Chapter 1
DEMENTIA BASICS

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Key Points

• Impact of dementia on health care
• Normal brain function versus brain function in dementia
• The meaning of dementia
• Causes of dementia

UNDERSTANDING DEMENTIA

The population of the United States and other countries is aging rapidly. Accompanying this aging population is a dramatic rise in the number of cases of dementia. Dementia is a general term for a disorder characterized by global intellectual deterioration. Because of the rapid aging of the population, the number of people with dementia is expected to increase dramatically in the next 10 to 20 years. In fact, dementia is now the most common mental disorder in the elderly.

Dementia by the Numbers

• More than 5 million people in the United States have dementia.
• At the age of 65, approximately 7% of elderly experience dementia.
• Between ages 75 and 85, the number doubles to about 16% of elderly.
2 Nurse to Nurse: Dementia Care

- Over the age of 85, at least half of the population has dementia.
- More than 27.7 million people worldwide have dementia.¹

In the years to come, a large percentage of patients will be elderly (older than age 65) and at high risk of having dementia. This is true across all practice settings and nursing specialties. Nurses who specialize in specific disorders will care for many older patients likely to suffer from dementia, as shown in the percentages of elderly patients in specialty care:²

- Oncology 63%
- Cardiology 60%
- Urology 53%
- Ophthalmology 52%

The aging population makes up the majority of patients in a variety of health care settings. The percentage of elderly patients in different health care settings is listed here:²

- Ambulatory care 65%
- Hospitals 48%
- ICUs 46%
- Home care 80%
- Nursing homes 90%
- Assisted living 70%

Impact on Health Care System

Dementia also has a major impact on the health care system as a whole.² When compared with normal elderly, older adults with dementia have:

- 3 times more hospital admissions
- 21.8 times higher hospital costs
- 3.1 times higher home health costs
- 2 to 3 times the length of hospital stay

Dementia is a common disorder with major ramifications for nurses, who will need the special knowledge and skills to care for such patients across the health care system.
NORMAL AGING, THINKING, AND MEMORY

It is vital for nurses to understand how the normal brain works, as the impairments that are common in dementia are related to the location of damage in the brain.

As a review, the brain has two hemispheres, right and left. Figure 1-1 shows the left hemisphere, with the front of the brain at the left and the back at the right. Table 1-1 reviews the normal functions of each part of the brain shown in Figure 1-1. This information can alert you to which parts of the brain are damaged in your patients with dementia.

WHAT IS DEMENTIA?

Forgetfulness and disorientation were once considered a normal part of aging. It was believed that if one lived long enough, such impairments were inevitable. Currently, dementia is considered an abnormal state with many causes that can often be identified. A well-accepted definition of dementia is:

A global intellectual decline of sufficient severity to impair social and or occupational functioning that occurs in normal consciousness.3

Figure 1-1  Lobes of the brain.
## Table 1-1  Functions in a Normal Brain Versus a Diseased Brain

<table>
<thead>
<tr>
<th>Part of the Brain</th>
<th>Normal Functions</th>
<th>Impact in Disease States</th>
<th>Impact on Behavior</th>
</tr>
</thead>
</table>
| 1. Frontal lobe   | • Organizing tasks  
                   • Regulation of manners  
                   • Inhibition of impulses  
                   • Decision-making | • Inability to sequence task  
                   • Inability to regulate and inhibit behavior | • Putting underwear over clothing  
                   • Eating from another's plate  
                   • Cussing, swearing |
| 2. Parietal lobe  | • Sensory perception  
                   • Movement | • Inability to interpret tactile sensations  
                   • Difficulty in performing learned motor movements | • Inability to identify spoiled food by smell  
                   • Inability to sense one's skin is being burned  
                   • Difficulty in orienting body to get into a car |
| 3. Temporal lobe  | • Memory  
                   • Rage | • Inability to form new memories  
                   • Emotional response | • Asking questions over and over  
                   • Sudden reactions to minor events with episodes of rage |
| 4. Occipital lobe | • Recognizing what you see | • Inability to recognize objects, places, people | • May not recognize spouse; may be afraid of him or her  
                   • Constantly wants to go home  
                   • Unable to recognize what is and is not food |
There are four key elements to the definition of dementia:

1. **Global impairment.** The impairments in dementia are global. Impairments occur in more than just memory. Most dementia patients experience impairments in reasoning, using and understanding language, recognizing what one perceives through the senses, coordinating learned motor movements, planning, and decision-making.

2. **Decline.** The impairments represent a decline from a previous level of functioning. To recognize decline, it is crucial for the nurse to know the patient's previous level of functioning. Methods of assessment for determining decline are presented in Chapter 3. Patients who are mentally retarded are not necessarily demented as they age. The exception to this are people with Down syndrome, all of whom will have the pathology of Alzheimer disease in their brains at 40 years and older.

3. **Severity.** Impairments are severe enough to interfere with normal functioning in everyday life. Examples are a person who was living independently and begins to make poor financial decisions or forgets how to cook a meal, although the person could previously perform those tasks. Getting lost while driving can also indicate severe impairment.

4. **Normal consciousness.** These impairments occur in a normal state of consciousness; patients are awake and alert. This is distinguished from an abnormal state of consciousness, such as drowsiness, stupor, or coma, seen in delirium. Delirious patients wax and wane in their consciousness and ability to pay attention to the world around them. A common example is a postsurgery patient who must be aroused to take a medication but quickly falls asleep as a result of anesthesia and pain medicine.

**CAUSES OF DEMENTIA**

There are many brain disorders that cause dementia. The currently recognized causes of dementia are represented in the pie chart shown in Figure 1-2. Each type has a distinctive profile of symptoms and course.
Alzheimer Disease

Alzheimer disease (AD) is the most common cause of dementia and thus the most common type that nurses encounter in clinical practice. AD is an incurable neurodegenerative disease. The hallmark pathology of AD includes amyloid plaques and neurofibrillary tangles in the brain. One also sees general shrinkage of the brain and a decrease in the number of functioning neurons.

Box 1-1 The Four A’s of Alzheimer Disease

- Amnesia: Memory impairment
- Aphasia: Communication impairment
- Apraxia: Impairment in performing motor movements
- Agnosia: Impairment in recognition of what is taken in through the senses
Currently, there is no cure for Alzheimer disease, and treatments that are available may impact the symptoms but do not slow down the disease process. Alzheimer disease affects different patients in different ways, and progresses steadily until patients are completely disabled. The disease typically progresses through three stages (Table 1-2).

Patients with AD live 4 to 20 years after diagnosis. The most common causes of death are from aspiration of food or fluids into the lungs and from the complications of immobility, as patients are unable to walk.

**Vascular Dementia**

Vascular dementia (VD), resulting from impaired blood supply to the brain, is the second most common form of dementia. The most common cause of VD is a series of small, often undetectable strokes in the brain. Such strokes disrupt the flow of blood, oxygen, and nutrients to the affected area. The clinical picture of dementia emerges when a total of 50 mL of brain
tissue is damaged. VD can occur along with AD, and is then called mixed dementia. The changes in functioning can occur suddenly or gradually as more and more tissue is damaged.

**Symptoms**

The symptoms of VD vary according to the area of the brain damaged by the disruption of blood flow, nutrients, and oxygen. The symptoms that point to vascular disease being the cause of dementia are:

- Abrupt onset of symptoms, often following a stroke
- Stepwise course with periods of stability, often called plateaus
- Dizziness
- Focal neurologic signs, such as weakness of an arm or leg
- Early gait disturbance
- Emotional lability (mood swings)
- Difficulty in making decisions
- Fluctuations in functioning, often called good and bad days
- Patchy impairments, such as language more impaired than memory
- Increased likelihood of developing depression
- Self-awareness of mental and physical problems late into the illness
- Arterial disease elsewhere in the body, such as in the coronary arteries

**Prognosis**

There is no current way to restore the function of the brain in areas damaged by the strokes of VD, and there is some evidence that having VD increases a patient’s later risk of developing AD. Further damage can be prevented by addressing the risk factors for stroke. These include managing diabetes and hypertension, losing weight, exercising, avoiding smoking, and controlling heart disease and high cholesterol.

The course of VD is difficult to predict. Death usually occurs due to a vascular event such as a large stroke or myocardial infarction. Patients with VD live about 8 to 15 years.
though the cause of VD is different from AD, patients eventually have a progressive decline until death.

**Lewy Body Dementia**

Lewy body dementia (LBD) is characterized by progressive cognitive decline. Other features distinct to those with LBD are:

- Fluctuations in consciousness
- Recurrent visual hallucinations
- Parkinsonism motor symptoms

The fluctuations in consciousness are evidenced by periods of drowsiness, lethargy, and staring into space. Nurses are often concerned that the staring into space is an early sign of aggression. This is typically not a deliberate behavior to threaten the nurse, but a result of the brain disease. Patients with LBD often prefer to spend long periods of time in bed sleeping. The visual hallucinations are often quite vivid, and patients can describe them in detail. In many cases, the hallucinations are not frightening or disturbing. Patients with LBD are very sensitive to neuroleptic medications, and thus hallucinations are difficult to treat.

The parkinsonism motor symptoms result in slowed movement and poor balance, resulting in falls and muscle rigidity. In some cases these symptoms are helped by the use of the same medications used for Parkinson disease such as levodopa. These symptoms progress as the disease worsens.

Lewy body dementia is described as having three stages: early, middle, and late.

- **Early stage**: Forgetfulness, poor concentration, unstable gait and depression.
- **Middle stage**: Worsening cognition that fluctuates and is often worse at night. Visual and auditory hallucinations and paranoid delusions. Falls become more frequent.
- **Late stage**: Rapid progression of cognitive decline, increase in frequency of behavioral disturbance, shouting, and aggression. Death occurs within months, in many cases, and is most often secondary to aspiration pneumonia.
Treatment of LBD focuses on the Parkinson-like features and the hallucinations and paranoid delusions. Medications approved for Alzheimer disease are often used and are helpful for cognitive dysfunction in some patients.

**Frontotemporal Dementia**

Frontotemporal dementia (FTD) primarily affects the frontal and anterior temporal lobes. In contrast to other types of dementia, personality, behavior, and language ability are affected first, and memory is often normal until late into the disease. As a result, the following features are characteristic of FTD:

- Disinhibited and inappropriate social behavior
- Inappropriate sexual behavior
- Loss of concern about personal hygiene and appearance
- Major increase in appetite and weight gain
- Apathy
- Lack of concern for others
- Compulsive and repetitive behaviors such as touching, collecting things
- Putting objects into mouth
- Memory loss (this evolves after the above symptoms)

**Other Causes of Dementia**

Around 10% of dementia cases are caused by more rare conditions described in Table 1-3.

**CONDITIONS THAT MIMIC DEMENTIA**

There are several common conditions that mimic dementia but may be treatable and reversible. In the process of a diagnostic workup, such conditions are ruled out by exams, lab work, and brain imaging before the diagnosis of Alzheimer disease is made. These conditions include:
Table 1-3 Other Causes of Dementia and Key Clinical Features

<table>
<thead>
<tr>
<th>Cause</th>
<th>Clinical Features</th>
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<tbody>
<tr>
<td>Multiple sclerosis (MS)</td>
<td>• Impairments in information processing, memory retrieval, decision-making, and planning</td>
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<td></td>
<td>• Poor regulation of mood</td>
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<td></td>
<td>• 16%–20% of MS patients have mood disorders, particularly major depression</td>
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<tr>
<td></td>
<td>• Delusions and hallucinations are rare</td>
</tr>
<tr>
<td></td>
<td>• Lack of concern about impairment</td>
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<tr>
<td>Parkinson disease</td>
<td>• Decrease in processing and mental flexibility—that is, persons are slow to respond</td>
</tr>
<tr>
<td></td>
<td>• Apathy and social withdrawal</td>
</tr>
<tr>
<td></td>
<td>• Impairments in verbal output</td>
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<tr>
<td></td>
<td>• 30%–60% develop depression</td>
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<tr>
<td></td>
<td>• 30% have visual hallucinations of groups of people or animals</td>
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<tr>
<td></td>
<td>• Delusions can occur as a result of treatment with anti-Parkinson medications</td>
</tr>
<tr>
<td>Creutzfeldt–Jakob disease (CJD)</td>
<td>• Personality change and disinhibition occur first</td>
</tr>
<tr>
<td></td>
<td>• Rapid decline</td>
</tr>
<tr>
<td></td>
<td>• Myoclonus (involuntary jerking of muscles and limbs)</td>
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<td></td>
<td>• Death within months to 6 years</td>
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<tr>
<td>Huntington disease</td>
<td>• Inherited neurologic degenerative disorder</td>
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<td></td>
<td>• Dance-like movements, involuntary movements</td>
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<td></td>
<td>• Poor coordination</td>
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<tr>
<td></td>
<td>• Frequent falls</td>
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<tr>
<td></td>
<td>• Apathy</td>
</tr>
<tr>
<td></td>
<td>• Slowness of thinking</td>
</tr>
<tr>
<td></td>
<td>• Recall impaired</td>
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<tr>
<td></td>
<td>• High rates of depression and mania</td>
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</tbody>
</table>

(Continued)
Table 1-3 Other Causes of Dementia and Key Clinical Features (Continued)

<table>
<thead>
<tr>
<th>Cause</th>
<th>Clinical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal-pressure hydrocephalus (NPH)</td>
<td>• Dementia</td>
</tr>
<tr>
<td></td>
<td>• Gait disturbance</td>
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<tr>
<td></td>
<td>• Difficulty walking, broad-based magnetic gait</td>
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<td></td>
<td>• Urinary incontinence</td>
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<td></td>
<td>• Onset early 70s</td>
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<td></td>
<td>• Enlarged ventricles identified on brain imaging</td>
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<tr>
<td></td>
<td>• Treatment is placement of shunt in brain to decrease pressure</td>
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<tr>
<td>Human immuno-deficiency virus (HIV)</td>
<td>• Memory loss</td>
</tr>
<tr>
<td></td>
<td>• Slowed mental processing</td>
</tr>
<tr>
<td></td>
<td>• Difficulty with planning</td>
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<tr>
<td></td>
<td>• Apathy, social withdrawal</td>
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<tr>
<td></td>
<td>• Cognitive impairment occurs much more often if CD4 count below 400</td>
</tr>
</tbody>
</table>

- Delirium, often a reaction to medications or dehydration
- Thyroid disease—hyperthyroidism or hypothyroidism
- Infections, such as urinary tract infection
- Anemia
- Vitamin B\textsubscript{12} deficiency
- Depression
- Brain tumors
- Vasculitis

**DIAGNOSIS OF DEMENTIA**

The standard approach to establishing a diagnosis of dementia includes the following:

- History of the present illness
- Direct cognitive testing to establish decline
• Psychiatric evaluation to rule out depression and other mental disorders
• Neurologic evaluation to rule out strokes, Parkinson disease, and other neurologic conditions
• Laboratory tests to detect metabolic abnormalities such as thyroid disease
• Brain imaging to detect tumors
• Medical evaluation, including careful review of prescription and over-the-counter medications and herbs

Many patients in long-term care will have a diagnosis of dementia without an evaluation, and the specific cause of the dementia may not be known.

REFERENCES
