

# Red Flags for Speech Impairment

## RISK FACTORS, SCREENING & REFERRAL

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# Early Risk / Protective Factors for Speech and Language Impairment

Risk

Being male

Having ongoing hearing problems

Having a more reactive temperament

Protective

Having a more persistent temperament

Having a more social temperament

Increased maternal well-being

Risk or

Having an older sibling

Protective

Parental LOTE\* status

Support for learning in the home

Language Other  
Than English\*

## Early Identification

“These early risk and protective factors along with observations of children’s speech and language milestones can be a useful guide for primary care professionals seeking to identify children who benefit from early intervention communication programs.”

Harrison & McLeod, 2010

## Aetiology

### Three putative causes of SSD

genetic transmission of a linguistic processing deficit, expressed as a problem with speech production

60%  
of referrals

fluctuating conductive hearing loss

30%  
of referrals

genetically transmitted deficit in speech motor control

10%  
of referrals

Source: Waisman Phonology Project

U Wisconsin, Madison [www.waisman.wisc.edu/phonology](http://www.waisman.wisc.edu/phonology)

# Literacy

- $\approx 30\%$  of children with Phonological Disorder have deficits in auditory working memory (AWM) .

Shriberg & Kwiatkowski, 1994

- AWM performance is a strong predictor of letter recognition ability.

Webster & Plante, 1992

# Literacy

- Critical Age Hypothesis

Literacy acquisition is likely to be compromised if children are not intelligible by age 5;6.

Bishop & Adams, 1990

- Persistent, mild speech production difficulties beyond age 6;9 are associated with literacy acquisition difficulties.

Nathan, Stackhouse,  
Goulandris & Snowling, 2004

# Screening

## 1. EARLY IDENTIFICATION OF 'AT RISK' CHILDREN

Aims for early treatment or to 'prevent'.  
Often done by health & education professionals e.g., audiologists, nurses, teachers

## 2. INFORMAL SLT TRIAGE SCREENING

Component of initial assessment process.  
Judgements are made about priority status.

## 3. FORMAL SLT SCREENING ASSESSMENT

Screening tests are used to determine whether voice, speech, language or fluency require investigation.

Roulstone, 2009

# Failure to babble

## Late onset of canonical babble



- [www.vocaldevelopment.com](http://www.vocaldevelopment.com)
- Canonical babbling: CV and VC strings that sound like “talking”.
- Usually starts at about 7 months.
- 10-12 months is “late normal”.
- Weird and wonderful noises are OK as long as there is some babble too.

# Failure to babble

## Late onset of canonical babble

- Ask parent if the child repeated syllables that sounded like “talking”.
- “Did you notice babble that sounded like babababa, dadada, gaga, uma uma before s/he turned one?”
- Parents may not remember babble, but they usually do remember if the child did not babble or was very quiet (apart from crying).

# Otitis Media with Effusion



- OME between 12-18 months is associated with speech delay.
- Query this with any child with ventilation tubes, especially if inserted at 1, 2 or 3 years of age.

# Otitis Media with Effusion

- Ask parent about OME at a young age, especially between 12-18 months.
- Be alert to the strong possibility of speech delay and / or language delay in children with OME histories.

# Children with Cochlear Implants or Hearing Aids



- Have delayed phonological development compared with hearing peers.
- Use developmental patterns well beyond expected ages of suppression.
- Use the unusual pattern of backing at 3 and 5 years.

Day, et al., 2010

## Children with CI's or Hearing Aids

- Phonological processes negatively impact speech intelligibility at age 5.
- Significant effect of H/L on phoneme accuracy scores for children with hearing aids at 3 years but not at 5.
- No significant effect of the age of first fitting of hearing aids on phoneme accuracy, or the presence of phonological processes at 3 or 5.

Day, et al., 2010

## Children with CI's or Hearing Aids

- Check with parents that the child's speech-language progress is being monitored an SLT.
- Listen for backing e.g.,  
ZIP = GIP, SIP = KIP,  
SHIP = KIP, MEASURE = MEGA,  
TIP = KIP, DIP = GIP.
- Strong possibility of speech delay and / or language delay with these children.

# Glottal Replacement



- Glottal replacement, when it is not dialectal, alerts clinicians to the possibility of speech delay or disorder.
- Listen for “glottal stops” in conversation.
- Have the child say “little” and “bottle”.  
“Is this baby big or little?”  
“This baby has milk in his \_\_\_\_\_” (bottle).

# Initial Consonant Deletion



- Initial Consonant Deletion (ICD) is only attested in 1st language learners of French, Finnish and possibly Hebrew, alerting us to the possibility of moderate and severe SSD.
- Listen for ICD, e.g., ask the child to count objects –  
“How many sultanas are there?”  
Does the reply sound like  
“un, oo, ee, or, eye, ih, e-en”?

# Small Phonetic Inventory



- A small repertoire of consonants, and/or vowels may signal moderate and severe SSD (moderate/severe phonological disorder and/or CAS).
- Listen for the same consonants repeated over and over.
- Sometimes parents will comment on this saying something like, “His speech sounds like all B’s and D’s”.

# Backing and Otitis Media with Effusion



- Perceptual findings indicate significant trends for backing of the obstruents /s/, /z/, 'sh', 'zh', /t/ and /d/ to be more prevalent in children with positive histories of OME.

Shriberg, Kent, Karlsson,  
McSweeney, Nadler, & Brown, 2003

# Backing and OME

Listen for backing e.g.,

- ZIP = GIP
- SIP = KIP
- SHIP = KIP
- MEASURE = MEGA
- TIP = KIP
- DIP = GIP

Refer to SLT if any of them are heard.

# Vowel Errors



- Prevalent or inconsistent vowel errors are a diagnostic marker for CAS.
- Most children with CAS and many children with phonological disorder experience difficulties producing vowels.
- At least some vowel errors occur in as many as 50% of children with these diagnoses.
- Typically, 24-65% of children <35 months have a high incidence of vowel errors.
- By 35 months errors are far less prevalent 0-4%

# Vowel Errors at 35 months and beyond

- Listen for vowels separately from consonants.
- Does the child seem to be using only three or four different vowel?
- Do the vowels sound “odd” or like a foreign accent?
- Vowel screener

[www.speech-language-therapy.com/vowel\\_screener2010.pdf](http://www.speech-language-therapy.com/vowel_screener2010.pdf)

# Persisting Final Consonant Deletion

- FCD coming up to three years alerts the clinician to the possibility of speech delay or disorder.
- FCD is typically gone by age 2;10.
- Listen for FCD
- Have the child name animal pictures or figurines:  
pig, horse, cat, sheep, hen, duck, whale.
- Do they sound like  
pih, hor, cah, she, heh, duh, way?

# PCC below 50% in “beginning readers”



- PCC <50% in children aged 4;1 to 8;6 signals severe SSD.
- Children aged ≈5;6 plus with PCC <50% are at risk for literacy impairment.
- They are usually extremely difficult for “strangers” to understand.
- Listen for very poor intelligibility.
- Parents should have no need to “interpret” school-aged children’s speech for “strangers”.

## Mild speech difficulties past 6;9



- Persistent, mild speech production difficulties beyond age 6;9 are associated with literacy acquisition difficulties. Nathan, et al., 2004
- Listen for mild speech errors in children of about 6;9 or older.
- Listen to pronunciation of /s/ /z/ 'sh' // /r/' 'th'.
- Refer to SLT if there are errors.

## “Losing words”

- If parents say their child ‘looses words’ it may be significant, but it is not, as is popularly thought, a ‘CAS indicator’ / ‘SSD indicator’.
- The phenomenon occurs in early typical development.
- However, it may indicate language regression due to epilepsy (e.g., Landau-Kleffner syndrome), tumours, etc.



## “Losing words”

- Ask parents if the child had 6 or more words in their vocabulary for a while and then stopped saying them.
- Ask if language abilities have declined for no apparent reason.
- If the answer is “yes” to both questions, refer to SLT for assessment.

# Inventory Constraints (Missing Consonants) and Errors



- Six inventory constraints (missing consonants ) across three manner categories signal severe SSD.
- Six sounds in error, across three manner categories signal severe SSD.

# PVM Chart

## Manner Categories & Places of Articulation

		MANNER	VOICING	PLACE						
				Bilabial	Labiodental	Interdental	Alveolar	Palatal	Velar	Glottal
OBSTRUENTS	Stop	Voiceless	p			t		k	ʔ	
		Voiced	b			d		g		
	Fricative	Voiceless		f	θ	s	ʃ		h	
		Voiced		v	ð	z	ʒ			
	Affricate	Voiceless					tʃ			
		Voiced					dʒ			
SONORANTS	Nasal	Voiced	m			n		ŋ		
	LIQUID	Lateral	Voiced			l				
		Rhotic	Voiced				r			
	Glide	Voiced	w				j	w		

# Selected Glossary

NZ English Vowel Transcription 1946, 2009

1-page Prompt for Audiologists wanting to  
Screen Children for Possible Referral to SLT

## Voice: Refer client to ENT and SLT



- If they have had a hoarse voice for more than one week.
- If they have periods of aphonia (no voice) at any age (e.g., regularly loses the voice after sporting events, choir, school camps, etc.).
- If a male past puberty has a high pitched, “immature sounding” voice.
- If they have an unusual voice and a “lump in the throat” feeling.
- If they have reflux and voice symptoms.

# Fluency



Refer to SLT when an individual complains of, or obviously is:

- Stuttering
- Cluttering
- Having trouble “getting words out”

# Language



- First words should emerge by 18 months.
- A “late talker” has a spoken vocabulary of <50 words at 24 months.

[www.speech-language-therapy.com/devel1.htm](http://www.speech-language-therapy.com/devel1.htm)



## Parents' Concerns

- If parents express concern regarding voice, speech, language, pragmatics or fluency refer for SLT evaluation.
- Parents are usually right about their own children.
- Professionals are often quick to “reassure” - but not always appropriately.
- Encourage parents to trust their judgement.

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# Handout

- The information in this slide show should be viewed in relation to the handout that was distributed to the NZAS Conference delegates in Blenheim NZ, July 2010.

