## B160    Improving Our Knowledge of Drug Usage Through the Analysis of Used Injecting Paraphernalia

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**Learning Overview:** After attending this presentation, attendees will have learned from an innovative approach to gather objective data about illicit drugs. In particular, at the end of this presentation, attendees will have a better understanding of what drug types and other potentially harmful substances are present in the drug market and are used by people who inject drugs. Up-scaling and implementation of the approach would support early detection of potentially harmful substances entering drug markets (for example, highly potent fentanyl analogs). It would also provide authorities with more objective data on the issues surrounding illicit drug use.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by demonstrating how existing common forensic science competencies (e.g., forensic chemistry, drug chemistry) can be expanded in a proactive and preventative space (in complement to the traditional reactive manner). This presentation will also have an impact on society as up-to-date laboratory data may better inform health messaging and support people who use drugs to make informed decisions, in line with harm minimization strategies.

Drug consumption, dependence on substances, and the illicit drug trade are significant challenges for most countries. Understanding such a complex and multifaceted issue requires a problem-orientated approach, gathering and comparing data from different sources (e.g., police statistics, chemical profiling, internet activity, self-report surveys). One relatively new source of data is the chemical analysis of residual drug content of used paraphernalia. Such analysis provides objective data about drugs, adulterants, and cutting agents injected by people who use drugs and is complimentary to more traditional data collection. Further, by studying patterns of drug injecting over time, the most effective policy response, including in harm reduction programs, can be adapted and updated based on consumption changes or newly detected substances. A pilot study involving the analysis of residual content of used injecting paraphernalia collected at a Supervised Injecting Facility (SIF) was undertaken in Sydney, Australia, in 2019.

The current work extends from the 2019 pilot study through 2020, including during the COVID-19 pandemic, at the same SIF, the Sydney Medically Supervised Injecting Centre (MSIC). It provides information on injecting drug trends and aims to provide an objective picture of the substances injected by consumers and add to existing methods of understanding patterns of use. By analyzing the substances injected by consumers through Gas Chromatography/Mass Spectrometry (GC/MS), chemical analysis of the discarded syringes, and comparing these results to the self-report, important messaging can ultimately be established, depending on how knowledgeable consumers/people who use drugs are regarding the substances they have injected.

For one week in early 2020, seven disposal bins containing all used injecting paraphernalia were collected from MSIC. The residual drug content of the 207 syringes was analyzed through a validated GC/MS method, and the main psychoactive substance and adulterants were described.

The most commonly detected drugs were heroin, methamphetamine, and oxycodone. Combinations of drugs, drug derivatives, and cutting agents were also seen. Results from laboratory analyses were consistent with self-reported drug usage. Variation over time was also examined. Up-to-date results, including the potential impact of the COVID-19 pandemic on drug consumption, will be provided during this presentation.

Such an approach is appropriate to be carried out regularly as it does not disrupt the usual running of the facility. By implementing longitudinal monitoring, further data regarding smaller time scale drug market changes can be developed, and the introduction of more potentially dangerous substances into the market can be more quickly identified. Combining these findings with data from other sources ultimately provides an enhanced capability to better understand and address the issue of illicit drug use.

**Illicit Drugs, Used Syringes Analysis, Harm Reduction**

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