

## **Lessons Learnt**

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### **Contextual Bias in Forensic Toxicology**

**Key Words:** forensic toxicology, cognitive bias, contextual information, organizational culture.

This issue concerns the use of case information to determine the testing strategy in a forensic toxicology laboratory. A post-mortem toxicology case was submitted to a laboratory and was described by the submitting authority as a “drug-related death”. The case history went on to mention that the deceased was a known intravenous drug user with a history of heroin use.

Only one sample was submitted for the case, a post-mortem blood sample with limited volume. After reading the case history, a senior scientist made the decision that this sample would not be screened by immunoassay for the possible presence of different drug families (as was usual practice in the laboratory) but would go straight to confirmation and quantification of a limited range of opiate-type drugs (morphine, codeine, and other heroin markers).

This analysis used almost all of the sample and was negative for that range of opiate-type drugs. Therefore, the small amount of sample remaining was screened by immunoassay for different drug families. This second test was negative for opiates, but revealed the possible presence of methadone (an opioid used to treat heroin dependence), which was not tested for in the first method. There was now insufficient sample to confirm or quantify this finding. On contacting the submitting authority with a negative result for heroin use, it emerged that the medical information received with the case sample was incomplete, and the deceased had, prior to their death, sought treatment for their heroin dependence.

Whilst case information can, and should, be used to determine case strategy, forensic scientists should bear in mind that the information they receive is often collected at the very start of a police investigation and may therefore be unreliable, incomplete or out-of-date. In this case, the forensic scientist made a key decision based solely on contextual information – and deviated from the established screening procedures. As the tests were destructive and the sample was limited, the presence of methadone in the blood could not be confirmed. Whilst it may be necessary occasionally to deviate from usual processes, there were no checks in place in this laboratory for such a scenario, and the customer was not contacted until after the sample had been consumed.

## **Definitions**

### **Cognitive bias:**

A pattern of deviation in judgement whereby inferences about other people and situations may be drawn in an illogical fashion. Types of include confirmation and contextual bias.

### **Confirmation bias:**

The tendency to test hypotheses by looking for confirming evidence rather than potentially conflicting evidence.

### **Contextual bias:**

The tendency for a consideration to be influenced by background information.

### **Anchoring effects or focalism:**

This is when an individual relies too heavily on an initial piece of information when making subsequent judgements, which are then interpreted on the basis of the anchor.

## **Things to consider**

- 1) How is case strategy determined in your organisation? Is a standard set of tests applied to each case, or are tests decided on a case-by-case basis? If it

is the latter, what information is used? Does the submitting authority decide which tests are carried out?

- 2) Are rules-of-thumb based on age, gender, cultural group, case circumstances, etc. being used formally or informally in your laboratory to decide what tests are necessary for a case?
- 3) When key decisions are made or changed, are records kept in the casefile of who made the decision and the justification?
- 4) What is the process for decision making when samples are limited or poor quality? Particularly when the information to hand suggests deviating from established procedures. If the tests are destructive and may consume the whole sample, is the submitting authority consulted? Would peer review of the strategy assist or hinder the process?
- 5) Does your organisation have a culture in which junior staff members feel they cannot question scientific decisions made by senior staff members?
- 6) Who has access to contextual case information in your organisation? Do you need safeguards to ensure that practitioners only have information relevant to the analysis?

## **Relevant documents**

### **Cognitive Bias Effects Relevant to Forensic Science Examinations**

[www.gov.uk/government/publications/cognitive-bias-effects-relevant-to-forensic-science-examinations](http://www.gov.uk/government/publications/cognitive-bias-effects-relevant-to-forensic-science-examinations)