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Suggestions for Improvement to Opioid Use Compliance Monitoring During the Age of the Opioid Epidemic

"Monitoring of opioid use in chronic pain treatment"

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COLUMN ARTICLE

Opioid medications are commonly prescribed for treatment of moderate to severe pain. Even though the United States population is less than 5% of the world's population, it consumed approximately 80% of the world's supply of oxycodone and 99% of hydrocodone, two of the most common opioids in use today. Opioids carry high addiction liability and the potential for abuse is great and so they are classified as scheduled 2 drugs by the Controlled Substances Act of 1970. The development of tolerance and subsequent addiction (Figure 1) may lead to abuse of other drugs, usually illicit, and the diversion of prescribed opioids to fund the new drug seeking behavior. For practical purposes, urine drug analysis is a very common method of monitoring drug use whether it is in a pain clinic or for workplace monitoring and the screening method is usually immunoassay-based. Much of this evolved from the guidelines of the federal agency Substance Abuse and Mental Health Administration (SAMSHA). This methodology however suffers several limitations, including the fact that urine drugs levels bear no clinical relationship to patients' symptoms and by design, immunoassay-based techniques detect solely the class of drugs rather than specific drugs (i.e. opiates vs morphine). This rather non-specificity is usually due to the antibody used, usually polyclonal, and even though it may target a specific opiate, such as morphine. Thus, in forensic situations a confirmation test utilizing gas-chromatography-mass spectrometry is required. Moreover, urine drug levels can hardly be used to confirm compliance as it is not normalized to water intake (i.e. creatinine excretion).

Therapeutic drug monitoring (TDM) is a specialized branch of clinical chemistry used for patient care which usually tests the levels of drugs that, among other things, have narrow therapeutic ranges, efficacy difficult to establish, those with potent metabolites and assessment of therapeutic failures. The specimen of choice is blood because and drug levels correlate significantly with patient symptoms. With the growing opioid epidemic and the strong push for monitoring compliance of opioid use, the push would be for the use of blood. While the collection of this sample may be tedious and invasive, it offers several advantages, including the ability to monitor compliance to the prescribed medication as the therapeutic ranges for all major medications is established.

Another suggestion to the testing strategy to improve compliance monitoring might be the use of chromatographic methods as screening techniques. Liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS) might be the best alternative. This technique could conceivably detect dozens of drugs and their metabolites in a single run to help detect cases of patients who are taking other drugs or not complying with dosing regimens of properly prescribed medications (Figure 1). These scenarios would be missed if a single antibody-based immunoassay technique were used.

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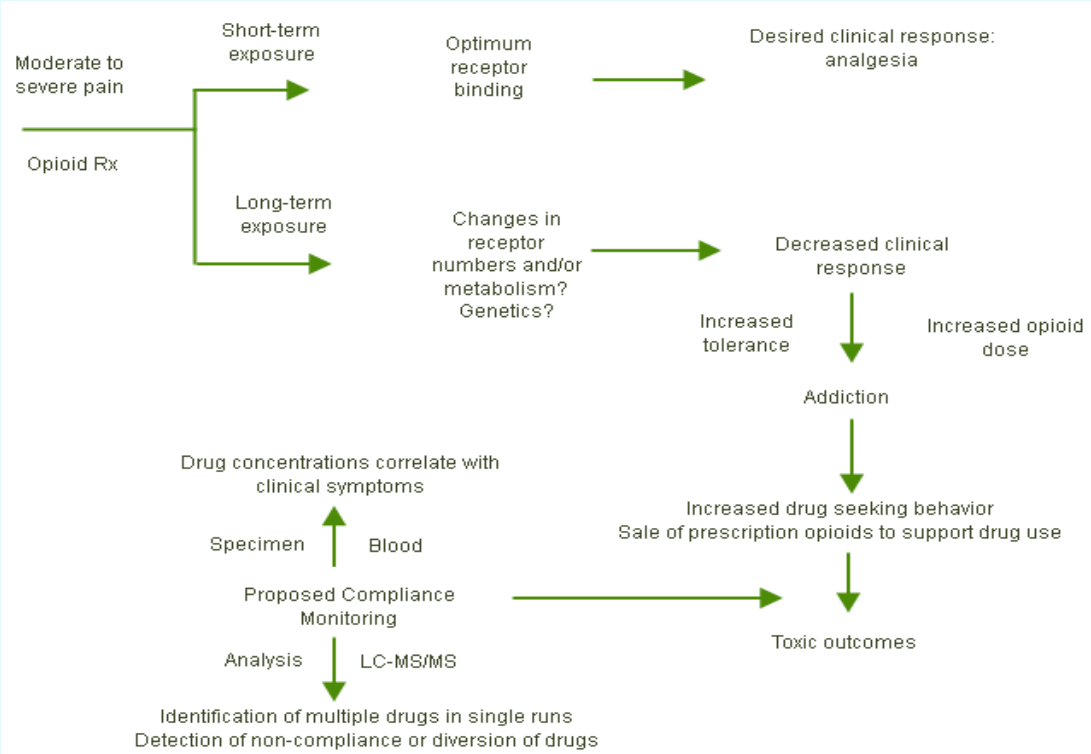

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