

Analysis of "repeat offending" rates amongst laboratories reporting false-positive results in the Heathcontrol drugs of abuse EQA scheme

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Introduction

The Heathcontrol EQA scheme contacted all participants that produced a false-positive analytical result or an error in integrity test reports for the 66 samples distributed between February 2003 and May 2008. Samples were circulated in sets of 3 at quarterly intervals – 22 sets in all.

Methods

What is repeat offending?

Inspection of the questionnaires showed that within a set of three samples, there were a number of cases where a single error either in an integrity test or a drug screening test had affected all three samples in a set. Similarly, in cases where a laboratory switched samples, several errors resulted within the set of 3 samples. These cases resulted in multiple questionnaires for a laboratory but were not considered to be repeat offending. The study therefore combined the errors for a laboratory within each set of 3 samples as a single event. The study investigated the number of times a laboratory appeared in the 22 sets of samples distributed.

Results

Over the 5 year period 232 laboratories were sent false positive questionnaires (ie: virtually all participants). The observed and binomial prediction of repeat offending rates were as follows. The distributions were highly significantly different (P<0.001).



How many laboratories took part?

Over the 5+ years of the study, participants both joined and left the scheme. The following analysis used the average number of participants as the total.

The analysis

The frequency distribution of the observed number of times a laboratory received a questionnaire was compared to the binomial prediction by chisquare. The binomial prediction assumes that the issue of each questionnaire is independent and thus one false-positive event does not influence the occurrence of another.



Sixty six (28%) laboratories made a single mistake, many more than predicted. One hundred and forty one (61%) made between two and six errors. Twenty five laboratories (11%) made between 7 and 11 false positive reports. The frequency of high numbers of errors exceeded expectation. For the latter group of frequent offenders, the errors were categorised for integrity and drug groups. A single laboratory had 9 false positives for integrity, the other 24 had errors for different drug groups ranging from 2 to 7.

Discussion

There was an excess over prediction in the number of laboratories that received a single questionnaire. Does this perhaps suggest that corrective actions have been taken by the laboratory to prevent a false-positive from re-occurring? Secondly, there were more than predicted numbers of participants that received high numbers of questionnaires. There do appear to be centres that took no corrective action on receiving questionnaires and who kept making errors time after time. Interestingly, these errors were for a variety drugs so the tendency to keep producing errors was general and not related to a specific drug group.

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