EMERGENCY MEDICINE PRACTICE

AN EVIDENCE-BASED APPROACH TO EMERGENCY MEDICINE

Behavioral Emergencies: Differentiating Medical From Psychiatric Disease

March 2002
Volume 4, Number 3

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CME Objectives

Upon completing this article, you should be able to:
1. list possible medical causes of behavioral symptoms;
2. define delirium, depression, mania, and anxiety and explain potential medical causes of each;
3. describe crucial elements of the history and physical examination that can help differentiate medical from psychiatric causes of altered mental status;
4. determine the need for laboratory testing in patients with altered mental status;
5. describe the indications and techniques for chemical and physical restraints; and
6. describe and identify neuroleptic malignant syndrome, serotonin syndrome, and behavioral manifestations of non-convulsive status epilepticus.

Date of original release: March 1, 2002.
Date of most recent review: February 22, 2002.
See "Physician CME Information" on back page.

2:20 a.m.: Another busy shift in the ED. The charge nurse brings in a "psych" patient from triage. This 27-year-old woman came with a friend who tells you that the patient has become increasingly agitated over the past 12 hours. Her blood pressure is 130/70 mmHg; pulse, 124; and respirations, 30. She is too combative to get a temperature.

During your history and physical examination, it becomes clear that the patient is hallucinating and is seeing things that are invisible to you. You order a urine toxicology screen, a blood alcohol level, and a urine pregnancy test. After these studies prove negative, the disposition becomes a "slam-dunk," and you call psychiatry to admit your "new-onset psychosis."

6:40 a.m.: Only 20 minutes left in the shift; you have survived another horrendous night. Things turn infinitely worse in a heartbeat, however, when you hear the overhead paging system crackle, "Code blue in psychiatry."

EACH day, emergency physicians face myriad diagnostic dilemmas—but few are as complex and misleading as behavioral emergencies. The causes of acute behavioral changes range from the mundane (such as a pint of vodka) to the horrific (in the case of suppurative meningitis). Because the differential diagnosis is astoundingly broad, such patients require a careful assessment of their mental and physical health. In many cases, the emergency physician's "medical clearance" exam is the only medical assessment that they will receive.

Unfortunately, too many patients are prematurely labeled as "psych," especially if they have a history of mental illness. Such hasty closure can miss occult medical problems that can either mimic or exacerbate a psychiatric condition. This issue of *Emergency Medicine Practice* provides a rational approach to patients with behavioral complaints.

Critical Appraisal Of The Literature

Admittedly, there is little evidence to support many of the clinical decisions emergency physicians must make in evaluating and caring for patients with

behavioral emergencies. Some literature does address the evaluation of behavioral emergencies; unfortunately, most are review articles filled with anecdotal or unreferenced recommendations. There are few prospective studies regarding epidemiology and diagnostic testing, and most of these have significant methodological flaws.

Several medical groups have issued guidelines for the management of behavioral emergencies. In 1999, the American College of Emergency Physicians (ACEP) published a "Clinical Policy for the Initial Approach to Patients Presenting with Altered Mental Status," which critically reviewed the literature and provides a framework for approaching these patients.[1] In the same year, the American Psychiatric Association published a "Practice Guideline for the Treatment of Patients with Delirium."[2] This document reviewed the literature and made graded recommendations based on the strength of evidence regarding psychiatric management, environmental and supportive interventions, and somatic (pharmacologic) interventions. It provides a comprehensive analysis of delirium and emphasizes the need for a multidisciplinary approach. In 2001, an expert panel led by members of the American Association of Emergency Psychiatry (AAEP) published a consensus guideline, "Treatment of Behavioral Emergencies," which focuses on acute interventions in decompensated psychiatric patients.[3] The AAEP's guidelines are based on consensus information collated from a survey of 52 American experts in psychiatric emergency medicine. While the guidelines reflect the practice pattern of the respondents, they do not serve as an evidence-based aid to clinical decision-making.

Epidemiology

"The statistics on sanity are that one out of every four Americans is suffering from some form of mental illness. Think of your three best friends. If they're okay, then it's you."—Rita Mae Brown

In 1998 there were approximately 100.4 million ED visits in the United States, approximately 4% of which were for a behavioral problem.[4] (Three percent were categorized as an acute behavioral problem, and 1% as a self-inflicted poisoning or injury.[4]) The statistics for the elderly are even more dramatic. Among ED patients older than 70, 40% have an alteration in mental status, and 24% are diagnosed as having delirium.[5-7]

There is a strong association between primary mental disorders and substance abuse (the so-called "dual diagnosis"). The National Institute of Mental Health Epidemiologic Catchment Area Program offers provocative data that shows the enormity of these problems. The Program estimates that at some point in their lives, 22.5% of Americans experience a non-substance-abuse mental disorder, 13.5% have either alcohol dependence or abuse, and 6.1% experience other drug dependence or abuse.[98] People with a primary mental disorder have even higher risk of addiction—nearly 30%.[8] On the flip side, those with a primary addictive disorder may have higher rates of mental illness; among those with an alcohol disorder, 37% have a co-morbid mental disease. The highest mental/addictive disorder co-morbidity rate is found for those with drug abuse disorders, among whom more than half (53%) have a psychiatric illness.[8]

Etiology

In addition to patients with behavioral problems related to mental disorders or substance abuse, there is also a large group whose behavioral emergencies are a direct result of medical illness. These medical illnesses can cause behavioral symptoms by themselves or can exist in combination with a mental disorder.[9]

At times, the medical etiology of the behavioral emergency is erroneously ascribed to a psychiatric problem. In one study, emergency physicians misdiagnosed a psychiatric illness (in patients who actually had an occult medical problem) 4% of the time.[10] Deficiencies in the history and physical examination accounted for the vast majority of missed illness. (See **Table 1**.)

A study by Hall in 1978 demonstrated that a medical cause for psychiatric symptoms occurred in 9.1% of psychiatric outpatients.[11] Major illnesses, in order of frequency, included infectious, pulmonary, thyroid, diabetic, hematopoietic, hepatic, and CNS disease. Of these patients, 46% suffered from medical illnesses previously unknown to their psychiatrists or physicians.[11] In this study, the most frequent presenting complaints included depression, confusion, anxiety, and speech or memory disorders. In a different retrospective analysis of 100 cases of "acute organic brain syndrome," 44 cases were found to have chronic organic brain syndrome with a specific precipitating cause for the acute decompensation: infections in 23%, environmental changes in 18%, fluid/electrolyte disorders in 14%, and intoxication in 14%.[12]

Meningitis and sepsis are the infectious diseases most often associated with rapidly lethal outcomes. Metabolic disorders such as hypoxia and gross alterations of electrolytes may be similarly dangerous. There is a great number of endocrine disorders that present with delirium, depression, or mania. *Apart from hypoglycemia, thyroid disease is the most common endocrine disorder associated with altered behavior*.[13] Other implicated endocrine problems include

Table 1. Findings Suggestive Of An Underlying Medical Basis For Psychiatric Symptoms.

- Late age (over 40) of onset of a new behavioral symptom[23,26,37]
- No past medical history of psychiatric illness
- Sudden onset of altered behavior[23]
- Presence of a toxidrome
- Visual hallucinations[11]
- Known systemic disease with new-onset behavior change
- New medication
- Altered behavior temporally related to a convulsive seizure
- Abnormal vital signs
- Disorientation
- Clouded consciousness

hypocortisolism, hypoparathyroidism, and diabetes mellitus out of control.[14]

Electrolyte abnormalities can also lead to altered mental status. Altered mental status associated with hypernatremia (presenting as lethargy to frank coma), which usually occurs with serum sodium levels of greater than 160 mEq/L, is caused by dehydration in very old patients but may be associated with fluid loss in sepsis. Acute hyponatremia, especially when the sodium falls rapidly, produces confusion, coma, and even seizures (usually if the sodium is < 115 mEq/L).[15] Alterations in mental status are common in hypercalcemia (particularly when serum calcium levels are > 14 mg/dL) and generally consist of progressive lethargy. Malignant neoplasms and hyperparathyroidism (75% caused by parathyroid adenomas) account for the vast majority of cases of hypercalcemia.[15]

Pathophysiology

Over the past 20 years, an improved understanding of neurochemistry has made the terms "organic" and "functional" nearly obsolete. Many disease processes, such as major depression, have a biologic etiology and thus are effectively modulated with pharmacologic interventions. This same recognition regarding the importance of neurotransmitters has improved therapies. Examples include the modulation of serotonin in depression, dopamine levels in schizophrenia, and acetylcholine in Alzheimer's disease. Neurochemistry also helps explain clinical manifestations of drug ingestions. For instance, dextroamphetamine increases the availability of dopamine, producing an acute psychosis clinically indistinguishable from paranoid schizophrenia.

Definitions and Differential Diagnosis

The *Diagnostic and Statistical Manual of Mental Disorders* defines a psychiatric presentation of a medical illness as a "mental disorder due to a general medical condition."[16] Psychiatric symptoms that may be a direct consequence of medical illness include delirium, dementia, psychosis, depression, mania, and anxiety.[14,17-19] (See **Table 2**.)

Delirium

Delirium is a disturbance of consciousness that occurs over a short time and primarily affects attention, with subsequent impairment of other cognitive functions.[14,16,20,21] Memory impairment usually involves recent memory; patients may be disoriented to time or place but rarely to person. Perceptual disturbances may include misinterpretations, illusions, or hallucinations. The disturbance develops abruptly and often fluctuates over the course of the day. There may be alterations in the sleep/wake cycle and psychomotor activity.

Delirium is common in patients 65 years and older and is reported to occur in 10% of all hospitalized patients.[7] Older individuals with delirium are especially susceptible to poor outcomes: Elderly patients who are admitted to the hospital with delirium experience a mortality rate of 15%-30%.[22]

Psychosis

Psychosis is a condition in which there is a loss of reality testing, a disturbance of thought processes, and, consequently, changes in behavior.[14,20] Psychosis disrupts perceptions and disorganizes thinking to a degree that interferes with social interactions. It can be psychiatric or medical in origin. Medical causes may involve a structural lesion, biochemical abnormality, or physiological disturbances of the brain. *A medical etiology should always be suspected in new cases of psychosis, especially if the patient is older than 40.*[23]

Depression

Depressed mood may be the manifestation of significant underlying medical conditions. Endocrine or metabolic disorders as well as medications are common causes of depressed states.[14,20] A diagnosis of a major depressive disorder requires alterations in mood, psychomotor activity,

Table 2. Clinical Features Of Delirium, Dementia, And Acute Psychosis.

Onset
- Delirium: Sudden
- Dementia: Insidious
- Psychosis: Sudden

24-hour course
- Delirium: Fluctuating, varies at night
- Dementia: Stable
- Psychosis: Stable

Consciousness
- Delirium: Reduced
- Dementia: Clear
- Psychosis: Clear

Attention
- Delirium: Globally disordered
- Dementia: Normal except in severe cases
- Psychosis: May be disordered

Cognition
- Delirium: Globally disordered
- Dementia: Globally impaired
- Psychosis: Selectively impaired

Hallucinations
- Delirium: Usually visual
- Dementia: Often absent
- Psychosis: Predominantly auditory

Delusions
- Delirium: Fleeting, poorly systematized
- Dementia: Often absent
- Psychosis: Sustained, systematized

Orientation
- Delirium: Usually impaired, at least for some time
- Dementia: Often impaired
- Psychosis: May be impaired

Psychomotor activity
- Delirium: Increased, reduced, or shifting
- Dementia: Often normal
- Psychosis: Varies—hypo- to hyperactive

Speech
- Delirium: Often incoherent, slow or rapid
- Dementia: Perseveration, difficulty finding words
- Psychosis: Normal, slow, or rapid

Involuntary movements
- Delirium: Often asterixis or coarse tremor
- Dementia: Often absent
- Psychosis: Usually absent

Physical illness or drug toxicity
- Delirium: One or both present
- Dementia: Often absent, especially in Alzheimer's type
- Psychosis: Usually absent

and cognition. In one study, 30% of patients older than 64 who came to an ED were clinically depressed—yet more than three-quarters of these cases went undiagnosed by the emergency physician.[24] The authors suggested that a simple battery of inquiries (like "Are you in good spirits?" "Do you avoid social gatherings?" "Are you often downhearted and blue?" "Do you often feel helpless?" and "Do you often wish you were dead?") would identify most cases and enable proper referral to a mental health provider. Not only is depression common, but emergency physicians must never forget its association with suicide. It is estimated that 15% of patients with major depression commit suicide.[25]

Dysthymia, on the other hand, is a less severe disorder characterized by sadness, anxiety, lack of joy, and feelings of inadequacy. Such symptoms appear continuously or fluctuate. While dysthymia presents a lesser suicide risk in comparison with major depression, suicide is always possible in patients with depressive pathology.

Mania

The main symptom of mania is a persistently elevated, expansive, or irritable mood. Symptoms occur in conjunction with at least three of the following: inflated self-esteem or grandiosity, decreased need for sleep, increased talkativeness, flight of ideas, easy distractibility, increased activities, or an excessive quest for pleasure (shopping, sex, eating, etc.). The mood disturbance is severe enough to markedly interfere with job performance and personal relations. Delusions or hallucinations may occur in conjunction with mania. As with the other acute behavioral disturbances presented, patients with new-onset mania and no psychiatric history must be evaluated for a potential causative medical condition.[14,26]

Anxiety

"Anxiety is the space between the 'now' and the 'then.'"
—Richard Abell[27]

A patient with an anxiety disorder presents with complaints of anxiety, nervousness, panic, or stress. Generalized anxiety due to either a primary psychiatric or medical illness is characterized by sleep disturbance, irritability, difficulty with concentration, easy fatigue, restlessness, and muscle tension. If a patient has a panic attack after age 35, and there is no clear-cut psychological precipitant, suspect a medical cause; hyperthyroidism, hypoxia, hypoglycemia, or drug toxicity are typical culprits.[14]

Prehospital Care

Patients with abnormal behavior pose a special challenge to prehospital care providers. They may refuse transport or become aggressive with medics. In one study, approximately 50% of the patients placed in restraints or seclusion in the ED arrived through the EMS system.[31]

Patients with an acute behavioral disturbance who refuse transport against medical advice (AMA) may be at risk for an adverse outcome.[28] In one study examining such patients, 70% of those over the age of 65 eventually went to the hospital, and one-third of these were admitted.[28] Patients who refuse transport pose a large medical-legal risk to prehospital providers and their medical director. Before allowing such patients to "sign out," paramedics must assess their capacity. (See **Table 3**.) Consulting the emergency physician who provides medical control is also prudent.[29] In one prospective study involving 361 patients (31% with altered behavior), contact with on-line medical control increased the likelihood of transport in patients who initially refused medical assistance.[30]

When in doubt regarding the patient's ability to make informed decisions, the medic's best course of action is to transport, especially if the potential for an adverse medical event is high. Compassion, a calm demeanor, and an offer of help may encourage patient cooperation. However, there are times when adjunctive action is required; such actions may include physical or chemical restraints.

If physical or chemical restraints are necessary, they should be used in accordance with protocols developed by the EMS system's medical director (hopefully written before they are needed in the field!). There is no uniform policy around the country that addresses the paramedic's use of chemical or physical restraints. In some locales, sedatives or tranquilizers can be given by medics only through a direct physician order. Sometimes, physical restraints or police intervention remain the only viable options. A dilemma arises when the police do not agree that the patient is in need of medical attention and decline transport assistance. In these cases, on-line medical control should be established to help with these decisions.

Only one study has examined the prehospital use of chemical restraints. Rosen et al compared 5 mg of droperidol IV to placebo in 46 combative patients. Patients given droperidol had significantly greater sedation at five and 10 minutes, and no major side effects (there was one occurrence of akathisia that had no associated morbidity).[32] (However, see the cautions later in this article regarding droperidol's association with torsades de pointes.)

Physical restraint requires a high level of vigilance to avoid harming the patient. Patients may suffer cardiac arrest due to position-related asphyxia.[33] Prehospital care providers sometimes physically restrain patients in a "hogtie" or "hobble" restraint position. The patient is placed in the prone position with wrists handcuffed or tied together behind the back and ankles bound together and secured to their wrists. In one experimental, crossover controlled trial involving 15 healthy men, this

Table 3. Key Questions In Determining Capacity.

- Does the patient understand the relevant information? (Disoriented patients cannot.)
- Does the patient have the ability to manipulate the information? (What would a rational person do?)
- Does the patient have the ability to communicate a choice? (Is he or she clear in the choice, or does he or she constantly change his or her mind?)
- Can the patient put all of these together to appreciate the situation and its consequences? (Are the reasons for his or her choices well-thought-out?)

position was not associated with any compromise of pulmonary function.[34] (However, the "patients" were cooperative and had no illicit drugs on board.)

Emergency Department Evaluation

The safety of care providers must assume a high priority. Involve trained security personnel earlier rather than later. The use of metal detectors in the ED has been controversial; however, at a minimum, violent or agitated patients must be undressed and searched for weapons and other contraband (especially paranoid schizophrenics with command hallucinations telling them to kill an emergency physician).

In some cases, it may be impossible to begin the work-up prior to controlling the patient's behavior. If the patient is violently agitated and aggressive, both physical and chemical restraints are indicated. When appropriate, chemical restraint or rapid tranquilization is preferred to physical restraint.[1,2] (These techniques are described in further detail in the "Treatment" section later in this article; see also the November 1999 issue of *Emergency Medicine Practice*, "The Violent Patient: Clinical Management, Use Of Physical And Chemical Restraints, And Medicolegal Concerns.")

Most patients with altered behavior will respond to supportive measures alone. These measures may include food and drink, reducing the noise, and orienting stimuli like family members and reassurance.[59] A quiet environment in which both the patient and the physician feel safe will promote a successful encounter. The interview may need to be modified to accommodate the patient's mental state. If the patient is agitated and highly charged, the examiner should reduce the intensity of the exchange by maintaining some distance and by carefully structuring the inquiry. If possible, sit when speaking to the patient. The emergency physician must appear calm, nonjudgmental, and non-threatening. Physicians who are "good listeners" and patient advocates have the best chance of obtaining a reliable history (and are the least likely to be assaulted).

Once the immediate concerns for the safety of the patient and staff have been adequately addressed, the emergency physician must determine whether the patient with altered behavior is medically and behaviorally stable. Quickly determine the need for oxygen, fluids, antipyretics, charcoal, and/or antibiotics. Prevention of dangerous physiologic or behavioral deterioration may need to precede a more methodical evaluation.[56-58]

It is imperative for the emergency physician to avoid "rushing" the history and physical examination. The literature abounds with accounts of medical disorders misdiagnosed as psychiatric ones, and vice versa. Fortunately, many of these quandaries can be prevented with a comprehensive history and physical examination. In one retrospective study of ED patients with psychiatric complaints, history, physical examination, vital signs, and laboratory testing had sensitivities of 94%, 51%, 17%, and 20%, respectively, for identifying a medical etiology.[35] Dubin et al studied more than 1140 patients with behavioral complaints and found four screening criteria on history and physical examination as being especially important in identifying patients with medical illness: *disorientation, abnormal vital signs, clouded consciousness, and age over 40 with no previous psychiatric history*.[36]

History

When evaluating a patient with a behavioral presentation, it is important to obtain information from as many sources as possible, including the patient, EMS, witnesses, family, and friends. Other sources of information may include the police and the primary care provider. Calling the local psychiatric center may provide a trove of pertinent records.

Important historical questions include the time and rapidity of onset as well as the presence of auditory or visual hallucinations, distortions, or illusions.[23,26,37] In one study, the authors reported that visual hallucinations are strongly associated with a medical pathology.[11] Some complaints are especially revealing: formication (the sensation of bugs crawling under the skin; not to be confused with fornication) is associated with chronic cocaine or speed use; bugs on the walls are almost pathognomonic of alcohol withdrawal; and pathological shyness is seen with mercury intoxication.[38] (Now *that's* an obscure one!)

The review of systems may help to direct the evaluation toward medical illnesses. A seizure prior to the patient's presentation suggests a postictal state or nonconvulsive status epilepticus (NCS); palpitations, tremor, and weight loss may imply hyperthyroidism; and headache might herald a CNS tumor, meningitis, or chronic subdural hematoma.

Cost-Effective Strategies For Patients With Altered Mental Status

1. Reserve laboratory tests for those patients with no prior psychiatric history, abnormal vital signs, or other suspicious findings on history or physical examination.

Caveat: Be liberal in obtaining a bedside blood sugar on all patients with unexplained alterations in behavior. Recognize that certain high-risk groups such as the elderly may require extensive diagnostic testing, especially if the behavioral change is acute.

2. Limit urine toxicologic screens to those cases where findings will change management (which is almost never).

Caveat: In the suicidal patient and in those admitting a specific ingestion, *quantitative* screens, such as an acetaminophen level, may be helpful.

3. Reserve head CTs for those patients with a focal neurologic exam or altered behavior of undetermined etiology.

Caveat: Consider ordering CTs on high-risk patients—those on warfarin or who have a coagulopathy, the elderly, and the immunosuppressed. ▲

Use the interview to determine the type of behavioral emergency—that is, delirium, psychosis, depression, mania, or anxiety. The confusion assessment method (CAM) is a validated, easy-to-use tool that has been developed to assist diagnosing delirium.[39] (See **Table 4**.)

Past Medical/Psychiatric History

Determine the patient's past medical and psychiatric history. A history of medical diseases, such as stroke, seizures, or cardiopulmonary or endocrine disease, may provide the key to the diagnosis.

Exhaust all resources to determine whether the patient has had similar events in the past. *The presence or absence of a past psychiatric history is one of the most important determinants of psychiatric vs. medical illness.* Most alert adult patients with *new* psychiatric symptoms who present to the ED have an organic etiology. In one prospective study of 100 consecutive, alert, 16- to 65-year-old patients with new psychiatric symptoms evaluated in the ED, 63% had an organic etiology.[40]

While the past medical history is important, the clinician must be careful not to be overly biased by the information. As stated, new psychiatric complaints are medical in etiology until proven otherwise; the converse is not always true. Just because a patient has a psychiatric history does not necessarily mean that the present complaint is psychiatric in origin.

The social history should investigate alcohol and illicit drug use. Drug toxicity or withdrawal accounts for up to 30% of all cases of delirium.[41]

Medications And Allergies

A list of the patient's medications can reveal the past medical history (theophylline and COPD, digoxin and cardiac disease, etc.). In addition, recent changes or additions in medications may suggest drug toxicity, especially in the elderly. At least 150 common drugs (and perhaps thousands more) can produce dramatic psychiatric symptoms.[42] Even a list of allergies can yield crucial information (especially if the patient lists an allergy to haloperidol).

Table 4. The Confusion Assessment Method (CAM) Diagnostic Algorithm.

The diagnosis of delirium by CAM requires the presence of features 1, 2, and either 3 or 4:

Feature 1: Acute onset and fluctuating course
Was there an acute change from the patient's baseline? Did the (abnormal) behavior fluctuate in severity?

Feature 2: Inattention
Did the patient have difficulty keeping track of what was being said?

Feature 3: Disorganized thinking
Was the patient's thinking disorganized or incoherent (rambling conversation, unclear or illogical flow of ideas)?

Feature 4: Altered level of consciousness
Overall, would you rate this patient's level of consciousness as alert (normal), vigilant (hyperalert), lethargic (drowsy, easily aroused), stupor (difficulty to arouse), or coma (unarousable)? (Any answer other than "alert" counts.)

Source: Inouye SK. Clarifying confusion: The confusion assessment method. A new method for detection of delirium. *Ann Intern Med* 1990;113:941-948.

The Physical Examination

Multiple studies document how infrequently both medical physicians and psychiatrists perform adequate physical examinations on patients with psychiatric complaints.[10,43-45] In one report, only 13% of surveyed psychiatrists routinely performed a physical examination on their inpatients.[45] Similarly, another showed that 83% of psychiatrists did not routinely perform a physical examination on their inpatients.[46] Remember—chances are, the emergency physician will be the only doctor who touches a patient heading to a psychiatric facility.

Vital Signs

Vital signs provide essential clues to serious medical illness. Unfortunately, they are often delayed or omitted in the hostile or combative patient. Still, it is imperative to obtain these once the patient has become calm and recheck abnormal values prior to disposition. In one retrospective study of 137 ED patients with psychiatric diagnoses, 32% did not have vital signs documented in the chart.[45] In particular, the temperature is frequently unchecked—yet this may be one of the most significant aspects of the physical examination. Fever in conjunction with altered mental status mandates consideration of such lethal conditions such as sepsis, meningitis, or drug-induced hyperthermia.

The General Examination

The physical examination is best performed in a head-to-toe manner in order to avoid missing important information. (See also **Table 5** on page 7.) Upon entering the room, note the patient's general appearance, posture, and motor activity. Be alert to increased motor activity, a finding that is associated with impending violence. Worrisome signs may include rapid pacing back and forth, clenching and unclenching fists, loading and unloading a gun, etc.

Inspect the head for trauma or prior neurosurgery. Specifically look for the signs of a basilar skull fracture (such as raccoon's eyes, Battle's sign, or hemotympanum).

The ocular examination can be especially revealing. Pinpoint pupils may represent narcotic, organophosphate, or clonidine use. Dilated pupils suggest stimulants or anticholinergic drugs, withdrawal from sedatives or narcotics, or postanoxic injury. Test the extraocular movements (EOMs) to detect a cranial nerve palsy. Impairment of EOMs can be seen with Wernicke's encephalopathy or a space-occupying lesion. In addition, look for nystagmus. Vertical nystagmus may occur with a brainstem lesion, Wernicke's encephalopathy, or may be congenital.[47] Horizontal or rotatory nystagmus suggests drug or, more commonly, alcohol toxicity. A blank, open-eyed stare with roving gaze, nystagmus, and dilated pupils (called "Groucho eyes") is common to PCP intoxication. Papille-

dema on funduscopic exam should trigger CT scanning to evaluate for increased intracranial pressure.

During the neck exam, look for meningeal signs or thyroid enlargement. The chest examination is especially important, since cardiovascular and pulmonary insults frequently cause psychiatric symptoms.[11,23] Auscultation of the chest may reveal evidence of pneumonia, pneumothorax, congestive heart failure, or COPD. Delirium may be a more prominent complaint in pneumonia among the elderly than either cough or chest pain.[48,49] A heart murmur can occur with valvular heart disease (including endocarditis), while an irregular heartbeat may signal atrial fibrillation, metabolic derangements, or drug toxicities.

An abdominal examination can suggest obstruction, perforation, hemorrhage, or infection in the abdominal cavity—all of which can alter mental status, especially in the elderly. An enlarged liver, especially in the setting of jaundice or asterixis, may signal hepatic encephalopathy.

Inspect the skin for rashes (especially for those with systemic implications, such as Kaposi's sarcoma) or petechiae. Diaphoresis is likely to be associated with physiologic stress. The presence of track marks should prompt further evaluation for HIV-related illness and endocarditis, while striae may predict adrenal disease or prolonged steroid use.

The Neurologic Examination

While the neurologic exam is difficult to perform in the uncooperative patient, it is crucial in distinguishing medical from psychiatric illness. In one review, the lack of a neurologic exam was the most frequent deficiency found in the charts of patients admitted with psychiatric complaints.[10]

Many neurologic diseases initially present with behavioral problems. A normal neurologic exam, including cognitive testing, suggests a primary psychiatric diagnosis, while focal deficits indicate a structural etiology. Perform the exam in a systematic fashion documenting cranial nerves, deep tendon reflexes, and motor, sensory, and cerebellar function.

The Psychiatric Examination

"After 12 years of therapy, my psychiatrist said something that brought tears to my eyes. He said, 'No hablo ingles.'"
—Ronnie Shakes

Table 6 and **Table 7** (on page 8) present a format for a structured psychiatric exam that promotes a systematic approach to behavioral complaints. At a minimum, the psychiatric evaluation should assess the patient's overall appearance, orientation, affect, thought content (delusions or obsessions), and perceptions (hallucinations). Determine

Table 5. Physical Findings Suggesting Medical Concerns.

Blood pressure
- *Significant hypertension:* Hypertensive encephalopathy , increased intracranial pressure, thyrotoxicosis, intracranial hemorrhage, pregnancy-induced hypertension, toxicologic (e.g., sympathomimetics, serotonin syndrome)
- *Significant hypotension:* Septic shock, cardiogenic shock, neurogenic shock, medication reaction, myocardial infarction

Pulse
- *Bradycardia:* Toxicologic (e.g., beta-blockers, calcium-channel blockers), increased intracranial pressure, hypothyroidism
- *Tachycardia:* Toxicologic (e.g., cyclic antidepressants, sympathomimetics, anticholinergics), sepsis, thyrotoxicosis, decreased cardiac output, withdrawal syndromes, hypoxia, hypoglycemia

Respiration
- *Hypoventilation:* Toxicologic (e.g., opioids, barbiturates), stroke, increased intracranial pressure, COPD, CO_2 retention
- *Hyperventilation:* Thyrotoxicosis, ASA overdose, acidosis, sepsis, CHF, COPD

Temperature
- *Fever/hyperpyrexia:* CNS infections, urinary tract infections, skin infections/sepsis, neuroleptic malignant syndrome, serotonin syndrome, toxicologic (e.g., anticholinergics, salicylates, sympathomimetics), stroke, heat stroke, throtoxicosis, withdrawal syndromes
- *Hypothermia:* Sepsis, toxicologic (e.g., alcohol, barbiturates), hypothyroidism, hypoglycemia

General appearance
- *Signs of head trauma or occult hematoma:* Intracranial hemorrhage (can include occult signs like hemotympanum, retinal hemorrhage, CSF rhinorrhea)

Neurologic (motor/sensory) findings
- *Focal motor or sensory deficit:* Stroke, space-occupying lesion, hypoglycemia, Todd's paralysis (postictal), Wernicke's encephalopathy
- *Asterixis:* Hepatic failure, uremia, other metabolic derangements
- *Rigidity:* Neuroleptic malignant syndrome
- *New asymmetry or fixed pupils:* Stroke, space-occupying lesions
- *Bilaterally pinpoint pupils:* Toxicologic etiology (e.g., opioids, clonidine, organophosphates), pontine stroke
- *Bilaterally dilated pupils:* Toxicologic etiology (e.g., sympathomimetics, anticholinergics, hallucinogens)
- *Breath odor:* Acetone—ketoacidosis, toxic ingestion; Fetor hepaticus—hepatic encephalopathy; ethanol—ethanol or other volatile intoxication

Funduscopic examination
- *Papilledema or retinal hemorrhage:* Space-occupying lesion, hypertensive encephalopathy, subarachnoid hemorrhage

Neck
- *Nuchal rigidity or other meningeal signs with or without fever:* CNS infection, subarachnoid hemorrhage

Abdominal
- *Ascites/hepatomegaly:* Hepatic encephalopathy, spontaneous bacterial peritonitis, HIV, hepatitis

Skin
- *Needle marks:* Parenteral substance abuse, CNS infection
- *Petechiae/purpura:* Intracranial hemorrhage, Rocky Mountain spotted fever, CNS infection/sepsis

(The author would like to thank Tracy Muenz, who helped develop this table.)

early in the interview whether the patient is suicidal or homicidal.

Simply listening to the patient's speech provides a wealth of information. Slurred speech is likely to be associated with drug or alcohol toxicity or neurologic problems. Mumbling is classic for anticholinergic toxicity. Schizophrenics may speak in rhymes sometimes called "clang" associations ("she sang and rang and whang!"). Their speech may be full of strange jargon and made-up words that has been referred to as a "word salad."

"If you talk to God, you are praying; if God talks to you, you have schizophrenia."—Thomas Szasz

Table 6. Cognitive Evaluation.

Orientation: Inquire as to the day, date, time of day, and location.
Registration: Have the patient repeat three objects immediately after being given.
Attention/calculation: Assess the patient's digit span (ability to repeat numbers forward and backward); have the patient spell WORLD backward or subtract serial sevens. (If attention is impaired, the remainder of the cognitive exam is difficult to interpret.)
Memory (Recall): Have the patient repeat the three objects used in "registration" (above).
Language: Assess the patient's ability to comprehend, name, and repeat; may include both reading and writing.
Visual-spatial skills: Copying a design and drawing a clock.

Table 7. The Structured Psychiatric Examination.

Appearance: Is the patient appropriately dressed and groomed? Comment on the patient's general interactional style.
Motor: Observe for abnormal movements, motor retardation, or agitation. At a minimum, assess muscle tone, posture, and gait. Note evidence of tardive dyskinesia (lip-smacking or chewing motions), dystonia, tremor, automatisms, or stereotypic behavior.
Speech: Assess speech according to its volume, tone, rate, and rhythm. Pressured speech (rapid, increased in amount and difficult to interrupt) suggests mania; slow, monotonous speech suggests depression.
Affect and mood: Consider three components when assessing a patient's affect: the range of the patient's emotional expression; the predominant emotional tone; and the appropriateness of the emotion(s). Mood is the prevailing emotional state of the patient as inferred from a variety of clues, including the patient's description of mood and behavior.
Thought content: At the very minimum, inquire about suicidal ideas and violent thoughts. Ask for concrete particulars and establish if a clear plan has been developed.
Thought process (thought form): Thought process is how the patient is thinking, divorced from what the patient is thinking about. Thought process is of central importance in the psychiatric interview, as certain key disorders including schizophrenia and other psychotic disorders are associated with disturbances in this area.
Perception: Ask specifically about auditory or visual hallucinations, and elicit details. Another important perceptual disturbance is depersonalization.
Insight/Judgment: Insight is the extent to which the patient understands that there is a problem, and what needs to be done. Judgment refers to the ability to anticipate consequences and modify behavior accordingly.
Impulse control/safety: This must be assessed directly by asking the patient if he has ever felt like he was going to lose control, hit someone, hurt himself, etc.

Diagnostic Studies

Bedside Glucose Testing

Hypoglycemia may be responsible for up to 10% of altered behavior in ED patients.[51] For this reason, many seasoned emergency physicians believe that *an immediate bedside test of blood sugar is the single most important laboratory test in a patient who presents with acute alteration of behavior or mental status.*

Drug And Alcohol Testing

The most economical and expedient means of detecting drugs and alcohol is to ask the patient (or, in the case of alcohol, smell the patient's breath). In one study looking at "medical clearance," patient self-reporting was 92% sensitive and 91% specific for identifying a positive drug screen. In this same study, patient self-reporting was 96% sensitive and 87% specific in identifying a positive ethanol level.[35]

There are no good data proving that an alcohol level is helpful in assessing abnormal behavior, although it may have some utility in the evaluation of head trauma. (See the September 2001 issue of *Emergency Medicine Practice*, "Alcohol-Related Emergencies: A New Look At An Old Problem.")

Toxicology screens are unlikely to change acute management—either medical or psychiatric. In a recent review of the literature, Allen and Currier concluded that toxicologic screening is not indicated as a routine part of the "medical clearance" process.[54]

Other Laboratory Testing

Research tends to confirm that diagnostic testing can be limited to those patients with suspicious findings based on a careful history and physical examination.[35,43,50] A recent study found that the history and physical examination (including vital signs) exhibited both high specificity and sensitivity in detecting medical problems in 345 ED psychiatric patients.[35] Sixty-five patients (19%) were found to have medical problems. Laboratory analysis alone (CBC, blood chemistries, urinalysis, toxicological and alcohol screening) exhibited a sensitivity of only 20% (13/65) in detecting medical disorders, while history alone had a 94% sensitivity. The authors concluded that "the vast majority" of medical illnesses in patients with psychiatric complaints can be identified by a history and physical examination, and that universal laboratory screening is of "low yield."

A number of early studies that examined the need for laboratory testing in patients with behavioral problems had significant flaws that undermine their validity. In one study where laboratory testing was routine, the authors pointed to

the large number of abnormal results. However, they did not address how many of these laboratory abnormalities were clinically significant nor how many could have been predicted on clinical grounds alone.[52] In a different study evaluating acute organic brain syndrome presenting to the ED, the authors recommended routine labs, including a CBC, BUN, glucose, calcium, electrolytes, qualitative toxicology screen, and urinalysis studies.[12] Once again, the methodology was flawed in that it is not clear how many cases were suspected *without* laboratory testing—nor did the authors address the impact that the test results had on management.

Patients with a prior history of psychiatric disease may need little or no testing, while those with new-onset behavioral emergencies are more likely to require diagnostic studies. In a recent retrospective study, no patient with an isolated psychiatric complaint and a past psychiatric history had a positive laboratory or radiographic finding. The authors concluded that these tests were not necessary if a reliable history and physical can be obtained.[43] Similarly, in a recent survey of 500 emergency physicians, most believed that routine laboratory testing was not necessary for "medical clearance" of a psychiatric patient.[50]

Therefore, the need for testing may be most justified in patients with no prior psychiatric history who present with a new-onset behavioral emergency. In a prospective study of 100 ED patients presenting with a new psychiatric complaint, the authors studied the value of a standardized diagnostic evaluation. The authors recommended that patients with new psychiatric complaints undergo SMA-7, calcium, CPK (if myoglobinuria was possible), alcohol and drug screens, computed tomography scan, and lumbar puncture as part of the "medical clearance."[40] In their study, the medical history was significant in 27 patients, physical examination in six, CBC in five, SMA-7 in 10, CPK in six, alcohol and drug screen in 28, computed tomography scan in eight, and lumbar puncture in eight. However, all of these studies were not performed in all patients; lumbar puncture was done in only 38 patients. The authors also admitted that "the highest WBC count obtained among study patients occurred in a case of apparent stress demargination, and all patients with infections were detected by the presence of fever or by lumbar puncture." Though the authors endorsed laboratory testing as part of "medical clearance," once again, it is unclear how often significant laboratory abnormalities occurred in patients with a reassuring history and physical.

Another caveat is that patients presenting to the ED with delirium are especially likely to have an underlying medical condition. Generally speaking, the older and the sicker the patient, the more extensive the diagnostic investigations need to be.[43] Tests that may be useful in acute delirium include a CBC, electrolytes, BUN, creatinine, and glucose. Liver function tests, serum drug levels, and drug of abuse screens should be selectively ordered. Because urinary tract infections are one of the most common causes of delirium in the elderly, a urinalysis is essential in this population.[53] If no etiology for altered behavior is identified, less probable etiologies may be sought by considering thyroid tests, B_{12}, and folate levels. Many of these tests can be left to the consultant.

Radiography

Chest radiographs are indicated based on suggestive historical or physical findings in young and middle-aged patients with acute behavioral changes. These include cough, tachypnea, or a low pulse oximetry reading. Use liberal criteria for chest radiography in the elderly. Pneumonia may present with no other findings apart from acute confusion or change in behavior.

A non-contrast head CT is best reserved for patients with a worrisome headache, focal neurologic examination, or those at risk for a chronic subdural hematoma (i.e., anticoagulant use or history of falls, seizures, or dialysis).[55] A lumbar puncture and cerebral spinal fluid analysis are indicated in patients with an acute change in mental status who are febrile, have meningeal signs, or who are immunocompromised (even in the absence of fever).

Treatment

Treatment of the patient with altered mental status must begin immediately upon arrival in the ED. First, patients must be prevented from harming themselves or others. The treatment of the agitated patient should if at all possible proceed from the less restrictive to the more restrictive. Begin with calm and comforting surroundings; if this fails, chemical and then, if these prove insufficient, physical restraints may be necessary.

The next priority is to determine whether the patient with altered behavior is medically and behaviorally stable. Any underlying medical precipitants, such as hypoglycemia, hypoxia, or fever, should be treated appropriately. Again, prevention of dangerous physiologic or behavioral deterioration may need to precede the history and physical examination.[56-58]

Because forming an appropriate treatment and disposition strategy depends on the diagnosis, performing a thorough history and physical examination is essential. Patients with medical illnesses must, of course, be treated and/or hospitalized as appropriate.

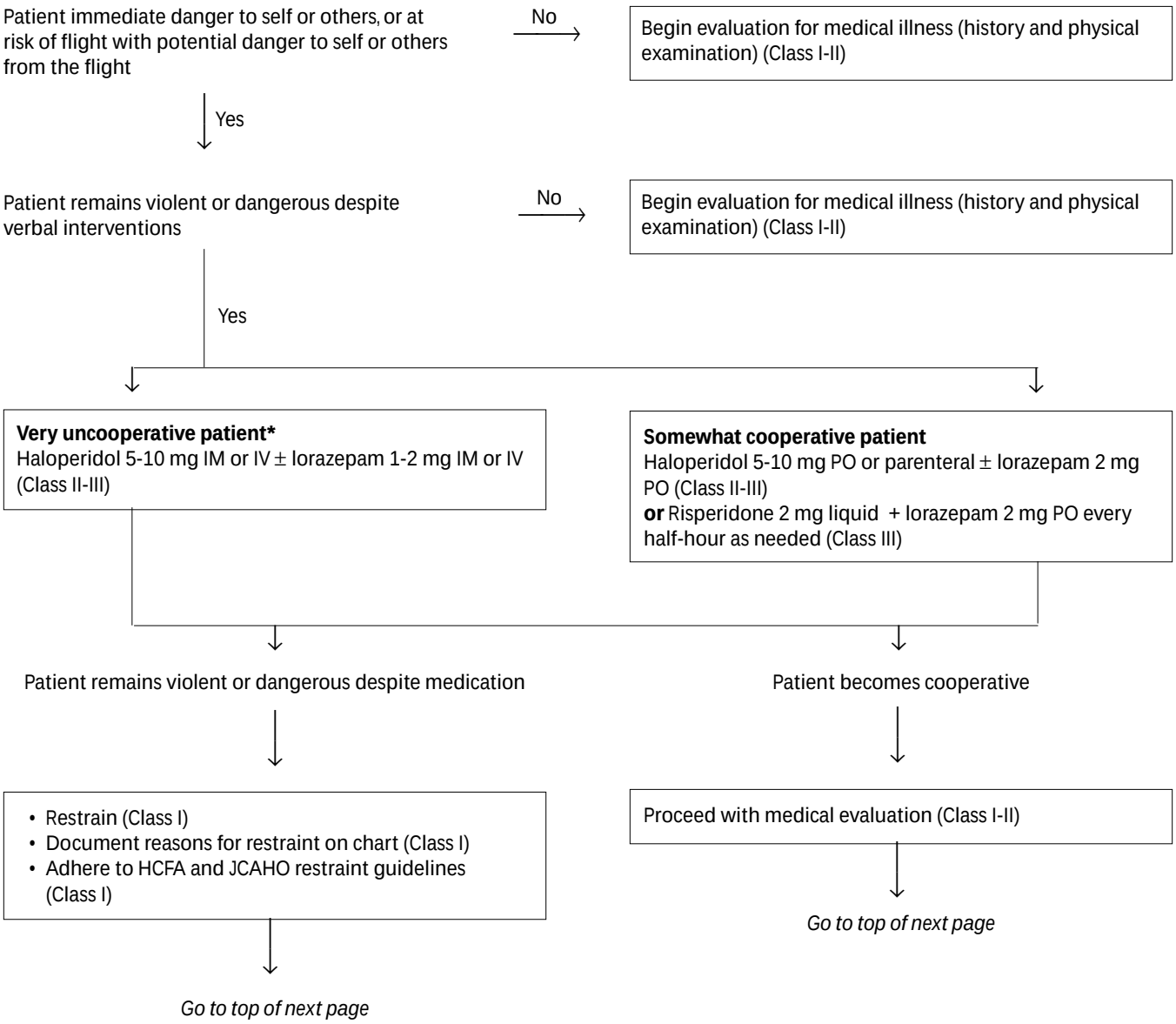
Treatment Of Agitation And/Or Severe Psychosis

Rapid tranquilization involves using a neuroleptic (such as haloperidol) either alone or in combination with a low-dose benzodiazepine (such as lorazepam or midazolam).[60-63] These medications, especially when used together, can rapidly and safely control a wild and dangerous individual within minutes.

If used in isolation, neuroleptics are the preferred approach. In one randomized, double-blind study of 244 patients with delirium, haloperidol or chlorpromazine were superior to lorazepam in controlling symptoms.[64] Some believe that haloperidol (5-10 mg IV q20-30min) is preferred to parenteral chlorpromazine to the latter's propensity for orthostatic hypotension. Others prefer mixing neuroleptics

Continued on page 14

Clinical Pathway: Management And Disposition Of Patients With Behavioral Emergencies

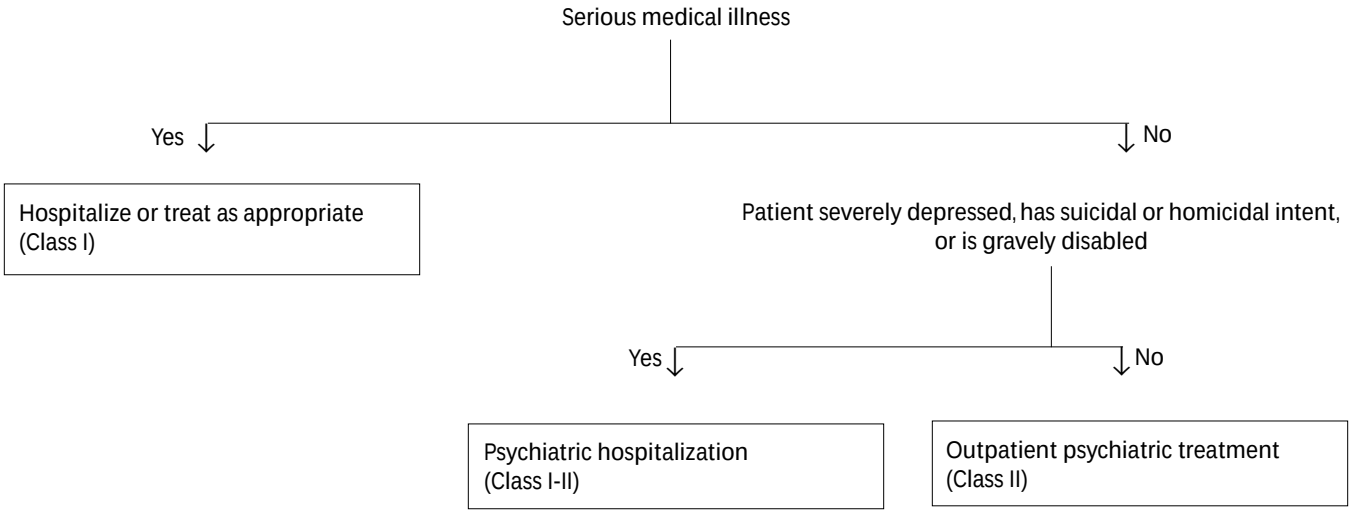


*Some especially combative patients may require restraints prior to sedation

The **evidence for recommendations** is graded using the following scale. For complete definitions, see back page. **Class I:** Definitely recommended. Definitive, excellent evidence provides support. **Class II:** Acceptable and useful. Good evidence provides support. **Class III:** May be acceptable, possibly useful. Fair-to-good evidence provides support. **Indeterminate:** Continuing area of research.

This clinical pathway is intended to supplement, rather than substitute, professional judgment and may be changed depending upon a patient's individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

Clinical Pathway: Management And Disposition Of Patients With Behavioral Emergencies (continued)



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Clinical Pathway: Medical Assessment Of Patients With Behavioral Emergencies

Historical features
- No prior psychiatric history
- Advanced age
- Acute psychosis or delirium
- Began new medication
- Seizure just prior to change in behavior
- Headache

Yes → Consider need for additional diagnostic testing (Class II) *(See "Clinical Pathway: Diagnostic Testing Of Patients With Behavioral Emergencies" on page 13.)*

↓ No

Physical examination
- Abnormal vital signs (check temperature)
- Altered level of consciousness
- Abnormal neurologic exam
- Signs of immunosuppression or IV drug use
- Evidence of a toxidrome
- Evidence of infection or physical distress

Yes → Consider need for additional diagnostic testing (Class II) *(See "Clinical Pathway: Diagnostic Testing Of Patients With Behavioral Emergencies" on page 13.)*

↓ No

Mental status examination
- Disorientation
- Visual hallucinations

Yes → Consider need for additional diagnostic testing (Class II) *(See "Clinical Pathway: Diagnostic Testing Of Patients With Behavioral Emergencies" on page 13.)*

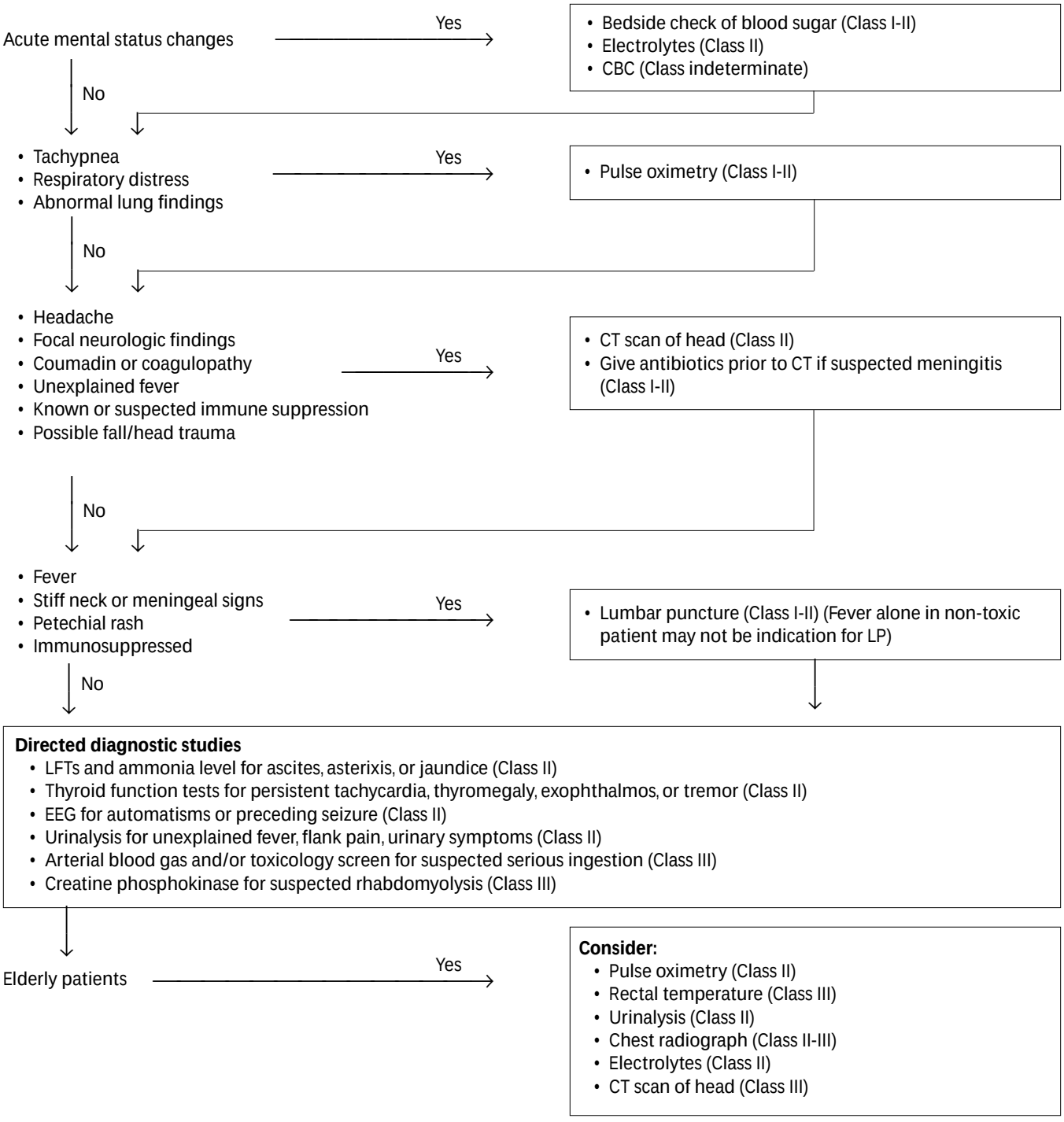
↓ No

Patients with a history of psychiatric illness or similar behavior problems, no worrisome historical features, and a normal physical examination may not require additional testing (Class II)

The **evidence for recommendations** is graded using the following scale. For complete definitions, see back page. **Class I:** Definitely recommended. Definitive, excellent evidence provides support. **Class II:** Acceptable and useful. Good evidence provides support. **Class III:** May be acceptable, possibly useful. Fair-to-good evidence provides support. **Indeterminate:** Continuing area of research.

This clinical pathway is intended to supplement, rather than substitute, professional judgment and may be changed depending upon a patient's individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

Clinical Pathway: Diagnostic Testing Of Patients With Behavioral Emergencies



The **evidence for recommendations** is graded using the following scale. For complete definitions, see back page. **Class I:** Definitely recommended. Definitive, excellent evidence provides support. **Class II:** Acceptable and useful. Good evidence provides support. **Class III:** May be acceptable, possibly useful. Fair-to-good evidence provides support. **Indeterminate:** Continuing area of research.

This clinical pathway is intended to supplement, rather than substitute, professional judgment and may be changed depending upon a patient's individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

Continued from page 9

and benzodiazepines. In several studies, this combination worked faster and required less total medication than using either in isolation.[60] Exercise caution when using these drugs in older populations, as many of the studies in the literature involved only young patients with a primary psychiatric diagnosis and no medical co-morbidities. In geriatric patients, titration of these agents using bolus IM or IV injections may be prudent.

One potent "cocktail" is haloperidol (Haldol) 5 mg IV or 10 mg IM along with 2 mg of lorazepam (Ativan) IM or IV, repeating as necessary. Another approach involves combining oral lorazepam (Ativan) 2 mg and risperidone (Risperdal) 2 mg liquid every half-hour as needed.[65,96]

As mentioned, recent FDA warnings have called attention to the potential risk of droperidol-induced torsades de pointes even when given at low doses (2.5 mg IV). According to the FDA, patients receiving droperidol should have an ECG prior to treatment to assess for a prolonged QT interval (a criterion that will essentially remove this drug from the armamentarium of emergency therapy).[66] While the FDA notice did not address haloperidol, it too may lengthen the QT interval. One study reported that 4 of 1100 patients treated with haloperidol developed torsades de pointes.[67] Other antipsychotic agents can potentially lengthen the QT interval, and quite a few have been implicated in torsades de pointes.[97] Treatment includes cardioversion if the patient is unstable, magnesium, potassium, and pacing.[97]

Physical Restraints

Restraints and seclusion are used as a final response to imminently dangerous behavior when less restrictive measures fail or are not appropriate.[68] This said, physical restraints may be the best approach in some behavioral emergencies and may be life-saving for the patient and the ED staff.

Once the decision to restrain has been made, an experienced team leader must direct the implementation of restraints. The staff must convey confidence, calmness, and firm resolve. To restrain an uncooperative patient, employ at least five people—one for each limb and an extra or team leader. The presence of such overwhelming odds may even calm the patient, thus aborting the need for force. Position the patient on a bed or stretcher, with legs spread apart and arms securely positioned by his or her sides. All four limbs should be secured in order to minimize injury. Restraints should be applied securely to the bed frame. They should be snug without impairing circulation—leave at least one finger-space between the skin and the restraint. After the restraints are applied, consider the use of sedation if the patient remains agitated.

A physician should periodically reassess the need for continued restraints. Assign a sitter to observe for potential restraint complications.[68] When the dust has settled, document the reasons for restraints, rationale why less restrictive methods were not utilized, medications given, course of treatment, and the patient's response.

Special Circumstances

The Elderly

Elderly patients who demonstrate acute behavioral changes are at high risk for adverse outcomes. In this population, altered mental status is a common sequela to infection and other diseases.[5] Evaluation of the mature adult is further complicated by the increasing incidence of dementia as the population ages.[5] An underlying dementia is likely to muddy the diagnostic waters.

During the history, pay special attention to the medications reported. *Nearly 20% of elderly patients brought for emergency psychiatric evaluation may be suffering from a drug reaction.*[69] In recent years, polypharmacy in the elderly patients has steadily increased, as has the incidence of adverse events.

In 1998, a panel of experts made recommendations regarding the management of agitation of elderly patients with dementia.[70] While the panel reviewed the literature, recommendations were based on consensus due to limited data. The panel recommended that high-potency antipsychotics be used to treat delirium due to a general medical etiology in patients with dementia. (Unfortunately, they did not recommend specific drugs, doses, or route of administration.) Risperidone was identified as a second-line therapy.

The Neuroleptic Malignant Syndrome

The neuroleptic malignant syndrome (NMS) affects about 1% of patients treated with neuroleptics. The syndrome most commonly occurs within the first 3-9 days of therapy but can occur after chronic use. The mortality rate in NMS is estimated at 12%-20% and is usually secondary to renal failure or aspiration pneumonia.[71]

NMS is most closely associated with the use of the "high-potency" neuroleptics such as haloperidol and thiothixene. However, other related drugs have also been associated with the syndrome.[72,73]

NMS may be secondary to dopaminergic blockade in the basal ganglia and in the hypothalamus.[74] The syndrome consists of hyperthermia (from 37.5˚C up to 42˚C), autonomic instability, encephalopathy, and skeletal muscle rigidity. Autonomic instability usually involves fluctuations in blood pressure, diaphoresis, and tachycardia. While the diagnosis is clinical, laboratory findings may include increased creatine kinase (CK), leukocytosis, thrombocytopenia, electrolyte disorders, and myoglobinuria.[75,76]

Management involves stopping the neuroleptic and, most importantly, providing meticulous supportive care. Since renal failure is the most common complication in NMS, aggressive hydration is necessary to prevent sludging of myoglobin in the renal tubules. Fluid input and output must be carefully monitored; maintain a urinary output of at least 50-100 cc per hour. Cooling blankets are essential to decrease body temperature; antipyretic agents are not effective. Carefully monitor vital signs and admit patients to an intensive care setting.

Lorazepam may be helpful for sedation and may decrease muscle rigidity. Dantrolene sodium (3-5 mg/kg IV) has been used to treat skeletal muscular rigidity, although

the literature regarding its efficacy is admittedly weak.[77,78] Bromocriptine (5 mg via nasogastric tube) has also been recommended in anecdotal reports.[79] Most treatment approaches have not been well-studied, and at least one author suggests that the various therapies are not only ineffective but may actually prolong the syndrome.[21] As a result, it is not possible to make clear ED treatment recommendations apart from emphasizing supportive care.[80] (While electroconvulsive therapy has been used successfully for refractory NMS,[81-83] it is unlikely to be used in the ED.)

Lethal Catatonia

Lethal catatonia, part of the group of entities known as malignant catatonia, deserves special mention in the differential diagnosis of NMS. It is a syndrome in which mutism, extreme motor excitement, clouding of consciousness, and fever may progress to severe autonomic disturbances, stupor, coma, and death. Like NMS, lethal catatonia can present as an encephalopathy accompanied by fever.[84] Some authors claim that it is not possible to distinguish between NMS and lethal catatonia, while others suggest that catatonia may be a prodrome of NMS. The importance of distinguishing catatonia from NMS lies in the treatment; a benzodiazepine must be added to the pharmacotherapy of any patient suspected of catatonia.[85,86]

Serotonin Syndrome

Selective serotonin reuptake inhibitors (SSRIs) were greeted with enthusiasm due to their low side-effect profile and high degree of therapeutic efficacy. However, this class of drugs may result in a toxic state that resembles NMS.

The serotonin syndrome is characterized by mental status changes and a variety of autonomic and neuromuscular manifestations. In most cases, two or more medications

Ten Excuses That Don't Work In Court

1. "I thought he was crazy—but since he refused the work-up, I let him go home."

All emergency physicians should be expert at assessing capacity. (See **Table 3**.) There are four components of the capacity assessment that should be documented before allowing a patient to refuse care: ability to communicate choice, understanding relevant information, appreciation of the situation and its consequences, and ability to manipulate information. Patients who do not have capacity should be kept in the hospital for evaluation regardless of their expressed desire.

2. "The patient presented as a psych case and not a subdural."

Remember, acute changes in behavior are a medical condition until proven otherwise. In this case, the patient was 60 years old and brought to the ED by his family for bizarre ideation. The patient's neurologic exam was nonfocal, but the family insisted he was "not right."

3. "I sent the patient to the mental health unit because he was disrupting the ED and we were too busy to keep him."

The patient was agitated because he was hypoxic. Even a simple medical evaluation would have demonstrated his low oxygen saturation, distended neck veins, and rales. Congestive heart failure is better treated on a medical ward than in a psych unit.

4. "The patient clearly had neuroleptic malignant syndrome, so I appropriately admitted him to the medicine service."

The problem is that no one saw the patient for over two hours. By the time the medicine service started cooling him down, the patient had severe rhabdomyolysis and ultimately developed acute renal failure. Patients with NMS need aggressive critical care initiated in the ED.

5. "He kept making faces at me and smacking his lips, so I sent him to the psychiatrist, where he belonged."

A careful history would have revealed that the patient's symptoms began after a brief seizure. The patient was in non-convulsive status epilepticus and needed a neurologist—not a psychiatrist.

6. "She was just depressed about her family situation. How was I supposed to know she was suicidal?"

Ask.

7. "I know she was tachycardic…but I thought she just needed some Ativan."

What she really needed was a V/Q scan, and now you need a good lawyer. People who are dying tend to be anxious.

8. "The patient was demented—how was I supposed to tell that his mental status had changed?"

The reason he was brought to the ED was that his family was concerned that he was *more* confused and agitated than usual. The patient was sent home on haloperidol but returned 24 hours later with frank urosepsis. Use the CAM score in patients with dementia. In this case, it was clear there was an acute onset with a fluctuating courses, suggesting a superimposed delirium on his baseline mental status.

9. "She had no signs of pneumonia—no cough, no rales!"

Pneumonia in the elderly may have a paucity of findings. Acute confusion should be enough justification for at least a rectal temperature and pulse oximetry, if not a chest x-ray.

10. "The patient was psychotic, so I admitted him to psychiatry."

A careful exam would have revealed an ophthalmoplegia and ataxia. Both the emergency physician and the psychiatrist missed the diagnosis of Wernicke's encephalopathy. The cruelest blow of all was that it was diagnosed by a rotating medical student on the psychiatry service. ▲

known to increase the activity of serotonin are implicated. In the majority of cases, symptoms develop soon after the addition of a new agent or a change in the dose of one already being taken.[87] The syndrome can result when an SSRI is started even weeks after an monoamine oxidase inhibitor (MAOI) has been discontinued, although this is less frequent in the case of newer MAOIs.[88]

The serotonin syndrome includes encephalopathy, hyperreflexia, nausea, vomiting, and marked autonomic instability.[89] A comprehensive medication history can help distinguish it from NMS and other encephalopathic states. Altered mental status occurs in approximately 40% of patients.[89] Patients are usually agitated, restless, or even hypomanic, although some show CNS depression. Neuromuscular symptoms include myoclonus, rigidity, and tremor. Hyperreflexia, especially in the lower extremities, is common. Diaphoresis and mild elevations in temperature are seen in about half of cases. Laboratory values rarely show significant abnormalities, but rhabdomyolysis, hyperkalemia, renal failure, and disseminated intravascular coagulation (DIC) have occasionally been reported.

Despite the similarities between NMS and serotonin syndrome, there are clinical features that help distinguish the two. NMS is more likely to present with extrapyramidal signs, very high fevers, dysphagia, incontinence, and sialorrhea. The serotonin syndrome, on the other hand, is more likely to present with myoclonus, hyperreflexia, and ataxia. Diarrhea, diaphoresis, and vomiting are also common.

The serotonin syndrome usually resolves without incident once the inciting agent has been discontinued. Supportive measures include intravenous hydration, monitoring of the patient's vital signs, and seizure precautions. Benzodiazepines can control muscle contractions and prevent rhabdomyolysis and respiratory compromise.[90] Specific treatments, including serotonin antagonists such as cyproheptadine and methysergide, have been proposed; however, no well-designed studies have been performed.[99]

Non-convulsive Status Epilepticus

Non-convulsive status epilepticus (NCS), like convulsive status epilepticus, is a state of continuous or intermittent seizure activity lasting more than 30 minutes without a return to baseline function. The hallmark of NCS is altered mental status, which can range from subtle behavioral changes to paranoia to coma. Therefore, unless it is suspected, the diagnosis can easily be missed.[91,92]

One author reported that 10% of patients with altered mental status of undetermined etiology after a laboratory and neuro-diagnostic evaluation were in NCS.[93] Another estimated that 25% of cases of status epilepticus involve non-convulsive status. This would translate into approximately 30,000 cases of non-convulsive status epilepticus each year in the United States.[94] NCS can occur on a continuum with convulsive seizures. Up to 15% of patients with a prolonged postictal period after *convulsive* status epilepticus may be suffering from NCS.[95]

NCS is easily suspected if the change in mental status follows a motor seizure or if a patient with altered behavior displays automatisms such as lip-smacking or repetitive motor movements. The diagnosis is more difficult if these findings are absent.

While a stat EEG can confirm the diagnosis of NMS, these may be difficult to obtain in a small ED in the middle of the night (or even in a large ED in the middle of the day). A neurology consult can be a useful alternative.

NCS is highly responsive to benzodiazepines (either diazepam or lorazepam). Some clinicians recommend a test dose of a benzodiazepine in cases of suspected NCS when EEG monitoring is not available. Benzodiazepines are not effective agents for long-lasting seizure control; therefore, when indicated, a second long-acting anticonvulsant needs to be administered.

Disposition

The ultimate disposition of the patient with a behavioral emergency is particularly daunting. Serious medical illness must be detected or ruled out. This involves formulating a differential diagnosis and rapidly excluding life threats. The likelihood of such threats is based upon the history and physical examination—most notably, the presence of prior psychiatric disease, age, vital signs, and neurologic examination. Patients with altered behavior due to organic disease usually require hospitalization (and *not* on a psychiatric ward). Coincident with evaluating for serious medical disease, determine whether the patient is a danger to self or others. Patients who are severely depressed, might be a danger to themselves or others, or who are gravely disabled must be referred for psychiatric hospitalization.

Summary

Emergency physicians are frequently expected to perform a "medical clearance" on patients with behavioral emergencies. The term "medical clearance" is a misnomer; "medical assessment" is more appropriate. A careful history and physical will distinguish most patients with an acute medical process from those with a primary psychiatric problem. Findings consistent with an organic illness include new behavioral symptom after age 40,[23,26,37] sudden onset of psychosis or delirium,[23] the presence of a toxidrome, visual hallucinations,[11] disorientation, altered level of consciousness, symptoms that began after starting a new medication, and abnormal vital signs.

Diagnostic testing is best reserved for those with suspicious findings on clinical examination. Such tests should be directed toward answering specific questions. The literature does not support a "shotgun" approach to medical assessment.

If the altered behavior is acute in onset, search for reversible etiologies. This is particularly true in cases of acute delirium. It is not sufficient to determine that the patient needs a medical or psychiatric admission; rather, it is critical that dangerous conditions—including suicidal ideation—be ruled out. ▲

References

Evidence-based medicine requires a critical appraisal of the

literature based upon study methodology and number of subjects. Not all references are equally robust. The findings of a large, prospective, randomized, and blinded trial should carry more weight than a case report.

To help the reader judge the strength of each reference, pertinent information about the study, such as the type of study and the number of patients in the study, will be included in bold type following the reference, where available. In addition, the most informative references cited in the paper, as determined by the authors, will be noted by an asterisk (*) next to the number of the reference.

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Physician CME Questions

33. All of the following are true *except:*
- a. It is rare for a patient to have a psychiatric disorder in conjunction with a substance abuse disorder.
- b. About 4% of all ED visits are for a behavioral problem.
- c. Patients with a primary addictive disorder may have higher rates of mental illness.
- d. Altered mental status is more prevalent among patients older than 70 vs. younger patients.

34. Which of the following types of illnesses may cause behavioral changes?
- a. Infectious
- b. Pulmonary
- c. Thyroid
- d. Diabetic
- e. All of the above

35. Behavioral emergencies among elderly patients:
- a. present a comparatively lower risk for adverse outcomes.
- b. may due to a drug reaction.
- c. are usually due Alzheimer's disease.
- d. rarely occur due to underlying infections or other medical processes.

36. All of the following are true regarding the prehospital care of patients with behavioral symptoms *except:*
- a. Patients with an acute behavioral disturbance who refuse transport against medical advice may be at risk for an adverse outcome.
- b. When in doubt regarding the patient's ability to make informed decisions, the medic's best course of action is to transport, especially if the potential for an adverse medical event is high.
- c. Compassion, a calm demeanor, and an offer of help may encourage patient cooperation.
- d. There is a nationwide protocol regarding the prehospital use of physical and chemical restraints.

37. All of the following characterize delirium *except:*
- a. It is a disturbance of consciousness that occurs over a short time and primarily affects attention, with subsequent impairment of other cognitive functions.
- b. Memory impairment usually involves the distant past and not recent memory.
- c. The disturbance develops abruptly and often fluctuates over the course of the day.
- d. Delirium is common in patients 65 years and older.

38. All of the following are true about psychosis *except:*
- a. Psychosis disrupts perceptions and disorganizes thinking to a degree that interferes with social interactions.
- b. It can be psychiatric or medical in origin.
- c. Medical causes of psychosis may include a structural lesion, biochemical abnormality, or physiological disturbances of the brain.
- d. A medical etiology for psychosis is very unlikely in new-onset cases in patients older than 40.

39. All of the following are true of depression *except:*
- a. Endocrine or metabolic disorders, as well as medications, are common causes of depression.
- b. A diagnosis of a major depressive disorder requires alterations in mood, psychomotor activity, and cognition.
- c. Simple questions like "Are you often downhearted and blue?" rarely identify depression.
- d. Most cases of depression go undiagnosed by emergency physicians.

40. All of the following are true of mania *except:*
- a. Mania rarely interferes with job performance and personal relations.
- b. The main symptom of mania is a persistently elevated, expansive, or irritable mood.
- c. Delusions or hallucinations may also occur.
- d. Patients with new-onset mania and no psychiatric history must be evaluated for a potential causative medical condition.

41. Upon presenting to the ED, patients with altered mental status:
- a. should be undressed and searched for weapons.
- b. should be referred to the psychiatrist on call.
- c. should be referred to the psychiatrist on call only if they have a known history of mental illness.
- d. should be separated from any family members who are present.

42. A complete history of a patient who presents with altered mental status should include:
- a. a list of medications the patient is taking.
- b. time and rapidity of onset.
- c. past medical and psychiatric history.
- d. the patient's alcohol and illicit drug use.
- e. all of the above.

43. All of the following are important criteria in identifying patients with a medical illness *except:*
- a. disorientation.
- b. abnormal WBC count.
- c. abnormal vital signs.
- d. clouded consciousness.
- e. age over 40 with no previous psychiatric history.

44. A physical examination should be performed in patients with altered mental status:
- a. only if the emergency physician deems it necessary based on the patient history.
- b. only if chemical or physical restraints have been administered.
- c. only if the patient will not be admitted to a psychiatric facility.
- d. in all cases.

45. Fever in conjunction with altered mental status:
- a. is a sign of the patient's agitation.
- b. usually subsides on its own within one hour.
- c. mandates consideration of such lethal conditions such as sepsis, meningitis, or drug-induced hyperthermia.
- d. is rarely a worrisome finding.

46. Which of the following laboratory tests should be *routine* in all patients with new-onset altered mental status?

a. CBC
b. Bedside glucose
c. Urinalysis
d. Drug and alcohol screening
e. All of the above

47. Which of the following is *not* present in neuroleptic malignant syndrome?

a. Hypothermia
b. Autonomic instability
c. Encephalopathy
d. Skeletal muscle rigidity

48. The presence or absence of a past psychiatric history is one of the most important determinants of psychiatric vs. medical illness.

a. True
b. False

Class Of Evidence Definitions

Each action in the clinical pathways section of *Emergency Medicine Practice* receives an alpha-numerical score based on the following definitions.

Class I
- Always acceptable, safe
- Definitely useful
- Proven in both efficacy and effectiveness

Level of Evidence:
- One or more large prospective studies are present (with rare exceptions)
- High-quality meta-analyses
- Study results consistently positive and compelling

Class II
- Safe, acceptable
- Probably useful

Level of Evidence:
- Generally higher levels of evidence
- Non-randomized or retrospective studies: historic, cohort, or case-control studies
- Less robust RCTs
- Results consistently positive

Class III
- May be acceptable
- Possibly useful
- Considered optional or alternative treatments

Level of Evidence:
- Generally lower or intermediate levels of evidence
- Case series, animal studies, consensus panels
- Occasionally positive results

Indeterminate
- Continuing area of research
- No recommendations until further research

Level of Evidence:
- Evidence not available
- Higher studies in progress
- Results inconsistent, contradictory
- Results not compelling

Significantly modified from: The Emergency Cardiovascular Care Committees of the American Heart Association and representatives from the resuscitation councils of ILCOR: How to Develop Evidence-Based Guidelines for Emergency Cardiac Care: Quality of Evidence and Classes of Recommendations; also: Anonymous. Guidelines for cardiopulmonary resuscitation and emergency cardiac care. Emergency Cardiac Care Committee and Subcommittees, American Heart Association. Part IX. Ensuring effectiveness of community-wide emergency cardiac care. *JAMA* 1992;268(16):2289-2295.

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Needs Assessment: The need for this educational activity was determined by a survey of medical staff, including the editorial board of this publication; review of morbidity and mortality data from the CDC, AHA, NCHS, and ACEP; and evaluation of prior activities for emergency physicians.

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Publisher: Robert Williford. **Vice President/General Manager**: Connie Austin.
Executive Editor: Heidi Frost.

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1-800-249-5770 Fax: 678-366-7934
EB Practice, LLC / 305 Windlake Court / Alpharetta, GA 30022
E-mail: **emp@empractice.net**
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Emergency Medicine Practice (ISSN 1524-1971) is published monthly (12 times per year) by EB Practice, LLC, 305 Windlake Court, Alpharetta, GA 30022. Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. This publication is intended as a general guide and is intended to supplement, rather than substitute, professional judgment. It covers a highly technical and complex subject and should not be used for making specific medical decisions. The materials contained herein are not intended to establish policy, procedure, or standard of care. *Emergency Medicine Practice* is a trademark of EB Practice, LLC. Subscription price: $249, U.S. funds. (Call for international shipping prices.)