Response Network is thinking about validating the information before it acts or responds; otherwise, we'll get too much information and it'll be ignored, or it'll dilute the value of it."
>
> - Mark, forensic toxicologist

Like Mark, most participants cautioned that uncoordinated or overly reactive responses to community reports may undermine the effectiveness of EWS communications. It was emphasised that an EWS must sustain community trust and maintain credibility among PWUD and that issuing too many alerts, or unsubstantiated alerts, may render an EWS ineffective.

Related to Mark's comments regarding coordination and moderation, two representatives from government public health departments spoke about previous instances in which multiple community reports referred to a single overdose. They suggested that such an occurrence may compromise the clarity of data and complicate efforts to verify concerns, highlighting the importance of devising data collection and moderation processes to enable the identification and management of duplications.

Barriers to reporting, reach and equitable engagement

Several participants noted that the success of a community drug reporting system would be contingent on its ability to engage a large and diverse cross-section of PWUD. In this respect, as indicated by Dora, drug criminalisation was discussed as a major barrier to engagement.

> "I also think that there's always gonna be an element of distrust among people who use drugs for anything that's really formalised or wanting information while we still live in a, a society that criminalises drug use."
>
> – Dora, drug checking services representative

The potential for community reports to be accessed for law enforcement purposes highlighted the possibility of legal ramifications for PWUD, and this was described as a risk to individuals that would need to be mitigated.

Further, participants identified challenges associated with equity of access. Advisors noted that such a system's engagement of women, people in regional and remote communities, Aboriginal and Torres Strait Islander people, culturally and linguistically diverse people and people with differing technological access or fluency would be challenging.

In contrast to concerns relating to broad and diverse participation, some interviewees raised concerns about the capacity to manage a high volume of reports. It was suggested that engaging communities to submit reports without first refining and testing moderation processes and response protocols could risk eroding community trust in the system. Advisors recognised the need for sustainable resourcing and, one interviewee stressed the importance of a phased rollout comprising pilot testing before an expanded implementation.

Tensions in reporting practices and intersectoral trust

Despite the prevailing focus of EWS on detecting and responding to potential harms, participants from peer-led community organisations stressed the need for a community drug reporting system to record neutral, pleasurable and beneficial drug experiences not just concern.

It was suggested by three interviewees and throughout the first meeting of the advisory group that enabling people to submit accounts of positive drug experiences, better reflected the values and priorities of PWUD. The system's collection of both adverse and positive experiences was described as critical for community engagement and, as indicated by Trevor below, it was felt that a system, if framed solely around risk, would fail to generate community interest.

> "I think, fundamentally, you will struggle with an anecdotal reporting system that's just about harms because the reason people use drugs is for pleasure. And so, if you want an anecdotal reporting system that's kind of vibrant and telling people the information that they actually wanna know, I think it needs to be both."
>
> Trevor, senior manager community-based peer-led organisation

However, it was acknowledged that the collection of positive drug experiences may not be supported by all EWS practitioners, highlighting the likelihood of this approach to incite tensions within EWS networks.

> "You get into this weird territory of like, "Oh, you've got positive information. Well, you can't share that with other people" … I do think there's probably a risk in, back into the broader project of other stakeholders being put off by that or whatever, for the reasons you could imagine."
>
> Anna, policy expert & community advocate

As indicated by Anna above, differing beliefs about, and perspectives on the role of community reports has potential to disrupt EWS networks. These networks are typically comprised of professionals with diverse values regarding drug use, priorities and organisational remits. Throughout interviews, it was widely acknowledged that effective drug-related EWS rely on strong interagency, interdisciplinary and intersectoral collaboration. As alluded to in the quote from Michelle below, the effectiveness of an EWS was regarded as contingent on healthy intersectoral partnership. However, these relationships were commonly described as delicate, founded on trust and established over a long timeframe.

> "The two areas that really need to build up trust are law enforcement and health… and it's a matter of building up trust. I don't know that there's a quick fix for that. For us, it's been going a long time so… to start from scratch would be tricky."
>
> Michelle, police officer

Interviewees, including Michelle, described disengaging from existing EWS networks when they perceived that such networks were misaligned with their personal or organisational values. In some cases, the prioritisation of community perspectives and the inclusion of positive experiential accounts of drug use were viewed as incompatible with personal and professional values, and in turn, potentially threatening to an EWS's capacity to meaningfully engage a sufficiently diverse range of relevant agencies and individuals.

Table 2 summarises the risks and corresponding mitigation strategies discussed by interviewees and advisors.

Design & implementation principles & priorities

In the first meeting of the advisory group, members discussed possible overarching aims for a community drug reporting system. The following aims were established:

(i) Establish a sustainable, scalable & safe model for community drug reporting,
(ii) Enhance engagement with and quality of EWS by integrating the experiential knowledge of PWUD
(iii) Increase visibility of real-world drug experiences within EWS, and

Table 2
Challenges and risks associated with a community drug reporting system.

Implementation challenges and risks	Risks to:				Mitigation	# Relevant implementation principle(s) Table 3
	Individuals contributing reports	The effectiveness and sustainability of the reporting system	The reputations of organisations implementing the system	Wider drug-related EWS		
Alerts or other responses/ communications issued due to false, unverifiable or repetitive reports that propagate myths, raise false alarm, contribute to alert fatigue and/or stigma	X	X	X	X	• Ensure that community reports are assessed alongside analytically and/or administratively verifiable data sources • Reports integrated as part of routine EWS processes to interpret and respond to signals of concern	5, 6
Privacy breaches and concerns regarding data becoming accessible to law enforcement	X	X	X		• Develop data collection mechanisms and an online database that ensures anonymity • Ensure reporting forms include information about privacy and do not mandate the collection of identifiable information • Forms include reminders to warn against disclosing identifiable details	2
Insufficient resourcing to interpret and respond to volume of reports received, concerns associated with rapid scaling may result in poorly defined and practiced processes and a lack of responsiveness to acute concerns	X	X	X	X	• Implement the system gradually • Conduct a small pilot phase to develop, test and refine data collection, interpretation and moderation • Only promote the system to a wider audience of PWUD once protocols are established and well-practiced and appropriate resourcing is acquired	2*
Failure to engage critical mass of PWUD (criminalisation noted as a significant barrier to engagement)		X			• Ensure the system is led by PWUD • Design accessible data collection mechanisms • Ensure that the system leverages existing mechanisms of community-reporting	1, 3 & 4
Failure to engage diversity of PWUD (reporting barriers potentially experienced by women, Aboriginal and Torres Strait Islander people, culturally and linguistically diverse communities, people with less technological access or fluency)		X			• Create multiple mechanisms for reporting and use of community centric, non-clinical language • Support multi-lingual options in forms	3 & 4
Discrepant views about the nature and value of community drug reporting, disrupting to EWS stakeholder relationships		X	X	X	• Those who broker drug-related EWS and their associated networks must recognise and affirm epistemic diversity while acknowledging the relative and complementary strengths and limitations inherent to discrete data sources	NA**

* Implementation Principle 2 addresses reporter safety by including links to support services, but none of the principles in Table 3 mitigate risk through phased or staggered implementation.

** This risk was raised in interviews but was not considered in the community drug reporting system advisory group discussions from which Table 3 was derived.

Table 3
Principles and approaches to inform the design and implementation of a community drug reporting system.

Key principles & priorities	Design & implementation approaches
1. Led by PWUD	• Peer/PWUD leadership from initiation and throughout project lifecycle • Data sovereignty: community/peer orgs as data custodians, meaning that PWUD and their organisational representatives determine who gets access to data and what data is used for
2. Safe & confidential	• Data encrypted, anonymised and securely held • Clear protocols for data cleaning and anonymised reporting • Data collection processes linked to 24/7 support lines, peer support programs, call-back services, alcohol and drug information lines
3. Equitable & accessible	• Multiple reporting options: online, paper-based, within services, email & phone • Reporting embedded where people engage (social media, services, mobile applications) • Online forms to use tick boxes, dropdowns, skip logic & pre-population to facilitate data entry • Use of engaging visuals (images & video) to demonstrate concepts and to aid reporting • Previews & examples of previous reports at all collection sites (online & in person) • Plain English & multilingual options • Community language, not clinical or medical language • Affirmative, non-judgemental and neutral prompt questions
4. Data diversity (leverage existing data sources, generating new data and remaining open to pleasures and harms)	• Open to reports of pleasures, benefits, unexpected or adverse effects • Forms offer both structured and open-text fields • Integration of existing community reporting processes and data sources into reporting system - data collected within needle syringe programs, peer-based online or in person outreach • Tailored data-collection processes to capture specific experiences of interest (for example experiences of new psychoactive substances forms distributed at drug checking services)
5. EWS integrated, verified & contextualised	• Community reports interpreted alongside analytically verified data (drug checking services, residue analysis, toxicosurveillance programs) • Allow reporters to opt-in for follow up via phone or email • Determine and establish minimum data requirements and criteria to assess report completeness: e.g. date, location, experience
6. Responsive moderation	• Moderation protocols designed by PWUD and informed by the diverse and interdisciplinary expertise of EWS networks • Routine moderator meetings, plus reactive responsive moderation protocols • Moderation processes to be linked with existing EWS interdisciplinary networks
7. Informing multiple outputs, not just drug alerts	• Multiple potential uses of community drug reports - to inform targeted harm reduction messaging and public drug alerts, priorities for harm reduction interventions and education, content of workforce training and capacity building exercises, aggregate summaries of information collected

(iv) Improve the harm reduction responses of EWS and their stakeholders.

In accordance with these aims, advisors preliminarily considered potential approaches to collect, verify and moderate community drug reports, engage relevant communities and generate meaningful systemic outputs. Approaches to these tasks were routinely underscored by the principles and priorities described in Table 3.

Discussion

Building upon studies which examine the involvement of PWUD in research, policymaking, and service settings (Chen et al., 2023; Madden et al., 2021; Perri et al., 2023), this study considers benefits and challenges of systematically incorporating lived-living experience of PWUD within drug-related EWS. Our study also adds to an expanding literature on how to assess and respond to emerging signals of potential drug-related concern in the context of EWS (European Monitoring Centre for Drugs & Drug Addiction, 2023; Syrjanen et al., 2023).

Participants in our study commonly noted that PWUD are often the first to detect emerging drug-related concerns, and integrating their insights into EWS may facilitate more rapid detection of and response to potential harms. They also described how community reports may help contextualise analytical data. However, concerns were raised about the privacy of data in the context of drug criminalisation, the difficulty of verifying community reports, and the potential spread of misinformation. To mitigate these risks, participants suggested that reporting initiatives should be led by PWUD, and be underpinned by robust and dynamic moderation processes, with diverse harm reduction outputs. These observations were closely linked to a broader recognition that PWUD have long shared information and cared for each other to mitigate risks associated with unregulated markets (Soukup-Baljak et al., 2015; Soussan & Kjellgren, 2014). In this respect, our work aligns with research from the international environmental disasters literature, which emphasises the necessity of integrating community-based experiential and technical/scientific knowledges (Hermans et al., 2022; Macherera & Chimbari, 2016).

Experiential evidence can be framed in opposition to scientific evidence, where these kinds of data are seen to be less reliable, less rigorous, and difficult to verify (Griffiths et al., 2000; Nunn, 2011). However, a recent review of 207 studies examining agreement between self-reported and biologically measured drug use found strong concordance in contexts where there was no negative consequence associated with drug use disclosure (Bharat et al., 2023). While this review addressed the concordance between self-report and analytic confirmation, our study further described additional nuanced concerns about reliability. Some participants spoke about receiving multiple reports referring to the same incident, while nearly all spoke about the potential for community reports to propagate misinformation, trigger disproportionate responses to unverified concerns, and in turn contribute to alert fatigue, a phenomenon that describes a state of oversaturated alerting which dilutes their impacts and credibility (Volpe et al., 2023). These risks were described as outcomes resulting from the implementation of a system without sufficient moderation protocols or oversight. It was suggested that risks should not prevent the establishment of community drug reporting systems and that robust management may ultimately strengthen impact. Interestingly, some interviewees suggested that inaccurate reports may usefully highlight priorities for community education and harm reduction interventions. This perspective affirmed the sentiment expressed by advisors, who advocated for community reports to inform a range of community facing resources, not just drug alerts which require analytical specificity.

Interviewees and advisors both noted an imperative for community reports to be integrated with other EWS data sources. Many interviewees recounted experiences in which community reports had helped to trigger timely public health responses to drug-related concerns. These

occurrences were narrated in circumstances where PWUD observed an adverse event and had recourse to provide a report, which was rapidly followed by confirmatory testing and a public health response.

Principles of community engagement are widely discussed in the literature on environmental disasters EWS (International Federation of Red Cross & Red Crescent Societies, 2012). Environmental EWS engage Indigenous and experiential knowledge to expedite threat detection and shape responses (Macherera & Chimbari, 2016). The meaningful engagement of PWUD in policy creation, service delivery and drug monitoring activities is also widely espoused (Brown et al., 2019; Perri et al., 2023; Ti et al., 2012). Collectively, this literature provides a compelling foundation upon which to rationalise the inclusion of PWUD within drug-related EWS.

However, our findings indicate that incorporating lived-living experience within drug-related EWS is marked by unique complexities. Most notably, drug use remains a value-laden criminalised terrain, and drug-related EWS often straddle dual public health and law enforcement remits (European Monitoring Centre for Drugs & Drug Addiction, 2019; United Nations Office on Drugs & Crime, 2020). There is a sizeable evidence base outlining the ways in which criminalisation and police presence mediate access to various harm reduction interventions (Bacon & Spicer, 2023), including drug checking services (Carroll et al., 2022) and emergency medical services (Freestone et al., 2023). Our findings indicate that concerns about privacy are particularly pertinent in the context of drug criminalisation; as such community drug reporting systems require strong privacy protocols and may be easier to implement in contexts where drug use and possession have been decriminalised.

Limitations

This study has some limitations that should be acknowledged. While detailed minutes were taken during advisory sessions, we did not audio-record and transcribe these sessions verbatim. This decision was motivated in part by resource constraints, and we note that without verbatim transcripts some of the more nuanced or granular aspects of participant contributions may not have been fully captured. Further, while our sampling frame for interviews included a diverse cross-section of EWS professionals, we could not interview representatives from poison information centres or coronial services. The absence of these perspectives may have limited our understanding of how a community drug reporting system may be perceived and utilised by certain EWS practitioners. Additionally, although our study has illuminated important considerations for practitioners of drug-related EWS globally, drug markets vary by jurisdiction, as do capacities for drug-related EWS. Our data were collected in the Australian context and may be most salient to practitioners in other global north nations. Finally, our findings mostly relate to the acceptability of, and approaches to establishing a community drug reporting system. Future empirical research must evaluate how the integration of experiential reports from PWUD influences the timeliness, accuracy, and effectiveness of EWS responses.

Conclusions

Incorporating the experiential reports of PWUD into drug-related EWS may offer benefits, including the potential for rapid detection of concerns and the contextualisation of analytically verified data. However, in exploring potential avenues for the design and implementation of such a system, our study illuminated various challenges and risks. These were mostly associated with community engagement in a context of criminalisation, data reliability and the potential to propagate misinformation. To address these challenges, participants emphasised the importance of PWUD leadership in design and implementation, accessible and anonymous platforms for data-collection and rigorous frameworks for data moderation. The principles and approaches outlined in Tables 2 and 3 may usefully guide the design and implementation of a community drug reporting systems in Australia and elsewhere.

Key point summary

- Incorporating incidental reports provided by people who use drugs (PWUD) into drug-related early warning systems may expedite detection of and responses to events of acute concern, such as overdose clusters or adulterated supply.
- Given drug criminalisation, the integration of experiential reports must be accompanied by robust data security and privacy protocols.
- Issuing drug alerts on the basis of experiential reports alone risks propagating misinformation: EWS practitioners should strive to cross-validate reports with other data sources.
- Community reporting systems that collect data on both enjoyable and harmful drug experiences may inform a range of outputs, including harm reduction resources, sector training and public drug alerts.
- Efforts to systematically collect and integrate community knowledge and experiential reports into a drug-related EWS should be led by PWUD.

CRediT authorship contribution statement

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Declaration of competing interest

MJB is chair of the board of the charity Bluelight Communities Ltd, which runs Bluelight.org, an international community of people who use drugs who share anecdotal information through multiple digital channels.

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