

## Topics Covered

- I. The (C)APD debate
- II. The clinical entity
- III. Is (C)APD a clinical entity?
- IV. Are subcategories of (C)APD clinical entities?
- V. The subclinical entity
- VI. Myklebust (1954)
- VII. Is a speech recognition in noise disorder a clinical entity?
- VIII. The cost of ambiguity
- IX. Alternative criteria for the clinical entity
- X. Summary and recommendations

Central Auditory Processing Disorder (CAPD) (ASHA, 1996)  
Auditory Processing Disorder (APD) (Jerger and Musiek, 2000)

**For the purposes of this discussion the terms (C)APD, CAPD and APD are considered equivalent.**

**The majority of this lecture is taken from “On the Clinical Entity in Audiology: (Central) Auditory Processing and Speech Recognition in Noise Disorders.” Vermiglio, A.J. (accepted January 2014) *Journal of the American Academy of Audiology***

### I. The (C)APD debate

#### Is (C)APD a clinical entity?

Yes – ASHA (2005), AAA (2010), DeBonis and Moncrieff (2008)

It’s questionable - Kamhi (2011)

No – Aetna (2014)

### II. The clinical entity

#### What is a clinical entity?

A clinical entity is a disorder that is diagnosed and treated. (General definition)

**Nosography** is the systematic description and classification of disease.

Knud Faber wrote “Nosography in Modern Internal Medicine” (Faber, 1923)

**Disease is a disorder of structure or function that produces specific signs or symptoms.**

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**Thomas Sydenham was a 17<sup>th</sup> century physician.** He has been called “the founder of scientific nosography and the father of English medicine.” Sydenham wrote that “...nature in the production of disease is uniform and consistent...”

The clinical entity should have an unambiguous definition. In other words it should represent a homogeneous disorder. The clinical entity should represent a disorder that is uniform across a particular patient group (Sydenham 1676).

**Dr. Otto Ernst Guttentag wrote “On the Clinical Entity” (Guttentag, 1949)**

*This is a highly recommended paper for all speech-language pathologists and audiologists.*

The clinical entity denotes concept of uniformity in patients. The clinical entity is a concept used to facilitate diagnostic and therapeutic approaches to the patient. The clinical entity is related to a limitation of the patient’s freedom of action (Guttentag, 1949).

**Mild cognitive impairment (MCI)** is considered to be an intermediate stage between the expected cognitive decline of normal aging and the more serious decline of dementia. It can involve problems with memory, language, and judgment that are greater than the normal age-related changes. These changes are not severe enough to interfere with daily activities (Mayo Clinic, 2013).

MCI is a heterogeneous disorder. It should be considered a clinical entity and it should be treated according to Petersen and Morris (2005).

“...MCI is not a homogeneous clinical entity and as such cannot be treated with a specific therapy...”  
Estimate of the prevalence of MCI vary greatly depending on the definition in use (Gauthier and Touchon (2005).

**Food and Drug Administration (FDA) (2000)**

A clinical entity must be identified and defined unambiguously. It must identify a reasonably homogeneous patient group.

“Labeling recommending a drug as a treatment for a clinical entity that is poorly defined is potentially misleading, since it would not be possible to adequately inform clinicians through labeling as to the appropriate use of the proposed drug treatment (FDA, 2000).”



**IV. Are subcategories of (C)APD clinical entities using the Sydenham-Guttentag criteria?**

Each open cell in Figure 1 represents a condition where the patient scores 2 SD below the mean on at least two tests from a (C)APD test battery. This is the criterion for a diagnosis of (C)APD according to AAA (2010).

Each subcategory represents an unambiguous disorder and a homogeneous patient group.

Does each subcategory represent a perceived limitation?

Does each subcategory facilitate (or provide a clear path for) diagnosis and intervention?

**Are the following categories of APD clinical entities using the Sydenham-Guttentag criteria?**

1) The four categories of APD from the Buffalo Model for APD Assessment (Katz, 1992)

2) The Bellis/Ferre Model of APD subtypes (Bellis, 2006)

**V. The subclinical entity**

**A condition is considered “subclinical” when it appears without symptoms, a perceived limitation, or functional impairment.**

For example a subclinical retinal detachment refers to *a retinal detachment that does not cause changes in the patient’s visual field or acuity.*

“Functional hearing” may refer to how well the auditory system operates for a hearing-critical task (Giguere et al., 2008; Soli and Vermiglio, 1999).

Unfortunately, in audiology the term “subclinical” has been used in reference to the audiogram and not to a limitation of function.



### **VIII. The cost of ambiguity**

What is the problem with having an ambiguously defined disorder?

#### **The logical fallacy of equivocation**

“Equivocation occurs when an ambiguous expression is used in more than one of its meanings in a single context (LaBossiere, 2011).”

### **IX. Alternative criteria for the clinical entity**

Kamhi (2011) proposed the following criteria as a rationale for why APD became a distinct clinical entity.

- 1) “Each disorder is associated with a distinct profession and practitioner (audiologist, psychologist, occupational therapist)
- 2) A certified, licensed professional in the discipline is the only one qualified to administer the assessment battery and make the diagnosis
- 3) The label for the disorder is not stigmatizing and is easy to understand, remember, and communicate to others (i.e., **a good meme**: cf. Kamhi, 2004)”

**X. Summary and recommendations**

It is imperative for clinicians to discover the nature of a (C)APD diagnosis and to determine the need for intervention. The following eight questions are suggested when working with a patient with the diagnosis of (C)APD.

- 1) What is the definition of the disorder used by the clinician(s) who diagnosed the client with (C)APD?
- 2) What were the tests used to identify the disorder?
- 3) Were the tests norm-referenced?
- 4) What were the criteria used to indicate the presence of the disorder?
- 5) What are the hearing-critical tasks encountered by the patient in daily life?
- 6) Does the disorder represent a limitation for the patient? In other words, does this condition require intervention?
- 7) Is there a measurable speech recognition in noise deficit?
- 8) Does the patient have a disorder that meets the Sydenham-Guttentag criteria for a clinical entity?

A (C)APD diagnosis without symptoms may represent a subclinical disorder – no intervention

(C)APD test results consistent with brainstem or central site of lesion – medical follow-up

When (C)APD test results agree with a limitation of the patient and this disorder is a clinical entity according the Sydenham-Guttentag criteria – conduct intervention for the specific disorder, replace “(C)APD” with the name of the clinical entity

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		Sound Localization	Sound Lateralization	Auditory Discrimination for Frequency	Auditory Discrimination for Intensity	Auditory Discrimination for Duration	Psychophysical Tuning Curves	Phoneme Discrimination	Auditory sequencing	Auditory Patterns	Gap Detection	Fusion Discrimination	Integration	Forward Masking	Backward Masking	Dichotic Consonant-Vowel	Dichotic Digits	Dichotic Words	Dichotic Sentences	Filtered Speech	Speech in Noise	Speech in Babble Noise	Speech in a Reverberant Environment
1	Sound Localization	■																					
2	Sound Lateralization		■																				
3	Auditory Discrimination for Frequency			■																			
4	Auditory Discrimination for Intensity				■																		
5	Auditory Discrimination for Duration					■																	
6	Psychophysical Tuning Curves						■																
7	Phoneme Discrimination							■															
8	Auditory sequencing								■														
9	Auditory Patterns									■													
10	Gap Detection										■												
11	Fusion Discrimination											■											
12	Integration												■										
13	Forward Masking													■									
14	Backward Masking														■								
15	Dichotic Consonant-Vowel															■							
16	Dichotic Digits																■						
17	Dichotic Words																	■					
18	Dichotic Sentences																		■				
19	Filtered Speech																			■			
20	Speech in Noise																				■		
21	Speech in Babble Noise																					■	
22	Speech in a Reverberant Environment																						■

Figure 1. 462 potential subcategories of (C)APD based on ASHA (2005) and AAA (2010).



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