The terms dementia and Alzheimer’s disease have long caused confusion and controversy. The English use of the word *dementia* appears in the early 1800s, from the Latin dement-, referring to “mad, raving”.¹ *Dementia praecox* was coined in the late 1800s, referring to what is now called schizophrenia.¹ An 1898 textbook of psychiatry contained an entire chapter on dementia, describing it as the “terminal stage” of either “mental depression or mental activity with general exaltation, described as melancholia or mania” and as “…an enfeeblement of the mental faculties.”² In 1906, Alois Alzheimer described a 51 year old woman with loss of memory plus behavioral and other cognitive changes.³ For decades afterwards, Alzheimer’s disease was considered “presenile dementia,” a condition of younger patients, while the elderly (vaguely defined) were considered to have cognitive dysfunction simply due to aging. In the 1960s, a movement began to recognize that the elderly with cognitive disorders had one or more diseases. This led to a desire for formal definitions and criteria for the class of diseases commonly called dementias. This article will describe the evolution of terminology of these disorders, with the most recent shift from dementia to neurocognitive disorders (NCD).

**Definition, Purpose, and History of the DSM**

The Diagnostic and Statistical Manual of Mental Disorders (DSM), published by the American Psychiatric Association, provides one of the two major systems for classifying mental disorders, the other being the International Classification of Diseases (ICD) produced by the World Health Organization. The DSM is used by healthcare professionals throughout the world, and contains descriptions, symptoms and criteria for a wide range of mental disorders. It represents an ongoing and evolving effort to organize and categorize various mental and behavioral phenomena. It has had an impact upon – and has been impacted upon – social, economic, scientific, political, and cultural forces over the course of its multiple versions and revisions.

**Definition of Dementia over the course of DSMs**

**DSM-I – Introduction of Chronic Brain Syndrome**

Before the 1950s, anatomic and microscopic study of the brain could identify acquired causes of brain dysfunction such as trauma, infections, tumors, and stroke. Medical history could provide evidence of congenital disease or substance abuse. Therefore, in 1952, DSM-I described 106 disorders including a general “chronic brain syndrome,” due to one of the above etiologies.⁴ At that time, it was thought that, “The chronic brain
syndrome may become milder, vary in degree, or progress, but some disturbance of memory, judgment, orientation, comprehension and affect persists permanently.” (p.18)

**DSM-II – Addition of Presenile/Senile Dementia**

In 1968, DSM-II was published with 182 disorders in broad entities on a continuum with normality. It included two new diagnoses, "Senile dementia" and "Pre-senile dementia" under “Organic Brain Syndromes” which were defined as “a basic mental condition characteristically resulting from diffuse impairment of brain tissue function from whatever cause.” (p. 22) Symptoms included: impairments of orientation, memory, judgment, and intellectual functions (comprehension, calculation, knowledge, learning), as well as lability and shallowness of affect.

**DSM-III and DSM-III-R – Criteria for Dementia**

The DSM-III, published in 1980, and a subsequent revision in 1987 (DSM-III-R) shifted the approach to mental illnesses towards symptom-based, categorical diseases. It introduced a multiaxial system, and listed 265 and then 292 diagnostic categories. In these versions, dementia diagnoses were listed within the category of "Organic Mental Disorders,” including diagnoses from prior editions, with additional subgroups defined for dementias not otherwise specified before or after the age of 65. In DSM-III-R, dementia was described as follows: “The essential feature of Dementia is impairment in short- and long-term memory, associated with impairment in abstract thinking, impaired judgment, other disturbances of higher cortical function, or personality change. The disturbance is severe enough to interfere significantly with work or usual social activities or relationships with others.” (p.103) Memory impairment was a necessary criterion for diagnosis, while impairment in “at least one” of the other cognitive functions was required (see Table 1).

**DSM-IV and DSM-IV-TR – Specific Etiologies Listed**

In DSM-IV and DSM-IV-TR, diagnoses of dementia were listed under “Delirium, Dementia, Amnestic and Other Cognitive Disorders.” The section on dementia is very similar between the two versions. In these volumes, dementia was described as “characterized by the development of multiple cognitive deficits (including memory impairment) that are due to the direct physiological effects of a general medical condition, to the persisting effects of a substance, or to multiple etiologies.” (DSM-IV, p.133). Impairment of memory plus another domain, and impairment of social or occupational functioning, remained necessary for diagnosis (see Table 1). Nine specific etiologies were then listed, each with their own additional criteria, plus other diseases and mixed disorders. An upper age limit on Alzheimer’s disease was dropped.

**Why the Change for DSM-5?**

By the late 1990s, growth in understanding of the anatomy and pathophysiology of brain disorders promoted efforts to improve the nomenclature in this field. In 2008, the DSM-5 Task Force formed a Working Group, represented by geriatric psychiatry, neurology, neuropsychiatry, neuropsychology, and cultural psychiatry, to address the chapter related to dementia. Over time, additional experts and public input were included in the five year revision process.

There were a variety of issues raised by the Working Group. First, DSM-IV did not recognize cognitive impairments that fell below a severity of causing functional decline. Over the past decades, much research has focused on patients with milder levels of impairment, in the effort to define markers of future decline, identify patients earlier in disease course, and develop strategies to delay or prevent decline. Outside of the DSM process, the term Mild Cognitive Impairment (MCI) was defined for this level of cognitive impairment. MCI is now widely used in neurocognitive literature and increasingly in clinical practice.

A second issue addressed by the Working Group was that DSM-IV had only text descriptions, rather than operational criteria, for many of the specific diagnoses, such as dementia due to traumatic brain injury, Parkinson’s disease, Huntington’s disease, fronto-temporal dementia, prion disease, and HIV dementia.
A third issue was the increasingly inexact and pejorative nature of the term dementia. Webster’s Dictionary defines “demented” as “not able to think clearly or to understand what is real and what is not real: crazy or insane.” Popular culture has adopted the concept of “demented” as an entertainment attraction, such as in the 2013 horror movie, The Demented, about college students fighting for their lives after a terrorist attack turns the local residents into rage infused zombies. Such images, along with the strong association of dementia with aging, led advocates of younger patients with acquired cognitive disorders, such as those with HIV, to seek a new term.

A fourth issue addressed by the Working Group was the excessive overlap between the terms Dementia and Alzheimer’s disease. The requirement for memory impairment had excluded patients with some specific types of cognitive decline. For example, frontotemporal lobe degeneration (in DSM-IV known as frontotemporal dementia) frequently affects executive and social functioning without significant memory impairment.

A related issue for the Working Group was the domains of cognition to be considered in neurocognitive disorders. Recent functional imaging and neuropsychological studies led to a new, more comprehensive list of domains for neurocognitive disorders that better capture the range of functional roles of the brain (see Table 1).

**DSM-5 – Introduction of Neurocognitive Disorders**

DSM-5 introduces the category of Neurocognitive Disorders (NCDs), replacing the DSM-IV-TR category of Delirium, Dementia, Amnestic and Other Cognitive Disorders. NCDs are classified as “major” or “mild.” Major NCD includes and expands upon the condition referred to in DSM-IV as dementia. DSM-5 describes diagnostic criteria for both major NCD and mild NCD, as well as diagnostic criteria for different etiological subtypes.

The DSM-5 summarizes the transition from dementia to neurocognitive disorder as follows:

> The term dementia is retained in DSM-5 for continuity and may be used in settings where physicians and patients are accustomed to this term. Although dementia is the customary term for disorders like the degenerative dementias that usually affect older adults, the term neurocognitive disorder is widely used and often preferred for conditions affecting younger individuals, such as impairment secondary to traumatic brain injury or HIV infection. Furthermore, the major NCD definition is somewhat broader than the term dementia, in that individuals with substantial decline in a single domain can receive this diagnosis...

As stated in DSM-5: “The core feature of NCDs is acquired cognitive decline in one or more cognitive domains (see Table 1). An important change in DSM-5 is that memory impairment is no longer required to diagnose NCD. The assessment of “decline,” is based on subjective (per the individual, a knowledgeable informant, or the clinician), and objective (e.g. neuropsychological testing) information.

Authors of the Neurocognitive Disorders chapter in DSM-5 emphasize that these designations of major NCD and mild NCD exist along a spectrum. The key distinction between major and mild NCD is regarding the individual’s level of independence in everyday functioning. In major NCD, cognitive impairment interferes with independence to the extent that others must take over tasks previously completed by the individual. In mild NCD, there is preservation of independence, though tasks require more effort or take more time than previously.

When diagnosing major neurocognitive disorder, the clinician must also specify whether it is due to one of 10 specific causes, a mixed disorder, another disease, or “unspecified” (see Table 2). There is the option to specify presence of significant behavioral disturbance (e.g., psychotic symptoms, mood disturbance, agitation, apathy, or other behavioral symptoms), and to specify severity (Mild: Difficulties with instrumental activities of daily living; Moderate: Difficulties with basic activities of daily living; Severe: Fully dependent). While in the case of major NCD the presumed etiology must be specified, in mild NCD the specification of etiology should not be used, just the code for mild NCD.

In specifying the etiology of a NCD, additional criteria unique to each etiology must be met. Additionally, for several etiologies, different degrees of criteria met qualify one for a diagnosis of “Probable” versus “Possible.” For example, in specifying whether NCD is due to Alzheimer’s disease, and further whether it
is considered a “Probable” versus “Possible” etiology, several factors are considered: presence of an insidious onset and gradual progression in cognitive impairment, evidence of a causative Alzheimer’s disease genetic mutation from family history or genetic testing, evidence of decline in memory and learning and at least one other cognitive domain, and steady decline without extended plateaus.

**Diagnostic Coding of NCD**

The evolution of DSM-5 has occurred at the same time as movement from the ICD-9 to the more specific version of diagnostic nomenclature in ICD-10. DSM-5 provides explicit instructions for coding of each of the types of NCD, including subgroups with and without behavioral disturbance, for both ICD-9 and ICD-10 (see Table 2). Fortunately, coding does not differentiate between probable and possible, so the clinician in practice does not need to look up or memorize those details. Below are some simple case studies applicable to the long-term care setting with appropriate coding for NCD.

**Case 1.** A 87 year old woman is admitted to the nursing home from assisted living due to increasing agitation. She has more the 10 years history of slowly progressive loss of cognition and function without known history of stroke, Parkinson’s disease, head trauma or other cause of NCD. She has limited speech and walks only with assistance. Coding for NCD using ICD-9 (10): Major neurocognitive disorder due to possible Alzheimer’s disease, with behavioral disturbance, code first 331.0 (G30.9) Alzheimer’s disease, followed by 294.11 (F02.81).

**Case 2.** Same history without behavioral disturbance, code first 331.0 (G30.9) Alzheimer’s disease, followed by 294.10 (F02.80).

**Case 3.** 78 year old man is admitted to nursing facility for rehab after being hit by a car and suffering a hip fracture. He was previously independent, living alone, driving, managing finances. Reports some forgetfulness at times, writes more notes for himself. Daughter corroborates patient’s history of no major health problems prior to the accident, adding only “Dad just has some more senior moments over the years.” Screened positive on Mini-Cog and scored 24/30 on Montreal Cognitive Assessment. Coding for NCD: Mild neurocognitive disorder due to Alzheimer’s disease, code 331.83 (G31.84). (Note: Do not use the additional code for Alzheimer’s disease.)

**Case 4.** Patient with a diagnosis of recent stroke leading to severe receptive and expressive aphasia (in addition to other motor deficits). Coding for NCD: Major neurocognitive disorder probably due to vascular disease, without behavioral disturbance, code 290.40 (F01.50). An additional medical code for the vascular disease is not needed.

**Implications for Clinical Practice**

A clear goal of DSM-5 is to expand the recognition of cognitive disorders. Codes and definitions to diagnose patients with mild disease and those with cognitive problems besides memory disorders should encourage clinicians to recognize and document such problems. Greater breadth and clarity about the domains of cognition can help clinicians more easily recognize cognition as a cause of functional difficulty. Use of more comprehensive or diverse tests of cognition will become common, to address all of these domains. For example, the Montreal Cognitive Assessment\(^\text{18}\) includes tests of executive function, which were not included in the Folstein Mini-Mental Status examination. As DSM-5 is increasingly adopted by clinicians across professions, communication about patients’ cognition can become more standardized and clear. Finally, coding for NCD has implications for eligibility for services such as hospice. In October 2014, Medicare began requiring a specific diagnosis for enrollment of patients with NCD. The non-specific ICD-9 code for dementia unspecified (290.0) will no longer be accepted. The specific diagnostic codes such as those found in Table 2, or similar specificity for other causes of NCD such as multiple sclerosis, are now required.
Implications for Research and Policy

The development of the Neurocognitive Disorders category, and in particular the defining of a “Mild Neurocognitive Disorder” diagnosis, holds important implications for research. Much of our understanding of mild NCD is derived from mild cognitive impairment (MCI). This new diagnosis of mild NCD captures a larger population, one which may be identified even earlier in disease course, and important to research focused on slowing progression. The capturing of a larger at-risk population, for research and early intervention, is further facilitated by the shift from “memory impairment plus one other” to, more simply, decline in at least one of the broader cognitive domains. As clinicians and health systems use more precise nomenclature that cover a broader population with cognitive disorders, health services researchers will be able to better track patients with cognitive impairment and their associated needs. Policy makers and health planners should be able to use this data to improve health system and community responses to the growing numbers with NCD.

Summary

The evolution from dementia to neurocognitive disorder has important implications for clinical practice, coding and research. The latest edition of DSM improves our terminology to permit more clear diagnostic terms to be applied consistently to more patients with cognitive disorders. Geriatricians, as primary care providers and consultants to patients with NCD should refer to DSM-5 to accurately and thoroughly describe patient’s cognitive diagnosis and its severity.

Table 1: Evolution of Domains of Cognition

<table>
<thead>
<tr>
<th>DSM III</th>
<th>DSM IV</th>
<th>DSM 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>memory (required)</td>
<td>memory (required)</td>
<td>learning and memory</td>
</tr>
<tr>
<td>abstract thought</td>
<td>complex attention</td>
<td></td>
</tr>
<tr>
<td>judgment</td>
<td>a disturbance in executive functioning</td>
<td>executive function</td>
</tr>
<tr>
<td>aphasia</td>
<td>aphasia</td>
<td>language</td>
</tr>
<tr>
<td>apraxia</td>
<td>apraxia</td>
<td>language</td>
</tr>
<tr>
<td>agnosia</td>
<td>agnosia</td>
<td></td>
</tr>
<tr>
<td>constructional difficulty</td>
<td></td>
<td>perceptual-motor</td>
</tr>
<tr>
<td>personality</td>
<td></td>
<td>social cognition</td>
</tr>
</tbody>
</table>

Table 2. Codes for Specific Diagnoses Causing Major Neurocognitive Disorder

<table>
<thead>
<tr>
<th>Etiological subtype</th>
<th>Primary ICD-9 (ICD-10) Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer’s disease</td>
<td>331.0 (G30.9)*</td>
</tr>
<tr>
<td>Frontotemporal lobar degeneration</td>
<td>331.19 (G31.09)*</td>
</tr>
<tr>
<td>Lewy body disease</td>
<td>331.82 (G31.83)*</td>
</tr>
<tr>
<td>Vascular disease</td>
<td>290.40 (F01.5x)</td>
</tr>
<tr>
<td>Traumatic brain injury</td>
<td>907.0 (S06.2X9S)*</td>
</tr>
<tr>
<td>Substance/medication use</td>
<td>Code based on the type of substance causing the major neurocognitive disorder</td>
</tr>
<tr>
<td>HIV infection</td>
<td>042 (B20)*</td>
</tr>
<tr>
<td>Prion disease</td>
<td>046.79 (A81.9)*</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>332.0 (G20)*</td>
</tr>
<tr>
<td>Huntington’s disease</td>
<td>333.4 (G10)*</td>
</tr>
<tr>
<td>Another medical condition</td>
<td>Code the other medical condition first</td>
</tr>
<tr>
<td></td>
<td>(e.g., 340 [G35] multiple sclerosis)*</td>
</tr>
<tr>
<td>Multiple etiologies</td>
<td>Code all of the etiological medical conditions first (with the exception of vascular disease)*</td>
</tr>
<tr>
<td>Unspecified</td>
<td>799.59 (R41.9)</td>
</tr>
</tbody>
</table>

*A secondary code of Major NCD 294.1x (F02.8x) should be added (x=0 if no behavioral disturbance, x=1 if behavioral disturbance)
About the Authors:
Dr. Ratner is an Associate Professor of Medicine at the University of Minnesota. Dr. Atkinson is a Fellow in Geropsychiatry. Both practice at the Minneapolis VA Medical Center. Acknowledgments to Dr. Riley McCarten for thoughtful review and comments.

2 Chapin, C, A Compendium of Insanity, W.B. Saunders, 1898 p147

Minnesota Nursing Home Quality Update- February 2015

Stratis Health releases white paper: Medication Reconciliation in Care Transitions Between Hospitals and Nursing Homes

A lack of understanding about workflows between organizations results in inefficient care transitions that can put patients at risk. For example, wasted effort for health care professionals to correct a medication discrepancy is estimated at 4.3 hours, while following up on a missing indications and/or diagnosis is estimated at 9.75 hours because of the uncertainty of who to contact for follow up. Stratis Health has released the white paper Medication Reconciliation in Care Transitions Between Hospitals and Nursing Homes (12-page PDF) which highlights the waste and risk in care transitions between hospitals and nursing homes, and recommends three actions for improving medication management as a solution.
President’s Letter

This year’s AMDA conference is entitled “Quality on Track in Long Term Care.” It is being held in Louisville, Kentucky, on March 19-22. I believe it remains the premier educational opportunity for post acute and long term care by extending educational opportunities in both the provision of care and in leadership development for those of us who work in those areas of care.

AMDA also is the national organization for policy development and advocacy in post acute and long term care. We all have a voice in that endeavor through its House of Delegates, which meets twice, during the course of each annual meeting. Minnesota has five delegates and one alternate delegate who have volunteered their time this year. They include Edmund Draper, Jane Pederson, Teresa McCarthy, Paul Takahashi, and me. Our alternate this year is Bob Sonntag.

Last night, I was part of the AMDA resolutions committee, which met to “fine tune” the intent and wording of the resolutions, in preparation for the House of Delegates. Our Minnesota delegation submitted two resolutions this year. Our first is entitled “Promoting the Quality of Care in Assisted Living Communities.” This vulnerable population, in a highly unregulated environment, often is in transition. As we will be asked more and more to provide care to them in a value-driven manner, we will need to have a better understanding of how to provide that care most effectively and efficiently. Last year, AMDA established a standing committee called the Assisted Living/Non-Institutional Committee. Our hope is that our resolution will encourage this committee to lay a foundation upon which education, research, and new developments can be shared with AMDA members.

Our second resolution is entitled “Geriatric Training in Medical Education.” We pointed out that health care reform seems to be encouraging, what many of us would call “good geriatric care,” to be provided to everyone in need of healthcare. That “good geriatric care” identifies the proper balance between medical complexity, which may require medications, modifications, and restrictions, while allowing for personal choice. We thought that an effective manner of teaching this in medical education might be to require geriatric electives in the LTC setting. It turns out that the AMDA State President’s Council also submitted a resolution with even more expansive medical educational goals. Ours will likely be combined with that resolution.

In addition, there will be resolutions that explore the concept of joint AMDA and state chapter membership and dues; that support state initiatives in requiring further training for those that serve as medical directors of nursing homes; that establish credentialing requirements for those who provide care in the nursing home environment; and that encourage AMDA to develop educational tools to assist long term care facilities in addressing pandemics and natural disasters (think Ebola or the fertilizer plant explosion in West, Texas). Finally, for the first time, a non-MD is submitting a resolution that would mandate geriatric education in all levels of nurses training, including NP level. This is significant because NPs now are full non-leadership members of AMDA. If you have any thoughts/perspectives on any of these issues, please discuss them with any of your delegates above.

I also want to remind you that this past year, we established the precedent of having one of the year’s TOPICS articles to be a summary of key clinical pearls that attendees gain while at the AMDA annual educational meeting. In 2014, it was the December issue. So take notes and forward a 2-4 sentence summary of any helpful pearls you acquire to our executive director, Rosemary Lobeck, at rlobeck@mnmeddir.org. They will be incorporated into a 2015 Pearls from AMDA article.

Finally, I will be establishing three working groups over the next couple of weeks that will address the following: 1) Organizational Development Committee – to explore how to best sustain the organization, to include new and creative funding opportunities; 2) Bylaws Committee – to finalize the wording of our bylaws as we address proposed organizational structural changes; and 3) 2015 Annual Meeting Education Conference Committee – to work on the content for this year’s annual meeting educational sessions. If you have any interest in helping with any of this work, contact Rosemary Lobeck for that as well.

George Schoephoerster, MD
Inside
The Evolution of Dementia into Neurocognitive Disorder: History and Implications for Clinical Practice and Coding Page 1

Minnesota Nursing Home Quality Update Page 6

President’s Letter Page 7

SAVE THE DATE:
October 22-23, 2015
MMDA’S FALL CONFERENCE

Topics in Geriatric Medicine and Medical Direction, the peer reviewed bimonthly publication of the Minnesota Medical Directors Association, is committed to publishing quality manuscripts representing scholarly inquiry into all areas of geriatrics and long term care medical direction and practice. We encourage submissions of geriatric and long term care research, best practices, reviews of literature and essays.

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