

## Children Section

### Central Auditory Processing Disorder (CAPD)

#### CAPD Importance & Symptoms

CAPD is due to a sound processing deficit in the brain. Simple hearing tests will miss this, as the patient can hear. In UK alone, 5 % of school-age children have Central Auditory Processing Disorder (CAPD), rising to 40% in children with learning difficulties. It is very often under-diagnosed in Asia especially, with many continuing into adulthood with CAPD.

It is a silent but debilitating problem, as it results in non-understanding of the spoken language which affects daily functioning. Many families may spend years seeking therapy for misdiagnoses of learning, language processing, autism and attention deficit disorders. Though these other diagnoses can coexist with CAPD, first treating CAPD will help to improve language processing and attention problems.

Patients may appear to be “spaced out”, “inattentive”, and miss instructions on and off. This may be aggravated by noisy environments, multiple speakers and longer instructions. They may have difficulty differentiating similar-sounding speech sounds, spelling and reading difficulties. They may have poor skills for music and discriminating intonations.

#### CAPD Diagnosis

The diagnosis can only be made by a CAPD-trained audiologist administering various speech lists tests under different sound conditions in a sound-proof room. At the ENT evaluation, I will exclude risk factors for CAPD and middle ear infections, and ensure hearing is first normal. We will then administer a CAPD Questionnaire that is filled by the parent or teachers. If determined to be at risk, we will arrange for two 2 hour CAPD testing sessions for the patient. Patients have to be over 7 years of age for the tests. Specific tests are done for sound localization, auditory discrimination, auditory pattern recognition, temporal audition, auditory performance in competing acoustic signals and with degraded acoustic signals. In selected cases, electrophysiological testing like Auditory Brainstem Response and others, and MRI brain are also needed.

#### CAPD Treatment

A multidisciplinary team approach (teachers, speech language pathologist, ear doctors, paediatricians and psychologists) is important in complex cases. Treatment must be tailored to the specific area of weakness - changing the communication environment, using higher order skills (eg problem-solving, memory, attention) to compensate or directly treating the deficit. In certain cases, FM systems are helpful. Working closely with the therapists, families and schools is important. Though there may be some online resources and lure of “sure-cures”, it is better to seek professional help for a proper diagnosis first as this is a complex disorder with many other causes mimicking it.



## Adult Section

### Central Auditory Processing Disorder (CAPD)

#### Adult CAPD Importance & Symptoms

CAPD is due to a sound processing deficit in the brain. Simple hearing tests will miss this, all returning as normal, as the patient can hear. In UK alone, 5 % of school-age children have Central Auditory Processing Disorder (CAPD), rising to 40% in children with learning difficulties. It is very often under-diagnosed in Asia especially, with many continuing into adulthood with CAPD.

It is a silent but debilitating problem, as it results in non-understanding of the spoken language which affects daily functioning. As a child with missed CAPD, many may have spent years seeking therapy for misdiagnoses of learning, language processing, autism and attention deficit disorders.

Patients may appear to be “spaced out”, “inattentive”, and miss instructions on and off. This may be aggravated by noisy environments, multiple speakers and longer instructions. They may have difficulty differentiating similar-sounding speech sounds, spelling and reading difficulties. They may have poor skills for music and discriminating intonations.

Many adults have not been diagnosed since childhood, and continue to struggle daily. However, they subconsciously have made adjustments to their environments and social communication modes to manage the difficulties. When diagnosed, many are emotional as they had wondered for years what was wrong. My first CAPD patient diagnosed in Singapore in 2004 was an adult who had been wrongly sent to detention barracks multiple times for “malingering” and “not listening to instructions” as his simple non-CAPD hearing tests had returned “normal”.

#### CAPD Diagnosis

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acoustic signals. In selected cases, electrophysiological testing like Auditory Brainstem Response and others, and MRI brain are also needed.

### **CAPD Treatment**

Treatment will be tailored to the specific area of weakness - changing the communication environment, using higher order skills (eg problem-solving, memory, attention) to compensate or directly treating the deficit. In certain cases, FM systems and other assistive listening devices are extremely helpful. Though there may be some online resources and lure of "sure-cures", it is better to seek professional help for a proper diagnosis first as this is a complex disorder with many other causes mimicking it.

### **Hearing aids and CAPD**

Unfortunately, adult CAPD is even less researched. Some seniors at the same age, and with the same degree of hearing loss have more difficulty hearing than others. This may be due to unrecognised CAPD, especially for communication between the 2 sides of the hearing brain. Thus, hearing aids may work better for some than others. A little known fact is that though bilateral hearing aids is better in bilateral hearing loss, some with CAPD may do better with only one hearing aid. Testing and fitting of hearing aids need to be meticulous for optimal benefit for individual patients.