A realist synthesis of how drug checking services are designed and implemented for people who use drugs.

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Background: With rising numbers of drug-related deaths in Scotland, exploration of interventions that seek to reduce drug-related harm is essential. Drug checking services (DCS) allow people who use drugs to submit drug samples for chemical analysis and receive feedback about their sample as well as harm reduction advice. The use of DCS is often linked to festival and/or nightlife settings, but research has also shown the potential of DCS as a community-based intervention. However, there is still limited understanding of the underlying mechanisms and processes within DCS which aid implementation and subsequent engagement. Without this knowledge, it is impossible to understand why DCS work or do not work, and how best to develop and deliver them in different contexts and for different populations. It is unclear, for example, how implementing communitybased DCS might differ from festival-based DCS and why. To explore this, a realist synthesis was undertaken to review the international evidence for the delivery and implementation of DCS. There were 135 sources included in the synthesis comprising of full text articles, project meeting notes, and conference notes. From the sources, the underlying contexts, mechanisms, and outcomes of DCS were extracted and refined into macro-, meso-, and micro-level programme theories showing what works, for whom, why, and in what contexts. The findings of this synthesis are theoretically novel and hold practical relevance for those involved in the design of DCS with implications for optimisation, tailoring, and implementing services to reach client groups in different settings. In particular, identifying how DCS could best be integrated into community-based services may inform future developments in harm reduction for people who use drugs more regularly and may be at higher risk of drug-related harm.

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