Effect of reducing the cut-off concentration for opioids in oral fluid screening

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IMMUNALYSIS

Introduction

• Opiate and oxycodone ELISA screening data from oral fluid samples received into our laboratory were reexamined.

• Samples that fell between the cut-off concentration (40µg/L) and the low positive control (20µg/L) were extracted and analyzed for codeine (COD), morphine (MOR), hydrocodone (HYC), hydromorphone (HYM), oxycodone (OXYC), oxymorphone (OXYM), 6-acetylcodeine (6-AC), and 6-acetylmorphine (6-AM) using LC-MS/MS.

Objective

• To analyze these previously screened negative samples in order to indicate the number that may confirm positively for opioids if the cut-off concentrations for both screening and confirmation were reduced.

Methods

• Data from opiate and oxycodone ELISA screens from oral fluid samples were retrospectively analyzed.

• Specimens that screened between the cut-off concentration and the low positive control (LPC) were noted and were analyzed using LC-MS/MS.

• Specimens which confirmed > 4µg/L were considered positive.

Results

• Of all the opioids analyzed, morphine had the highest percentage increase in positive results of 50%.

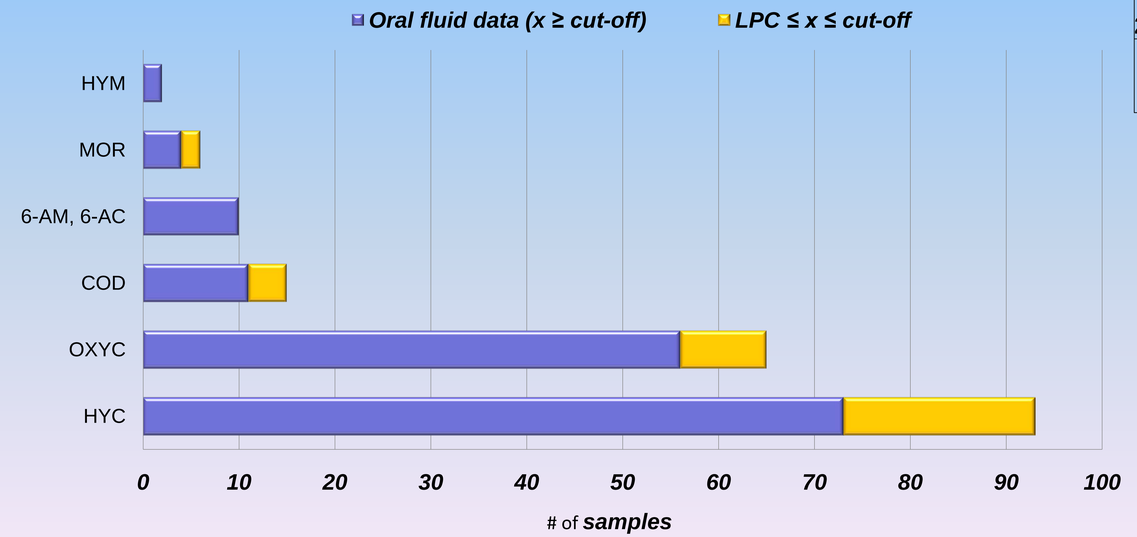
• Four more samples confirmed for codeine, ranging between 11.9 and 33.0µg/L, increasing its positivity rate to 36.3%.

• Twenty samples were positive for hydrocodone which displayed a rise of 27.4%.

• Oxycodone showed the least increase with nine samples confirming positively (16.0% increase)

• Analyzing specimens below the 20µg/L concentration resulted in six more oral fluid specimens being identified for 6-AM as well as more positives for codeine and morphine.

Increase in Opioid Positives



Data Summary

	HYC	OXYC	COD	6-AM	MOR	HYM	Total # Opiate Positives
Oral fluid data (x ≥ cut-off)	73	56	11	10	4	2	**156**
LPC ≤ x ≤ cut-off 4ug/L confirm	20	9	4	0	2	0	**35**
% increase	**27.4**	**16**	**36.3**	**0.0**	**50**	**0.0**	**22.4**
LPC ≤ x ≤ cut-off 20ug/L confirm	15	5	1	0	1	0	**22**
% increase	**20**	**8.9**	**9**	**0.0**	**25**	**0.0**	**14.1**

Conclusion

•Since oral fluid serves as a good matrix in identifying users of pain management drugs, it is imperative that we use this to our advantage in distinguishing users from non-users. If the cut-off is too high, it may produce false negative results.

• A reduction in the cut-off concentration for both screening (from 40µg/L to 20µg/L) and confirmation of opioids in oral fluid should be considered to increase the number of true opioid positives detected.

Oral Fluid

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