

Critical Decisions in Emergency Medicine
Medical Clearance of the Psychiatric Patient

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Objectives

1. Define medical clearance.
2. Outline a differential diagnosis for neuro-psychiatric symptoms.
3. Identify patients requiring more intensive screening for organic disease.
4. Describe the importance of identifying organic illness.
5. Demonstrate a rational and practical screening algorithm.

Introduction

Patients with apparent psychiatric illness present frequently to emergency departments, constituting 2-12% of visits annually.¹ Emergency physicians must rapidly assess these patients for life and limb-threatening illness, a task often made more difficult by the patient's inability to cooperate in the history and physical. Extensive laboratory testing or imaging of *every* patient presenting with psychiatric symptoms would be both time-consuming and expensive, yielding few positive results. On the other hand, misdiagnosis of serious medical illness causing or coexisting with psychiatric symptoms may increase morbidity and mortality. We will present an evidence-based emergency department evaluation of psychiatric complaints, outlining a sensible screening algorithm and pointing out populations at particular risk for organic disease.

“Medical Clearance” Defined

“Medical clearance” describes the process by which organic disease is excluded before patients with apparent psychiatric complaints are referred for specialized psychiatric services. Although the original use of the term “medical clearance” is uncertain, its function today is obvious. Medical evaluation of psychiatric patients should answer two questions: 1) Does the patient actually suffer from a significant *medical* abnormality which is causing the apparent psychiatric complaint? 2) Does the patient have significant acute medical illness or acute exacerbation of chronic disease coincidentally occurring with his psychiatric illness? To answer these questions, emergency physicians must perform basic evaluation of all patients before referring the patient for isolated psychiatric care.

Case Presentations

Case 1:

A sixty-four year old female with a history of paranoid schizophrenia presents with family members who state that she is “not herself.” For the past several days she has been very agitated and violent. The family states that the patient has been taking her neuroleptic medication as prescribed. She has no other medical problems and does not use illicit drugs or alcohol. She is a 3 pack per day smoker for forty years.

On examination, the patient is snoring and difficult to arouse. She states her name but will not answer other questions.

Vital signs are blood pressure 140/90, pulse rate 83, respirations 18, and temperature 37.5°C (99.5°F). The cardiovascular and pulmonary exams are normal with the exception of occasional wheezes bilaterally. The abdominal exam is unremarkable. Extremities show no edema. The patient is alert to self, demonstrates lip and tongue dyskinesia, and moves all extremities. She will not comply with a more detailed neurologic exam.

Case 2:

A 47 year-old male presents complaining of suicidal ideation. The patient states that he has been thinking of shooting himself due to pressures at work and a recent divorce. He denies auditory or visual hallucinations and has no prior history of mental illness. He freely admits to occasional alcohol and marijuana use, including earlier today. Past medical history is significant for diet-controlled diabetes and hypertension. The patient takes no medications. He denies any physical complaint.

On examination, the patient is tearful but alert. He answers all questions promptly and complies with your exam.

Vital signs are blood pressure 160/90, pulse rate 90, respirations 12, temperature 36.5°C (97.7°F), glucose 140. The patient’s examination is normal. His neurologic exam is unremarkable, with normal orientation and memory and no focal deficits. He appears depressed.

Critical Decisions

Can life-threatening medical illness masquerade as psychiatric disease? Does delayed diagnosis affect patient morbidity and mortality?

Are the history and physical examination useful in identifying medical illness in patients with psychiatric complaints?

What constitutes an adequate neurologic examination?

When are screening labs and radiographs indicated? Which studies are useful?

Is drug screening *necessary* and *sufficient* to rule out a toxic etiology?

Are certain populations at particular risk for organic disease?

Critical Decision: Can life-threatening medical illness masquerade as psychiatric disease? Does delayed diagnosis affect patient morbidity and mortality?

The differential diagnosis for psychiatric illness includes a multitude of life-threats. To simplify this extensive list, it is helpful to consider three general categories: psychosis, delirium, and dementia. In psychosis, the form and content of a patient's thoughts are altered, but the level of alertness usually is not decreased. The psychotic patient should not be somnolent, disoriented, or obtunded. In contrast, in delirium the patient's level of consciousness waxes and wanes. Lucid periods may alternate with confusion or unresponsiveness. Dementia, which may coexist with psychosis or delirium, represents a baseline loss of cognitive abilities such as memory or computational skills. In dementia, cognitive skills are gradually lost over time; they should not wax and wane during the examination or (based on the history) over the last few hours or days. Although psychosis, dementia, and delirium may coexist, patients should be carefully assessed for delirium during their examination. Any evidence of delirium warrants further testing, as delirium is generally caused by organic pathology. Meningitis, hyponatremia, hypothyroidism, and intracranial hemorrhage are but a few of the life-threatening causes of delirium. Delirium carries a high morbidity and mortality (25% in some series).² Even with optimal treatment, delirium tremens has a reported mortality of 5-10%, with many experts suggesting ICU management.³

Is delirium ever actually mistaken for psychiatric illness? Absolutely. In a review of 64 patients misdiagnosed with psychiatric illness in an emergency department, myriad medical emergencies were discovered – many of them undetectable on routine laboratory screening (table).

Medical conditions mistaken for psychiatric illness

delirium tremens / alcohol or drug withdrawal (12.5%)
 prescription drug overdose (12.5%)
 uremic encephalopathy (6.3%)
 hepatic encephalopathy (3.1%)
 diabetic ketoacidosis (3.1%)
 hypoglycemia (1.6%)
 Wernicke's encephalopathy (1.6%)
 lithium toxicity (3.1%)
 anticonvulsant toxicity (3.1%)
 hyperthyroidism (1.6%)
 encephalitis (1.6%)
 pneumonia (3.1%)
 sepsis (1.6%)
 UTI (1.6%)
 neurosyphilis (1.6%)
 CVA (1.6%)
 CHF (3.1%)
 subdural hematoma (1.6%)
 neuroleptic malignant syndrome (1.6%).

Critical Decision: Are the history and physical examination useful in identifying medical illness in patients with psychiatric complaints?

Patients with psychiatric complaints are difficult to examine and interview. They may be combative or distracted, unable or unwilling to answer questions or to comply with examination. Yet studies indicate that *history and physical exam are the most valuable tools for diagnosing organic disease in these patients, more valuable by far than screening labs or imaging studies.*^{3,4}

In a prospective study of patients with psychiatric complaints presenting to a general emergency department who were subsequently found to have medical pathology, the history and physical exam had sensitivities of 94% and 51%, compared with 20% for routine screening labs (CBC, chem 7, UA, tox screen). Moreover, acute medical conditions in psychiatric patients included lacerations, chest pain, hypertension, asthma, cellulitis, hernia, neck strain, endocarditis, contusions, gastritis, and oral thrush. These complaints are difficult or *impossible* to identify by laboratory testing.⁴ Consequently, physicians must avoid relying on routine laboratory screening in *lieu* of history and examination.

Studies have also retrospectively examined the cause of inappropriate admissions of patients with medical emergencies to psychiatric facilities. In a year 2000 review, the single most common cause of misdiagnosis was failure to perform adequate mental status evaluation (appropriate exam was performed in 0 of 64 patients). In fact, 79.7% of misdiagnosed patients had a documented mental status that evaluated only orientation (e.g. "A+Ox3"), neglecting all other aspects of the neurologic exam. The second most frequently cited cause of misdiagnosis (43.8%) was inadequate or *absent* physical examination. Failure to assess easily obtainable history led to misdiagnosis in 34.4% of cases, while failure to note or address vital sign abnormalities occurred in 7.8% of cases. In contrast, failure to obtain laboratory or imaging studies was noted in only 37.5% of cases of missed medical illness.

Critical decision: What constitutes an adequate neurologic examination?

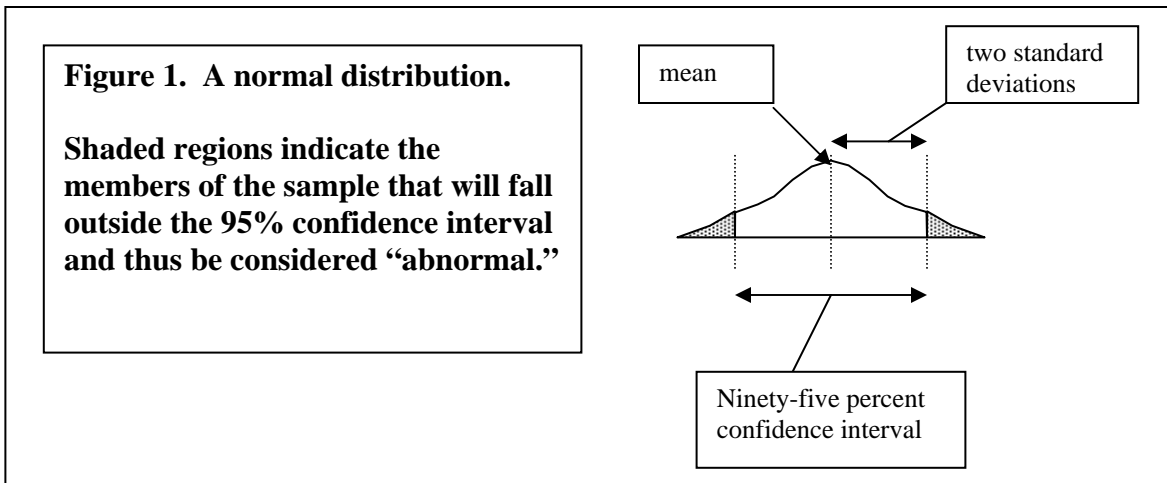
Neurologic examination can run the gamut from the crude assessment of coma score to detailed neuropsychiatric testing requiring specialized training and hours of testing time. An emergency neurologic assessment must be brief enough to be practical in a busy department, yet sensitive enough not to miss significant pathology. A recent study compared the routine examination performed by emergency physicians with a validated mental status screen (CAM, Confusion Assessment Method) for diagnosis of delirium. Emergency physicians performing their customary assessment diagnosed only 17% of patients with delirium or probable delirium diagnosed by CAM. The three-month mortality rate for patients with delirium/probable delirium was 14%, compared with 8% for the lucid group ($p=0.20$). Thus routine examination failed to diagnose an important condition detectable by a 5 minute standardized neurologic assessment tool.⁵

Critical Decision: When are screening labs and radiographs indicated? Which studies are useful?

Some investigators have advocated extensive screening laboratory and radiographic studies to identify medical illness among apparent psychiatric patients. Henneman *et al* suggest the use of chem 7, calcium, +-CPK, alcohol and drug screen, cranial CT scan, and lumbar puncture as routine tests in emergency psychiatric evaluation, citing a 63% rate of organic illness as the cause of new psychiatric symptoms. However, the Henneman study suffered from significant selection bias, as investigators specifically noted that “Patients were included if, during their initial evaluation a functional etiology of their symptoms was considered possible.” This study population probably represents a subcategory of psychiatric complaint better described as “altered mental status,” accounting for the high rate of medical abnormalities. Large numbers of the patients in this study acknowledged hallucinations (49%), and many others were described on exam as disoriented (60%) or agitated (66%). Moreover, in 30 of 63 patients with “medical” etiologies of psychiatric symptoms, drug or alcohol intoxication was found to be the cause. As will be discussed below, exam and history have high reliability in identifying patients with drug or alcohol intoxication, calling into question the need for extensive testing. The Henneman study also found the CBC to be unhelpful in assessing psychiatric complaints, with all five patients with significantly abnormal CBC identified by other means (fever or lumbar puncture).⁶

Studies subsequent to the Henneman paper have not borne out the need for elaborate screening. A 1996 study demonstrated a 20% sensitivity of the cbc, chem 7, and tox screen for identifying medical illness. Moreover, the combination of history, physical exam, and vital signs identified all but two of 65 patients with abnormalities; these two patients had mild hypokalemia not requiring treatment. In addition, laboratory screening identified 25 patients with isolated leukocytosis with no apparent clinical significance, again calling into question the value of the CBC for psychiatric screening. Most recently, a retrospective study found that patients with psychiatric symptoms who deny medical complaint, have a documented past psychiatric history, and have normal physical exam and stable vital signs do not require *any* laboratory or imaging studies before psychiatric referral.⁷

Extensive routine screening of any group will frequently reveal “abnormalities” of questionable clinical importance since the “normal” range for most tests is defined by the 95% confidence interval. This is the range 2 standard deviations above and below the mean value obtained in testing of apparently healthy volunteers. By definition, 5% of patients will have values above or below the 95% confidence interval. Therefore, as the number of screening tests is increased, an increasing number of patients will have lab “abnormalities” of no clinical significance. (figure 1).



Critical Decision: Is drug screening *necessary* and *sufficient* to rule out a toxic etiology?

Drug screening may not be necessary to evaluate for toxidromes in most patients with psychiatric complaints. A 1996 study demonstrated that patient self-report had 92% sensitivity, 91% specificity, 88% positive predictive value, and 94% negative predictive value for identification of patients with a positive toxicology screen. Similarly, patient self-report had 96% sensitivity, 87% specificity, 73% positive predictive value, and 96% negative predictive value for identifying alcohol users. These findings have been substantiated by a more recent study that compared disposition of psychiatric patients undergoing mandatory drug screening or testing at the discretion of the examining physician. This study found *no significant difference* in treatment disposition for patients regardless of mandatory or PRN drug and alcohol testing. Moreover, 88.2% of patients reporting substance abuse had positive screens for alcohol or drugs of abuse, and only 10.2% of patients who denied use and were not suspected of intoxication had positive drug screens. This suggests that patients admitting drug use do not require confirmatory testing, and elimination of mandatory drug screening is unlikely to lead to adverse patient outcomes.⁸

Drug screening may be inadequate in assessing some patients for toxic exposures. When ordering a “tox” screen to evaluate *any* patient, it is vital to recall the limits of the test. Toxicology screens typically include only a handful of common drugs of abuse. A vast number of substances that can cause aberrant behavior are not included, and the astute physician should screen the patient for physical exam findings that suggest a toxidrome. Anticholinergic overdose from illicit drugs such as Jimsen Weed or from over the counter medications such as diphenhydramine can cause altered mental status. Steroid psychosis may be observed; physicians should ask about recent steroid use and assess for stigmata of steroid use such as buffalo hump or striae. Neuroleptic malignant syndrome, characterized by muscular rigidity, hyperthermia, and altered mental status, may also occur in patients with pre-existing psychiatric illness. Alcohol withdrawal or delirium tremens may present in patients with negative or relatively low alcohol levels. Elderly patients may be particularly susceptible to toxicity from aspirin products. Physicians must remain vigilant for these and other toxidromes in patients with negative “tox screens.”

Recognizing the limited utility of drug and alcohol screening, a role for these tests persists in some specific clinical scenarios, especially when a history cannot be obtained. Psychosis from primary psychiatric illness can be clinically indistinguishable from cocaine-induced psychosis.⁹ This is not surprising as these processes share the same underlying neurophysiology. Schizophrenia appears to be due in part to excessive dopaminergic activity in specific brain centers; cocaine prevents re-uptake of dopamine from synaptic junctions. Although some psychotic features such as thought-broadcasting and thought withdrawal may be more common in schizophrenia than in cocaine intoxication,¹⁰ the clinical syndromes overlap sufficiently to make drug screening appropriate when a history of drug ingestion cannot be obtained.

Critical Decision: Are certain populations at particular risk for organic disease?

Populations at special risk for organic disease include the elderly, patients with new onset psychosis, and patients with known psychiatric disease. The elderly are statistically far more likely to have causal or coincident medical illness, and physicians must be alert for these. New onset psychosis, particularly in the elderly, should ring warning bells for likely medical abnormality. And finally, patients with known psychiatric illness are not immune from medical problems. In fact, they may be less likely to receive adequate routine medical care or to seek help for physical ailments. Thus psychiatric patients should be carefully *questioned* and *examined* for signs of physical malady. Remember, history and examination are your most sensitive tool for detection of organic illness.

Pitfalls

- Attributing current complaint to prior psychiatric diagnosis
- Failure to adequately examine the patient
- Failure to note vital sign abnormalities
- Failure to assess mental status adequately
- Failure to consider alternative diagnoses
- Failure to look for medical illness in the elderly
- Failure to look for medical causes of new onset psychosis

Summary and Case Resolutions

Case 1: The patient presented in this case, although having a prior history of psychosis, now exhibits evidence of delirium. Her level of alertness is diminished. The family confirms this, stating that the patient ordinarily feeds and dresses herself. As the patient has altered mental status and an elevated respiratory rate, pulse oximetry is performed, demonstrating a saturation of 88%. Bedside glucometry is normal. A chem 7 and chest xray demonstrate a serum sodium of 115 and a right lower lobe pneumonia. During the patient's admission she is diagnosed with SIADH and post-obstructive pneumonia. Bronchoscopy shows a poorly differentiated small cell lung cancer.

Several key points should be taken from this case. First, the patient's mental status is abnormal and demonstrates elements of *delirium*, not *psychosis*. This demands further investigation. Moreover, she has an abnormally high respiratory rate, again requiring attention. Thirdly, at age 64 this patient has an increased likelihood of harboring medical illness. The presence of a prior psychiatric diagnosis should not dissuade the physician from, at a minimum, a very careful history and examination. This case also demonstrates the importance of obtaining information from all available sources, including family members. Finally, although this patient's medical illness was related to a malignancy and subsequent infection and SIADH, psychiatric patients may develop medication related illness, such as neuroleptic malignant syndrome, neuroleptic-induced hyponatremia, lithium toxicity, or tricyclic antidepressant overdose. Physicians should carefully consider medication-induced illness in their differential.

Case 2: This patient presents with symptoms of depression but has a completely normal exam including normal mental status. He does have mild hypertension and diabetes, but these do not appear to be the cause of his symptoms, nor do they require immediate treatment. He admits to drug and alcohol use but does not appear intoxicated now. This patient may safely be referred for psychiatric care without *any* further laboratory testing or imaging.

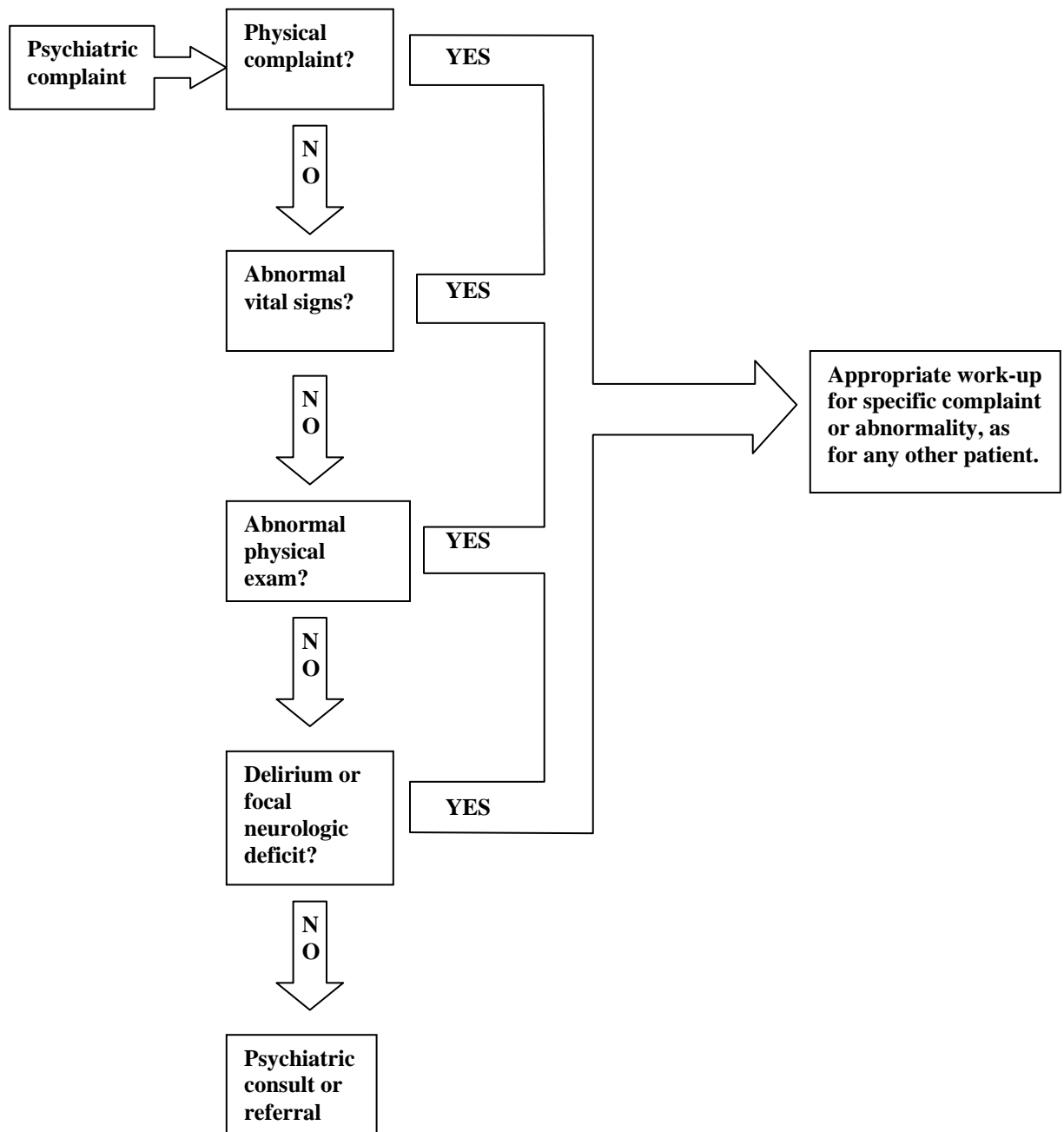
Lesson Summary

Like all emergency department patients, patients presenting with apparent psychiatric complaints deserve a screening medical history and examination. Physicians should ascertain the patient's chief complaint and should attempt a brief review of systems to uncover specific physical complaints of the patient. Patients with physical complaints should be excluded from the category of simple "medical clearance" and should be evaluated appropriately for their specific complaint. Moreover, vital signs should be obtained and carefully reviewed for all patients to reduce the risk of missed infection, hemodynamic abnormality, hypoxia, or hypo/hyperglycemia. A careful history and physical examination, including neurologic exam with attention to signs of delirium, should be performed. Special attention should be given to elderly patients and patients with possible new onset psychosis. Patients who have no physical complaint, normal vital signs and examination, and normal neurologic exam require no routine testing in the emergency department. These patients may be referred directly to the psychiatric service as needed. Patients with abnormalities on any of the above assessments require further testing appropriate to the complaint or abnormality (Figure 2).

Although many patients may require minimal laboratory or radiographic testing according to the principles outlined above, psychiatric facilities may have different requirements for admission. Some may request baseline chest x-ray, EKG, CBC, metabolic panel, or other tests before accepting the patient. Emergency departments should work with their psychiatric consultants to develop a pragmatic and standardized approach to "medical clearance." This will not only ensure patient safety but also streamline emergency department stays by preventing last-minute requests for medical tests before a patient can be transferred to a receiving psychiatric facility.

Medical clearance of psychiatric patients must identify life-threatening medical causes of altered behavior or coincidentally occurring threats to life in true psychiatric patients. It cannot provide universal assurance that the patient will be safe from all medical illness in the future. Emergency physicians are often the first to evaluate patients with psychiatric complaints. The principles outlined above will help emergency physicians to protect and to treat appropriately psychiatric patients in their care.

Figure 2 : Algorithm for emergency department assessment of psychiatric complaints.



References

Tueth M. Diagnosing psychiatric emergencies in the elderly. *American Journal of Emergency Medicine*. 1994; 12(3): 364-9.

Siegler E., Tamres D, Berlin J, Allen-Taylor L, Strom B. Risk factors for the development of hyponatremia in psychiatric inpatients. *Archives of Internal Medicine*. 1995; 155(9): 953-957.

Zubenko G, Marino L, Sweet R, Rifai A, Mulsant B, Pasternak R. Medical comorbidity in elderly psychiatric inpatients. *Biological Psychiatry*. 1997; 41(6): 724-36.

Breslow R, Klinger B, Erickson B. Acute intoxication and substance abuse among patients presenting to a psychiatric emergency service. *General Hospital Psychiatry*. 1996; 18(3): 183-91.

Mookhoek E, Sterrenburg-v.d.Nieuwegiessen I. Screening for somatic disease in elderly psychiatric patients. *General Hospital Psychiatry*. 1998; 20(2): 102-7.

Talbot-Stern J, Green T, Royle T. Psychiatric manifestations of systemic illness. *Emergency Medicine Clinics of North America*. 2000; 18(2): 199-209.

Rosler W, Hewer W, Fatkenheuer B, Loffler W. Excess mortality among elderly psychiatric in-patients with organic mental disorder. *The British Journal of Psychiatry*. 1995; 167(4): 527-532.

Thienhaus O. Rational physical evaluation in the emergency room. *Emergency Psychiatry*. 1992; 43(4): 311-2.

CME Questions

Objective: Define medical clearance.

1. Medical clearance must identify which of the following?
 - a. controlled diabetes
 - b. hypertensive encephalopathy
 - c. mild hypertension
 - d. recent marijuana use
 - e. sarcoidosis

2. Medical clearance
 - a. guarantees that medical illness will not develop during a psychiatric admission.
 - b. is defined by federal law.
 - c. is defined by individual state law.
 - d. must resolve all acute and chronic medical conditions.
 - e. should identify medical causes of psychiatric symptoms and life-threatening medical conditions.

Objective: Outline a differential diagnosis for neuro-psychiatric symptoms.

3. A patient who alternates between periods of agitation and obtundation demonstrates
 - a. delirium
 - b. dementia
 - c. depression
 - d. psychosis
 - e. stroke

Objective: Identify patients requiring more intensive screening for organic disease.

4. Which of the following patients requires laboratory testing?
 - a. 25 year old admitting cocaine use
 - b. 28 year old suicidal male with wrist laceration
 - c. 37 year old male complaining of depression
 - d. 40 year old known schizophrenic with medication noncompliance
 - e. 68 year old male with new onset visual hallucinations

5. In elderly patients,
 - a. CT scan is essential for evaluation.
 - b. delirium cannot be distinguished from psychosis.
 - c. medical illness may present with psychiatric symptoms.

- d. medications are not responsible for psychiatric symptoms.
- e. new-onset psychiatric illness frequently develops.

Objective: Describe the importance of identifying organic illness.

6. Delirium has a reported mortality of

- a. 1%.
- b. 5%.
- c. 10%.
- d. 25%.
- e. 50%.

Objective: Demonstrate a rational and practical screening algorithm.

7. Every patient with a psychiatric complaint should be evaluated with

- a. CBC.
- b. chem 7.
- c. cranial CT.
- d. history and physical exam.
- e. lumbar puncture.

8. The most sensitive tool available for identifying medical illness in patients with psychiatric complaints is

- a. comprehensive metabolic panel
- b. EKG
- c. history and physical
- d. MRI
- e. toxicologic screen

9. The most common cause of missed diagnosis of medical illness is

- a. failure to check chem 7
- b. failure to obtain CBC
- c. failure to obtain head CT
- d. failure to obtain readily available history
- e. inadequate neurologic exam

10. Screening tests such as CBC, tox screen, and chem 7

- a. are never necessary if the patient has known psychiatric illness.
- b. are the medical-legal standard of care.
- c. guarantee correct diagnosis.

- d. increase the number of clinically insignificant abnormalities detected.
- e. obviate the need to examine the patient.

11. Patients with psychiatric complaints

- a. always require a tox screen.
- b. do not accurately report substance abuse.
- c. do not suffer from a toxidrome if their tox screen is negative.
- d. do not suffer from a toxidrome if they exhibit psychosis.
- e. frequently report drug and alcohol use accurately.

12. Psychiatric patients with physical complaints

- a. require an evaluation appropriate to their complaint.
- b. require chest x-ray, EKG, and screening laboratory tests.
- c. require the same evaluation as patients without physical complaints.
- d. should never be admitted to psychiatric services.
- e. suffer from conversion disorder.

Answer Key

1. b. hypertensive encephalopathy
2. e. should identify medical causes of psychiatric symptoms and life-threatening medical conditions.
3. a. delirium
4. e. 68 year old male with new onset visual hallucinations
5. c. medical illness may present with psychiatric symptoms.
6. d. 25%
7. d. history and physical
8. c. history and physical
9. e. inadequate neurologic exam
10. d. increase the number of clinically insignificant abnormalities detected.
11. e. frequently report drug and alcohol use accurately.
12. a. require an evaluation appropriate to their complaint.

References

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- ¹ Williams E, Shepherd S. Medical clearance of psychiatric patients. *Emergency Medicine Clinics of North America*. 2000; 18(2): 185-98.
- ² Tueth M. Diagnosing psychiatric emergencies in the elderly. *American Journal of Emergency Medicine*. 1994; 12(3): 364-9.
- ³ Reeves R, Pendarvis E, Kimble R. Unrecognized medical emergencies admitted to psychiatric units. *American Journal of Emergency Medicine*. 2000; 18(4): 390-3.
- ⁴ Olshaker J, Browne B, Jerrard D, Prendergast H, Stair T. Medical clearance and screening of psychiatric patients in the emergency department. *Academic Emergency Medicine*. 1997; 4: 124-128.
- ⁵ Lewis L, Miller D, Morley J, Nork M, Lasater L. Unrecognized delirium in ED geriatric patients. *American Journal of Emergency Medicine*. 1995; 13(2): 142-5.
- ⁶ Henneman P, Mendoza R, Lewis R. Prospective evaluation of emergency department medical clearance. *Annals of Emergency Medicine*. 1994; 24(4): 672-7.
- ⁷ Korn C, Currier G, Henderson S. "Medical clearance" of psychiatric patients without medical complaints in the emergency department. *Journal of Emergency Medicine*. 2000; 18(2): 173-6.
- ⁸ Schiller M, Shumway M, Batki S. Utility of routine drug screening in a psychiatric emergency setting. *Psychiatric Services*. 2000; 51(4): 474-8.
- ⁹ Serper M., Chou J., Allen M., Czobor P., Cancro R. Symptomatic overlap of cocaine intoxication and acute schizophrenia at emergency presentation. *Schizophrenia Bulletin*. 1999; 25(2): 387-94.
- ¹⁰ Rosse R., Collins J., Fay-McCarthy M, Alim T., Wyatt R., Deutsch S. Phenomenologic comparison of the idiopathic psychosis of schizophrenia and drug-induced cocaine and phencyclidine psychoses: a retrospective study. *Clinical Neuropharmacology*. 1994; 17(4): 359-69.