Community drug checking: A harm reduction pathway to safer drug use through a pilot program in SLO County

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Introduction

Drug checking is a harm reduction method that helps people who use drugs (PWUD) identify harmful contaminants in their drugs, as well as a public health strategy to monitor the local drug supply.

Objective: To pilot a drug checking program in SLO County at the local syringe exchange program. Our goal was to provide timely, useful information to our participants as part of our harm reduction program, and to learn more about the local drug supply to aid in education and conversations about participant experiences.

Materials and Methods

Materials:

- 97 syringe samples and 46 participant samples collected from 6 sites in San Luis Obispo County.
- Test strip kits for the following compounds: methamphetamine, amphetamine, opiates, fentanyl, benzodiazepines, nitazine, and xylazine.

Methods:

- Immunoassay test strips and Direct Analysis in Real Time Mass Spectroscopy (DART-MS) conducted by the Rapid Drug Analysis and Research (RaDAR) group at the National Institute of Standards and Technology (NIST).

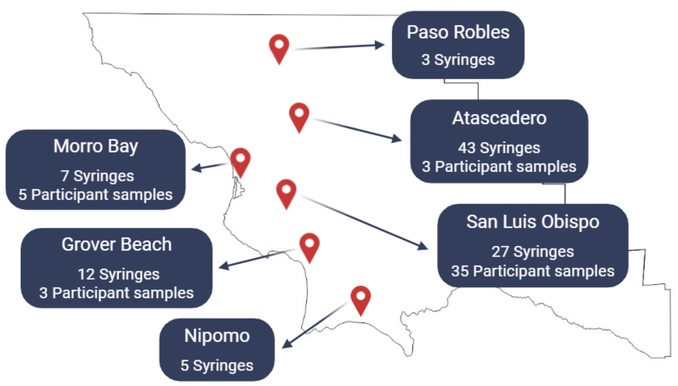

Figure 1: Sample collection locations throughout San Luis Obispo County. Image created in BioRender.com. County map sourced from d-maps.com.

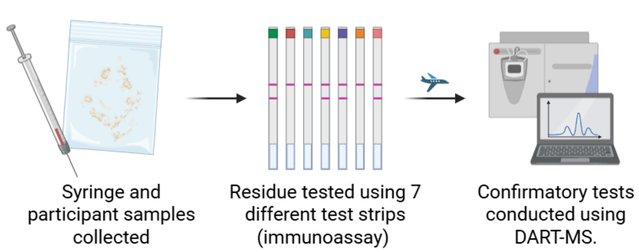

Figure 2: Drug checking workflow. Image created in BioRender.com

Results

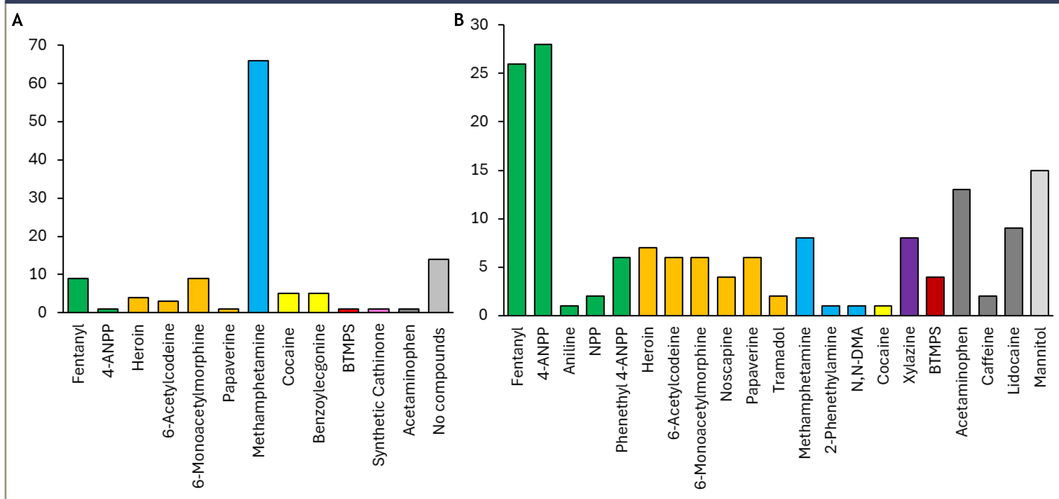

Figure 3: Compounds detected in syringe samples (n=97) (A) and participant samples (n=46) (B) using DART-MS. Excluded unknown compounds (m/z values only) and compounds below trace levels. Some samples contained more than one compound. Fentanyl and precursors/synthesis byproducts (green), heroin and synthesis byproducts (orange), methamphetamine and synthesis byproducts (blue), cocaine and synthesis byproducts (yellow), xylazine (purple), bis (2,2,6,6,-tetramethyl-4-piperidyl) sebacate (BTMPS) (red), synthetic cathinone (pink) and other bioactive (grey) or inert substances (light grey).

	Meth	Fentanyl	Mixed
Syringes	68.0%	9.3%	(1.0%)*
Participant samples	17.4%	56.5%	None

Table 1: Frequencies of methamphetamine, fentanyl, and both substances appearing in syringes (n=97) and participant samples (n=46). *With syringe-based testing, we cannot confirm which substance was the expected one and which was an adulterant.

	Fentanyl	Fentanyl +Xylazine	Fentanyl +BTMPS
Syringes	9.3%	None	1.0%
Participant samples	56.5%	17.4%	8.7%

Table 2: Frequencies of fentanyl, fentanyl with xylazine[2] (a veterinary tranquilizer), and fentanyl with BTMPS[3] (an industrial chemical used in plastics manufacturing) appearing in syringes (n=97) and participant samples (n=46).

	Heroin	Heroin +Quetiapine
Syringes	4.1%	None
Participant Samples	17.4%	4.3%

Table 3: Frequencies of heroin, and heroin with quetiapine (a medication prescribed to treat schizophrenia, bipolar disorder, and depression) appearing in syringes (n=97) and participant samples (n=46).

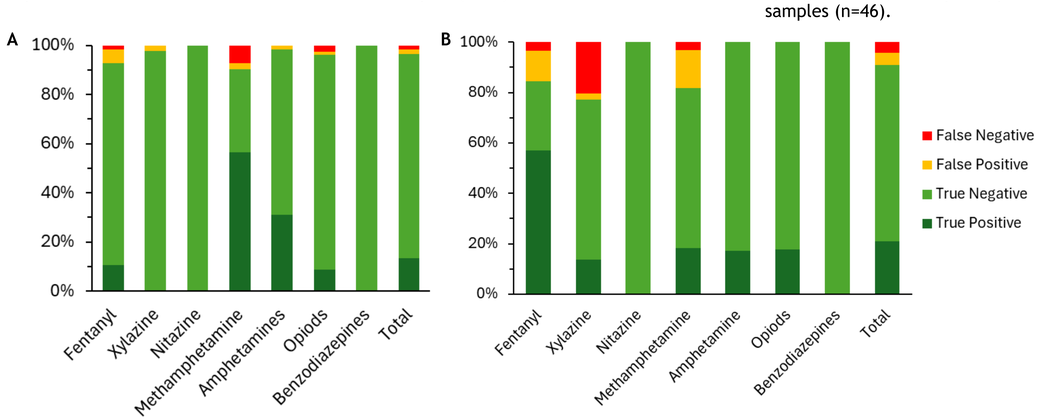

Figure 4: Comparison of test strip results to DART-MS results for syringe samples (A) and participant samples (B). Of the test strips (n=638) conducted on syringes, there were: 13.3% true positive, 83.1% true negative, 2.0% false positive, 1.7% false negative. Of the test strips (n=278) conducted on participant samples, there were: 20.9% true positive, 70.1% true negative, 4.7% false positive, 4.3% false negative.

Discussion

Small, off-site drug checking programs can provide important information to participants. People using stimulants exclusively (e.g. methamphetamine) were concerned about fentanyl cross-contamination[1], which was ruled out by both test strips and lab-based analyses (Table 1). People using opioids were concerned with the strength of the opioid and the presence of xylazine[2], BTMPS[3], quetiapine, or other adulterants (Tables 2 & 3). Lab-based secondary testing provided helpful information on adulterants or cuts not available by test strips alone.

Small pilot programs can be a valuable step towards acceptance in the community while funding and training are acquired for more robust programs. And finally, participant input and involvement are crucial to program success.

Next Steps

1. Expand drug checking services to include more participants by word of mouth.
2. Start quantitation-based drug checking to provide participants with greater detail of the amounts of compounds in their samples.

References

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