

Auditory processing disorder: A service delivery model

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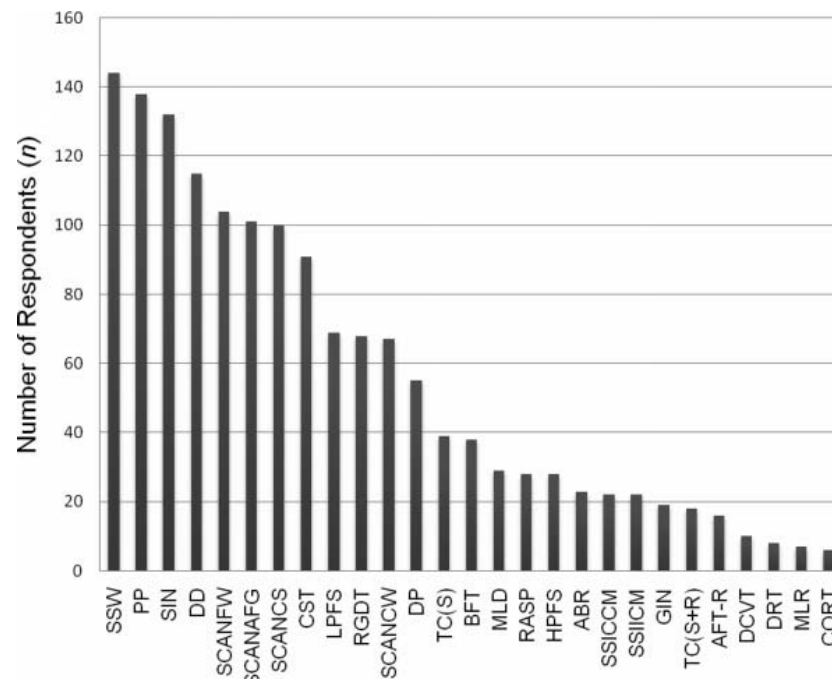
What to do about listening difficulties

- James Jerger famously stated that “there are more tests of APD than there are children with the disorder”
- Dillon et al. (JAAA, 2012) argue that rather than defining a single disorder, the term APD should be viewed as an umbrella term for a range of different AP deficits that ultimately affect ability to understand spoken language.
- A number of distinguished thinkers on learning problems in children (e.g. Dorothy Bishop) suggest a single, umbrella term of Neurodevelopmental Disorder or Syndrome. Individual problems sit under this canopy and form the basis for intervention

What is presently done - Diagnosis

Factor	Always		Often		Sometimes		Never		Total (n)
	n	%	n	%	n	%	n	%	
Preset (C)APD battery for all patients regardless of age or case history.	23	17	28	21	18	14	63	48	132
Preset (C)APD battery for each specific age range (e.g., all 10-year-old children) regardless of case history.	11	10	22	19	29	25	54	47	116
A set minimum battery for all patients with additions based on individual case history and age.	82	53	42	27	18	12	13	8	155
A set minimum battery for all patients with additions based just on individual case history.	14	13	24	22	31	28	41	37	110
Battery completely based on case history considerations.	11	10	16	14	24	21	63	55	114

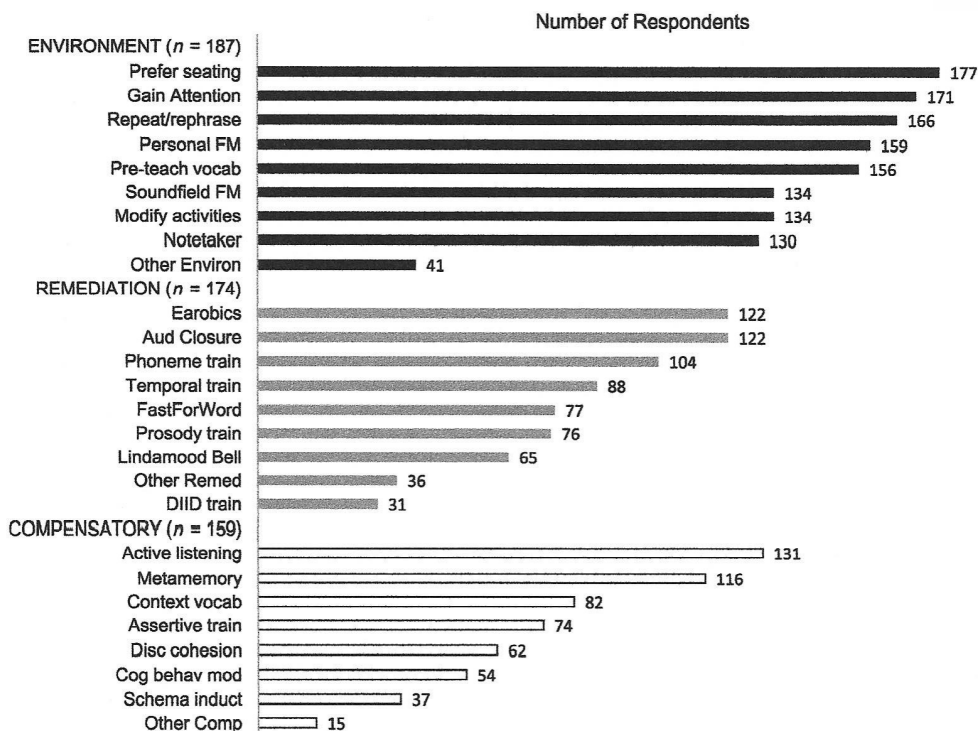
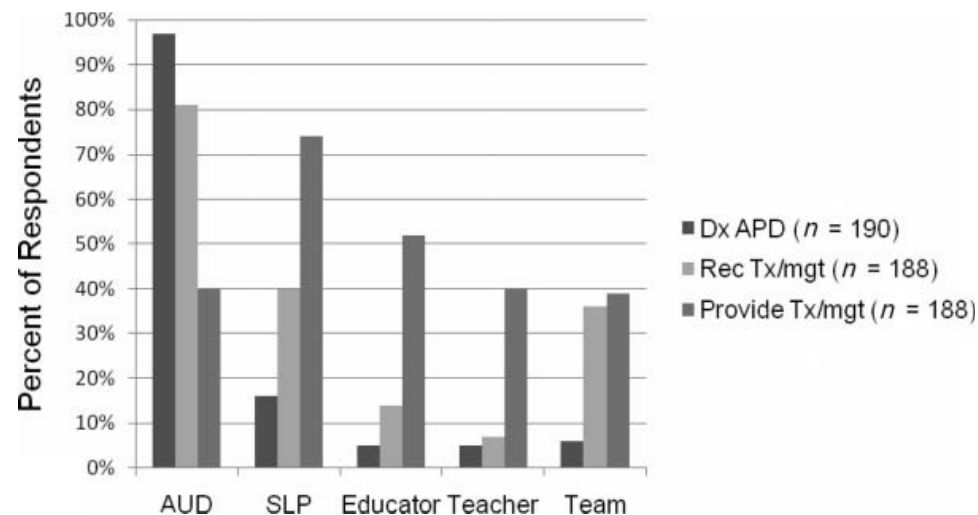
Test	Always		Often		Sometimes		Never		Total (n)
	n	%	n	%	n	%	n	%	
Dichotic tests									
Dichotic digits (DD)	69	42.9	46	28.6	26	16.1	20	12.4	161
Staggered Spondaic Word (SSW)	112	62.6	32	17.9	25	14.0	10	5.6	179
SCAN Competing Words	44	35.8	23	18.7	23	18.7	33	26.8	123
SCAN Competing Sentences	74	47.4	26	16.7	19	12.2	37	23.7	156
Synthetic Sentence Identification with Contralateral Competing Message (SSI-CCM)	10	7.5	12	9.0	33	24.8	78	58.6	133
Competing Sentences Test (CST)	60	32.9	31	20.3	30	19.6	32	20.9	153
Dichotic Consonant Vowel Task (DCVT)	3	2.4	7	5.6	18	14.4	97	77.6	125
Dichotic Rhyme Test (DRT)	3	2.6	5	4.3	16	13.8%	92	79.3	116
Monaural low-redundancy speech tests									
High pass filtered speech	16	12.9	12	9.7	19	15.3	77	62.1	124
Low pass filtered speech	36	25.9	33	23.7	26	18.7	44	31.7	139
SCAN Filtered Words	82	53.2	22	14.3	22	14.3	28	18.2	154
SCAN Auditory Figure Ground	79	52.7	22	14.7	19	12.7	30	20	150
Synthetic Sentence Identification with Ipsilateral Competing Message (SSI-ICM)	10	7.8	12	9.3	32	24.8	75	58.1	129
Speech-In-Noise (SIN)	96	55.8	36	20.9	24	14.0	16	9.3	172
NU-6 time-compressed speech	11	8.4	28	21.4	32	24.4	60	45.8	131
NU-6 time-compressed speech with reverberation	6	5.2	12	10.4	22	19.1	75	65.2	115
Temporal processing tests									
Pitch pattern (PP)	79	45.1	59	33.7	23	13.1	14	8.0	175
Duration pattern	13	9.5	42	30.7	27	19.7	55	40.1	137
Auditory Fusion Test—Revised (AFT—R) ^a	4	3.3	12	9.8	20	16.0	86	70.5	122
Random Gap Detection Test (RGDT)	31	21.8	37	26.1	24	16.9	50	35.2	142
Gaps-In-Noise (GIN)	6	5.0	13	10.9	18	15.1	82	68.5	119
Binaural interaction tests									
Rapidly alternating speech perception (RASP)	15	10.9	13	9.5	23	16.8	86	62.8	137
Binaural fusion test (BFT)	15	11.1	23	17	27	20.0	70	51.9	135
Masking level difference (MLD)	11	8.3	18	13.6	19	14.4	84	63.6	132
Electrophysiology tests									
Auditory brainstem response (ABR)	9	5.8	14	9.1	21	13.6	110	71.4	154
Middle latency response (MLR)	1	1.1	6	6.8	21	23.9	60	68.2	88
Cortical evoked potentials	1	0.8	5	3.6	8	6.2	116	89.2	130



- Survey of practice by 192/515 audiologist members of ASHA
- Audiometry, pretesting, screening, testing, management

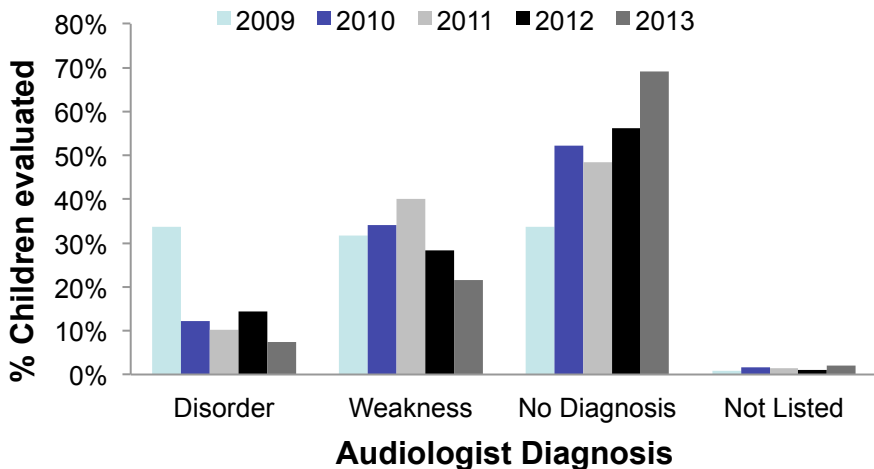
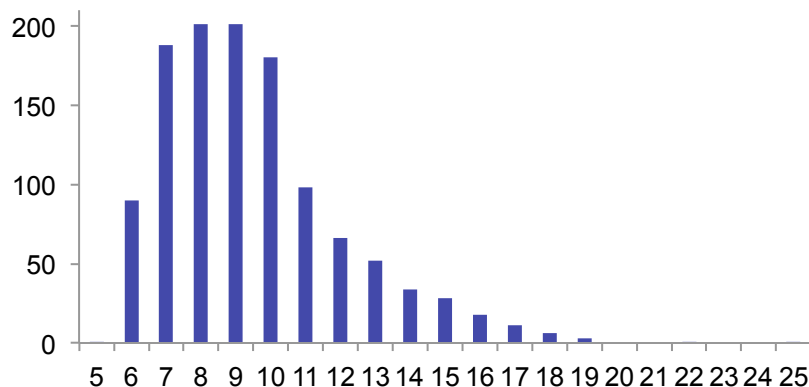
What is presently done - Management

Type of recommendations	Always		Often		Sometimes		Never		Response count (n)
	n	%	n	%	n	%	n	%	
A published list of management recommendations	13	10	34	26	28	22	55	42	130
A preprinted list of management recommendations generated by clinical site	27	20	32	23	27	20	51	37	137
A preprinted list of management recommendations based on diagnostic profile or category (e.g., temporal integration deficits)	29	20	56	38	22	15%	42	28	149
A customized list of management recommendations based on findings of diagnostic tests (not using a profile diagnosis system)	84	51	40	24	24	15%	17	10	165



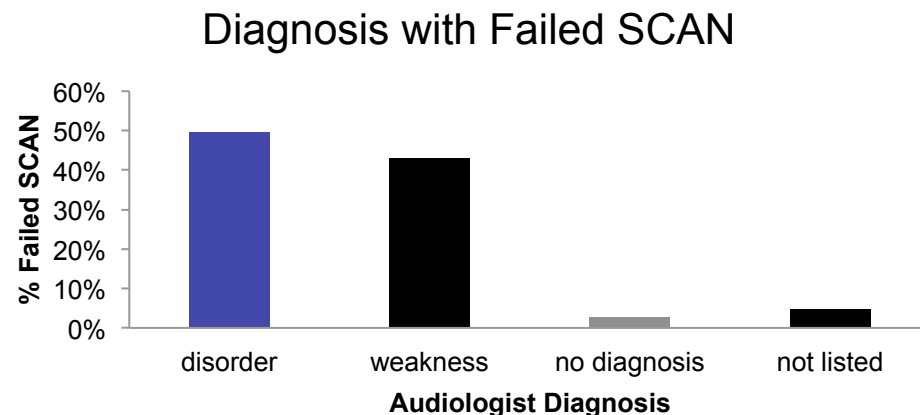
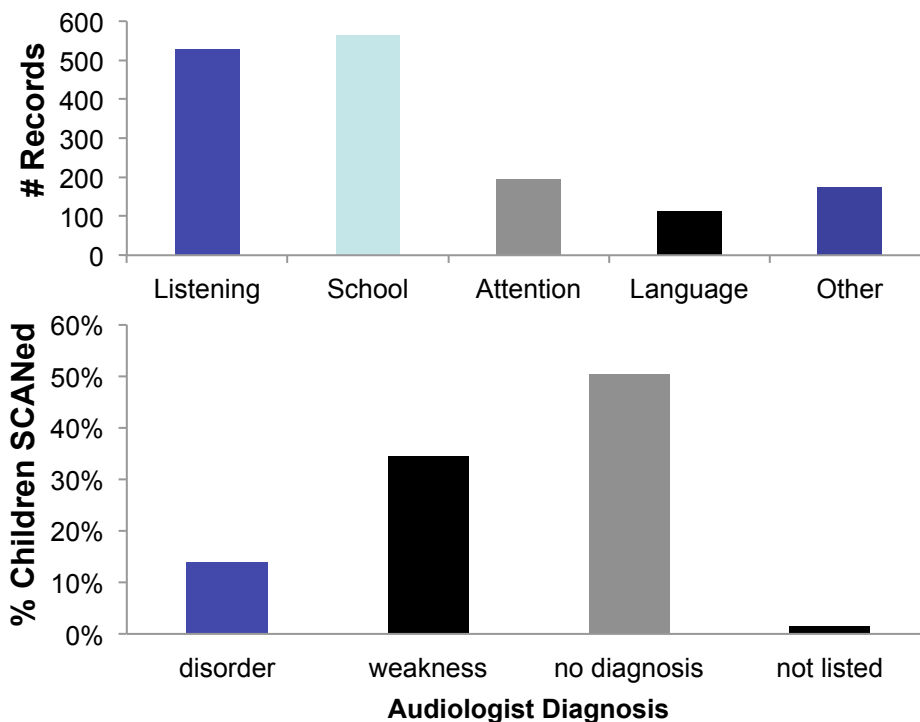
What is presently done? CCH - A case study

CAPE Appointments by age



- EPIC review of 1115 CAPEs
- 50% failed SCAN → diagnosed
- Decreasing trend to diagnose

Primary Complaint



Questions about diagnosis?

- Should we have a screen? If so, what and by whom?
- How should referral be handled? Multi-disciplinary?
- What should be in an audiological work-up?
- What sorts of additional testing should be done?
- What specific tests should be used?
- What diagnostic options should there be?
- What onward referral should occur?
- Other?

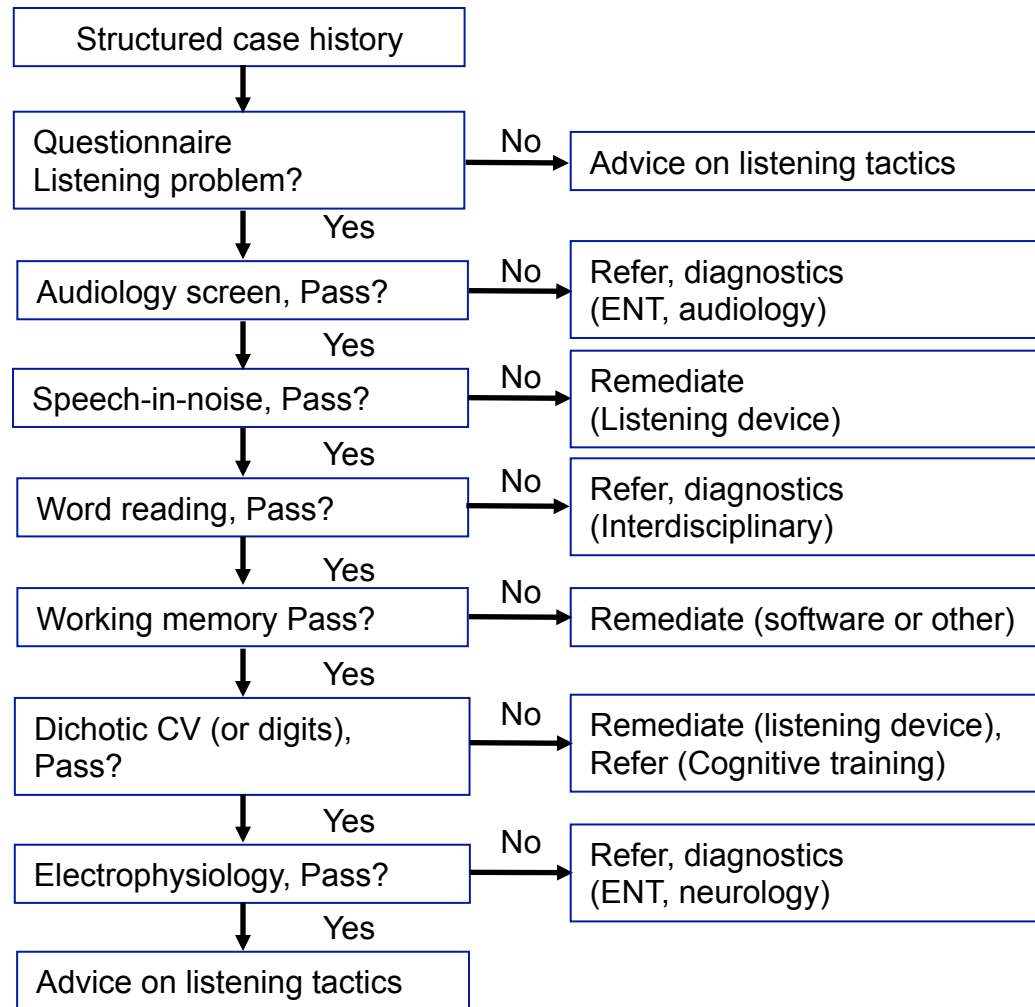
Questions about management

- Is any management useful and needed?
- Who should be the 'manager'? Multi-disciplinary?
- What sorts of management are useful?
- What specific management strategies should be used?
- How should we evaluate the outcomes?
- What about longer-term follow-up?
- Other?

Questions about APD

- Is APD a useful construct? Should the 'label' be retained?
- What should be done in Alberta? Can we take a lead?
- How do we get stakeholders engaged?
- Is it worth establishing international consensus?
- How would a consensus be achieved?
- Should professional bodies be involved? Which ones?
- Other?

APD: Hierarchical assessment and intervention



APD: Relevant, Validated, normalized tests

DeBonis: Four tests proposed (if speech/language, hearing & psychoeducational evaluation age-appropriate)

Two caregiver questionnaires

BRIEF (executive function, G Gioia et al, 2000)



CCC-2 (communication, DVM Bishop, 2003)



Two speech in noise tests

BKB-SIN (sentences in noise, Etymotic Inc)



WIN (words in noise, RH Wilson et al, 2010)