

## Cross Reactivity of Risperidone in Fentanyl Point of Care Devices

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**Abstract :** Background-Aim: Fentanyl is a highly-potent synthetic  $\mu$ -opioid receptor agonist used for exceptional pain management. Its main metabolite, norfentanyl, is typically present in urine at significantly high concentrations (i.e. ~20%) representing an effective targeting molecule for immunoassay detection. Here, we evaluated the NCS<sup>TM</sup> One Step Fentanyl Test Device<sup>®</sup> and the BTNX Rapid Response<sup>TM</sup> Single Drug Test Strip<sup>®</sup> point of care (POC) test strips targeting norfentanyl (20 ng/ml) and fentanyl (100 ng/ml) molecules for potential risperidone interference. Methods: POC tests calibrated against norfentanyl (20 ng/ml) used [immunochemical] lateral flow devices to provide qualitative results within five minutes of urine sample contact. Results were recorded as negative if lines appeared in the test and control regions according to manufacturer's instructions. Positive results were recorded if no line appeared in the test region (i.e., control line only visible). Pooled patient urine (n=20), that screened negative for drugs of abuse (using NCS One Step Multi-Line Screen) and fentanyl (using BTNX Rapid Response Strip) was used for spiking studies. Urine was spiked with risperidone alone and with combinations of fentanyl, norfentanyl and/or risperidone to evaluate cross-reactivity in each test device. Results: A positive screen result was obtained when 8,000 ng/mL of risperidone was spiked into drug free urine using the NCS test device. Positive screen results were also obtained in spiked urine samples containing fentanyl and norfentanyl combinations below the cut-off concentrations when 4000 ng/mL risperidone was present using the NCS testing device. There were no screen positive test results using the BTNX test strip with up to 8,000 ng/mL alone or in combination with concentrations of fentanyl and norfentanyl below the cut-off. Both devices screened positive when either fentanyl or norfentanyl exceeded the cut-off threshold in the absence and presence of risperidone. Conclusion: We report that urine samples containing risperidone may give a false positive result using the NCS One Step Fentanyl Test Device.

**Keywords :** fentanyl, interferences, point of care test, Risperidone

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