



The Medical Screening Process for Psychiatric Patients Presenting Acutely to Emergency Departments

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Introduction

Mental-health-related visits to emergency departments are common and steadily increasing [1–3]. More than ever, emergency departments (EDs) have become burdened with longer wait times, overcrowding, and complex patient safety issues. Patients with primary psychiatric complaints, numbering approximately 53 million from 1992 to 2001 in the United States, now constitute 12.5% of all adult ED visits [1, 4]. This rise in mental health visits corresponds to a 38% increase [5]. At the same time, there has been an increasing shortage of inpatient psychiatric beds nationally, with a decline in a number of inpatient beds per capita of 62% from 1970 to 2003 [6]. Frequently, there is an inherent challenge or even fear in dealing with these patients and their behavioral symptoms due to discomfort in diagnosing and managing psychiatric conditions, such that the medical aspects of psychiatric care are overshadowed in order to

arrange a rapid disposition. Sigmund Freud once famously noted, “When I treat a psychoneurotic, for instance, hysterical patient ... I am compelled to find explanations for the first symptoms of the malady, which have long since disappeared, as well as for those existing symptoms which have brought the patient to me; and I find a former problem easier to solve than the more exigent one of today” [7].

Although Freud’s words are by now a century old, the search for the medical causes of existing psychiatric problems is still common. This screening, usually performed by emergency physicians, has become known as “medical clearance.” The clearance process is enigmatic and, at best, an imperfect science. The discrimination and depth of this screening, such as which patients require extensive workup and which laboratory tests are most useful, is controversial without much high-quality evidence to support various practices [8–10]. Even the goals of screening, such as whether to identify all possible medical causes of psychiatric illness or simply to identify medical conditions that either contribute to or supersede the psychiatric emergency, are often disagreed upon by specialists in psychiatry and emergency medicine.

Furthermore, the term “medical clearance” itself is controversial and often misinterpreted [11]. In general, emergency department screening is not designed to evaluate all possible coexisting illnesses. Thus, some authors have argued

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that there is no such entity as being completely “medically clear” from the emergency department, preferring instead to use the terms “focused medical assessment” or “medically stable,” or simply listing the screening procedures performed in a discharge summary [11–13].

Areas of Consensus

Despite the controversy surrounding this process, both research and expert consensus agree upon important principles of the medical screening process. First, regardless of the details of the screening, the millions of emergency department patients who make a mental-health-related visit deserve at a minimum an adequate history, an adequate physical exam, and a measurement of vital signs. Second, emergency physicians are obligated to discover medical etiologies that may be the cause for new psychiatric symptoms or exacerbate psychiatric conditions. These signs and symptoms—often referred to as “medical mimics” but more appropriately characterized as a delirium state—may be missed by initial evaluators, particularly in the elderly [14]. Third, emergency physicians should seek to identify and treat life-threatening medical conditions that supersede the psychiatric emergency. Even medical urgencies are best identified prior to psychiatric admission, as most psychiatric facilities are neither equipped with the resources nor do they have appropriately trained staff to treat these conditions [15]. Failure to identify these conditions can lead to dangerously bad outcomes for the patient [13]. Fourth, guidelines and protocols may help streamline the medical screening process in the emergency department [16–18].

This chapter serves to introduce and describe the process of medical evaluation, also termed “medical screening,” of the psychiatric patient in a typical United States emergency department. The term “screening” is deliberate, as “medically clear” is often too ambiguous. In addition, “medical clearance” implies a detailed history, a thorough physical exam, laboratory testing, and observation beyond the timeframe of a typical ED visit. The diagnosis of medical mimics is dis-

cussed first, along with the utility of both the patient history and physical exam and laboratory evaluations. The second half of the chapter discusses the use of standardized screening algorithms, which have been shown in several studies to decrease testing costs for emergency department patients undergoing medical screening. Though there are no uniform guidelines for this process, attention to detail while minimizing resource overutilization, all while providing the best care for the individual patient, will likely yield the best outcome for both the patient and the institution.

Medical Mimics

Ralph Waldo Emerson once said, “Every man is a borrower and a mimic, life is theatrical, and literature a quotation” [19]. Although Emerson was not referring to the medical mimicry of psychiatric conditions, he might as well have been. The evaluation that an emergency physician conducts is an extremely important and albeit limited chance for the patient to be treated for a medical condition that may be causing their symptoms.

The Role of the History and Physical in Recognizing Medical Mimics

Although the often-taught truism is that a thorough history and physical exam (H&P) is the key to making a diagnosis, the ability of the H&P to discover all disease during medical screening is controversial. In part, this is because the important elements of the H&P have not yet been fully quantified [20]. In a 1994 study, for instance, Henneman and colleagues analyzed the standard medical evaluation of 100 consecutive adult emergency department patients with new psychiatric symptoms [21]. Although 63 of these 100 patients were eventually noted to have a medical etiology for their symptoms, the H&P was only significant in 33/63 patients. The authors, therefore, recommended performing additional laboratory evaluations along with the H&P. Unfortunately, neither the quality of the

H&P performed nor the most revealing portions of the H&P for these patients were analyzed.

Other authors have noted that mental status changes (i.e., disorientation) are often associated with medical causes of psychiatric illness. Counterintuitively, mental status changes are sometimes surprisingly difficult to discover on physical exam, and cases of delirium are missed by emergency providers 12.5–75% of the time [14, 22]. As a result, many authors have also advised formal mental status screenings as part of the standard H&P [9]. Although a prospective randomized trial of the additional benefit of mental status screenings over and above a standard H&P has never been performed, the performance of mental status screenings may nonetheless be reasonable in the assessment of psychiatric patients, particularly for patients at higher risk of delirium, such as the elderly. One study by Kaufman and Zun found that a six-item questionnaire had a 72% sensitivity and a 95% specificity in identifying impaired mental status [23]. This test was noted to take only a few minutes and rated useful by the clinicians using it. Expert guidelines, such as those by the American College of Emergency Physicians, also recommend an assessment of mentation as part of medical screening in emergency departments [24]. By definition, symptoms of delirium wax and wane, necessitating frequent patient reevaluation and observation by experienced providers for maximum diagnostic sensitivity.

The Role of Laboratory Testing in Recognizing Medical Mimics

There has been considerable disagreement between emergency physicians and psychiatrists on the necessity for laboratory screening, with conflicting evidence about its utility [25]. In a study by Hall and colleagues, for instance, the authors performed blood work, an ECG, an EEG, and detailed medical and neurologic exams on 100 consecutive patients admitted to an inpatient psychiatric unit [26]. The authors found that 46% of these patients had an unrecognized medical illness that caused or exacerbated their symptoms,

with an additional 34% of patients having an unrelated physical illness. After medical treatment, 28 of the 46 patients had rapid clearing of their psychiatric symptoms. The authors concluded that patients should have laboratory evaluations and detailed physical exams. A 1994 study by Henneman and colleagues reached similar conclusions [21]. Finally, Schillerstrom and colleagues noted that patients who were emergently medicated for agitation were more likely to have abnormal laboratory values and suggested that these patients were medically different from unagitated patients [27].

Other authors, however, have found that routine laboratory evaluations are of low yield. In a 1997 study, for instance, Olshaker and colleagues retrospectively investigated 345 patients with psychiatric symptoms [28]. The sensitivity of the history, physical exam, vital signs, and laboratory testing for indicating disease were calculated as 94%, 51%, 17%, and 20%, respectively. The authors concluded that the vast majority of medical problems of psychiatric patients in the emergency department could be identified by routine H&P and vital-sign measurement. In a 2000 study, Korn, Currier, and Henderson retrospectively investigated 212 patients with psychiatric complaints in the emergency department [29]. In this study, patients presenting with psychiatric complaints underwent routine testing, including electrolytes, blood urea nitrogen/creatinine, complete blood count (CBC), urine and blood toxicology screens, chest x-ray, and a pregnancy test. Patients with a psychiatric history, normal physical findings, stable vital signs, and no current medical problems did not have abnormal laboratory findings. The authors concluded that routine laboratory testing was of low yield. Janiak and Atteberry also retrospectively reviewed 502 charts of psychiatric patients who received routine laboratory testing by the psychiatric service and found, with only one exception, no labs ordered routinely would have changed emergency department management [30]. A similar conclusion was reached in a prospective study of 375 patients by Amin and Wang [31].

Nonetheless, routine testing is often required for patients in the emergency department with

mental-health complaints. In a 2002 survey of emergency physicians by Broderick and colleagues, for instance, 35% of respondents indicated that they were required by consultants to obtain routine tests [32]. Many respondents believed that at least some of these tests were unnecessary, with urine toxicology screening and serum alcohol testing felt to be more necessary than blood work or an EKG.

Unfortunately, it is difficult to draw firm conclusions from existing studies such as these, since none of the above studies documented the comprehensiveness of their history, physical, or mental status examinations. In addition, none of these studies investigated whether the testing of high-risk groups increases the number of positive laboratory investigations or whether inpatient treatment by the psychiatry service (as opposed to emergency department management and disposition) would have changed as a result of obtaining labs. However, based on evidence of this type, the American College of Emergency Physicians recently stated in a clinical guideline on the evaluation of adult psychiatric patients that routine laboratory testing for asymptomatic, alert, cooperative patients was unnecessary [24]. However, it remains unknown whether the identification of chronic comorbidities, such as diabetes, HIV, or chronic kidney disease, impacts the patient after ED discharge [9].

The Role of Urine Drug Screens in Recognizing Medical Mimics

As with laboratory values, the utility of routine urine drug screens has also been questioned, since many psychoactive substances are not tested for in the “drugs of abuse” urine assays. Some studies, such as those by Schuckman and colleagues, have indicated self-reporting of illicit drug use is unreliable in the emergency department [33]. However, several emergency department studies have indicated that urine drug screens, even when positive, do not often change emergency department management or disposition of psychiatric patients [34–37]. Schiller and colleagues, for instance, prospectively investi-

gated 392 patients presenting to a psychiatric emergency service [34]. The researchers found 20.8% of patients who denied substance use actually had positive screens, but dispositions did not change between patients in whom a routine urine drug screen was ordered and patients in whom it was not. Similar results have been found by both Fortu and colleagues in a retrospective review of 652 charts [35] and Eisen and colleagues in a prospective study of 133 patients [36].

Concerns have also been raised about the accuracy of urine drug screens. In a 2009 study, Bagoien and colleagues compared a commercially available urine drug screen against liquid chromatography/mass spectrometry analysis of the same urine samples [38]. The standard urine drug screen was correct for all five drugs of abuse included on the panel only in 75.2% of cases, with sensitivities of 43–90% depending on the drug of interest.

Based primarily on evidence of this type, the American College of Emergency Physicians stated in a recent clinical policy that routine urine drug testing is unnecessary in the emergency department [24]. However, these types of studies have not investigated whether or not the requirement for urine drug screen testing is influenced by the type of patient, the facility to which the patient is being transferred, or by demand for payment from insurers [37].

Tips to Improve the Accuracy of Medical Screening Exams

Examine Thoroughly, Test Selectively

Despite the conflicting evidence about routine laboratory testing, most experts agree that emergency physicians can improve their diagnostic accuracy both by selective testing of certain patient groups and by increasing their knowledge of medical mimics of psychiatric disease. Obtaining an adequate history is often the first and most important step. Although most astute clinicians rely primarily on the history as the most useful information when formulating a diagnosis and care plan, missing pieces of vital

information regarding the history, as well as inadequate physical examinations, are far too common in the evaluation of the psychiatric patient. In a study in 2000, for instance, Reeves et al. found inadequate history, physical exam, and the almost universal failure of obtaining a mental status exam in those patients in whom a medical diagnosis was missed [22]. Inadequate H&P were also cited by Koranyi and Potoczny as the leading contributor to missed diagnoses [39].

Search for Collateral Information

Incomplete history and physicals are not always the fault of the clinician; it is not uncommon for psychiatric patients to be unable to provide a clear detailed history [13]. Both delirium and underlying psychosis can make it difficult for the provider to obtain accurate information, and there may be an additional degree of fear or shame that prevents some patients from being fully forthcoming regarding their symptoms [40]. Obtaining a collateral history from family, friends, other providers, and prehospital personnel is important. In addition, previous or outside medical records should be carefully reviewed. Review of the patient's medication list is also important, as this can be a significant contributor to the patient's symptoms [41, 42].

Stratify Risk with H&P, Including Mental Status Exam

In order to best identify patients with a medical cause for their psychiatric symptoms, it is important to recognize patients at the highest risk of illness. In general, existing studies have noted that patients with a new onset of psychiatric symptoms have a high rate of medical illness [12, 16, 17, 21]. However, it is reasonable to suspect a high rate of medical illness in other groups, as well, such as patients with preexisting comorbid medical conditions, especially immunosuppressive disease and active substance abuse, and those without regular access to health care (i.e., those from lower socioeconomic situations) or

the elderly [15]. Given the difficulty of obtaining a history from agitated patients and the numerous causes of agitation, these patients may form an additional high-risk group [43].

Along with obtaining a thorough medical history, a focused yet appropriately detailed physical examination can be informative. The physical exam should always begin with an assessment of vital signs, as these are more likely to be abnormal with an underlying medical cause, but should also include an assessment of general appearance, affect, a mental status examination, and a thorough neurologic examination. The physical examination should also note evidence of encephalitis, thyroid disease, signs of liver disease, seizures, trauma, toxidromes, or withdrawal syndromes, as each can present with psychiatric symptoms [44–47].

Specifically Exclude Delirium and Treat Its Causes

The goal of the mental status exam is to exclude delirium, which is defined as an acute medical condition resulting in a state of confusion or disturbance of consciousness [47, 48]. Delirium, which often presents with a short period of symptom onset and fluctuating mental status, is not a diagnosis in itself. Rather, it is a common symptom of impaired brain functioning. As such, it is often accompanied by disorientation or memory deficit. This is in contrast to patients with dementia, who often have a gradual onset of symptoms without changes in consciousness. A good delirium assessment is important, particularly in senior patients [49].

Delirium has numerous causes, which are listed in Table 2.1 [50, 51]. Several of these conditions require prompt recognition and treatment, and so delirium is regarded as a potential medical emergency. Despite this, emergency physicians often overlook the recognition of delirium. In a 2010 study, Reeves et al. found that elderly patients with delirium are more likely to be admitted to psychiatric units and less likely to complete a medical assessment than patients admitted to the inpatient service [51].

Table 2.1 Medical conditions: delirium

Causes of delirium due to underlying medical conditions
Intoxication with drugs—Many drugs implicated especially anticholinergic agents, anticonvulsants, anti-parkinsonism agents, steroids, cimetidine, opiates, sedative hypnotics. Don't forget alcohol and illicit drugs
Withdrawal syndromes—Alcohol, sedative hypnotics, barbiturates
Metabolic causes
Hypoxia, hypoglycemia, hepatic, renal or pulmonary insufficiency
Endocrinopathies (such as hypothyroidism, hyperthyroidism, hypopituitarism, hypoparathyroidism, or hyperparathyroidism)
Disorders of fluid and electrolyte balance
Rare causes (such as porphyria, carcinoid syndrome)
Infections
Head trauma
Epilepsy—Ictal, interictal, or postictal
Neoplastic disease
Vascular disorders
Cerebrovascular (such as transient ischemic attacks, thrombosis, embolism, migraine)
Cardiovascular (such as myocardial infarction, cardiac failure)

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Assume a Medical Cause in the Absence of Previous Psychiatric History

Given the number of potentially life-threatening causes of infection and studies such as those by Henneman and colleagues in which a high percentage of patients with new psychiatric symptoms were found to have medical illness [21], a thorough workup is generally advisable for any patient with first-time onset of psychiatric symptoms [9]. In addition, medical screening should include an assessment for delirium. Both the brief mental status exam and the quick confusion scale (see Tables 2.2 and 2.3) have been shown to be useful in the emergency department setting [23, 52]. Although each asks similar questions, scoring is different for each test. The Brief Mental Status Exam has been shown to have a sensitivity of 72% when compared against emergency phy-

Table 2.2 The brief mental status exam

Questions	Score number of errors × weight
What year is it now?	(0 or 1) × 4
What month is it?	(0 or 1) × 3
Repeat this phrase after me and remember it: “John Brown, 42 Market Street, New York”	
About what time is it? (Correct if within 1 hour)	(0 or 1) × 3
Count backwards from 20 to 1	(0, 1, or 2) × 2
Say the months in reverse	(0, 1, or 2) × 2
Repeat the memory phrase (each underlined portion is 1 point)	(0, 1, 2, 3, 4, or 5) × 2

Final score is the sum of total errors in each box. 0–8 normal; 9–19 mildly impaired; 20–28 severely impaired

Table 2.3 The quick confusion scale

Quick confusion scale	Scoring
What year is it now?	2 points
What month is it?	2 points
Repeat this phrase: “John Brown, 42 Market Street, New York”	
About what time is it?	2 points
Count backwards from 20 to 1	2 points
Say the months in reverse	2 points
Repeat the memory phrase	5 points

Final score is the sum of the total in each box. Impaired is <11

sician judgment. The Quick Confusion Scale has been shown to have a sensitivity of 64% for detecting cognitive impairment when compared against the Mini-Mental Status Exam [23]. The 3D CAM is another brief screening tool with a sensitivity in one study of 95% [53].

In summary, there are a number of ways that clinicians can improve their diagnostic accuracy when medically screening patients with psychiatric complaints. All physicians should be aware of the numerous medical causes of psychiatric illness and should seek to exclude these illnesses in their history and physical examination. Laboratory testing should be based on the results of an adequate history and physical exam [54]. *Clinicians should have a low threshold for a broader workup in patients in whom an adequate history and physical cannot be obtained; in patients with no prior psychiatric history; or in*

patients at higher risk of medical illness. As part of the physical exam, emergency physicians should obtain both an assessment of mental status and a neurologic examination; validated assessment tools can be useful. Universal routine laboratory testing is not supported, especially in patients with a known psychiatric history, a presentation consistent with that psychiatric history, normal vitals, and a normal history and physical examination [20, 24, 54].

The Utility of Guidelines and Protocols

Given the frequent disagreement between emergency medicine and psychiatry over the scope of the medical workup, many authors have argued for the use of standard protocols that have been agreed upon in advance by all specialties involved. One algorithm was created by Zun and colleagues in their work with the Illinois Mental Health Task Force [16]. This protocol is implemented by asking five binary questions:

1. Does the patient have any new psychiatric condition?
2. Does the patient have any history of active illness needing evaluation?
3. Does the patient have any abnormal vital signs?
4. Does the patient have an abnormal physical exam (unclothed)?
5. Does the patient have any abnormal mental status?

If the answer to all five questions was no, the patient could be safely transferred without further evaluation. Zun and Downey then performed a retrospective chart review of all emergency department patients with psychiatric complaints who were transferred to a psychiatric facility both before and after the adoption of this protocol. The total cost was \$269 per patient after the adoption of the protocol but \$352 before [16]. The return rate of patients to the emergency department for further evaluation after the protocol, however, was similar.

Another screening algorithm was recently proposed by Shah and colleagues [18]. In this study, the authors retrospectively reviewed the charts of 485 patients who had been screened in the emergency department with a five-item questionnaire (stable vital signs, no prior psychiatric history, alert/oriented \times 4, no evidence of acute medical problem, no visual hallucinations). Only six patients (1.2%) with a “yes” to all five questions were transferred back to the emergency department for further medical workup, and none of these patients required medical or surgical admission.

A quick glance at these two screening tools finds them remarkably similar, yet the reported effectiveness differed. Local processes, such as coordination of care, trust between providers, wait times for subsequent psychiatric admission, facility overcrowding, and subgroup demographics, may play a strong role in acceptance and accuracy of the emergency medicine evaluation process. Perhaps for these reasons, a simple medical screening algorithm has not yet been widely accepted. This is unfortunate, as medical protocols have the potential to resolve many conflicts between psychiatric receiving facilities and emergency departments. Agreed-upon protocols also maintain a high standard of care for patients, reduce the cost of testing, and provide a structured format for quality improvement activities and clinical research.

Conclusions

Emergency physicians are commonly expected to evaluate patients presenting with psychiatric symptoms. Medical screening of these patients, to stabilize medical conditions, to facilitate psychiatric evaluation, and to safely transfer them to an appropriate treatment facility, is indicated. Evidence-based limitations of these assessments should be recognized.

1. Emergency physicians should not use the phrase “medical clearance,” as this implies that the patient is medically free from all disease. Instead, this phrase should be replaced

by “medical stability” or by a concise discharge note listing the screening procedures performed.

2. Emergency physicians should be aware of the medical mimics of psychiatric disease. All patients with psychiatric complaints should receive an adequate history and physical exam, including both a neurologic exam and an assessment of mental status.
3. Emergency physicians should have a low threshold to obtain laboratory testing on high-risk patients. Commonly encountered high-risk patients in the emergency department include those with a new onset of psychiatric symptoms; those with preexisting comorbid medical conditions (especially immunosuppressive disease); the elderly; patients with active substance abuse; and patients without access to health care (i.e., those from lower socioeconomic situations). Agitated patients may also be an additional underrecognized high-risk group.
4. Psychiatry services should recognize the indications and limits of routine testing. In particular, laboratory testing does not reveal significant disease in young patients with known psychiatric disease who have normal vitals, a normal H&P, and a presentation consistent with their psychiatric illness.
5. Prospectively developed protocols that are collaboratively derived by emergency medicine and psychiatry specialists can decrease the amount of testing while preserving a high level of care.

As the number of visits to emergency departments increases, the number of screenings of psychiatric patients by emergency physicians will also continue to increase. A systematic approach, focused medical assessment, and appropriate laboratory testing guided by the history and physical examination and followed by clear communication between providers will achieve a high quality of care, control costs, and guide improvement activities. Further research may help refine the medical screening process even further, by identifying the most sensitive and specific parts of the history and physical

exam, by determining the groups at highest risk for medical disease, and by validating the most efficient medical screening protocols.

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