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# Which Diagnostic Labs Should You Order in Psychiatry Inpatients?

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## Introduction

In this fact sheet, we present our approach to ordering lab tests for psychiatric patients, focusing on those most relevant to those newly admitted to psychiatric units. In other fact sheets, we drill down into more detail on specific labs to help you interpret abnormalities (see, for example, .....)

## Reasons to order labs in psychiatry

- **To rule out medical conditions** that might present with psychiatric symptoms.
- **To monitor potential side effects** of psychiatric medications that could alter lab values.

## Guidelines for Ordering Lab Tests

- **Avoid routine screenings for all patients.** Consider the patient's history and current presentation to select the most appropriate tests.
- **But adhere to guidelines** specific to your state or your hospital. Many regulatory agencies require that you order specific tests for all patients on certain medications. Examples include ordering lipid panels and HgbA1c/fasting glucose for all patients on antipsychotics or lithium levels and renal function tests for those on lithium therapy.
- **Refrain from repeating recent tests** unless there's a significant change in the patient's condition that warrants reevaluation.
- **Be prepared to act** on abnormal results. Ordering tests without the readiness to interpret and respond to the findings does not contribute to effective patient care. While this may seem obvious, in practice we have seen many abnormal results languishing in patients' charts without proper follow-up.

## Commonly Ordered Labs in Inpatient Psychiatry:

- Complete blood count (WBC with diff, RBC, hematocrit, hemoglobin, platelets)
  - Low hematocrit (anemia) can cause fatigue and depression
  - Elevated WBC may reflect infection or dehydration
  - Low WBC leukopenia is common in drug detox or as side effect of some psych meds like clozapine and carbamazepine.
  - Low platelet count can occur from valproate exposure and can cause abnormal bruising and bleeding
- Basic metabolic panel, or Chem 7 (Na, K, BUN, creatinine, Cl, CO2, Glucose)
  - Hyponatremia in dehydration, psychogenic polydipsia, side effect of some psych meds like SSRIs, carbamazepine, oxcarbazepine.
  - Low bicarbonate (acidosis) side effect of topiramate
  - Hypokalemia in dehydration and bulimia nervosa
  - Low BUN/Cr in renal impairment
  - High BUN/Cr in dehydration
  - High glucose in diabetes
- Urine pregnancy test
- HgbA1c
  - Screen for diabetes; can be elevated by several antipsychotics
- Magnesium, calcium, phosphate

- Rule out elevations or deficiencies
- Thyroid-stimulating hormone (TSH)
  - Rule out hypo- or hyperthyroidism, which can contribute to mood disorders.
- Liver function tests (AFT, ALT, Alk phos, bilirubin)
  - Detect liver impairment, which can affect choice of medications.
- Lipid panel
  - Can be elevated by a variety of medications, especially certain antipsychotics.
- Vitamin B-12/Folate
  - Deficiencies can contribute to depression/fatigue/cognitive impairment
- Vitamin D
  - Deficiency is common in patients with chronic mental illness and can exacerbate mood and anxiety disorders.
- RPR (Rapid Plasma Reagin)
  - Used to screen for syphilis, as neurosyphilis can present with psychiatric symptoms.
  - If positive, follow up with confirmatory treponemal testing, such as FTA-ABS (Fluorescent Treponemal Antibody Absorption) or TP-PA (T. pallidum Particle Agglutination).
- HIV
  - To detect HIV-associated neurocognitive disorders
- Urine drug screen
  - To identify substance use which may affect mental status or interact with medications
- Troponins
  - To rule out myocarditis in patients on clozapine, especially in the first four weeks of treatment
- Medication blood levels
  - Therapeutic levels:
    - Lithium: 0.6 to 1.2 mEq/L
    - Valproate (Valproic Acid): 50 to 125 mcg/mL
    - Carbamazepine: 4 to 12 mcg/mL
    - Clozapine: 350 to 600 ng/mL
- Urinalysis
  - Useful for detecting urinary tract infections or kidney issues that can present with altered mental status.
- Neuroimaging
  - To identify structural brain abnormalities that might contribute to psychiatric symptoms, such as tumors, strokes, or traumatic brain injuries.

**Labs that may be altered by certain psychiatric medications**

This section provides a guide on which lab tests to consider based on the psychiatric medications your patient might be taking. Obtain pregnancy tests in reproductive-age patients prior to initiating any psychiatric medications.

Medications	Recommended Diagnostic Tests
Antipsychotics—second generation, primarily clozapine, olanzapine, quetiapine, paliperidone, risperidone <sup>1</sup>	Fasting glucose or HgbA1c and lipids

<sup>1</sup>

Atomoxetine	Liver Function Tests (LFTs)
Carbamazepine (CBZ)	CBZ level, complete blood count (CBC), sodium, LFTs, HLA-B*1502 in Asians <sup>1</sup>
Citalopram	ECG if cardiac disease or age > 60 or dose > 40 mg daily
Clozapine	Fasting glucose and lipids, CBC, troponins
Desvenlafaxine	Periodic BP
Haloperidol	Prolactin level
Levomilnacipran	Periodic BP/pulse rate
Lithium	Li level, TSH, BUN/creatinine <sup>2</sup> , ECG if cardiac disease
Mirtazapine	Lipids
Naltrexone	LFTs if suspect liver disease
Oxcarbazepine	Sodium, HLA-B*1502 in Asians <sup>2</sup>
Paliperidone	Prolactin, fasting glucose and lipids

<sup>1</sup> HLA-B\*1502 is a gene that increases the risk of developing toxic epidermal necrolysis (TEN) and Stevens-Johnson syndrome (SJS) in response to taking carbamazepine. Asians, especially the Han Chinese, are much more likely to have the gene than other populations.

<sup>2</sup> The serum creatinine is used to compute the estimated glomerular filtration rate (eGFR), a more precise measure of kidney functioning. Increasingly, laboratory test results include the estimated GFR. You can calculate it yourself using an online calculator at [www.niddk.nih.gov/health-information/health-](http://www.niddk.nih.gov/health-information/health-)