

Prehospital Behavioral Disorders

Objectives

Upon completion of this module, you should be able to:

1. Discuss the prevalence of behavioral disorders in the United States.
2. Define the pathophysiology of common behavioral disorders.
3. Describe the proper assessment of the pre-hospital behavioral patient.
4. List the steps in the ongoing care and safety of the pre-hospital behavioral patient.

Case Study

You are a paramedic in a suburban EMS department. On a weekday afternoon you and your EMT partner are called to a residence for a behavioral emergency involving a young man that is screaming and kicking over furniture in his home. Per protocol, the police are dispatched simultaneously. During your response, your dispatcher advises that you are responding to a 24 year-old man with autism and a moderate developmental delay.

The police arrive two minutes ahead of you and advise that the scene is safe. Upon arrival, you are met at the front door by the mother and one of the two police officers. The second police officer is in the living room with the patient. The patient's mother stays within eye contact of the patient and explains his condition to you.

The mother explains that J.M. is a young man with autism and moderate developmental delay. He also has seizures and bipolar disorder. He resides with his mother and participates in a sheltered workshop three times a week.

Approximately one week ago, J.M. suddenly became irritable and threw an object against the wall at the workshop. His mother picked him up and returned home. He seemed anxious and agitated but his behavior gradually improved. This pattern recurred three more times over a one-week course. His psychiatrist increased his carbamazepine (Tegretol) dose, assuming these behaviors were a manifestation of J.M.'s bipolar disorder. Since J.M. is non-verbal, no additional information from him regarding his symptoms and behavior could be obtained. The mother states that J.M. is currently taking carbamazepine. He does not take any other medications and has no known drug allergies.

Today, J.M. became progressively more agitated throughout the day. When he threw a pan at the kitchen window, his mother decided to call for help.

As you enter the living room, you find J.M. pacing about under the watch of the police officer, who is standing about 10 feet away. From your training, you know that familiarity is especially important to autism patients. You allow the mother to lead the communication with the patient. Your movements are slow and quiet.

Your partner asks the mother if there is anything that would comfort J.M. while the two of you attempt to get him into the ambulance. His mother suggests giving J.M. his iPad which contains his favorite music, since this tends to calm him down. The mother uses this to negotiate with the patient. She is able to talk J.M. into getting into the ambulance.

As your partner begins a quiet drive to the hospital, you attempt to assess vital signs. The patient allows you to assess his radial pulse, which is 98. When you attempt to place the blood pressure cuff on his arm, the patient becomes agitated. He also does not like the pulse oximeter. You are able to count respirations of 18 per minute. Since J.M. is breathing fine, has a palpable radial pulse, and shows no other signs of physical distress, you decide to forgo the assessment of pulse oximetry and blood pressure.

Prehospital Behavioral Interventions

Behavioral emergencies are a common and serious problem for the patient, family, community, and healthcare personnel. Behavioral emergencies require urgent intervention, oftentimes with limited information. Rescuers often need to rapidly change intervention strategies as new information becomes available.

Understanding behavioral and psychiatric disturbances is one of the most complex human sciences, and is an integral component of EMS training. The number of community based psychiatric emergencies more than doubled between 1970 and 1994.¹ This was influenced in part by the reduction of psychiatric inpatient beds across the U.S. The number of inpatient beds was reduced by half, as more chronic psychiatric patients are residing and being treated in outpatient community settings.

Behavioral disturbances may erupt as a result of physical illness and trauma. They may also evolve strictly as psychological events. It is especially difficult to attempt to intervene in the midst of an emotional and behavioral outburst with a person you know nothing about. However, rapid assessment and effective intervention can reduce the danger to patients and the community and result in more quickly directing patients to recovery.

In this article, there is an introduction to the disorders that are most frequently associated with behavioral emergencies. There are a variety of situations that EMS may be confronted with. These range from individuals that have no previous history of behavioral abnormalities to others that have a lifelong pattern of behavioral disturbances.

Societal Norms- What We Expect from Each Other

Social norms are the rules and laws that a group uses to provide guidelines for appropriate and acceptable behaviors, attitudes, values, and beliefs. Norms change significantly over time and vary by location. For example, many years ago, aggressive behavior may have been used to protect the family in a rural setting with little law enforcement. Some may argue the same environment may currently exist in poorer inner city regions that are overrun with drugs, unemployment and desperation. Assertiveness is viewed as acceptable, but physical aggression is not. This societal line may not be so clear-cut when an individual is confronted with his or her perception of a threatening situation.

Behavioral Emergencies

Behavior can be defined as the physical and mental action of an individual across all activities.² A behavioral emergency can be defined as abnormal or unacceptable behavior that poses the risk of harm to the individual, family or bystanders. Abnormal, intolerable and unacceptable behaviors can be subjective and are, in part, dependent on community/familial norms, the context of the situation, and the reaction of others. The problematic behavior may be a variant, "outside" of a normal reaction or as a result of an underlying medical condition, psychiatric disorder, trauma, or drugs and alcohol.

Conditions and Disorders Associated with Abnormal Behaviors

There are several groups of conditions that can result in the exhibition of abnormal, unacceptable, or dangerous behavior. The etiology of one's abnormal behavior is not always evident. A patient's underlying personality traits and psychological stability may exacerbate behaviors. For example, under specific environmental stresses, a mentally healthy individual may panic and cry uncontrollably for a time but pose no threat of significant concern to friends and family. However, a patient with a tendency towards a mental illness may have a more severe reaction and emergency intervention may ultimately be required.

Medical Causes of Behavioral Disturbances

Metabolic abnormalities that affect the blood flow, glucose supply, or oxygen supply to the brain will affect neuronal function and therefore, behavior. There are additional medical conditions and trauma that can cause a severe dissociation of normal behavior and functioning. To help to determine if a behavioral crisis situation is related to a medical etiology, there are several specific signs and symptoms to look for at the scene. These are unusual odors on the patient's breath; dilated, constricted, or unequal pupils; a description of a rapid onset of the abnormal behavior; excessive salivation; loss of bladder control; and visual hallucinations (rather than more typical auditory in psychiatric disorders).

Hypoglycemia and hyperglycemia are two of the more common medical causes that can negatively affect brain functioning and behavior. A known diabetic may have an extremely high blood glucose level or may have administered too much insulin, resulting in a dangerously low blood glucose level. Hypoglycemia due to a biological reason or an insulin overdose impacts neurons of the brain in the same fashion. A pancreatic tumor, an insulinoma, results in an overproduction of insulin and subsequently, hypoglycemia. The individual may become confused and agitated as a result of the brain not receiving the amount of blood glucose required to function normally.³

There are additional endocrine disorders that manifest with high activity levels and agitation. Thyroid hormones play a critical role in the metabolic activity and maintenance of normal functioning in the adult brain. Neuropsychiatric manifestations of thyroid disease have long been recognized as a cause or contributing factor in mood disturbances, cognitive impairment, and other psychiatric symptoms. Thyroid hormone receptors are located throughout the brain. Key structures include the limbic system where thyroid hormone activity has been implicated in the pathogenesis of mood disorders.⁴ Hyperthyroidism and hypothyroidism can both result in changes of mood and intellectual performance. Severe hypothyroidism can mimic melancholic depression and dementia. Hyperthyroidism, sometimes occurring as a "thyroid storm" (acute thyrotoxicosis can manifest as hyperactivity and agitation.⁵ Thyrotoxicosis is commonly accompanied by psychiatric disturbances, such as dysphoria, anxiety, restlessness, emotional irritability, poor concentration, and impulsivity.⁶ The cognitive impairments associated with thyroid dysfunction will typically resolve following return to normal hormone levels. Severe untreated hypothyroidism, however, may rarely result in irreversible dementia.⁷

A reduction in oxygen concentration in the blood will also impair the functioning of the neurons in the brain. Severe hypoxia will result in psychomotor slowing, poor cognition, confusion, and agitation and may progress to loss of consciousness.⁸ Moderate hypoxia and the sensation of shortness of breath often create a sense of panic.⁹ These conditions will resolve with the removal from the hypoxic condition, and supplemental oxygen will increase the rate of

return to normal functioning.

Chemicals that are consumed or absorbed from the environment have a direct effect on the functioning of the different parts of the brain and autonomic nervous system. Mind altering substances are common causes of behavioral disturbances. Alcohol by far is the leading culprit, but additional drugs include methamphetamines, ecstasy, cocaine, and narcotics. The effects of these drugs are all amplified with the consumption of alcohol. The effects of alcohol will be reviewed in more detail in a separate section.

Fertilizers and insecticides may contain organophosphate compounds that affect the cholinergic systems in the brain and peripheral nervous systems. Many clinical reports and laboratory studies have shown a clear association between the neurobehavioral manifestations of organophosphate toxicity and the accumulation of acetylcholine at central and peripheral synapses as a result of cholinesterase inhibition.¹⁰ The symptoms of acute organophosphate poisoning generally become observable three to four hours after exposure.¹¹ The early symptoms include headache, nausea, and dizziness. These may be followed by impaired vigilance and reduced concentration, psychomotor and processing slowing, memory impairment, trouble with expressive language, depression, anxiety, and irritability.¹² Symptoms that suggest a worsening of the condition include muscle twitching, weakness, abdominal cramps, and vomiting. Upon physical examination excessive sweating, salivation, tearing, and constricted pupils are frequently present. Emergency medical intervention is required because the effect of substance can last up to several days.

Severe and prolonged excessive temperature exposure can result in electrolyte imbalances and changes in blood flow that affect the brain and behavior.¹³ This can be seen in prolonged exposures to heat or cold. There have even been studies suggesting that prolonged weather heat waves are associated with a significant increase in violent acts that have required EMS and law enforcement intervention. Prolonged hot temperatures appear to increase aggression by increasing the feelings of hostility and indirectly promoting aggressive thoughts.¹⁴

Neurological Causes of Behavioral Disturbances

Most neurological conditions are likely to affect behavior, but there are several that are associated with acute behavioral events. There are seizures disorders, mass effects from tumors, vascular abnormalities, and neurodegenerative conditions that have been associated with a greater chance of behavioral disturbances. The conditions described in this section originate in the brain and are caused by specific neurological pathology.

There are several situations where epilepsy or a seizure may result in abnormal behavior. After a generalized seizure, patients can wake up afraid, confused, and unable to think clearly. This postictal phase typically does not last more than one to two minutes and resolves spontaneously as the brain returns to its normal patterns. If patients are noted to have prolonged confusion and do not return to normal functioning after five to 10 minutes, non-convulsive status epilepticus may be occurring.¹⁵ This means that the person may have continuing electrical seizure activity that is interfering with normal functioning. Secondly, the manifestation of a partial seizure (no loss of consciousness) can result in abnormal behavior. A complex partial seizure, by definition, is an altered mental status. If the seizure focus is in the limbic and other parts of the brain responsible for regulation of emotions, then the patient will feel that emotion intensely.¹⁶ Partial seizures typically last 10-25 seconds and either resolve or progress into a generalized seizure.

Behavioral syndromes although usually brief, can pose special challenges for physician and nursing management, as well as for a patient's family and friends. A study looking at post-seizure behavior found that 35% of patients experienced severe delirium following a seizure. Most patients had baseline cognitive and affective disorders that apparently made them susceptible to problematic behavioral symptoms in the postictal state.¹⁷ There is also a postictal psychosis that can only be differentiated from a psychiatric psychosis with an EEG. Postictal psychosis is more likely to be the diagnosis if there was no prior history of psychosis and the patient was documented to have experienced a seizure prior to the onset of the behavioral disturbance.¹⁸

Just as seizures originating in an area that is responsible for behavior and emotion, several types of brain lesions can have a similar effect on behavior. A tumor growth can compress important brain structures and cause abnormal behaviors as a result of impairment of cognition, reasoning and sensory deficits. Vascular abnormalities such as an aneurysm or arteriovenous malformation (AVM) can have similar effects as the vessels dilate and compress nearby brain structures.

Dementia and degenerative disorders such as Alzheimer's and Parkinson's are additional neurological causes of abnormal behaviors that may result in the need for emergency intervention. Individuals with dementia and progressive loss of their cognitive ability are prone to becoming frustrated and agitated. In the evening, patients with dementia may experience "sundowning." This occurs when the darkness limits their visual cues that help them remember where they are. This can result in severe anxiety, agitation, yelling, and restlessness.¹⁹ Less common are central nervous system infections and toxins that are responsible for brain pathology. Infections causing a mass effect in the HIV/AIDS population are more common and may present with similar effects of a tumor or with encephalopathy. The mass effect occurs when the infection takes a form similar to an abscess. The area around the localized infection becomes inflamed and a greater mass effect results. This area of infection swells and expands to press on adjacent brain tissue. Infections

most frequently seen include toxoplasmosis, cryptococcal abscesses, tuberculous abscesses, and CNS lymphoma. Urinary tract infections are very common manifestation of altered mental status and abnormal behaviour in the elderly, particularly nursing home bound females.”²⁰

Psychiatric and Cognitive Impairment

Individuals with psychiatric and developmental disabilities more frequently display behavioral disorders than the general population. In this section, specific conditions and psychological/psychiatric disorders will be reviewed.

Mental health and social life are two aspects in our lives that are highly dependent on each other. Social deficits in persons with psychiatric conditions are essentially universal in this population. The opposite also occurs in which one's social situation can affect his or her mental health. There is an increased rate of psychiatric disorders in people exposed to deprivation or problematic social and environmental conditions.

Individuals, especially children, exposed to defective or abusive social conditions are at increased risk for mental illness.²¹ The longer the exposure is endured the greater the risk. Brief severe episodes can also result in long standing problems. An example of a brief severe episode could be when an individual witnesses a traumatic event such as a murder or a rape. This relatively brief exposure can lead to a long standing condition referred to as post-traumatic stress disorder. Epidemiological studies have reported evidence that there is an increased rate of psychiatric disorders for all of these situations. However, each person has a different threshold of being affected by a given environmental stressful condition. The susceptibility of each individual is in part due to a person's neurochemical makeup that is derived from our genes.²²



Urban areas have both health benefits and risks. However, these areas have been found to have a greater negative mental health impact. City dwellers have a higher rate of mood and anxiety disorders.²³ EMS in urban settings is more likely to be called for psychiatric emergencies than those in suburban or rural settings. A related neuroanatomical study examining the activity level in brain regions regulating negative emotions and stress processing (anterior cingulate cortex and amygdala) found that these regions were more active during a stressful cognitive task in those that grew up in an urban setting. There were no other specific brain area differences that were significant on this cognitive stress task.²⁴ In a second study there were clear associations with elevated amygdala activity during social stress activities in those that live in urban areas.²⁵

Developmental Disabilities

Persons with developmental disabilities by definition have cognitive and social deficits, but up to 50% also have psychiatric conditions and behavioral disorders. The community medical and mental health care providers have had to provide care to more of those with developmental disabilities in recent years. This is a result of deinstitutionalizing where those with developmental disabilities were relocated from state institutions to community settings.²⁶ Most have been relocated into community group homes and many now stay with their families.

In years past, individuals with severe disabilities were often admitted to long-term care facilities in childhood or as young adults where staff provided medical care and mental health interventions. The current trend of the deinstitutionalization of individuals with moderate to profound developmental disabilities has "relocated" this population to a variety of community settings including; group homes, sponsored living, supported living arrangements, and supervised apartment living.²⁷ For example, in the state of New Jersey there were 5,841 people in developmental centers in 1986, but as of March 1999, there were 3,623. These 2,000 persons have been relocated and are now living in many communities throughout the state.

There is also an increasing number that remain at home with their families after they become adults. Most individuals with moderate to profound developmental disabilities with cognitive impairment are evaluated and found not to be competent to make decisions for themselves. A legal guardian is appointed. Parents and other family members that live nearby are often the legal guardians. However, when there are no close family members involved, the legal guardianship is assigned to a legal representative within the state's division of developmental disabilities. It is imperative that legal guardians are notified when emergency intervention is instituted.

The medical, neurological, and psychiatric care of individuals with developmental disabilities is now becoming the responsibility of healthcare providers located in these communities.²⁸ The caretakers of the developmentally disabled

are trained to handle behavioral emergencies. As a precaution, however, when behavior escalates the protocol is to call for emergency services. Resolving a behavioral event with individuals with developmental disabilities can be challenging. It is often difficult to reason with the individual due to cognitive and social deficits. This is especially difficult when the individual is non-verbal or language impaired. This is often the case with individuals who have autism.

Autism

Autism is considered a developmental disability and manifests in a wide range of behaviors and abilities. The group of disorders is referred to as pervasive developmental disorders (PDD). These are "pervasive" because they affect so many aspects of one's personality and function. "Developmental disability" is descriptive because these traits impair one's ability to function at normal societal levels. Developmental disability implies mental retardation, but not all with PDD are cognitively impaired, although it is difficult to determine because of the behavior restrictions due to the severity of the anxiety, obsessive compulsive disorder (OCD), and language impairment.

PDDs are also referred to as autism spectrum disorders and represent a class of disorders that have similar features. Under the category of PDD there are four distinct diagnoses: autistic disorder, Asperger syndrome (AS), PDD not otherwise specified (PDD-NOS), and childhood disintegrative disorder (CDD).²⁹ For the purpose of this chapter, PDD will include all but the diagnosis of AS, which has distinct differences that affect the approach to the behavioral emergency. Individuals with Asperger syndrome or PDD-NOS have fewer diagnostic and less severe symptoms. The remainder of this chapter will refer to PDD as autism unless otherwise specified.

The heterogeneous nature of PDD makes it hard to provide appropriate treatment or interventions for the group. Autism refers to a spectrum of conditions that encompass three main factors: anxiety, OCD, and language impairment. Each person with autism will have a different mix of these three components and each factor may not manifest the same as usually seen in "typical" individuals. These factors result in abnormal development in socialization, communication, and behavior. Symptoms typically appear by the age of three, oftentimes after relatively normal initial development. Language delay is the most common initial parental concern.

There are no biologic markers for autism and identification is determined by professionals who evaluate a child's developmental status and behaviors. The prevalence of all PDDs is approximately seven of 1,000 births.³⁰ Recently, there have been reports that the incidence of Autism have increased. This increase may likely reflect a greater awareness of Autism in the community, resulting in more parents bringing their children in for evaluations. Nonetheless, the Center for Disease Control (CDC) has stated that the noted higher incidence rates are a public health concern because of the educational and healthcare demands required to treat the greater numbers of individuals diagnosed with autism.

Approximately 40% of children with autism under the age of 20 have significant cognitive impairment with an IQ lower than 70.³¹ Comorbid psychiatric conditions occur at a higher rate than in non-autistic age matched individuals.³² The added psychiatric conditions include ADHD, bipolar disorder, mania, and anxiety disorders.³³ In a study to determine if anxiety in those with autism was greater than with other developmental disabilities, it showed significantly elevated levels of anxiety in adults with autism compared to a matched group of adults with intellectual disabilities.³⁴ These comorbid conditions can severely impact the development of a child and result in severe behavioral problems. Predictors of functional outcome in children with autism include cognitive status, age of language acquisition, and age symptom development. Prospective studies have overall reported poor outcomes in up to 60–75% of autistic patients followed into adulthood.³⁵ However, with early recognition and increasing availability of early interventions, those changes may limit the significance of these findings.

Emotional stress is a common trigger for a behavior outburst in any person, but individuals with autism have a lower threshold for reaching their "limit." In addition, they typically do not have the cognitive ability and social understanding to evaluate and integrate the information of a stressful situation in order to resolve the conflict. The most stressful situations for individuals with autism are difficulty coping with change, anticipation, specific sensory stimuli, and unpleasant situations. These relative stressful conditions may even occur as a result of relatively minor changes in the person's environment or routine. Studies have found that the more anxious the individual with autism, the more likely they will have trouble adjusting to environmental situations.³⁶ In addition, these individuals manifest a lack of fear in dangerous situations and are more likely to harm themselves or others.³⁷

Although autism and AS are diagnosed in childhood, most symptoms persist into adulthood. For some with a less intense clinical course and appropriate interventions, the symptoms may become less impairing as the child grows older. However, for others the symptoms may worsen or may be exacerbated by mood and neurological disorders. In adults with Asperger syndrome, most patients were found to have clinically diagnosable anxiety and/or depression.³⁸ In a cohort of 85 adults with Asperger syndrome, 30 were found to meet the criteria for another psychiatric disorder.³⁹ Depression, anxiety, and OCD were found in this subgroup. On the other hand, 55 did not meet criteria for a psychiatric condition. In an emergency situation, the first responder should be aware that the person with AS may have additional psychiatric issues.

Behavioral Problems in Autism and AS

Children and adults with autism can have serious behavioral disturbances, including self-injurious behavior, aggression, and tantrums in response to environmental demands or changes. This is likely a direct result of the anxiety and the obsessive-compulsive traits that individuals with autism have.

Studies have shown that risperidone is effective in treating severe behavioral disturbances in those with autism with less chance of tardive dyskinesia and sedation than typical neuroleptics such as Haldol.⁴⁰ Tardive dyskinesia is a potentially irreversible movement disorder involving the oral-lingual musculature.

Mental Retardation and the Developmentally Disabled

Developmental disabilities are defined as a group of conditions that occur before the age of 22 that cause significant impairments in areas such as independent living, self-care, receptive and expressive language, learning, and economic self-sufficiency. This group includes any etiology including genetic disorders or cognitive deficits as a result of an acquired brain injury.

There are thousands of genetic, acquired, and environmental causes that can result in a child becoming developmentally disabled. Down syndrome is a common genetic disorder and is due to problems with chromosome 21. Environmental causes include trauma that result in brain injury and acquired conditions that include illnesses such as encephalitis or hypoxia from a near drowning event. Similar to autism and AS, it has been reported that 40%-70% of individuals with mental retardation also have a diagnosable psychiatric condition.⁴¹

Those individuals with a developmental disability have contributing problems such as language disorders, impaired mobility, and hearing or visual impairments that typically become worse with advancing age. The individual's loss of ability to have control over his or her environment is a significant contributing factor to behavioral disturbances. Acute behavioral events are often triggered when others have inappropriate expectations and when there is a lack of understanding of the individual with a cognitive disability.

Community-based crisis intervention models have been developed in a few areas. They are designed to address the acute and long-term behavioral intervention required for developmentally disabled persons with a history of severe behavioral problems.⁴² It is important to be aware of these community-based programs as they can be an educational reference. If a patient is enrolled in a program, that resource can also be used as a contact in an acute behavioral situation. Staff working with the client may have a set protocol for a specific individual or may at least be able to make recommendations.

Alcohol and Drug Use

Alcohol and street drugs are ingested to change the way people feel and subsequently, how they behave. When taken in excess, alcohol has the potential to excessively change that person's behavior. Alcohol use specifically influences aggressiveness more than it influences other social and non-social behaviors.⁴³ If there is an underlying personality trait of hostility or depression, alcohol and street drugs may allow those behaviors to freely manifest themselves and result in an emergent and dangerous situation. The motivations that often lead people to over consume alcohol are frequently the same factors that lead to emotional and behavioral outbursts. Two main motives are anxiety and power insecurities. Drinking to reduce anxiety in some individuals is accompanied by a corresponding reduction in restraints on their aggression.⁴⁴ Others have claimed that alcohol intoxication makes the insecure feel stronger mentally and physically and may manifest with aggression. Specifically, alcohol-related aggression is clearly dependent on an individual's desire to be seen as powerful.⁴⁵

Alcohol intoxication is associated and shown to cause many severe aggressive types of behavior. Studies have reported there is a significantly higher rate of alcohol intoxication aggressive offenses compared to non-aggressive offenses leading to arrest. Over 50% of those that commit murder are intoxicated at the time of the event.⁴⁶ Alcohol has also been shown to significantly increase the rate of assaults⁴⁷, spousal abuse⁴⁸ and rape.⁴⁹ Meta-analytic studies have concluded that alcohol does cause aggressive behavior.⁵⁰

Alcohol use and abuse is much less common in children, but does occur. The circumstances are entirely different than in adults. In a study from Glasgow over a 12-year period, there were 143 children (108 boys, 35 girls) that were admitted to hospitals for alcohol intoxication. Nine of the children, aged 7-14, reported drinking due to extreme stress at home and at school. Four of the cases were directly related to previous sexual abuse.⁵¹

Psychiatric Disorders and Aberrant Behavior

Psychiatric disorders are present in all cultures, races, and socioeconomic groups. Psychiatric disorders represent a significant cause of morbidity, accounting for about one-quarter of disability in the U.S., more than is attributable to cardiovascular disease or cancer.

This grouping includes the more severe conditions such as schizophrenia and psychosis as well as the less involved conditions such as ADHD and Tourette syndrome. The most commonly used reference for diagnostic criteria is the Diagnostic and Statistical Manual of Mental Disorders (DSM), currently in the fourth edition.⁵² The DSM-IV is a manual published by the American Psychiatric Association and provides concise information on all mental health disorders in both children and adults. The manual lists known causes of disorders, statistics in terms of gender, age at onset, and prognosis, and information regarding treatment approaches. The book is typically considered the standard for any professional who makes or needs to understand psychiatric diagnoses.

The National Comorbidity Survey Replication (NCS-R) is a widespread survey that is conducted periodically in the U.S. to examine the prevalent rates and epidemiological characteristics of mental illness. In 2000, the survey found that over 30% of Americans between the ages of 15 and 54 meet the DSM-IV diagnostic criteria for a psychiatric disorder. In this group, 6.3% had serious mental disorders, 13.5% were moderate, and 10.8% were considered mild.⁵³

Depression

In the U.S. depression affects about 8% of adults, and is the leading cause of suicide.⁵⁴ The symptoms are pervasive and can be disabling. The impact of depression is not only with the individual patient but also on the families and the community. Depression produces a wide range of mental health issues that include: the absence of a positive affect (a loss of interest and enjoyment in ordinary things and experiences), sad mood, and a wide range of emotional, cognitive, physical and behavioral symptoms.⁵⁵

Early research into biological factors of depression concentrated on monoaminergic theories with particular focus first on norepinephrine and later serotonin. The most commonly accepted description of the pathophysiology of depression involves impairment of the serotonin system in the brain. Many neuroimaging studies, drug studies, and post-mortem analysis of depressed patients support the serotonin deficiency theory. Overall, there is a reduction in serotonin neuron transmission in those with depressive illness.⁵⁶

Assessing the severity of the symptoms, the duration and the degree of functional and social impairment makes the diagnosis of major depression. Behavioral and physical symptoms characteristically include sadness, tearfulness, irritability, social withdrawal, reduced libido, fatigue and less activity, agitation, and heightened anxiety. A loss of interest and enjoyment in everyday life, a change in sleep and appetite patterns, along with feelings of guilt and worthlessness are seen in individuals with depression. Feelings of lowered self-esteem, loss of confidence, and helplessness can lead to suicidal ideation and attempts at self-harm or even suicide. Common cognitive changes seen are poor concentration, reduced attention, mental slowing, rumination, and pessimism with recurrent negative thoughts about the future.⁵⁷

Most commonly, individuals experience their first episode of major depression in their mid-20s, however, the first episode may occur at any time from early childhood through to old age. A person living with clinically diagnosed depression has over a four-time higher risk of suicide compared with the general population, which may be as high as 20 times in the most severely depressed. Depression can lead to acts of violence against others and less commonly includes homicide. Family especially marital relations are most frequently negatively affected. Parental depression has led to neglect of children and other significant problems in children.⁵⁸

The first effective pharmacological treatment for depression was the Tricyclic antidepressants, such as imipramine and amitriptyline. Although this class of medications is effective, there is a high rate of side effects and toxicity. The next generation antidepressants are the selective serotonin reuptake inhibitors. These medications are most commonly used to treat depression and include: fluoxetine (Prozac), paroxetine (Paxil), sertraline (Zoloft), fluvoxamine (Luvox), citalopram (Celexa), escitalopram (Lexapro) and others.⁵⁹

Schizophrenia

Schizophrenia is a complex mental disorder that makes it difficult for the patient to recognize the difference between real and unreal experiences, think logically, behave normally in social situations, and have normal and appropriate emotional responses. Researchers have not found causes for schizophrenia, but it is clear that genetic factors play a strong role. There is a subgroup of patients that are genetically "at-risk" that developed symptoms shortly after experiencing an unusually stressful environmental event.

Schizophrenia affects both men and women equally and usually begins in the teen years or young adulthood. The symptoms are typically more severe in men. The symptoms of schizophrenia develop slowly over months or years. Patients may experience many symptoms at one point and relatively few at other times. The severity of the symptoms will vary as well.⁶⁰

There are no medical tests to diagnose schizophrenia. Psychiatrists establish the diagnosis based on a thorough interview with the patient and family members concerning the time of onset, symptoms experienced by the individual, and behaviors observed by family members. The primary symptoms of schizophrenia are: a flat affect (lack of

emotion), social isolation, delusions (strongly held beliefs that are not based on reality), hallucinations, loose associations (thoughts move between unrelated topics), problems paying attention, and bizarre behaviors. These are divided into two groups of symptoms: negative symptoms (flattening of affect, apathy, poverty of speech, anhedonia, and social withdrawal) and cognitive symptoms (deficits in attention, working memory, and executive functions). People with schizophrenia have difficulty maintaining friendships and holding jobs because of their symptoms. Additional problems include anxiety, depression, and suicidal thoughts or behaviors.⁶¹

The prognosis for a person with schizophrenia varies significantly. Symptoms usually improve with medication. However, others may have difficulty functioning and are at risk for repeated episodes of hallucinations and delusions. People with schizophrenia typically require assisted living or supervised housing, job training, and support programs. Group homes and long-term facilities are necessary for those with more severe forms of the disorder.⁶²

Any of the problems discussed in this section on schizophrenia could lead to a behavioral emergency requiring EMS intervention. The most common are severe hallucinations or delusions that are interpreted as threatening or harmful to the patient.

There has not been a clear biological explanation of the causes of schizophrenia, however, the dopamine hypothesis is supported by significant scientific research. This hypothesis is not sufficient enough to explain all of the behaviors of this complex disorder, but offers a direct relationship to symptoms and to treatments. The dopamine hypothesis is based on the findings of markedly increased dopamine content and transmission in the brains of individuals with schizophrenia.⁶³

Neuroleptics are the primary class of medications to specifically treat schizophrenia and are dopamine antagonists, which reduce dopamine activity specifically in the nucleus accumbens and striatum. The initial class of Neuroleptics used included:⁶⁴

- Thorazine
- Haldol
- Prolixin
- Navane
- Stelazine
- Trilafon
- Mellaril

A newer class of neuroleptics offering fewer side effects include:⁶⁵

- Abilify
- Geodon
- Invega
- Latuda
- Risperdal
- Saphris
- Seroquel
- Zyprexa

Clozaril is in an entirely new class and is used when the above medications are not effective.

Anxiety Disorders

At some point in their lives, everyone feels anxious and experiences fear and/or panic. In situations where we are actually in danger, fear is a healthy way of protecting ourselves. About one out of 20 people reaches a point during his or her life when these worries and fears become intolerable and chronic. When these symptoms interfere significantly with an individual's life, it is called a generalized anxiety disorder (GAD). The fears are disproportionate and the person cannot control them. Everyday problems and demands become overwhelming and suddenly incapacitate individuals resulting in a virtually inescapable cycle of anxiety.⁶⁶

As anxiety develops, the hormone adrenaline is released. Adrenaline increases the body's functions so that we become vigilant and ready to react. The heart rate increases as breathing becomes shallow and rapid. Most people will begin to feel lightheaded, nervous, and easily agitated if this state of alarm lasts too long.⁶⁷

Panic disorders and phobias are types of anxiety disorders, but they differ from normal fear and anxiety because the emotions are typically more severe, are prolonged, and strike without reason or warning. Severe behavioral responses occur when the patient feels like he or she is losing control, threatened or even as if he or she is about to die. The development of phobias can be the result of early traumatic events, but the majority of them have no obvious cause.⁶⁸

Bipolar Disorder

Bipolar disorder is characterized by alternating states of mania, depression, and mood moderation (euthymia). Bipolar disorder affects both men and women equally. The abnormal mood cycling typically begins between the ages of 15-25. The cause is unknown, but the condition develops more often in relatives of people with bipolar disorder. The manic phase is the portion of the condition with a marked elevated mood, often with irritability. This is the time when an intervention for a behavioral emergency is most likely. Patients have sustained hyperactivity, racing thoughts, are impulsive, and may feel invincible.⁶⁹ During this phase the patient's condition is further complicated by a low tolerance for frustration and agitation. This combination of psychological profiles is an optimal mixture for behavioral problems.

The group of medications used to treat bipolar disorder consists of agents that have mood stabilizing properties. These include carbamazepine (Tegretol), Valproic acid (Depakote), lithium, and lamotrigine (Lamictal).⁷⁰

There is a high comorbidity with substance abuse and suicidal behaviors. Patients with bipolar disorder typically have significant problems with relationships, work and finances.⁷¹

Physical and Psychological Trauma and Emotional Factors

There has long been the understanding that violence begets violence. It is therefore not surprising that those who are abused are more likely to display aggressive behaviors themselves. This pattern primarily begins in childhood, as the young and more defenseless are easily accessible targets for those releasing anger. Many adolescents who have faced trauma exhibit aggressive and violent behaviors, and demonstrate higher rates of maltreatment and physical abuse than do the age matched controls.⁷² In one report, 68% of abuse cases were not reported to authorities by the child or family members.⁷³ Physical abuse results in heightened levels of aggression in those children with emotional difficulties. It has been estimated that approximately one-third of physically abused or neglected individuals abuse their own children.⁷⁴

Behavior emergencies in those that suffered from physical abuse include suicide attempts and aggressive behavior towards others.⁷⁵ In addition, there is a higher incidence of drug use, chemical dependency, behavioral outbursts, criminal behavior, and sexual deviant behavior in adolescents that have been physically abused. Some drugs can induce adverse or even violent behavioral reactions. In addition, physical abuse experienced by a child or an adult results in a significantly higher rate of later self-injurious behaviors, suicidal behaviors, and emotional problems.⁷⁶

Management of the Behavioral Emergency

The most common behavioral crises that EMS is called for are episodes of severe anxiety or panic attacks. In these situations the patient suddenly becomes extremely fearful and agitated. The person may experience a phobic reaction in which he or she has an irrational fear of an object or situation. When individuals are extremely anxious they often feel depressed and have no signs of relief or hope. The initial approach to the patient with abnormal behavior is very important. Often this will set the tone for the remainder of the event. The person is most likely in a heightened and hyperalert state to even the most subtle movements or noises. While initiating contact with the patient, it is important to look for signs and symptoms and formulate a plan for establishing a rapport with the troubled person.

Establishing a Connection with the Patient

The most important defense the patient has is his or her space. On some level he or she may realize that if there is a satisfactory distance from other people, he or she will have time and the chance to "escape" this difficult situation. If the person is approached too rapidly, this defense mechanism collapses and the patient is likely to panic and possibly become aggressive. The amount of space is subjective in every situation and EMS must use judgment. A general rule is about three feet depending on the circumstances.

The first priority for EMS is to remain aware and alert throughout the incident. It is essential to continually reassess the situation as well. Life-threatening conditions for anyone who is involved must be addressed during the assessment. The situation may take a prolonged period of time, so one must be mentally prepared to take as much time as the patient needs for the situation to be resolved. To gain some insight into the problem, encourage the patient to talk about what is troubling him or her. Schizophrenia and drug-induced hallucinations and delusions are relatively common in emergency behavioral situations and it is important that you do not acknowledge that the hallucinations are real. This may result in distrust if the patient realizes you are lying to him or her.

Talk and move in a calm manner while quietly and carefully assessing the situation. Speak slowly and clearly in a friendly tone. Take time to explain that you are here only to help and be honest about why EMS was called and what you are planning to do. Trust is a major factor that EMS must establish with the patient. It is possible that a loss of trust or an unjust feeling triggered the event. Give the patient time to talk and make him or her feel that you are listening to what is being said. It helps to rephrase what the person says to keep the conversation going and this allows the patient to believe you and trust you. Show compassion and do not be judgmental in any way. If the patient verbalizes delusions or hallucinations, it can help to assure the patient that these symptoms are not true. It is important that you acknowledge the patient's feelings and convey that you understand why he or she is upset. If the verbal exchange

seems to be going well and the person seems to be calming down, ask if you may move closer so you can see if medical attention is needed. Always stay alert for sudden changes in behavior and movement. Continue to be alert for sudden and irrational behaviors even when the situation seems to be defusing. The patient likely has one of the medical, neurological or psychiatric conditions previously mentioned. If that is the case, it is to be expected that the patient's brain function is not normal at this time.

Assessing the Patient and Providing Emergency Care

Involve the family in the conversation if it is appropriate. The family can provide insight to both the patient and EMS personnel. Obtain information from family or bystanders to attempt to determine the cause of the behavior. At this time it is appropriate to obtain a medical history and recent symptoms. Once the patient is approachable, try to perform a focused history and a physical exam for the signs and symptoms previously discussed. There are several physical signs that can be observed including: skin color (blood perfusion and oxygenation, infective rashes), eye movements and pupil size (a sign of internal head trauma, drug use), odor of breath (alcohol, hyperglycemic "fruity breath"), and external signs of trauma. A more detailed physical exam should be performed if it is determined the patient can tolerate this. Restraints are occasionally required when patients are persistently violent or self-injurious.

Potentially Dangerous Situations

Aggressive or hostile patients pose obvious special concerns when approaching this situation. To help determine this when first arriving, look for clues that suggest potential violence. First, aggressive behavior is most commonly seen in patients with head trauma, metabolic disorders, substance intoxication, high stress, and psychological or psychiatric disorders. A patient's stance, movements, and behavior can suggest he or she is or could potentially be aggressive. Concerning behaviors includes constant pacing, shouting, rapid respirations, pressured speech, quick movements, clinched fists, and the appearance of being nervous or anxious. A patient that displays any of these signs should be considered capable of sudden violent behavior.⁷⁷

In the situation with aggressive or hostile patients, it is important not to be separated from your partner or other personnel. Be vigilant of the surroundings, watch for anything that could be used as a weapon, and always watch the patient's hands. Do not make any movement or actions that may be interpreted as threatening. It is important to maintain verbal contact with other responders on the scene and be alert for sudden behavioral changes. Using reasonable force is described as the actions necessary to keep the patient from causing injury to themselves or others. This can be determined by looking at the circumstances involving the patient's size and strength, mental status, displayed behavior, and available methods of restraint.

Lastly, it is important to document all observations, behavior and scene thoroughly and professionally. This can help the doctors and mental health professionals determine what happened.

Suicide Emergency

A behavioral emergency may involve suicidal ideation, a suicide attempt, or involve an instrument that could be used for suicide. Ideations may occur for any number of reasons. The main concern when faced with a suicidal situation is responder safety. The most common risk factors for suicide are depression, high stress levels, recent emotional distress, or trauma. Suicide attempts also occur more frequently in those between the ages of 15-25 and over the age of 40.

Suicide is a situation for law enforcement officers, but EMS may be the first on the scene. In addition, a suicidal situation may evolve out of a behavioral emergency that is attended by EMS. As with all behavioral emergencies, personal interaction with the patient is critical. Initiate visual and verbal contact and provide empathy. It is important to avoid any type of confrontation, arguments, and threats. Do not display any signs of using force. These factors may escalate the patient's behavior. If the patient questions EMS, the answers should be honest but not inflammatory. It may help to point out options and discuss family relations to defuse the pattern of thinking the patient is focused on. If the patient verbalizes delusions and hallucinations it can help to assure the patient that these symptoms are not real. Once law enforcement is on the scene, allow them to deal with the patient unless the situation is near resolution. Do not leave the immediate area unless there is responder risk. Assist law enforcement if restraining is required and treat life-threatening injuries as conditions permit.⁷⁸

Medications Used in Behavioral Emergencies

Medications most commonly used for the treatment of agitated patients that are not responding to behavioral intervention are benzodiazepines, conventional antipsychotics and atypical antipsychotics. In a voluntary situation medication is given orally, however, if the patient exhibits escalating behavior and refuses to take medication it is administered intramuscularly (IM). Intravenous (IV) medication can be used but it is often difficult to gain IV access in an agitated patient. In an assessment of 51 psychiatric emergency service programs, it was reported that the majority of departments (94%) reported using mild sedation to allow for further assessment of the patient as the appropriate reason and did not use sedation as an endpoint (82%). Benzodiazepines were reported to be used most frequently;

82% of physicians indicated it is their policy to administer a benzodiazepine alone for agitation. Only if the behavior became more problematic did physicians choose to initiate neuroleptic medication. However, given a history of previous antipsychotic treatment, only 8% stated they would use benzodiazepines alone. Most departments (78%) preferred to use oral medication for treating behavioral emergencies whenever possible, but 70% reported regular use of an IM combination of a benzodiazepine and a high-potency typical neuroleptic when necessary. Involuntary medications were administered in 16% of cases, but in the oral form in 29% of those cases.⁷⁹ Emergency psychiatric departments' usage reflects what local EMS personnel are administering in the field.

The condition excited delirium syndrome, also known as agitated delirium, defined as altered mental status and combativeness or aggressiveness, typically requires a more aggressive approach. This type of patient often paces or is constantly moving, displays a high tolerance to pain, has rapid breathing, sweating, severe agitation, elevated temperature, delirium, non-compliance to direction from police or medical personnel, lack of fatigue and displays unusual strength. In this situation, emergency personal may need to administer IM or IV neuroleptics or even ketamine.⁸⁰

Commonly Used Medications

Benzodiazepines

- Lorazepam
- Diazepam
- Midazolam

Conventional Antipsychotics

- Haloperidol
- Ziprasidone (Geodon)

Restraints when Necessary

Effective strategies are sufficient in resolving most behavioral emergencies. Based on the results of a survey of 50 psychiatric emergency services in the United States, it was found that 37.2% of patients presented involuntarily, but only 8.5% of the patients required restraints at any point during their time in the behavioral emergency setting.⁸¹

Physical confrontation with the patient is likely to be met with resistance and possible injury to the patient and responders, so attempts to restrain are a last resort. Restraints are methods used to limit or restrict the movement of a patient and are used to protect the health and safety of the patient, bystanders, and responders. The use of restraints often brings controversy. The concern arises over reports of injury and even death in some patients that were restrained, primarily in psychiatric hospitals as recently as the 1990s.⁸²

In some localities EMS is not legally allowed to restrain a patient against his or her will, so law enforcement officers must be present. All EMS agencies should have a written policy regarding the use of restraints. The restraints should not have any component that may injure the patient. Handcuffs and flex cuffs should be avoided. When planning to institute the restraints, make sure there is adequate help available. Estimate the reach and range of motion of the patient's arms and legs and avoid that defined area until completely ready.

When EMS or law enforcement feels it is time to consider using restraints, it is important to attempt to explain to the patient what type of restraints are going to be used and the specific reasons for using them. It should be explained that the patient can do to avoid the use of restraints. A clear explanation of what will happen and why it is necessary should be conveyed to the patient. Act quickly once the decision to restrain is made. There should be one responder assigned to continue to talk and reassure the patient during the restraint procedure. A minimum of four people should be present because a panicked patient who is fearful can generate a surprising amount of force and speed. Secure all four limbs and use multiple straps or restraints to ensure that the patient cannot break free.

It is helpful to continue to explain what is happening to the patient as the restraint process begins. Responders should protect the patient's head while others each manage an arm or leg. Be careful not to use excessive force. In an emergent situation where the patient may appear to be trying to harm others, it is important to not let emotions influence professional work. The patient may be restrained on his or her back or side. The patient should never be placed in the prone position with their face towards the ground. This puts the patient at risk of suffocation. If the patient is spitting, utilize a surgical mask or a "spit sock" on him or her, but watch closely for appropriate breathing. Intermittently assess the patient's distal pulses to ensure the restraints are not constricting blood flow.

Once the patient is secure and safe, document the reason why restraints were required and the specific methods used. Describe specific behaviors and the concerns about the patient's ability to harm themselves and/or others. Describe the scene with statements to support the decision to physically intervene. Report evidence, or suspicion of the use of drugs or alcohol, and any signs of illness or injury. List all names of EMS, law enforcement officers, and witnesses present.

Medical-Legal Considerations

People who are acting inappropriately and even violently still have the right to be treated fairly and humanely. However, in order to be competent to refuse treatment the patient must be of sound mind. There is sometimes a fine line between protecting individuals from themselves or from harming others and maintaining their legal rights.

It becomes essential to understand state and local laws regarding the treatment of patients that do not give consent. The plan should involve medical personnel input, law enforcement officers and mental health staff if possible. Take deliberate steps to avoid use of unreasonable force and the possibility of charges of sexual misconduct. Legal repercussions can be avoided if time is taken to explain and assist an emotionally disturbed person to consent to emergency care.

Case Study Conclusion

Once in the emergency room, J.M. screamed and was noticed to have urinated. On examination, there was blood in his urine with a large granular material. J.M. was sedated and an ultrasound revealed multiple bilateral kidney stones.

A urologist was called in to administer lithotripsy to break down the kidney stones. J.M. remained on pain medication for 24 hours until all evidence of the kidney stones had passed. His behavior returned to his normal mild-mannered personality and he had no further behavioral outbursts.

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