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# Clinical Cases: Evaluating the Evidence

- (i) Inconsistent phonological disorder
- (ii) N of One Randomized control trials
- (iii) Swiss study


# Clinicians' Role in EBP Research

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- Complex interventions, such as therapy for speech and language disorders, are dependent on theory for the development of ways to establish differential diagnostic categories and link each category to cost effective intervention.
- Consequently, clinical practice has a crucial role in the development of theory and evidence-based practice research in two ways:


# Role of Clinical Practice

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- A novel intervention, devised for a specific client and having a positive outcome, can lead to a better understanding of the nature of communication disorder resulting in a theoretical advance.
- The resulting theory, accounting for why an aspect of communication is impaired in a particular way, can be evaluated by an intervention targeting the hypothesized deficit causing the communication breakdown.


# That is:

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- Excellence in clinical research is probably best achieved by an interaction between practice and theory.
- Practice should motivate theory and is the ultimate test of theory.


# An Example

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- **Practice**
- A boy, aged 4;2, participated in clinical study evaluating phonological contrast treatment.
- He made no progress in 36 weekly sessions.
- The other six children in the study improved.
- He differed from them in that he made inconsistent errors, but had no signs of Childhood Apraxia of Speech.
- A novel therapy (core vocabulary) resulted in major improvement in 8 sessions.


# Theory

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- Experiments established assessment criteria, and defined a population that differed from other children with speech disorder and controls.
  - Experiments investigated auditory processing, receptive new word learning, awareness of phonological legality, onset-rime awareness, reading comprehension and oro-motor function.
- **Hypothesis: A deficit in the speech processing chain in phonological assembly underlies inconsistent speech errors.**


# Practice: Reprise

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- A refined Core Vocabulary approach was trialled in case studies and crossover treatment design studies to determine content, dosage, service delivery and parent involvement.
- The results showed that children who make inconsistent errors on the same lexical items make much greater progress when receiving CV therapy than other types of therapy;
- They make better progress when given Core Vocabulary therapy than children who make consistent errors or are diagnosed with CAS.


# Practice-Theory-Practice.

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- The example demonstrates a desirable cycle:
  - Practice leads to new theory. The new theory is evaluated by further practice.
- Patient-Specific Hypothesis Testing
- This EBP approach stresses the important role of multiple case studies in building the evidence base.


# Clinician-Researcher Collaboration

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- The lack of definitive evidence for many client groups in SLT, and the heterogeneous nature of the population served by speech-language pathologists, indicates a need for reliance on clinical expertise in building the knowledge base.
- This means that collaboration between clinicians and researchers is essential.


# Building EBP Knowledge Base in Speech-Language Pathology

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- Randomized Control Trials are considered the best evidence.
- In a traditional RCT
  - Clients are randomly allotted to treatment and no-treatment groups.
  - Comparison of the two groups' outcomes is 'double-blind' (neither the client nor the assessing clinicians knows if treatment has been received).


# An Important Question

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- How relevant are RCTs for research in speech-language therapy provision?
  
- While there are some exceptions, in general there are problems in implementing such a design.
  - Population
  - Treatment
  - Double Blinding
  - Outcome Measures


# N of 1 Randomized Control Trials

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- Guyatt, Sackett et al (1986) concluded that:  
*‘Multi-patient, double-blind, RCTs cannot be carried out for many clinical disorders’; and that ‘The results (of RCTs) may be difficult to extrapolate to individuals’*
- **So**, they begun to use **N = 1 RCT** where a single patient receives, in random order,
- a pair of treatments (one placebo and one ‘active’) or two treatments for comparison.


# N = 1 RCT Advantages

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- Quantitative data for statistical analysis;
- Specificity to individual patients;
- Each participant acts as their own control, no matching of control groups difficulties
- Avoids the problems of attrition in large scale RCTs (depending on population, treatment type);
- Avoids ethical issue of with-holding treatment;
- Multiple N=1 RCTs allow general conclusions to be drawn concerning an intervention.


# No SLP Studies, but.....

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- 5 Patients with osteoarthritis of the knee in a 12 week n=1 trial comparing two types of knee supports
- **Method:** 6 treatment periods:  
*KS1 for one week; then, 1 week 'washout' (no treatment) x 3*  
*KS2 for one week; then 1 week 'washout' (no treatment) x 3*  
The SIX treatments were RANDOMISED for each patient
- **Measures:** Interviews; Daily scales for pain and knee stiffness
- **Results:** Patients were: (i) keen to participate, (ii) eager to complete trial, (iii) reported they learnt about their problem (iv) improved self-management (v) N=1 trials considered 'logical' and 'personalized'.


# Plan for an N=1 Study in SLP

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## □ Research Question

- For patients with acquired word finding difficulty, what is the effectiveness of
  - (i) phonemic cueing (PC)
  - (ii) semantic cueing (SC)
- Design: N=1 RCT: 10 patients who receive 12 weeks of intervention with **6** separate **randomized** treatment episodes:
  - two weeks (4 x 30 mins x week) PC x 3
  - two weeks (4 x 30 mins x week) SC x 3
- Measures: patient interviews and rating scales
  - objective measures (number of words names)
  - (therapy targets, control probes).


# Your Questions.....

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Clinicians to put forward their EBP questions from their own context.

Research designs will be compared to select the best approach to providing evidence.