

Introduction

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Urine drug testing is performed on patients on chronic pain medications and those undergoing substance abuse rehabilitation. The reasons for these tests are to monitor medication compliance, detect unexpected drug use, and detect illicit drug use. For these purposes, our laboratory has performed over 4 million drug tests since the year 2016 and more than 2 million from 2020-2024. Many of these urine drug tests quantitatively measure the administered drug and its Phase 1 metabolite. Both the administered drug and its corresponding metabolite appearing in urine reflect the final processing of the medication and offer a way of monitoring drug metabolism. In these studies, we term the parent drug as the taken medication, and metabolite as the medication processed by any Phase 1 CYP450 pathway. The metabolic ratio of metabolite/parent therefore reflects the ability of the

CYP450 pathway to process the drug. We present our analytic analysis of our observations of the metabolic ratio of metabolite/administered parent drug by defining the reference interval and the upper and lower 2.5 percent of the data. The lower limit defines poor metabolism which must be considered by the provider. One of the reasons for poor metabolism is drug-drug interaction which can limit metabolism. We present drug-drug interaction data for the 18 drug pairs in our study showing the effect of commonly coprescribed drugs on the metabolism of prescribed drugs for pain management and substance abuse.

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