What is Auditory Processing?

Auditory processing is a complex series of processes, which make sound meaningful to various centres in the brain. These processes include:

- coordinating information between ears
- routing signals to appropriate recognition centres
- inhibiting meaningless input, and
- associating and coordinating information with other sensory systems.

Auditory processing refers to the way the brain processes auditory information collected from the ears, such as: determining where a sound is coming from; differentiating speech from other noise; recognizing the differences between sounds and remembering them; and recognizing acoustic patterns.

Children with auditory processing weakness often have difficulty keeping up with the natural flow of conversation; understanding speech in less than optimal conditions; understanding complex verbal directions, and often become easily distracted in the presence of background noise. Many of these children will exhibit academic difficulty (specifically related to language arts) if deficits remain unidentified and unmanaged.

What are common signs of APD?

- Poor listening
- Difficulty reading
- Short attention span
- Difficulty following verbal directions
- Doesn’t participate in conversations
- Language delay
- Often shows frustration
- Difficulty distinguishing speech sounds; especially in a noisy environment
- Functions better in a quiet environment
- Memory problems
- Easily distracted
How do I find out if my child has APD?

An auditory processing assessment must be conducted by a registered Audiologist. The audiologist will begin by taking a detailed case history from the parent and also look at any supporting documents such as information from the physician, teacher, speech-language pathologist, school psychologist etc., if available.

Next, the audiologist will evaluate the child’s hearing acuity and middle ear function. The audiologist will then administer a comprehensive battery of APD tests in order to assess performance on various auditory tasks in different listening conditions.

APD tests include:

- Auditory pattern ordering: reproducing the pattern heard
- Auditory closure: filling in the gaps that are missing based on knowledge of the language
- Binaural separation: detecting the appropriate message while ignoring other competing voices or noise
- Binaural integration: fusing or integrating information from both ears
- Temporal gap detection: detecting the difference in emphasis i.e. ‘the quarter- back threw the ball’ vs. ‘I want my quarter back’
- Auditory figure ground: filtering out steady state background noise
- Spatial processing: determining where sound is in space in order to focus on target speech while ignoring distracting speech
- Phonemic Synthesis: blending individual speech sounds into words
- Rapid speech and tones: following changes of intensity and pitch information over time.
- Word memory: linguistic memory which is linked to language understanding and reading
- The diagnostic assessment is based on consensus from the Canadian Interorganizational Steering Group for Speech-Language Pathology and Audiology [www.speechandhearing.ca](http://www.speechandhearing.ca)

How long is the assessment?
The appointment is approximately 90 minutes long.

How much is the assessment?
The auditory processing assessment is $245 and includes a detailed summary of the results and recommendations.

How is APD managed?
The audiologist will review the test results with the parent/caregiver and provide a detailed report with recommendations based on the specific findings.
Auditory processing management is divided into three main categories:

1. **Environmental modification** and teaching suggestions to improve the individual’s access to auditory information
2. Provision of **compensatory strategies** designed to teach the child how to overcome residual dysfunction and maximize the use of auditory information
3. **Remediation techniques** designed to enhance discrimination, interhemispheric transfer of information, and associated neuro-auditory functions (Bellis, 1996)

**Environmental Modification:**

Some common environmental recommendations for children with APD are:

- Reduce external visual and auditory distractions as much as possible
- Preferential seating in the classroom near the teacher and away from auditory and visual distractions and noise sources like heating and cooling systems
- Avoid asking the child to listen and write at the same time. Sometimes a buddy can share notes with the child or the teacher may provide the child with notes
- Encourage the child to ask questions for clarification
- To improve the listening situation, the audiologist may recommend the use of a device that transmits the teacher’s voice directly to the child’s ear through a headset. This is called an FM system.
- Use visual aids and write instructions to supplement spoken information
- Use simple, brief directions
- Speak slowly and clearly but not exaggerate speech
- Recognize fatigue and give breaks when needed

**Compensatory Strategies:** Self Advocacy, listening strategies, and coping skills are provided to help the individual manage difficult listening situations.

**Software programs** are also available for auditory training. These training games are aimed at improving dichotic listening skills and tonal processing skills. They introduce different activities and increasingly difficulty levels in order to remediate processing delays with repeated training. This allows the child to incrementally improve at the skills that they have difficulty with.

**Therapy Program:**

*The Interior Development Centre* Offers an auditory integration program which focuses on motor and auditory integration. This 12 week, one on one based program is meant to strengthen auditory skills, motor skills and executive functioning.