

# Use of the Clinical Laboratory in Psychiatric Practice

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## KEYWORDS

- Clinical laboratory • Psychotropic prescribing practices
- Therapeutic drug monitoring • Urine drug testing • Substance abuse
- Blood drug levels • Urine drug levels

## KEY POINTS

- The clinical laboratory is an invaluable tool for guiding prescribing practices of psychiatric medications. Laboratory results should always be correlated with a clinical examination and are rarely useful on their own.
- Care must be taken when testing patients for medication levels that the results of such testing can be useful and will affect treatment.
- There is much literature but still inconclusive evidence for the usefulness of medication levels in blood and other fluids for many psychotropic agents.
- For psychiatric care, medication levels may be best used when ordered with a specific clinical question as opposed to as a general screening battery for all patients.

## INTRODUCTION

The clinical laboratory can be a useful tool in psychiatry, but is not always clinically indicated. Advances in laboratory testing technology can sometimes outpace clinical scientific advances of how to use this technology. When ordering a drug level or toxicology assessment in the discipline of psychiatry, one must think of the clinical setting, the potential significance of the results, the class of medication being tested, and most importantly whether the information will have an impact on treatment or expected treatment outcomes. Although the laboratory toxicology workup is used in pain, addiction, and other fields of medicine, psychiatric evaluation and assessment is unique in certain

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respects. Although the ability exists in our modern era to test for almost everything, the situations where one should test are far more limited. In this review, we address treatment considerations in different psychiatric settings and discuss how the clinical laboratory can be effectively used in each of these settings. We also review each of the major psychiatric medication classes and discuss how the clinical laboratory can be used to guide prescribing practices. Although substance use and addiction are closely intertwined with regular psychiatric care, therapeutic drug monitoring (TDM) and its role in psychiatric treatment are the primary focus of this review. Where applicable, we comment on the nonmedical use of psychiatric medication as well.

## TREATMENT CONSIDERATIONS DEPENDING ON SETTING

The goals of treatment in psychiatry differ based on the clinical setting. The basic treatment settings are the emergency setting, inpatient setting (either psychiatrically or medically hospitalized), and the outpatient setting. Each setting will have slightly different considerations.

### *Emergency*

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In the emergency setting, the primary goal is stabilization of acute issues, some of which may be life threatening, and evaluation to determine if the patient can be treated as an outpatient or inpatient. In this setting, one can usually assume psychiatric treatment failure because many patients presenting to the psychiatric emergency room are in distress. Discharge planning is usually done in this setting to ensure continuity of care, but is not as involved as in the inpatient setting.

Contact between the clinician and patient is limited in this setting, with treatment often lasting less than 1 day. Patients sometimes present without records or collateral information, and their histories may be unknown, especially if a patient is unable to cooperate with a diagnostic interview. Safety is also always a concern in the emergency setting, and a thorough clinical interview and examination can be hindered by an aggressive or psychiatrically unstable patient.

In this setting, screening tests are invaluable sources of information, and clinicians will often order batteries of tests for every patient with minor adjustments when clinically indicated. Laboratory tests such as urine toxicology screens for drugs of abuse, thyroid-stimulating hormone levels, and computed tomography play an invaluable role in the evaluation of a patient in the emergency setting and play a large role in the decision-making process. In general, drug testing of urine may only be useful qualitatively, whereas drug testing in serum may be either qualitatively or quantitatively useful for therapeutic levels.

Checking for blood levels of therapeutic drugs with well-defined therapeutic windows, such as lithium or clozapine, can indicate whether treatment failure occurred when the patient was at a therapeutic level of a drug, or if low blood levels may have impacted a patient's psychiatric stability. It can also inform decision making when suspecting lithium toxicity, although this must also be correlated with a thorough clinical examination.<sup>1</sup> Specific medications where blood levels are more useful are discussed in the class-specific sections.

Although some studies have found routine drug screening to be helpful in the detection of substance use,<sup>2,3</sup> others have found that they did not affect disposition or duration of inpatient stays,<sup>4</sup> management,<sup>5</sup> or diagnosis.<sup>6</sup> There is little evidence for the usefulness of routine urine drug screening in the emergency setting for patients without clinical suspicion of substance use or intoxication.<sup>7</sup> Testing for substances in an acute intoxication or overdose are discussed elsewhere.

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