The cognitive disorders are delirium, dementia, and amnestic disorders. Table 8-1 lists the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, classification of cognitive disorders.

### DELIRIUM

Delirium is a reversible state of global cortical dysfunction characterized by alterations in **attention** and **cognition** and produced by a definable precipitant. Delirium is categorized by its etiology (see Table 8-1) as due to general medical conditions, substance-related, or multifactorial in origin.

**Etiology**

Delirium is a syndrome with many causes. Most frequently, delirium is the result of a general medical condition; substance intoxication and withdrawal also are common causes. Structural central nervous system lesions can also lead to delirium. Table 8-2 lists common general medical and substance-related causes of delirium. Delirium is often multifactorial and may be produced by a combination of minor illnesses and minor metabolic derangements (e.g., mild anemia, mild hyponatremia, mild hypoxia, and urinary tract infection, especially in an elderly person). Common medical causes of delirium include metabolic abnormalities such as hyponatremia, hypoxia, hypercapnia, hypoglycemia, and hypercalcemia. Infectious illnesses, especially urinary tract infections, pneumonia, and meningitis, are often implicated. The common substance-induced causes of delirium are alcohol or benzodiazepine withdrawal and benzodiazepine and anticholinergic drug toxicity, although a great number of commonly used medications, prescribed and over the counter, can produce delirium. Other conditions predisposing to delirium include old age, fractures, and preexisting dementia.

**Epidemiology**

The exact prevalence in the general population is unknown. Delirium occurs in 10% to 15% of general medical patients older than age 65 and is frequently seen postsurgically and in intensive care units. Delirium is equally common in males and females.

**Clinical Manifestations**

**History and Mental Status Examination**

History is critical in the diagnosis of delirium, particularly in regard to the time course of development of the delirium and to the prior existence of dementia or other psychiatric illness. Key features of delirium are

1. Disturbance of consciousness, especially attention and level of arousal;
2. Alterations in cognition, especially memory, orientation, language, and perception;
3. Development over a period of hours to days; and
4. Presence of medical or substance-related precipitants.

In addition, sleep-wake cycle disturbances and psychomotor agitation may occur. Delirium is often difficult to separate from dementia, in part because dementia is a risk factor for delirium (and thus they frequently co-occur) and in part because there is a great deal of symptom overlap, as outlined in
Table 8-3. Key differentiating factors are the time course of development of the mental status change (especially if the patient did not have a prior dementia) and the presence of a likely precipitant for the mental status change. Individuals with delirium may also display periods of complete lucidity interspersed with periods of confusion, whereas in dementia, the deficits are generally more stable. In both conditions, there may be nocturnal worsening of symptoms with increased agitation and confusion (“sundowning”).

The diagnosis of delirium is complicated by the fact that there are no definitive tests for delirium. The workup for delirium includes a thorough history and mental status examination, a physical examination, and laboratory tests targeted at identifying general medical and substance-related causes. These should include urinalysis, complete chemistry panel, complete blood count, and oxygen saturation. Additional workup might entail chest X ray, arterial blood gas (ABG), neuroimaging, or electroencephalogram (EEG). EEG may reveal nonspecific diffuse slowing. The presence of a delirium is associated with a 1-year mortality rate of 40% to 50%.

### Differential Diagnosis

Delirium should be differentiated from dementia (although both can be present at the same time), psychotic or manic disorganization, and status complex partial epilepsy.

### Management

The treatment of delirium involves keeping the patient safe from harm while addressing the delirium. In the case of delirium due to a general medical illness, the underlying illness must be treated; in substance-related delirium, treatment involves removing the offending drug (either drugs of abuse or medications) or the appropriate replacement and tapering of a cross-reacting drug to minimize withdrawal. Delirium in the elderly is frequently multifactorial
and requires correction of a multitude of medical conditions.

In addition to addressing the cause of a delirium, oral, intramuscular, or intravenous haloperidol is of great use in treating agitation. Low doses of short-acting benzodiazepines can be used sparingly. Providing the patient with a brightly lighted room with orienting cues such as names, clocks, and calendars is also useful.

**Etiology**

Generally, the etiology of dementia is brain neuronal loss that may be due to neuronal degeneration or to cell death secondary to trauma, infarction, hypoxia, infection, or hydrocephalus. Table 8-1 lists the major discrete illnesses known to produce dementia. In addition, there are a large number of general medical, substance-related, and multifactorial causes of dementia.

**Epidemiology**

The prevalence of dementia of all types is about 2% to 4% after age 65, increasing with age to a prevalence of about 20% after age 85. Specific epidemiologic factors relating to disease-specific causes of dementia are listed in Table 8-4.

**Clinical Manifestations**

**History and Mental Status Examination**

Dementia is diagnosed in the presence of multiple cognitive defects not better explained by another diagnosis. The presence of memory loss is required; in addition, one or more cognitive defects in the categories of aphasia, apraxia, agnosia, and disturbance in executive function must be present. Table 8-3 compares characteristics of dementia to those of delirium. Dementia often develops insidiously over the course of weeks to years (although it may be

**TABLE 8-3**

<table>
<thead>
<tr>
<th>Delirium versus Dementia</th>
<th>Delirium</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Hours to days</td>
<td>Weeks to years</td>
</tr>
<tr>
<td>Course/duration</td>
<td>Fluctuates within a day. May last hours to weeks*</td>
<td>Stable within a day. May be permanent, reversible, or progressive over weeks to years</td>
</tr>
<tr>
<td>Attention</td>
<td>Impaired</td>
<td>May be impaired</td>
</tr>
<tr>
<td>Cognition</td>
<td>Impaired memory, orientation, language</td>
<td>Impaired memory, orientation, language, executive function</td>
</tr>
<tr>
<td>Perception</td>
<td>Hallucinations, delusions, misinterpretations</td>
<td>Hallucinations, delusions</td>
</tr>
<tr>
<td>Sleep/wake</td>
<td>Disturbed, may have complete day/night reversal</td>
<td>Disturbed, may have no pattern</td>
</tr>
<tr>
<td>Mood/emotion</td>
<td>Labile affect</td>
<td>Labile affect; mood disturbances</td>
</tr>
<tr>
<td>Sundowning</td>
<td>Frequent</td>
<td>Frequent</td>
</tr>
<tr>
<td>Identified precipitant</td>
<td>Likely precipitant is present</td>
<td>Identifiable precipitant not required</td>
</tr>
</tbody>
</table>

* DSM-IV does not specify a limit for the duration for delirium; clinical experience suggests resolution within days to weeks, in most cases.

**KEY POINTS**

1. Delirium is a disorder of attention and cognition.
2. It has an abrupt onset and a variable course.
3. It has an identifiable precipitant.
4. 1-year mortality rate is greater than 40%.

**DEMENTIA**

Dementia is characterized by the presence of memory impairment in the presence of other cognitive defects. Dementia is categorized according to its etiology (see Table 8-1). It can arise as a result of a specific disease, for example Alzheimer’s disease or HIV infection; a general medical condition; or a substance-related condition; or it can have multiple etiologies. The definitive cause may not be determined until autopsy.
abrupt after head trauma or vascular insult). Individuals with dementia usually have a stable presentation over brief periods of time, although they may also have nocturnal worsening of symptoms (“sun-downing”). Memory impairment is often greatest for short-term memory. Recall of names is frequently impaired, as is recognition of familiar objects. Executive functions of organization and planning may be lost. Paranoia, hallucinations, and delusions are often present. Eventually, individuals with dementia may become mute, incontinent, and bedridden.

### Differential Diagnosis

Dementia should be differentiated from delirium. In addition, dementia should be differentiated from those developmental disorders (such as mental retardation) with impaired cognition. Individuals with major depression and psychosis can appear demented; they warrant a diagnosis of dementia only if their cognitive deficits cannot be fully attributed to the primary psychiatric illness.

A critical component of differential diagnosis in dementia is to distinguish pseudodementia associated with depression. Although there are many precise criteria for separating the two disorders, neuropsychological testing may be needed to make an accurate diagnosis. In pseudodementia, mood symptoms are prominent and patients may complain extensively of memory impairment. They characteristically give “I don’t know” answers to mental status examination queries but may answer correctly if pressed. Memory is intact with rehearsal in pseudodementia, but not in dementia.

### Management

Dementia from reversible, or treatable, causes should be managed first by treating the underlying cause of the dementia; rehabilitation may be required for residual deficits. Reversible (or partially reversible) causes of dementia include normal pressure hydrocephalus; neurosyphilis; HIV infection; and thiamine,

<table>
<thead>
<tr>
<th>Disease</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer’s</td>
<td>Most common cause of dementia, accounts for greater than 50% of all cases. Risk factors are familial, Down syndrome, prior head trauma, increasing age. Clinically, it is a diagnosis of exclusion. Post-mortem pathology reveals cortical atrophy, neurofibrillary tangles, amyloid plaques, granulovascular degeneration, loss of basal forebrain cholinergic nuclei. Course is progressive, death occurs 8–10 years after onset.</td>
</tr>
<tr>
<td>Vascular</td>
<td>Second most common cause of dementia. Risk factors are cardiovascular and cerebrovascular disease. Neuroimaging reveals multiple areas of neuronal damage. Neurological exam reveals focal findings. Course can be rapid onset or more slowly progressive. Deficits are not reversible, but progress can be halted with appropriate treatment of vascular disease.</td>
</tr>
<tr>
<td>HIV</td>
<td>Limited to those cases caused by direct action of HIV on the brain; associated illnesses, such as meningitis, lymphoma, toxoplasmosis producing dementia are categorized under dementia due to general medical conditions. Primarily affects white matter and cortex.</td>
</tr>
<tr>
<td>Head trauma</td>
<td>Most common among young males. Extent of dementia is determined by degree of brain damage. Deficits are stable unless there is repeated head trauma.</td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>Occurs in 20–60% of individuals with Parkinson’s disease. The most likely pathological finding on autopsy is Lewy body disease. Bradyphrenia (slowed thinking) is common. Some individuals also have pathology at autopsy consistent with Alzheimer’s dementia.</td>
</tr>
<tr>
<td>Huntington’s</td>
<td>Risk factors are familial, autosomal dominant on chromosome 4. Onset commonly in mid 30s. Emotional lability is prominent. Caudate atrophy is present on autopsy.</td>
</tr>
<tr>
<td>Pick’s</td>
<td>Onset at age 50–60. Frontal and temporal atrophy are prominent on neuroimaging. The dementia responds poorly to psychotropic medicine.</td>
</tr>
<tr>
<td>Creutzfeldt-Jakob</td>
<td>Ten percent of cases are familial. Onset age 40–60. Prion is thought to be agent of transmission. Clinical triad of dementia, myoclonus, and abnormal EEG. Rapidly progressive. Spongiform encephalopathy is present at autopsy.</td>
</tr>
</tbody>
</table>
folate, vitamin B₁₂, and niacin deficiencies. Vascular dementias may not be reversible, but their progress can be halted in some cases. Nonreversible dementias are usually managed by placing the patient in a safe environment and by medications targeted at associated symptoms. Tacrine, an acetylcholinesterase inhibitor, has some efficacy in treating memory loss in dementia of the Alzheimer’s type. High-potency antipsychotics (in low doses) are used when agitation, paranoia, and hallucinations are present. Low-dose benzodiazepines and trazodone are often used for anxiety, agitation, or insomnia.

Confusion may resolve, leaving a residual amnestic disorder called Korsakoff’s psychosis (alcohol-induced persistent amnestic disorder).

**Epidemiology**

Individuals affected by a general medical condition or alcoholism are at risk for amnestic disorders.

**Clinical Manifestations**

**History and Mental Status Examination**

Amnestic disorders present as deficits in memory, either in the inability to recall previously learned information or the inability to retain new information. The cognitive defect must be limited to memory alone; if additional cognitive defects are present, a diagnosis of dementia or delirium should be considered. In addition to defect in memory, there must be an identifiable cause for the amnestic disorder (i.e., the presence of a general medical condition or substance use).

**Differential Diagnosis**

Delirium and dementia are the major differential diagnostic considerations. Amnestic disorders are distinguished from dissociative disorders on the basis of etiology. By definition, amnestic disorders are due to a general medical condition or substance related.

**Management**

The general medical condition is treated whenever possible to prevent further neurologic damage; in the case of a substance-related amnestic disorder, avoiding reexposure to the substance responsible for the amnestic disorder is critical. Pharmacotherapy may be directed at treating associated anxiety or mood difficulties. Patients should be placed in a safe, structured environment with frequent memory cues.

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**KEY POINTS**

1. Amnestic disorders are disorders in memory alone.
2. They are caused by identifiable precipitants.
3. Amnestic disorders are reversible in some cases.