Evaluation and Management of Psychotic Patients in the Emergency Department

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Emergency departments (EDs) have assumed an increasing role in the provision of acute psychiatric care in recent years.[1] Major factors accounting for this trend are the ongoing deinstitutionalization of mentally ill patients and the nationwide epidemic of substance abuse.[1] Psychiatric patients may present to the ED with various disorders that may include functional or toxic/metabolic psychosis, the behavioral side effects of medications, complications of substance abuse, and coexisting medical and psychiatric illnesses. Delirium and dementia are the most frequent non–drug related nonfunctional causes of psychosis seen in the ED. Caring for psychotic patients presents special challenges because the history in these patients is often poor or unobtainable. In addition, such patients lack insight into their illness and may present with bizarre affect, agitation, and violent behavior.

This article discusses the evaluation and management of psychotic patients in the ED in terms of physical illness in the psychiatric patient; screening for medical and psychiatric illness; history and physical examination; management of the violent, agitated, or disruptive patient; and psychiatric evaluation. Substance abuse in this patient population is also discussed.

GENERAL PRINCIPLES

Psychosis, which is predominantly characterized by the presence of delusions and/or hallucinations and may also include incoherent speech and disorganized behavior, is a defining feature of the major functional disorders, including schizophrenia, mania, major depression, and reactive psychoses. Several clinical characteristics serve to differentiate these major classes of psychoses.[2] Although some clinical presentations overlap, the following findings are useful in the initial evaluation:[2]

- Patients with manic disorders are generally more delusional and grandiose and tend to have higher levels of social functioning than other psychotic patients

- Patients with schizophrenia usually present with prominent thought disorders, flight of ideas, and loose associations; gradual, progressive deterioration in work and social relationships characterizes the clinical course

- Patients with psychotic depression often present with delusions colored by severely depressed mood but rarely with incoherent speech

- Patients with delirium, a nonfunctional disorder, can display both delusions and hallucinations but more characteristically are disoriented, inattentive, distractible, and confused

Most important, any of the functional disorders may mimic psychosis caused by a toxic/metabolic disorder. Misdiagnosing a patient as having a functional psychotic disorder when a nonfunctional disorder is responsible not only confers a social stigma on the patient but also can result in inappropriate management. A study by Lewis et al[3] concluded that emergency medicine physicians discharged approximately 38% of patients who were separately determined to have severe delirium. Of greater importance was this study's finding that the mortality rate in the discharged patients during the 3 months after discharge was 14%. **Table 1** lists potential causes of psychosis that can be life threatening.

MEDICAL CLEARANCE OF PSYCHIATRIC PATIENTS
Physical Illness in Psychiatric Patients in a Psychiatric Inpatient Setting

The available literature amply demonstrates that physical illness in psychiatric patients is underdiagnosed. In a study by Summers et al,[4] physical examinations were performed on 75 unselected psychiatric inpatients in an attempt to determine the incidence of undiagnosed

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medical conditions in this population. Medical conditions directly contributing to psychiatric symptoms were found in 19% of the study cohort. Forty-three percent of the patients had clinical findings leading to evaluation for psychiatric diagnoses other than the admitting diagnosis.

Hall et al[5] concluded that medical illness directly causing or exacerbating psychiatric symptoms was present in 46% of a series of 100 psychiatric inpatients. Psychiatric pathology resolved in 60% of such cases after medical treatment for the responsible disorder. An additional 33% of patients were found to have a previously unrecognized physical illness that was unrelated to the psychiatric condition but required medical treatment.

Despite these findings, other studies have documented that psychiatrists often do not perform physical examinations on patients newly admitted to a psychiatric unit.[6] Surveys have found that psychiatrists may omit these examinations because they consider themselves as no longer competent in diagnosis of a physical rather than a mental disorder.[6]

Physical Illness in Psychiatric Patients in the Emergency Department

Although medical screening in the ED of psychiatric patients should diagnose associated illnesses, such screening may be cursory and incomplete. Tintinalli et al[7] documented that most patients who were medically cleared from the ED for transfer to a psychiatric unit had no documentation of mental status during the initial evaluation. In addition, a substantial percentage of psychiatric patients required transfer to medical wards for further medical management within 24 hours after admission. Tintinalli et al[7] also concluded that, if physical examination and appropriate laboratory studies had been performed, more than 80% of psychiatric patients requiring acute medical intervention would have been identified.

Medical and Psychiatric Screening of Psychiatric Patients in the Emergency Department

Although a thorough medical evaluation is clearly essential for all patients presenting to the ED with psychiatric symptoms, the extent of laboratory screening and the most appropriate psychiatric examination to perform in this setting are controversial. Laboratory screening tests commonly performed for this indication include complete blood count, electrolyte levels, pulse oximetry, alcohol level, and urine toxicology studies. The indications for head computed tomography (CT) scanning and lumbar puncture are less clear-

Table 1. Life-Threatening Causes of Psychosis

Central nervous system or systemic infection
Collagen vascular disease
Drug overdose or intoxication
Head trauma
Hypertensive crisis
Hypoglycemia
Hypoxemia
Sedative-hypnotic agent withdrawal
Thyrotoxicosis

ly defined. These tests should be considered when central nervous system (CNS) pathology is suspected or when the preliminary work-up is unrevealing. Ordering such comprehensive laboratory tests adds significantly to the cost of evaluation of psychotic patients in the ED; however, these additional costs appear to be justified by the literature. Several studies document the inadequacy of history and physical examination alone to reliably detect associated medical, traumatic, or toxic illness causing psychiatric presentation in these patients.[7,8]

Findings in clinical studies. A classic article by Purdie et al[8] evaluated 100 consecutive patients admitted to a teaching hospital with delirium and found that 44% of patients suffered from unsuspected exacerbation of chronic organic brain syndrome. The leading causes accounting for de novo presentations in the remaining 56% of patients were drug ingestion, infection, electrolyte disorders, alcohol-related conditions, endocrine dysfunction, organ failure, stroke, head injury, hypertensive crises, and seizures. Migraines, direct or remote effects of malignancy, acute myocardial infarction, and Korsakoff's syndrome were responsible in a small percentage of cases.

These findings were reinforced and extended to the ED setting in a 1994 study by Henneman et al.[9] One hundred alert, adult consecutive patients with new psychiatric symptoms on presentation to the ED were studied. Patients were included if "a functional etiology for their symptoms was considered possible."[9] Almost two thirds of this patient cohort presented with agitation, disorientation, or both. Patients with obvious alternative causes for their psychosis such as alcohol or drug use, patients with symptoms consistent with prior psychiatric disorders, psychiatric patients with medical complaints, and suicidal patients were excluded. A standardized evaluation was used in all patients. This

evaluation included complete blood count, electrolyte levels, urinalysis, and creatine phosphokinase level if urinalysis was positive for blood without erythrocytes. Head CT and lumbar puncture were performed in select cases. The authors found that 63% of the patients had a toxic/metabolic etiology for their symptoms or had findings resulting in hospital admission for medical rather than psychiatric indications. The majority of nonfunctional causes were toxic psychoses, predominantly related to drugs or alcohol. Other less common etiologies included metabolic or electrolyte disturbances and systemic illness, dementia, hypothyroidism, HIV-related illness, meningitis, postictal states, stroke, hydrocephalus, and cysticercosis.

General recommendations. Although clinical features alone cannot reliably distinguish between functional and toxic/metabolic etiologies of psychotic behavior, some general guidelines can be discussed.[8,9] All patients must undergo a thorough history, physical examination, and psychiatric evaluation. Initial priorities of a mental status work-up in the emergency department must include assessment and stabilization of airway, breathing, and circulation; administration of thiamine; determination of oxygen saturation; fingerstick glucose measurement; and consideration of naloxone administration. Some patients may require physical and/or chemical restraint prior to examination. Techniques for management of the violent or agitated patient are discussed later in this article.

The extent of screening, laboratory evaluation, and more invasive testing must be considered on an individual basis. For example, patients with mild psychiatric symptoms secondary to noncompliance with neuroleptic medication probably do not need a full laboratory evaluation.[10] However, the high incidence of substance abuse and undiagnosed or untreated medical illness among psychiatric patients mandates that a high index of suspicion be maintained for organic illnesses, even in otherwise "stable" patients. As a general rule, all patients with new-onset psychosis, particularly patients older than age 35 years, require laboratory screening including electrolyte levels, calcium level, toxicology screening, and serum alcohol level. Presentation of the elderly patient with new psychotic symptoms should further raise suspicion for a toxic/metabolic etiology.[9] Side effects of prescription or nonprescription medications, occult malignancy, cerebrovascular accident, and even acute myocardial infarction are some of the other considerations in this age group. If CNS infection or head trauma is suspected or if all other studies have been uninformative, head CT, lumbar puncture, or both may be warranted. Psychosis or agitation caused

by toxins may have concurrent cardiac manifestations, in which case an electrocardiogram may be useful.[11] Certainly, all patients with abnormal vital signs, severe agitation, violent behavior, or focal deficits require comprehensive evaluation.[9]

HISTORY AND PHYSICAL EXAMINATION
History of Current Episode

Lack of any previous psychiatric history should heighten suspicion of toxic/metabolic causes for new-onset psychosis.[12] Although a previous psychotic disorder may suggest a functional cause, potential exacerbation or precipitation of psychosis by medical illness, trauma, or substance abuse in mentally ill patients must always remain a consideration. Functional psychosis generally presents with gradual onset of symptoms during early adulthood. Overt illness is preceded by a prolonged prodromal period during which patients exhibit progressive deterioration from their baseline social functioning.[12] In contrast, rapid onset and progression of illness suggest toxic, metabolic, or traumatic causes.

Medical History

The patient or available relatives, friends, neighbors, coworkers, emergency medical services personnel, or law enforcement agents who may be able to provide information should be questioned regarding the circumstances surrounding the patient's current illness. Specific points of interest include the patient's premorbid functioning, previous psychiatric history, alcohol use, substance abuse, recent injury, medical history, and medication use. Presence of any neurologic symptoms, including confusion, slurred speech, focal deficits, ataxia, headache, and incontinence, should be elicited. The review of systems should emphasize organ system malfunction associated with behavioral changes, including endocrine, hepatic, renal, pulmonary, and neurologic systems.

Medications, Toxins, and Substance Abuse

Prescription and nonprescription medications. Patients should be questioned about the use of antidepressants, cardiovascular drugs, stimulants, anticonvulsants, sedative-hypnotic agents, neuroleptics, antiparkinsonian drugs, antibiotics, and other prescription medications (**Table 2**). Because patients may not consider nonprescription drugs to be medications, details about nonprescription medications must be specifically elicited. For example, antihistamines and decongestants possess substantial anticholinergic and sympathomimetic properties, both of which may result in psychotic symptoms.

Substance abuse. Eliciting a history of illegal drug use is especially important because drug intoxication is often misdiagnosed as an acute psychiatric illness. Patients with psychotic illness have a high incidence of coexisting substance abuse, estimated at between 39% and 50%.[13] A National Institute of Mental Health survey determined that patients with mental disorders have a twofold greater rate of alcohol abuse and a nearly fourfold greater incidence of drug abuse than the general population.[14] Although a recent study suggested that ED patient self-reporting of alcohol and substance abuse was reliable, many other investigators have published contrary results.[13–15] McNagny and Parker[15] found patient self-reporting of cocaine use to be unreliable when compared with urinary cocaine metabolite assays. Reliability of self-reporting of drug use is further decreased by the fact that street drugs are often adulterated with other substances or that drug identity may be misrepresented by drug dealers. In another study, Dhossche and Rubinstein[16] concluded that a structured clinical psychiatric interview specifically designed to identify substance abuse identified only 45% of patients positive for cocaine metabolites on urinary drug testing.

Because substance abuse may potentiate psychotic symptoms, high alcohol levels and positive urine drug screens may affect ED decisions regarding patient disposition. In particular, patients intoxicated with alcohol tend to require higher levels of behavior management while undergoing evaluation in the ED. Such patients have lower admission rates because their psychiatric symptoms dissipate with return of their blood alcohol level to normal.[13] Psychotic symptoms attributed to toxins in association with a positive urine drug screen may result in admission for substance abuse/substance-induced psychosis rather than for functional psychosis.

Presentation and evaluation. Intoxication with or withdrawal from various illicit or prescription drugs may present as agitation, hallucinations, or violent behavior. Serum and urine toxicology tests may be useful in supporting suspicion of these substances, ruling out unsuspected co-ingestions, and establishing the role of drugs in multiple trauma cases. However, results of drug screens frequently are not reported back from the laboratory in time to affect ED clinical decision making.[17] Further, toxin levels do not necessarily correlate with the severity of intoxication. Evaluation of clinical presentation using toxicologic syndromes, or toxidromes, associated with different drug classes allows the clinician to begin effective, empiric therapy based on the likely causes.

Intoxication with cocaine, phencyclidine (PCP),

Table 2. Medications Associated with Psychotic Symptoms

Antihistamines	Corticosteroids
Appetite suppressants	Digitalis glycosides
Anticholinergic agents	Histamine$_2$-blockers
Antidepressants	Neuroleptics
Anticonvulsants	Opioids
α-Adrenergic blocking agents	Salicylates
	Theophylline
Barbiturates	Thyroid hormone
β-Blockers	

amphetamines, lysergic acid diethylamide, and other drugs of abuse may present as features of the sympathomimetic toxidrome. Milder levels of intoxication with these agents present as agitation, tremulousness, and anxiety. Physical examination in such cases may reveal dilated, reactive pupils; resting tremor; brisk reflexes; myoclonus; and cool, pale skin. Moderate tachycardia, hypertension, and a low-grade fever are characteristic vital signs at this stage. More severe intoxication may be associated with florid psychotic symptoms indistinguishable from acute schizophrenia, including delusions, hallucinations, disorientation, and confusion.

Although neither clinicians nor patients can reliably distinguish among sympathomimetic agents such as cocaine or PCP by their clinical effects, some features may aid in making this distinction.[18] A rapidly waxing and waning mental status alternating over minutes between severe agitation and catatonic posturing with staring is especially characteristic of PCP intoxication. Recurrent fluctuating symptoms occur with PCP as the drug is released from depot sites in adipose tissue and because of variations in "trapping" of the drug in the acid milieu of the stomach. A distinguishing feature of PCP-intoxicated patients can be found on the pupillary examination. Although the pupils may be dilated, similar to cocaine toxicity, they may also be midposition or miotic. Rotatory or vertical nystagmus is more helpful in diagnosing PCP intoxication. One study found that nystagmus and hypertension were each found in 57% of PCP-intoxicated patients.[18] Therefore, the presence of nystagmus in an agitated, hypertensive patient should suggest PCP intoxication. Nystagmus is also frequently encountered in the setting of sedative-hypnotic or anticonvulsant overdose, often associated with flaccid musculature, depressed mental status, and hypoventilation.

Vital Signs

Abnormal vital signs are very important clues to diagnosing nonfunctional disorders.[9] In general, any abnormal vital sign must be explained. Patients with acute psychiatric illness may present with abnormal vital signs, but other potential causes must always be excluded. For example, tachycardia should suggest causes such as sympathomimetic toxicity, anticholinergic drug ingestion, infection, alcohol withdrawal, or hyperthyroidism. Bradycardia may be associated with hypothyroidism, digitalis poisoning, β-blocker toxicity, and increased intracranial pressure. Fever is associated with infection, thyrotoxicosis, sedative-hypnotic agent withdrawal, delirium tremens, tricyclic antidepressant and neuroleptic toxicity, sympathomimetic drug ingestion (eg, cocaine, amphetamines, PCP), and CNS disease.

Head and Neck Examination

Signs of trauma to the head and neck region include contusions, Battle's sign, hemotympanum, and neck tenderness. Evaluation of extraocular movements may provide valuable clues to drug toxicity, including PCP toxicity, which may present as rotatory, horizontal, vertical, or mixed nystagmus. Mydriatic pupils suggest sympathomimetic toxicity. Epistaxis or perforation of the nasal septum suggests cocaine abuse. Lateral tongue lacerations are consistent with recent seizure. Examination of the neck region should determine airway patency, thyroid pathology, spine tenderness, evidence of trauma, and signs of meningeal irritation.

Neurologic Examination

Neurologic examination includes assessment for motor strength and cerebellar function. Abnormal speech quality such as pressured pace suggests manic illness or sympathomimetic drug effect, and slurred speech may be secondary to CNS pathology or sedative-hypnotic intoxication. Hyperactive reflexes may occur with hyperthyroidism, lithium poisoning, or sympathomimetic toxicity. Hypoactive reflexes are consistent with hypothyroidism, sedative-hypnotic toxicity, or deep coma from any cause.

In the past, some authors have suggested that auditory hallucinations are characteristic of functional psychosis whereas visual, olfactory, and tactile hallucinations increase the probability of toxic/metabolic psychosis.[12] However, substantial overlap exists between functional and nonfunctional psychosis in the character of hallucinations. For example, Henneman et al[9] found that the sensory modality through which hallucinations were experienced was not helpful in discriminating between toxic/metabolic and functional causes of psychosis. One exception, formication (the delusion of bugs crawling under or on the skin), appears to be quite specific for intoxication with numerous drugs, including PCP, cocaine, and anticholinergic agents. Presence of command hallucinations, voices heard commenting on the patient's behavior, audible thoughts, thought withdrawal, or thought broadcasting increases the probability of a functional disorder.[19] In general, the type of hallucinations may give some indication of etiology in a broad sense (ie, functional versus toxic or metabolic). However, the types of hallucinations overlap substantially among disorders, and the character of hallucinations should not be relied on as the only criterion to establish cause.

MANAGEMENT OF VIOLENT, AGITATED, OR DISRUPTIVE PATIENTS
Physical and Chemical Restraint

Agitated, violent patients are frequently brought into the ED in the custody of police, often against the patient's will. The violent behavior and verbal outbursts of such patients are disruptive to ED functioning and make their physical examination and psychiatric evaluation impossible. Thus, the first priority is to achieve control and stabilization of such patients before they harm themselves or others. Although some of these patients can be "talked down" with empathetic, supportive verbal interaction, many of these patients require some combination of physical and chemical restraint before further evaluation is possible.[20,21]

Certain elements of the patient's history and presentation have been found to be useful in predicting potential for violence and the need for restraint.[22] These factors include a history of violent behavior, a police arrest record for violent crimes, a known diagnosis of paranoid or manic disorder, participation in a violent subculture (eg, gangs), drug intoxication, or withdrawal from drugs and alcohol. Certain expressions of physical demeanor, such as tense, aggressive posture; clenched fists; marked agitation (eg, the patient who continually paces); shouting; and threatening speech, also strongly indicate a potential for violence.

Violent patients who present a danger to themselves or others or who make evaluation impossible require restraint. Mildly agitated patients may respond to efforts to calm them. Speaking in a quiet, reassuring voice; offering food or drink; or allowing them time to "cool off" may be effective. If none of these measures succeeds, then the need for restraint should be explained to the patient. The patient may be given the choice of physical or chemical restraint and offered a final opportunity for voluntary cooperation. If this

measure fails, then restraint should be instituted without further negotiation.

Hospital security protocols should mandate that sufficient personnel are immediately available to serve as a show of force or for safe restraint of violent patients. Once brought under control, violent patients should be placed in three- or four-point restraints and positioned lying on either side to minimize the potential for aspiration. In an agitated patient, physical restraint should only be used long enough to allow the administration of drugs to achieve chemical restraint. Advantages of chemical restraint include improved cooperation with physical examinations and decreased potential for violence or self-injury, particularly rhabdomyolysis or hyperthermia caused by struggling against restraints.[21]

Although physical and/or chemical restraint is ideally administered to a patient with a known history and after a full examination, this is not always possible. Severely agitated patients are difficult to examine before restraint. Further, patients may harm staff members or themselves if physical and/or chemical restraint is not administered expediently.

Pharmacologic Principles of Chemical Restraint

Neuroleptics and benzodiazepines are the drugs of choice for control of violent, combative, or agitated patients. These agents have replaced barbiturates, which were commonly used for this purpose until the 1970s.[23,24] Although barbiturates provide adequate sedation, these drugs have a low toxic-therapeutic ratio. Barbiturates are associated with substantial risks, including drug interactions as well as cardiac and respiratory depression. Consequently, barbiturates have been supplanted as first-line agents for this indication.

Rapid Tranquilization

The technique of rapid tranquilization (RT) has gained widespread support for use in this patient population. This method uses high-potency neuroleptic drugs such as haloperidol, thiothixene, and droperidol, administered either alone or in combination with benzodiazepines, including diazepam, lorazepam, and midazolam. These agents are generally given via the intramuscular (IM) or intravenous (IV) route at 10-minute to 30-minute intervals and are administered to an end point of sedation.

The main goal of RT is to control agitation, violence, and excess psychomotor activity, not to quicken the resolution of psychotic symptoms. In fact, studies have demonstrated that the speed of remission of psychotic thought processes and hallucinations is not affected by rapid "front-loading" with neuroleptic

drugs.[22] RT has been demonstrated to be an effective method of sedation regardless of whether a functional or a toxic/metabolic psychosis is responsible for patient agitation.[22] Numerous studies conclude that RT with haloperidol is effective for agitation secondary to PCP, amphetamine, and alcohol intoxication.[25]

RT with neuroleptic agents may be accomplished using IV, IM, or oral administration. No definitive studies have demonstrated more rapid onset of action with IV compared with IM administration. In any case, establishment of IV access is often not possible at the outset in acutely agitated, combative patients. Onset of action after IM administration using high-potency neuroleptics such as haloperidol is usually within 10 minutes, and sufficient sedation occurs within 30 to 90 minutes using one to three doses. Oral administration is an option in cases with less severe agitation; however, this route suffers from the disadvantage of delayed onset of action compared with the IM or IV route. A significant psychological advantage provided by oral administration is that patients feel that they are active participants in their treatment as opposed to passive recipients of a therapy that is being imposed on them. Oral administration of neuroleptics is appropriate for only a small percentage of acutely agitated patients in the ED setting.[22]

Choice of pharmacologic agent. Although haloperidol is probably the most widely used neuroleptic agent for RT, several studies have suggested that droperidol may be preferable to haloperidol. A study by Thomas et al[20] demonstrated that IM droperidol resulted in significantly more rapid control of agitation than IM haloperidol. Earlier control of agitation is achieved with IM droperidol because rate of absorption and time to peak serum levels are substantially faster than IM haloperidol and almost as fast as IV haloperidol. Droperidol also allows for earlier reassessment of patients because this drug has a shorter half-life and shorter duration of sedation. The half-life of droperidol is 2.2 hours, compared with a half-life of more than 10 hours for haloperidol. This characteristic permits reassessment and possibly more rapid disposition of patients whose mental status is no longer clouded by continued sedation.

A related study by Resnick and Burton[26] determined that 81% of psychiatric patients being treated with haloperidol for agitation required multiple drug doses to achieve sedation. In contrast, only 31% of the group treated with droperidol required repeated drug doses. Derlet et al[27] found that droperidol was superior to lorazepam in sedating agitated patients who are experiencing cocaine or methamphetamine toxicity.

Some authors have suggested that benzodiazepines administered as sole therapy are the preferred agent

for sedation of agitated patients.[18,28,29] Arguments in favor of benzodiazepines emphasize their favorable side-effect profile, which includes a high therapeutic-toxic ratio, rapid onset of action, and antiseizure activity.[29] Benzodiazepines are of proven benefit in cases of sedative-hypnotic agent withdrawal and anticholinergic poisoning.[29] In addition, benzodiazepines are considered to be first-line agents in the treatment of cocaine intoxication. In contrast, risks of neuroleptics may include lowering of the seizure threshold, anticholinergic side effects, and hyperthermia. These risks assume particular importance in toxin-induced etiologies of psychosis and may outweigh the benefits gained from administration of neuroleptic agents.

Several studies have demonstrated the effectiveness of haloperidol in management of PCP-intoxicated patients.[30,31] These studies concluded that administration of haloperidol decreased delusional thinking and hallucinations, improved disorganized thinking, and decreased assaultive behavior. Another study concluded that combination therapy with ascorbic acid and haloperidol was more effective than either agent alone.[25] In several studies of amphetamine overdose, haloperidol administration was not associated with an increased incidence of seizures.[23] Therefore, the arguments against neuroleptics are based on theoretical concerns that clinical studies have failed to substantiate.

No clinical studies have directly compared benzodiazepines with neuroleptics in management of sympathomimetic drug overdose. However, several studies provide some insight into the question of the relative roles of benzodiazepines and neuroleptics in this setting.

First, Derlet et al[32] examined pretreatment with either haloperidol or diazepam prior to administration of cocaine or amphetamine in an animal model. This study demonstrated that haloperidol pretreatment resulted in a decrease in seizure incidence (from 90% to 60%) but no decrease in death rates in cocaine-intoxicated rats. The study also demonstrated that treatment with haloperidol decreased death rates without preventing seizures in amphetamine-intoxicated animals. In contrast to the moderate benefit achieved with haloperidol, pretreatment with diazepam resulted in a reduction in seizure rates by 80% and zero deaths.

Second, benzodiazepines are recommended as first-line agents in the management of cocaine-induced myocardial ischemia.[33] The documented clinical benefit of benzodiazepines in this setting may result from interruption of a positive feedback loop in which cocaine-induced CNS agitation causes excess adrenergic neurotransmitter release, thereby worsening myocardial ischemia.[34]

Third, Garza-Trevino et al[28] demonstrated the effectiveness of a combination IM regimen consisting of haloperidol 5 mg and lorazepam 4 mg in sedating agitated patients. The study found that combination therapy with haloperidol and lorazepam achieved satisfactory sedation after 1 hour in all patients and was superior to administration of either component alone. In a case study, Mendoza et al[18] demonstrated that midazolam was effective in sedating agitated patients within 10 minutes after administration. Further, in a prospective double-blind multicenter trial, Battaglia et al[35] found tranquilization to be achieved more rapidly with the use of lorazepam and haloperidol in combination than with either agent alone, without a significant difference in side effects.

The authors of this article conclude that combined use of neuroleptics and benzodiazepines is a reasonable management strategy in view of these documented additive actions.

Side effects of rapid tranquilization. The incidence of extrapyramidal syndromes (EPS) in the initial 24 hours after instituting RT with neuroleptics ranges between 5% and 10% in older studies.[36] In two recent studies, dystonic reactions occurred in one of 68 patients.[22] Another study reported a single episode of dystonia in 108 patients treated.[29] The most common types of EPS are dystonic reactions consisting of bizarre involuntary muscle contractions including opisthotonus, eye deviation, tongue protrusion, and, rarely, laryngospasm. Some authors have suggested administration of diphenhydramine or benztropine prior to neuroleptic administration for prophylaxis of dystonic reactions. In light of the low incidence of these reactions in this setting, prophylaxis does not appear to be indicated in all patients. However, prophylaxis may be reasonable in several patient groups: patients who have had previous dystonic reactions; young adult men, who have a high incidence of EPS; and patients who require high doses of neuroleptics for control of symptoms.

Akathisia is perhaps the most commonly occurring, yet often underrecognized, complication of neuroleptic administration. Akathisia presents with motor restlessness, jitteriness, and agitation and may be wrongly interpreted and treated as worsening agitation or psychosis.

Less common side effects of neuroleptics include transient hypotension, which is generally responsive to IV fluid boluses. No significant cardiovascular sequelae have been reported. Tardive dyskinesia is associated exclusively with chronic administration of antipsychotics and is not a concern with RT.

PSYCHIATRIC EVALUATION

Once control of the agitated or violent patient is achieved, the most important steps are obtaining a detailed medical history, performing a thorough physical examination, and conducting a psychiatric interview. Ideally, the interview should take place in a quiet but readily accessible room. The door should be left open to allow the physician an exit if the patient rapidly becomes violent. Care should be taken not to physically intimidate or "crowd" the patient. Direct eye contact may be considered confrontational by some psychotic patients and should be minimized.

Psychiatric Interview

The interview begins with an assessment of the patient's appearance, level of hygiene, and appropriateness of attire, as well as emotional state and demeanor. Initial questioning should be open-ended, both to determine the patient's perception of the problem and to evaluate the degree of organization of thought processes. Responses to questioning are analyzed for any looseness, tangentiality, or circumstantiality of thought processes as evidence of a psychotic disorder. Pressured, rapid speech suggests mania or sympathomimetic drug ingestion, whereas slowed speech should prompt consideration of depression, sedative-hypnotic drug effect, or metabolic abnormalities. The patient's affect is examined for anger, anxiety, or depression. If depression is suspected, somatic symptoms such as loss of appetite or change in sleep patterns as well as hopelessness regarding the future should be sought out. Further, the presence of suicidal or homicidal ideation must be determined. If a patient admits to such ideation, then any history of violence directed toward the self or others as well as available means and plans for carrying out such impulses should be determined.

Mental Status Examinations

In addition to a standard history and physical examination, formal evaluation of mental status may provide significant clues to the presence of systemic or CNS illness in psychiatric patients. One study found that only 43% of ED physicians performed mental status examinations for most cases; 20% of ED physicians performed mental status examinations occasionally, and 19% never included mental status examinations in their evaluations.[37] Despite these findings, most ED physicians interviewed agreed on the importance of mental status testing in the evaluation of behavioral disorders. Inordinate length of time required to complete a thorough standard mental status examination was the reason most frequently cited for omitting such examinations.[37]

Lewis et al[3] demonstrated that ED physicians correctly diagnosed only 17% of their ED patients who were separately determined to have severe delirium by a previously validated scoring system. Equally concerning is the study's finding, as mentioned earlier, that 38% of delirious patients were discharged from the ED. The mortality rate during the succeeding 3 months in the group with severe delirium was 14%, almost twice the rate of patients with milder degrees of illness. Previous studies including those by Katz[38] and Kaufman,[39] have also demonstrated strong correlations between major organic illnesses and delirium.

Misdiagnosis may be more common in patient groups that do not conform to the stereotype of the delirious patient, such as elderly patients with delirium. Their behavior may appear quiet and withdrawn, but on examination such patients demonstrate substantial inattentiveness and disorientation. Physicians may mistakenly assume that psychomotor agitation, as seen in sedative-hypnotic drug withdrawal, is a defining feature of all types of delirium.

Brief Mental Status Examination. Given the chaotic environment common in the ED, Kaufman and Zun[40] suggested that a short mental status examination, termed the *Brief Mental Status Examination (BMSE)*, would be appropriate for ED use. The BMSE shows high correlation with longer, comprehensive mental status tests but can be performed within the time constraints imposed by the ED setting. The first step of the BMSE consists of asking three questions: 1) What year is it? 2) What month is it? and 3) About what time is it? The patient is asked to repeat a simple three-element memory phrase and then to recall it several minutes later. Finally, the patient is asked to count backwards from 20 to 1 and to say the months in reverse order.

BMSE test scores showed 72% sensitivity and 95% specificity when compared with assessments made by ED physicians in identifying the most severely impaired patient group. The conclusions reached by physicians differed from the results of the BMSE in 33% of cases. Most of such cases occurred when emergency physicians determined that mild impairment of mental status was present but the BMSE yielded a result of "normal." Equally important, physicians felt that test administration was easy to perform in the majority of patients (86%); predictably, the group of patients graded "easy" tended to have lesser degrees of impairment in mental status than the patients graded "difficult."

Abbreviated Mental Status Examination. Merigian et al[41] proposed an Abbreviated Mental Status Examination (AMSE) differing in several elements from the

Table 3. Mini–Mental Status Examinations

Brief Mental Status Examination (BMSE)	Abbreviated Mental Status Examination (AMSE)
What year is it now?	What month is it?
What month is it?	What day is it?
Three-item memory phrase with recall 3 minutes later	What time is it?
About what time is it?	What city are we in?
Count backwards from 20 to 1	What is 25 minus 7?
Say the months in reverse order	What is 10 minus 2?
	Identify pen
	Identify watch
	Follow three-stage commands: right index finger to tip of nose, left index finger to right ear

Data from Kaufman DM, Zun L: A quantifiable, Brief Mental Status Examination for emergency patients. *J Emerg Med* 1995;13:449–456 and from Merigian KS, Hedges JR, Roberts JR, et al: Use of abbreviated mental status examination in the initial assessment of overdose patients. *Arch Emerg Med* 1988;5:139–145.

BMSE. The AMSE includes questions about current location and simple arithmetic skills as well as testing of attention and motor skills by asking the patient to bring the right index finger to the tip of the nose. The investigators found that the AMSE, when studied in drug overdose patients, was highly correlated with the Glasgow Coma Scale score, likelihood of admission to an intensive care unit, and likelihood of complications after admission. Other similar studies have also found that an AMSE can be used in the ED.[39]

Summary. The mental status examination is clearly an important feature in the evaluation of patients with psychiatric symptoms. In the ED, a mini–mental status examination appears to be simple, time efficient (requiring approximately 5 minutes), and accurate. **Table 3** compares the BMSE and the AMSE. The specific test format chosen is of less importance than consistent performance of some sort of mental status examination. Because the most frequent non–drug-related nonfunctional causes of psychosis in the ED are delirium and dementia, performance of a mental status examination should result in improved ED diagnostic sensitivity for these conditions.

CONCLUSION

In dealing with acutely psychotic patients, emergency physicians must be prepared to control violent behavior and agitation, determine whether a functional or toxic/metabolic etiology is responsible for psychosis, and make dispositions to psychiatric and/or medical inpatient treatment or outpatient follow-up. Focused history-taking and laboratory testing, appropriate sedation of agitated or violent patients, and performance of mental status examinations may refine this process and result in better patient outcomes.   **HP**

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