

NEUROCOGNITIVE DISORDERS

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Overview

Introductory remarks

- Psychiatry is a very perplexing field because no “visible” structure can be pinpointed as the cause of the disorder. However, we can say with some confidence that the **brain** is certainly involved one way or another.
- **What other specialty loves the brain?** Yes, **Neurology!** This causes psychiatry to overlap significantly with neurology. The distinction primarily lies in the fact that there are well-defined structural lesions in neurology (e.g., infarct in a certain location in the brain as in strokes, a demyelinating plaque as in multiple sclerosis, amyloid deposits and atrophy in the temporal lobes in Alzheimer’s disease). In psychiatry, most disorders, including **bipolar disorder and schizophrenia**, **lack a well-defined structural abnormality**, although there are hypotheses as to which **neural networks are involved** but **evidence remains lacking**. The problem is more “functional” than “structural” in these disorders, although this may change in the future as more advanced techniques to study brain pathology emerge.
- Why am I saying all of this? Because the topic of this seminar mainly involves **neurological disorders** (e.g., **Alzheimer’s disease**) where an “organic” etiology is the cause of the symptoms. Thus, this is more of a “neurology” seminar camouflaged as a “psychiatry” seminar. We will talk more on why it is mentioned in psychiatry later.

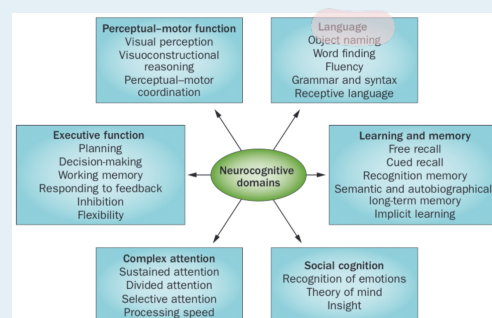
💡 What are neurocognitive disorders?

💡 **Neurocognitive disorders (NCDs)** are a group of disorders in which the **most prominent** feature is a **decline in cognitive functions** from a previous level of cognitive functioning.

💡 Ok, so we said NCDs affect cognitive functions, but what are cognitive functions?

💡 Well, consensus is lacking with regards to the precise definition and many use the term “cognitive function” loosely. For the sake of our discussion, cognitive functions are those functions the belong to **any of the following six domains**:

1. **Complex attention**
2. **Executive function**
3. **Learning & memory**
4. **Language**
5. **Perceptual-motor skills**
6. **Social cognition**



💡 You may wonder and ask: Aren't some of these functions affected in the disorders we have previously covered? For example, patients with major depressive disorder, especially elderly patient, are known to have memory problems (sometimes even called pseudodementia and confused with Alzheimer's disease!). Attention is impaired in manic patients as they are easily distractible. Schizophrenia can also have impairment in cognitive functions. **So what makes the disorders in this seminar any different?**

💡 In the diseases discussed in this seminar (NCDs), the **MOST PROMINENT feature of the disease is impairment in cognitive function**, unlike the diseases we discussed before where cognitive impairment is not the most obvious symptoms of the disease. The main complaint of a patient with depression is unlikely to be **memory changes**, but instead the depression itself! While in NCDs such as Alzheimer's disease, the patient's (or his carer's) main concern is **the memory impairment**. This is what distinguishes the diseases in this seminar from previous ones. This is not always as simple as it seems and distinguishing cognitive impairment from other psychiatric symptoms is not always easy, and this is why NCDs (which are treated by neurologists) are discussed here in psychiatry, because both can be part of the your differential diagnosis). Many patients with major depressive disorder at an old age were wrongly diagnosed **as dementia!**

💡 NCDs are a large group of diseases. The DSM-5 are making our lives easier by classifying them into several subtypes and by providing clear criteria to define each of them. So what are the categories of NCDs?

💡 NCDs are classified into one of three categories: 1) **delirium**; 2) **mild NCD** and 3) **major NCD**.

To classify NCDs, the first thing you should note is the course/onset of cognitive decline.

- If it is **ACUTE** → we call it **delirium**
- If it is **INSIDIOUS/CHRONIC** in onset → we call it **mild or major neurocognitive disorder** (mild or major depends on the severity)

Example 1: *A hospitalized patient develops - over the span of two days - confusion, disorientation (disorientation can reflect impaired attention (a cognitive function) → impaired attention causes him to be unable to focus on things around him → becomes unaware of what is around him because he cannot focus on it → disoriented to place, person, time) and impairment in recent memory.*

- **What is the most prominent feature of this disorder?** The **most prominent** defects here are deficits in cognitive function (e.g., impaired attention manifesting as disorientation and memory impairment) → this is **a NCD**
- **Is it acute or chronic?** **Acute** (only several days) → thus it is most likely **delirium** (of course, we should check by applying the **DSM-5 criteria** but this example just seeks **to give you a general idea**).

Example 2: *A 60-year-old male patient who was otherwise healthy is brought by his son to the clinic because he has become increasingly forgetful over **the past several years**. Last week, he even got lost while he was driving back home because he forgot the way back home.*

- **What is the most prominent feature of this disorder?** The **most prominent** defects here are deficits in cognitive function (e.g., impaired memory) → this is a NCD
- **Is it acute or chronic?** **Chronic** (several years) → this is either **mild or major NCD** (depending on the **severity**, we decide if **mild or major**, which **we will discuss next**).

💡 How to decide if a patient has mild or major NCD?

💡 Obviously, mild NCD involves mild cognitive impairment while major NCD involves severe cognitive impairment. However, these qualitative terms are subjective. Therefore, the most important feature to distinguish between mild and major NCD is **CAPACITY FOR INDEPENDENCE IN EVERYDAY ACTIVITIES**. If the cognitive impairment makes the person dependent on someone for help in order to perform normal activities of daily living that could otherwise be performed independently by a normal person, the person has major NCD. If the patient is still independent when performing everyday activities despite the cognitive impairment, the patient is said to have mild NCD.

💡 Important note: delirium, mild NCD and major NCD are not diseases, but instead "syndromes" or "symptoms" of various underlying diseases. Just like how chest pain could be a symptom of myocardial infarction, pericarditis, aortic dissection, etc., NCDs are symptoms of many underlying diseases (major NCD can be caused by Alzheimer's disease, Lewy body dementia, Huntington's disease). Each NCD has its own differential diagnosis, and so identifying the type of NCD (delirium, mild NCD, or major NCD) narrows the differential and is an intermediate step in the search for a final diagnosis. So NCDs are not final diagnoses in and of themselves.

neurocognitive disorders (NCDs)

- Acute
- Fluctuating course
- "Acute brain failure"

Delirium

TABLE 8-2. DSM-5 Criteria for Delirium

▪ Disturbance in attention and awareness.
▪ Disturbance in an additional cognitive domain .
▪ Develops acutely over hours to days, represents a change from baseline, and tends to fluctuate .
▪ Not better accounted for by another neurocognitive disorder .
▪ Not occurring during a coma .
▪ Evidence from history, physical, or labs that the disturbance is a direct consequence of another medical condition, substance intoxication/withdrawal, exposure to toxin, or due to multiple etiologies .

Etiology of delirium

- ↳ substance intoxication delirium
- ↳ substance withdrawal delirium
- ↳ medication-induced delirium
- ↳ delirium due to another medical condition

Mild or Major NCDs

TABLE 8-3. DSM-5 Criteria for Mild and Major NCDs

CRITERION	MILD NCDs	MAJOR NCDs
Functional decline in at least one cognitive domain relative to baseline as evidenced by		
Concern (expressed by the patient or someone who knows them)	Mild decline	Significant decline
Objective findings on cognitive testing (preferably standardized neuropsychological testing)	Modest impairment	Substantial impairment
Effect on functioning in daily life.	Ability to perform IADLs preserved	Impaired performance of IADLs/ADLs
Deficits do not occur exclusively in the context of a delirium		
Deficits are not better explained by another mental disorder.		

ADLs, basic activities of daily living; IADLs, independent activities of daily living.

Etiology of mild and major NCDs:

- Alzheimer disease
- Frontotemporal lobar degeneration
- HIV infection
- Huntington disease
- Lewy body disease
- Parkinson disease
- Prion disease
- Substance and/or medication use
- Traumatic brain injury
- Vascular disease
- Another medical condition
- Multiple aetiologies
- Unspecified