# Evaluation of Latent Fingerprints for drug screening in a social care setting

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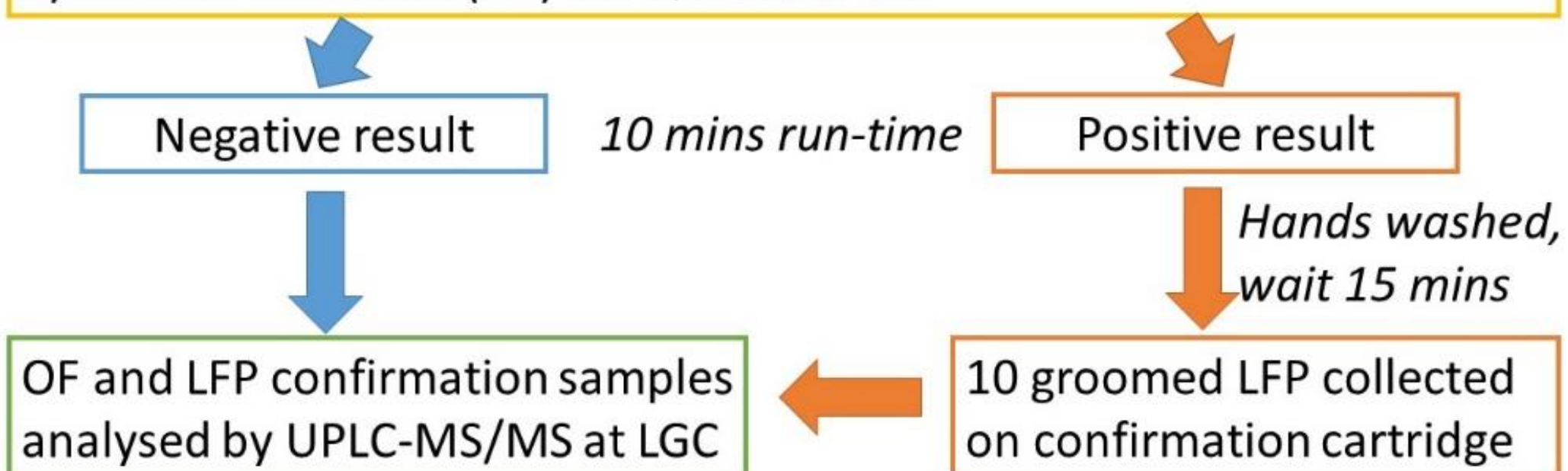[3] *Harrow Children's Services, Station Road, Harrow, HA1 2XY*

## BACKGROUND

- Sweat in latent fingerprints (LFPs) deposits have shown to contain illicit drugs and their metabolites[1]
- Quantitative mass spectrometry techniques paired with qualitative point-of-care tests (POCT) have been utilised to detect cocaine, opiates and amphetamines[2]
- POCT require minimum sample preparation allowing a rapid turnaround time[3]
- This pilot study trialled a POCT utilising LFPs in a social care setting, where quick and confidential screening tests are required

## METHODS

Samples collected:
1) 1 natural LFP → screened for Amphetamine, Opiates and Cocaine via Intelligent Fingerprinting screening test
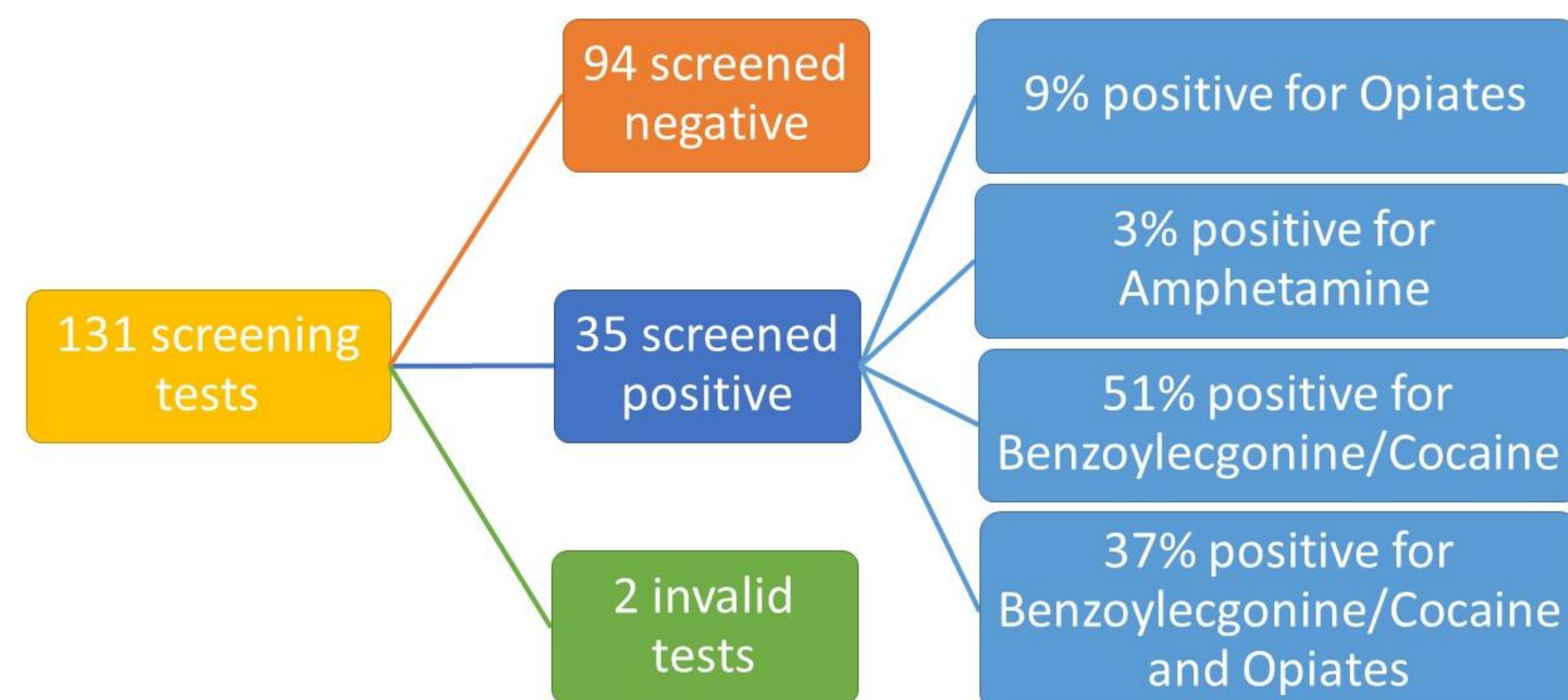2) 1 mL of Oral Fluid (OF) via Quantisal kit

Negative result   *10 mins run-time*   Positive result

*Hands washed, wait 15 mins*

OF and LFP confirmation samples analysed by UPLC-MS/MS at LGC ← 10 groomed LFP collected on confirmation cartridge

- Both screening and confirmation cartridge were from Intelligent Fingerprinting (DOA114 and DOA150)

## RESULTS: Demographics

- 36 subjects were tested:
  - 53% female
  - Mean age 36 ± 11 years (range 17 – 36 years)
  - Main ethnicity was white (61%)
- Alcohol and illicit drug use:
  - Two-thirds smoked, of which 21% smoked <5 a day
  - 39% of subjects stated alcohol consumption (14% drink > 10 units)
  - Cocaine was the most frequently used drug in the last month (14%) followed by cannabis (11%)

## RESULTS: Screening tests

- Out of 131 tests, 13% were ad-hoc testing

131 screening tests

94 screened negative

35 screened positive
- 9% positive for Opiates
- 3% positive for Amphetamine
- 51% positive for Benzoylecgonine/Cocaine
- 37% positive for Benzoylecgonine/Cocaine and Opiates

2 invalid tests

## RESULTS: Confirmation

*Table 1 - Drug and metabolite concentrations in 10 LFP confirmation samples analysed via UPLC-MS/MS (n = 32).*

| Drug/metabolite | No. of samples | Median quantity (pg/print) | Quantity range (pg/print) |
|---|---|---|---|
| Benzoylecgonine | 22 | 90 | 11 - 1485 |
| Cocaine | 22 | 1400 | 177 – 6260 |
| Morphine | 3 | 139 | 35 – 177 |
| 6-MAM | 5 | 194 | 48 -1524 |
| Codeine | 2 | 222 | 38 – 406 |

*Table 2 - Drug and metabolite concentrations in OF confirmation samples analysed via UPLC-MS/MS (n = 130).*

| Drug/metabolite | No. of samples | Median concentration (ng/mL) | Concentration range (ng/mL) |
|---|---|---|---|
| Benzoylecgonine | 5 | 18 | 8 - 50 |
| Cocaine | 12 | 14.5 | 8 - 207 |
| 6-MAM | 6 | 2.5 | 2.5 - 49 |
| Dihydrocodeine | 1 | 83 | 83 |
| Codeine | 4 | 65 | 26 – 652 |
| THC | 19 | 26 | 2 – 150 |
| Negative | | 89 | |

## CONCLUSIONS

- Overall, the LFP POCT successfully detected cocaine and opiates in a social care setting
- Cocaine was the most dominant analyte in LFP screening test and both confirmation samples
- Additionally, THC was observed in OF
- Factors affecting results included: drug's physiochemical properties, time of drug administration and the dose consumed → social workers should enquire about dose and time of administration to understand results

1. Leggett R, et al.: Angew Chem Int Ed Engl 2007;46:4100-4103.
2. Hudson M, et al.: J Anal Toxicol 2018
3. George C, et al.; in Wolff K (ed) Detection of Drug Misuse: Biomarkers, Analytical Advances and Interpretation. UK, The Royal Society of Chemistry, 2017, vol 1, pp 23-45.

*The authors declare that there is no conflict of interest*