

## Observation of improved adherence with ongoing urine drug testing in patients with chronic pain

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### Purpose

Reports have indicated low medication adherence rates in patients being treated for chronic pain. This study explores the effectiveness of adherence monitoring through urine drug testing (UDT). The study objective is to determine if there is a relationship between UDT frequency and pain medication adherence, specifically with morphine, hydrocodone, oxycodone, methadone, carisoprodol, buprenorphine, and fentanyl.

### Method

This retrospective analysis was conducted on de-identified urine specimens collected between March 2008 and May 2011 and analyzed at Millennium Laboratories by LC/MS-MS for both parent drug and metabolites. Specimens tested in this study had physician-reported use of each medication and were collected as part of clinical monitoring of patients with chronic pain. For all medications, adherence was defined as the presence of the parent drug greater than or equal to the lower limit of quantitation (LLOQ) of the assay. Adherence of those considered to be less frequently monitored was determined using all subjects in the dataset with reported use of each medication. Adherence of those considered to be more frequently monitored was determined using subjects with 5 or more specimens measured during the study period (2 or more for carisoprodol). Linear regression analysis was performed using OriginPro 8.5.1 to determine if there was a correlation between adherence and number of visits within the study period.

### Results

The number of specimens and adherence rates representing less frequent monitoring are as follows: morphine 22,364 (85% adherent), hydrocodone 73,301 (72% adherent), oxycodone 68,834 (71% adherent), methadone 49,778 (93% adherent), carisoprodol 16,613 (74% adherent), buprenorphine (88% adherent), fentanyl 21,345 (85% adherent). When comparing specimens taken from all subjects to specimens taken from subjects with more frequent monitoring (two or more specimens for carisoprodol and 5 or more for all other medications), subjects on all medications show improved adherence. The percent improvements are as follows: morphine 7%, hydrocodone 7%, oxycodone 15%, methadone 3%, carisoprodol 4%, buprenorphine 2%, fentanyl 6%. A positive correlation exists between the number of visits and adherence ( $P < .005$ ). For all medications studied, the frequently-monitored patients trended towards full adherence.

### Conclusions

A positive correlation was shown between medication adherence and number of drug monitoring visits. This suggests that adherence may be further improved with more frequent monitoring. One limitation of this study is that physicians may decide to discontinue treatment in nonadherent subjects, which would result in increased adherence overall. However, in subjects with more than 5 visits, a correlation still exists, indicating that even when patients are not dismissed from a practice, adherence may be improved.