# Artificial Intelligence–Aided Diagnosis and Treatment Selection for Uncomplicated Mental Illness in Primary Care

*A low-cost, high-value strategy to address the shortage of mental health prescribers*

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## Abstract

For many people, primary care has become the first door they knock on—and sometimes the only one—when they are struggling with depression, anxiety, insomnia, the aftermath of trauma, difficulty concentrating, or substance use. Yet specialty mental health care remains hard to reach, especially in rural and underserved communities, which leaves primary care clinicians to meet needs that can outstrip their training. Artificial intelligence (AI) can help these clinicians recognize common, lower-acuity conditions and choose evidence-based first-line care—but only when it serves as clinical decision support rather than an autonomous system that diagnoses or prescribes on its own. This paper proposes a safety-bounded model for AI-aided assessment of "uncomplicated" mental illness in primary care, built on validated screening tools, DSM-5-TR diagnostic criteria, structured red-flag checks, measurement-based care, and stepped treatment recommendations consistent with current guidelines. Implementing it responsibly calls for informed patient involvement, strong privacy protection, ongoing bias monitoring, clear clinician accountability, reliable crisis-escalation pathways, and firm limits on the authority we grant the technology.

**Keywords:** artificial intelligence, primary care, depression, anxiety, clinical decision support, measurement-based care

## Background and Rationale

The shortage of mental health professionals is not an abstraction; it shapes who gets care and how soon. Because specialty services are scarce, people in distress often turn first—and sometimes only—to their primary care provider. HRSA's 2026 data identify thousands of designated mental health professional shortage areas, home to a large share of the population (Health Resources and Services Administration [HRSA], 2026). The consequences reach beyond staffing. Long waits and delayed treatment become routine, and clinicians without specialized psychiatric training are left to recognize and care for conditions that can be genuinely hard to sort out.

A thoughtfully designed, AI-supported workflow could help narrow this gap. It is not meant for the hardest problems—complex psychiatry, involuntary risk assessment, psychosis, bipolar disorder, active substance withdrawal, or acute suicidal crisis. Its place is earlier and simpler:

helping clinicians recognize and begin caring for more straightforward situations, such as mild to moderate major depressive disorder, generalized anxiety disorder, panic disorder, adjustment-related distress, uncomplicated insomnia, and certain stable attention- or trauma-related symptoms. Here, “uncomplicated” means low immediate safety risk, no signs of mania or psychosis, no severe substance-use disorder, no complicated medication history, no major diagnostic uncertainty, and no history of several adequate treatments that have already failed.

Part of the appeal is practical. Because this kind of support can be built into the electronic health record systems that practices already use, it asks for little new spending and no new clinic to stand up. And precisely because it helps primary care teams handle straightforward cases with more confidence and consistency, it frees scarce psychiatric specialists to spend more of their time on the complex, higher-acuity patients who most need their expertise. In a system where the binding constraint is people rather than technology, that redistribution is where much of the value lies: better-matched staffing, shorter waits, and care that reaches more people without lowering its standards.

AI should never replace the clinician. Its value lies in making this work more consistent and harder to overlook: surfacing the right questions, scoring validated measures, flagging warning signs, pointing toward guideline-concordant options, tailoring suggestions to the person in front of the clinician, and proposing sensible follow-up. The judgment, and the relationship, remain human.

## Diagnostic Framework

Because national guidance now recommends screening adults for both depression and anxiety (U.S. Preventive Services Task Force, 2023a, 2023b), primary care is increasingly where these conditions are first noticed—which makes a reliable, structured approach to detection all the more important. AI-aided diagnosis should begin with a structured conversation rather than a free-form impression. A primary care mental health intake works best when it covers the person’s main concern and how long it has lasted, its effect on daily life, their medical history and current medications, substance use, any history of trauma, sleep patterns, pregnancy or postpartum status when relevant, prior psychiatric care, a family history of bipolar disorder or suicide, and any current safety concerns. From there, the AI can suggest validated measures—the PHQ-9 for depression, the GAD-7 for anxiety, the Mood Disorder Questionnaire to screen for the bipolar spectrum, and the Columbia-Suicide Severity Rating Scale when someone describes thoughts of suicide (Hirschfeld et al., 2000; Kroenke et al., 2001; Posner et al., 2011; Spitzer et al., 2006).

The AI’s output should offer a ranked differential diagnosis, but always with its reasoning on display: which DSM-5-TR criteria appear to be met, which remain unconfirmed, which medical conditions could mimic the picture, and which findings would call for urgent referral (American Psychiatric Association, 2022). Showing this work matters, because psychiatric symptoms rarely point to a single cause. Fatigue, trouble concentrating, irritability, insomnia, changes in appetite, and low motivation may reflect depression or anxiety—but they can just as easily

stem from thyroid disease, anemia, sleep apnea, a medication's effects, substance use, an abusive relationship, grief, burnout, a neurocognitive disorder, or bipolar depression.

Before offering any treatment suggestion, the system should check for situations that fall outside its scope. These red flags include suicidal intent or a plan, thoughts of harming others, psychosis, mania or hypomania, a severe collapse in functioning, catatonia, dangerous eating-disorder behaviors, intoxication or withdrawal, concern for postpartum psychosis, delirium, new cognitive impairment, an acute personality-disorder crisis, suspected abuse or coercion, and a history of two or more adequate medication trials that have not worked. When any of these are present, the right response is immediate stabilization and referral—not management by a primary care tool built for simpler situations.

## Stepped-Care Pathway

A safe treatment approach follows a stepped-care model, matching the intensity of care to what each person actually needs.

**Step 1: Confirm scope and safety.** The clinician reviews what the AI has gathered, listens to the patient's own account and confirms it, completes a suicide and violence risk assessment when indicated, and decides whether this situation truly fits the uncomplicated pathway. The AI assists; the clinician owns the diagnosis and the plan.

**Step 2: Match the intensity of care to the severity of symptoms.** For mild depression or symptoms below the diagnostic threshold, early care might involve watchful monitoring, attention to sleep, a plan for physical activity, psychoeducation, brief behavioral activation, digital or guided self-help, and a referral to therapy where one is available. For moderate depression, current guidelines support cognitive behavioral therapy, a second-generation antidepressant, or both—the choice shaped by the patient's preferences, symptom profile, prior response, access, concerns about side effects, and other health conditions (National Institute for Health and Care Excellence [NICE], 2022; Qaseem et al., 2023, 2026; U.S. Department of Veterans Affairs & U.S. Department of Defense [VA/DoD], 2022). For generalized anxiety or panic disorder, first-line care generally centers on CBT-based approaches and antidepressant options, while benzodiazepines are kept out of routine long-term use because of their risks of dependence, sedation, falls, cognitive effects, and drug interactions (NICE, 2020).

**Step 3: Personalize within the guidelines.** AI can help a clinician weigh reasonable options for the individual in front of them. A patient living with insomnia, low appetite, and weight loss, for instance, may need a very different conversation than one facing oversleeping, weight gain, worries about sexual side effects, or uncontrolled hypertension. The tool should take into account prior response to medication, how family members have responded to treatment, sensitivity to side effects, drug interactions, pregnancy, substance-use risk, cost, access to therapy, the patient's own preferences, and their cultural context.

**Step 4: Let measurement guide the care.** Rather than relying on impression alone, symptoms should be measured again at set intervals. This kind of measurement-based care uses

standardized scales to inform decisions and is backed by evidence of better outcomes in depression (Fortney et al., 2017; Guo et al., 2015). A workable primary care rhythm is to reassess two to four weeks after starting medication or structured therapy, then every four to six weeks while treatment is active. When meaningful improvement does not appear, it is a cue to revisit adherence, optimize the dose, reconsider the diagnosis, add psychotherapy, switch medication, seek consultation, or refer.

**Step 5: Escalate when things grow more complicated.** A referral or psychiatric consultation is warranted when symptoms worsen, a safety risk emerges, bipolar disorder is suspected, psychosis appears, substance use destabilizes treatment, side effects become severe, the diagnosis stays unclear, or two adequate treatments have failed. Collaborative care models—which bring together primary care, behavioral care management, registry tracking, and psychiatric consultation—have strong evidence behind them for depression and anxiety, and they offer a natural home for AI-supported workflows (Archer et al., 2012; Unützer et al., 2002).

## Ethical and Safety Issues

The central ethical risk is misplaced authority. AI can sound confident even when it is wrong, and in mental health a plausible-but-mistaken formulation carries real human cost: it can delay lifesaving care, deepen stigma, miss bipolar disorder, make an unsafe medication choice seem routine, or wrongly reassure a clinician about someone's suicide risk. For that reason, AI belongs in this work only as explainable decision support. It should lay out options, reasoning, contraindications, missing information, and the signs that should prompt escalation—and it should never diagnose, prescribe, deny a referral, or manage a crisis on its own.

Privacy deserves equal care. Few kinds of health information are as sensitive as a person's mental health record. Any AI used in clinical care must meet privacy and security requirements, move no more data than necessary, avoid secondary uses without authorization, and keep auditable access logs. Patients should be told plainly when AI is helping with their care, and should know that the clinician—not the software—remains responsible for every decision.

Bias must be watched for actively. Medical algorithms can carry inequity forward when they learn from biased data, or when a stand-in variable reflects unequal access rather than real clinical need (Obermeyer et al., 2019). In mental health, the result can be underdiagnosis for some, overpathologizing for others, culturally tone-deaf interpretations, or uneven referral patterns. AI systems should therefore be tested across age, sex, race, ethnicity, language, disability, socioeconomic status, rurality, and literacy—and practices should audit real outcomes, including diagnosis rates, medication choices, referrals, symptom improvement, crisis escalation, and patient complaints. Established governance frameworks can structure this monitoring: both the AI Risk Management Framework from the U.S. National Institute of Standards and Technology and the World Health Organization's guidance on AI for health set out principles for safe, equitable use (National Institute of Standards and Technology, 2023; World Health Organization, 2025).

Regulatory boundaries matter too. FDA guidance separates some forms of clinical decision support from device-regulated software when a clinician can independently review the basis

for a recommendation (Food and Drug Administration [FDA], 2026). That principle fits primary care mental health AI well: the system should show its reasoning clearly enough that a thoughtful clinician can accept, reject, or revise what it suggests.

## Limitations

This is a proposal, not a finished or validated system, and it should be read with that in mind. Direct evidence for AI-assisted decision support in primary care mental health is still early; much of the strongest evidence cited here comes from measurement-based and collaborative care rather than from AI tools themselves. The line around "uncomplicated" care is a matter of clinical judgment rather than a bright boundary, and some patients will reveal that they have crossed it only once treatment is underway. Screening instruments and diagnostic criteria carry their own margins of error, and any AI that leans on them inherits those limits. Real-world performance will also depend on conditions the model cannot guarantee: the quality of the underlying data, the time clinicians have, the availability of therapy and specialty referral, and whether the tool eases the workflow rather than adding to it. None of this argues against the approach, but all of it argues for careful piloting, transparent evaluation, and a willingness to revise or withdraw any tool that does not clearly help.

## Conclusion

AI can meaningfully help primary care clinicians care for people with uncomplicated mental illness—as long as it lives inside a workflow that is conservative, transparent, measurement-based, and safety-first. Its best use is not to replace psychiatric expertise but to extend psychiatric reasoning more safely and more widely: standardized screening, prompts toward the right differential, thoughtful treatment matching, steady follow-up, and timely escalation. In a mental health system stretched thin, a tool like this could widen access to care while protecting what medicine cannot do without—accountable, human attention to each person.

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