EBP: Answering Practical Clinical Questions

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Morning Session

- Asking Evidence-Based Clinical Questions
- EBP Issues in the Swiss Context

Break

- Clinical Cases: Evaluating Intervention

Context of EBP in SLT

- SLTs are increasingly required to demonstrate that their practice is based on evidence
- Professional associations support its use
- Resources for services are becoming dependent on efficacy results
- Provides a research imperative

Definitions of EBP

- *'The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients'* (Sackett et al, 1997)

- *Current best evidence is up-to-date information from relevant, valid research* (First Annual Nordic Workshop,1996)

Three Other Factors

- Clinician expertise – *the proficiency and judgement that individual clinicians acquire through experience and practice*
- Client preferences –*limited evidence in SLT*
- Institutional norms and policies – *vary, not always driven by evidence*

ASHA, Scope of Practice in Speech Language Therapy, 2001

- The professional role of speech-language pathologists is to

  ‘*Participate in outcomes measurement activities and use data to guide clinical decision making and determine effectiveness of services provided in accordance with the principles of evidence based practice*.’

Proper EBP Questions

- Does a particular intervention approach,
- For a particular diagnostic group,
- Delivered by a skilled practitioner,
- Using appropriate dosage and scheduling,
- Enhance a specific ability/specific abilities,
- At particular points in time post intervention?

A Particular Intervention

- RCTs that do NOT evaluate a specific intervention, with a specific diagnostic population, yield non-significant findings.
- Glogowska et al (2000) studied a heterogeneous group of 159 children, treated by 21 clinicians in 16 community clinics, who received '**table-top activities**'.
- *'Different, unproven treatments were offered to clients with different disorders'* (Pring, 2004).

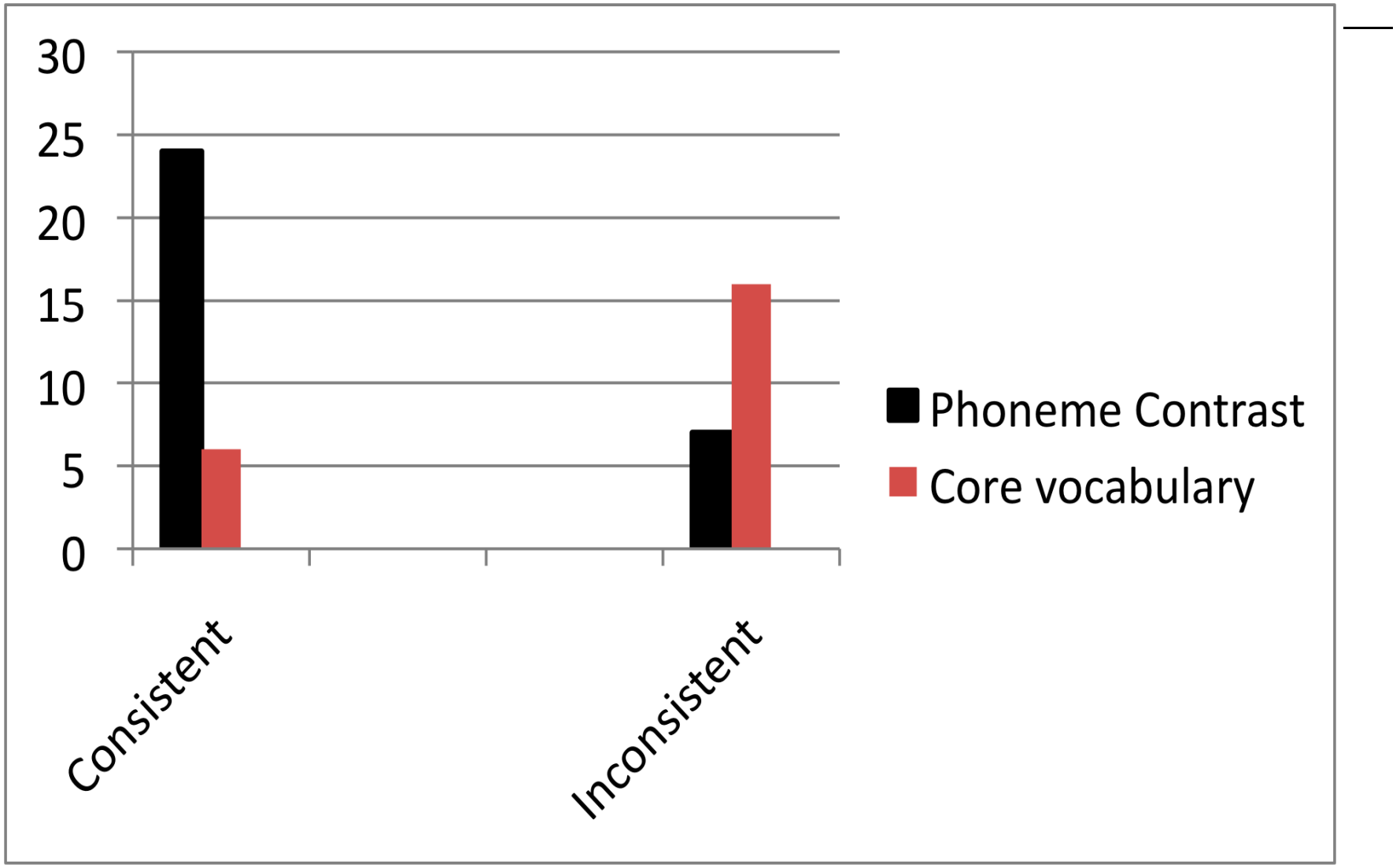
A particular diagnostic group

Positive RCT Outcome	Negative RCT Outcome
Stuttering Voice Developmental phonological disorder Parkinson's disease (dysarthria)	Dysarthria due to non-progressive brain damage Severe mixed receptive-expressive specific language impairment Mixed speech and language disorder Acquired aphasia

Importance of Diagnostic Group

- An example, Crosbie et al (2005)
- 18 children (4;08-6;05 years) with severe speech disorder took part in an intervention study comparing phonological contrast and core vocabulary therapy.
- All children received two 8-week blocks of each intervention (cross-over design)
- Changes in consistency of production and accuracy (per cent consonants correct) were used to measure the effect of each intervention.

PCC Gain Immediately Post Therapy



Inconsistency score gain immediately post therapy

Group	Phoneme Contrast	Core vocabulary
Consistent Speech Disorder	9.5 (13)	5.0 (7.6)
Inconsistent Speech Disorder	4.2 (7.6)	24.6 (9.1)

A Skilled Practitioner

- Not all agents of SLT are equal
- Lancaster (1991) compared 3 groups of 5 children: untreated; treated by a clinician (8 x 30 minute weekly sessions); and, treated by parents at home.
- Parents received two hours training on input tasks.
- Children who received treatment > the untreated group
- Intervention from a clinician > parent (clinician group reduced their ‘deviancy score’ by 44% compared to 20% for parent group).

Dosage and Scheduling

- To compare service delivery in intervention studies for speech disorder, Baker & McLeod (2008) looked at 150 papers in 28 journals between 1978-2008.
- **Dosage:** NOT REPORTED
- **Scheduling**:

  Range of number of sessions per week 1-5.

  1 (16%) 2 (37%) 3 (19%) 4/5 (6%)
- **Session Length:** Range 5 -270 minutes

  20% 30 mins, 12% 45 mins, 20% 60 mins

Dosage and Scheduling

- Survey of 17 papers on speech (2004-2008)
- **Dosage**: 6-7 hrs (23%) 8-12 hrs (29%)
  14-19 hrs (23%) 31-36 hrs (23%)
- **Scheduling**: Number of sessions per week
  1: 23%; 2: 35%; 3:18%; 5 times: 6%
- **Session Length (minutes)**:
  - 25 (6%), 30 (29%), 45 (18%)
  - 50 (12%), 60 (12%), 90 (6%)

  NB No report scheduling/session length 18%

HOW To Measure:

- Myth: Quantitative data is objective
  - '*Not everything that can be counted counts, and not everything that counts can be counted*', Einstein
- Myth: Unintentional bias doesn't happen in RCTs:
  - Person **assessed** and person assessing is blind as to treatment/placebo
- Many factors affect assessment performance
- Huge numbers are required in RCTs:
  - – means obviate individual differences
  - – standard deviations are often enormous

Enhancement of Specific Abilities

- **What** is measured, within a diagnostic category, varies widely, making comparison across intervention studies difficult or impossible.

- Bernstein-Ratner (2006) posed these questions:
  - Is one treatment more cost effective than another treatment?
  - Is a particular treatment clinically cost efficient as well as statistically significantly effective?

Stuttering: measures

- **Speech Performance**
  - % syllables stuttered, duration of dysfluency,
  - type of dysfluency, naturalness of speech
  - speaking rate general rating of speech
  - ***audio vs. audio-visual samples (20% difference)***
  - **Speaking Situations: relative, stranger, phone, public address**
- **Affective:** attitudes to speaking, struggle, avoidance, personal construct, narrative, self perception scales.
- **Judges** Observer (clinician, relative, stranger) Self-evaluation

Stuttering: A Special Case?

- Spontaneous recovery is common in preschoolers who stutter
- Relapse is a significant problem with older children, adolescents and adults who stutter
- Measures of stuttering/dysfluency are inherently unreliable because the variability of stuttering makes speech performance measures unreliable
- Consequently, some researchers argue that self-evaluation provides better insights as to therapy outcome.

RCT of Lidcombe Program: Jones (et al, 2005)

- Measure: proportion of syllables stuttered, from audio-taped recordings of participants' conversational speech outside the clinic in three different speaking situations.
- Comparison the Lidcombe program with a Demands and Capacities approach have shown that both treatments yielded similar positive outcomes.
- The standard RCT statistical framework cannot be used for populations where natural recovery occurs. The results show no evidence of a recovery rate exceeding 74% which is what has been reported for spontaneous recovery of stuttering.

Child speech disorder: measures

- **Speech Performance**
  - severity measure e.g. PCC
  - error patterns (number and type)
  - consistency
  - phone repertoire (articulation)
  - intelligibility rating
  - **Speech Samples:** single word picture naming; connected speech with parent or clinician; imitation of non-words /words
- **Affective:** activity and participation limitations
- **Underlying Abilities:** phonological processing tasks (e.g., Phonological Awareness)

Comparison of studies

- **MAXIMAL PAIRS:**
  - Gierut (2004): increase of **28-88%** in PPC + 3 new phonemes per child.
- **MINIMAL PAIRS:**
- Dodd et al (2008): increase of **6-20%** in PPC + 4 new phonemes and 7 clusters, suppression 2 error patterns per child.

Baker and McLeod (2008) concluded: Maximal pairs are more cost-effective than minimal pairs.

BUT……

- **Gierut (2004):**
  - 19 hours (1 hr, 3 x week)
  - Speech sample: **CVC non-words taught in therapy**
  - Measure: PPC, new phonemes
- **Dodd et al (2008):**
  - 6 hours (30 mins 1 x week)
  - Speech sample: **DEAP standardised assessment**
  - Measure: PPC, new phonemes, clusters, error patterns

What is clinically significant?

- **A meaningful, important, not trivial change due to treatment**.
- **Three groups with different perspectives**:
  - **Clinicians**: absolute size of change (> 1SD; 5% increase)
  - **Client**: Subjective evaluation
  - **Carers**: Social impact.
- A multi-method approach is ideal
- BUT research is needed to evaluate current and new measures of clinical significance (Ratner, 2005).

WHEN To Measure

- Establish a pre-therapy baseline
- Monitor change in therapy
- Measurement at end of an episode of therapy
- Post-therapy evaluation of maintenance or change:
  - 6 weeks
  - 3 months
  - 6 months
  - 1 year
  - longer

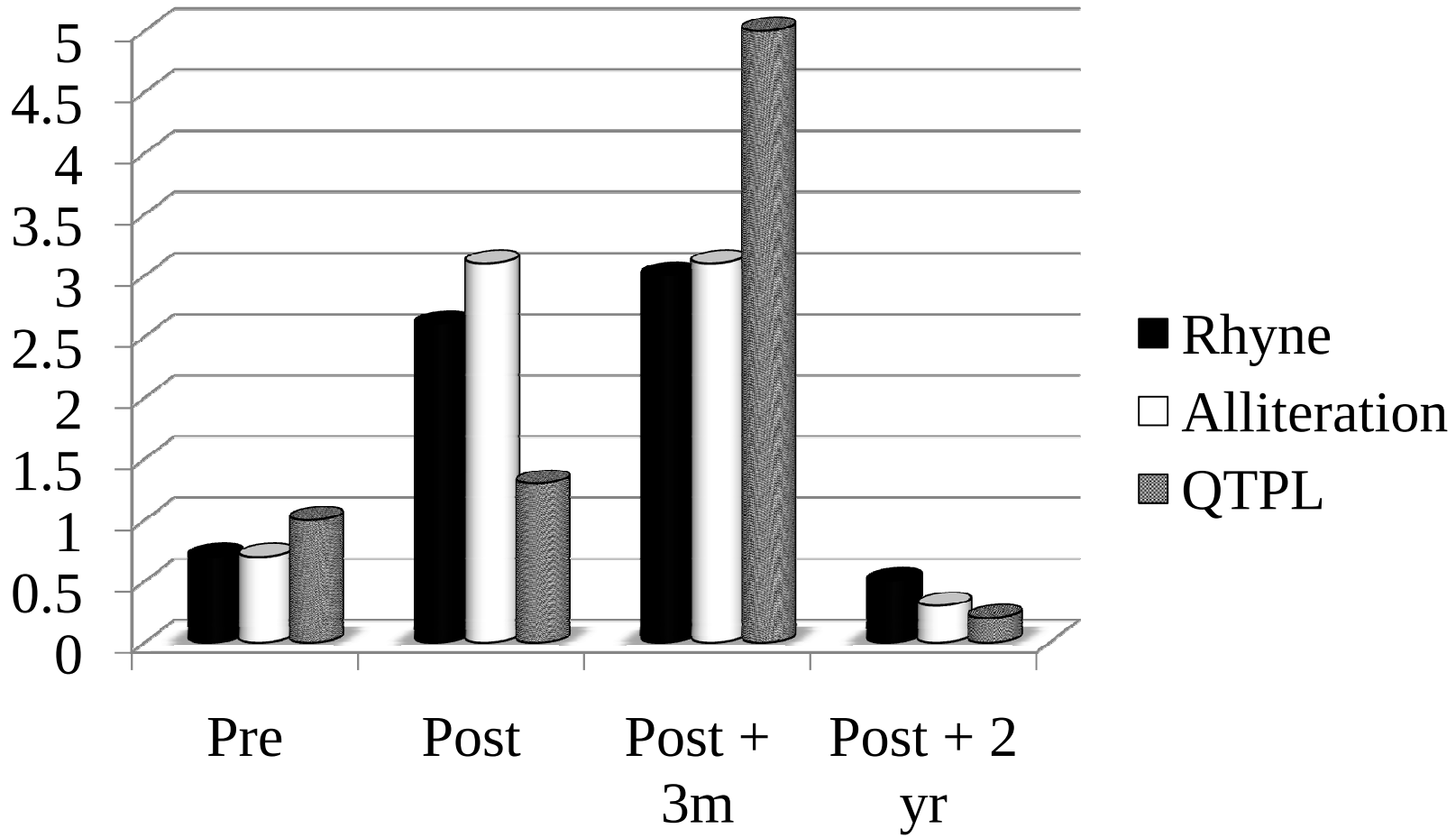
Preschool PA intervention

- Emerging literacy concepts in early childhood predict later reading ability (e.g., Adams, 1990).
- Children growing up in literate homes learn to read well.
- *In contrast, there is compelling evidence that children who begin school with poor language and PA typically remain poor readers throughout their schooling and beyond (Stanovich, 1986; Torgesen & Burgess, 1998).*
- Children must be provided with appropriate support and experience -> Sure Start/Head Start.

Example: Long-term follow-up

- **RCT of intervention for PA and language of socially disadvantaged pre-schoolers**
  - Two groups (treatment and no treatment)
  - Two pre-intervention assessments established low performance on a standardised assessments
  - Treated: 2 x 10 weeks of intervention, planned by SLT, delivered by a teacher as part of class activity.
    - PA: onset-rime tasks
    - Language: narrative skills and language for concepts.
  - Outcome was measured using standardised tests immediately post intervention, three months later, and two years later.

Difference Between Scores : Intervention - controls



A one-off?

- Other research on early PA and language intervention programs comparing treated and untreated children:
  - Denne Langdown Pring Roy (2005) PA ✓ reading ✖
  - Hatcher Hulme et al (2005): Low SES didn't make gains
  - Nancollis, et al (2005): PA ✓BUT + 2 years, reading ✖
  - Troia (1999): review of positive studies showed methodological problems and lack of follow-up studies
  - Ukrtainetz Ross Harm (2009): 9 month follow-up: no difference between once weekly, intensive and controls on alliteration, rhyme, blending and segmenting

Recommendations

- EBP questions need careful formulation, to allow appropriate research design that provides clinically useful answers.
- Our research priority should be better differential diagnosis of developmental acquired language disorders and the development of interventions shown to target specific deficits.
- The evidence-base in SLT is just beginning to emerge. It needs to be built. HOW we measure what we do and WHEN we take those measurements affects the answers.

Questions and Discussion

- What EBP issues are important in Switzerland?
- Who requires evidence of the efficiency of SLT?
- What EBP questions do you have about your practice?