

# Tele-intervention

Future prospects for  
children with hearing loss



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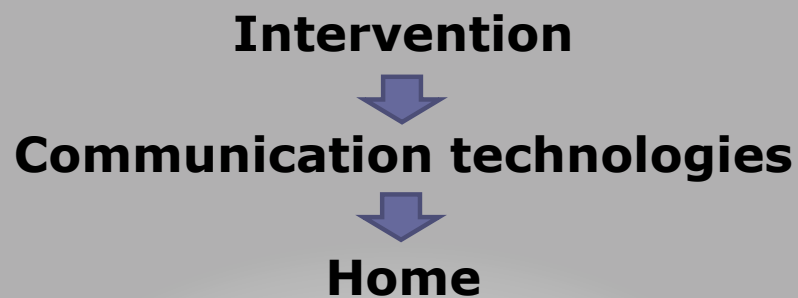
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## Meet Mireille



## What is tele-intervention (TI)?




## Why tele-intervention?

- Prevalence of hearing loss in newborns
  - Over 90% in developing countries
  - Many don't have access to necessary early intervention services.
- Possible reasons:
    1. Hearing loss: **Low-incidence** condition
    2. Few children with HL in the same **area**
    3. Shortage of appropriately trained **professionals**
    4. **Distance**



(WHO, 2010; McCarthy, Muñoz and White, 2010; Olusanya et al., 2009; Olusanya & Newton, 2007)


**AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION**  
 ASHA Telehealth Special Interest Group

## Current evidence of TI in SLP

**Assessment:**

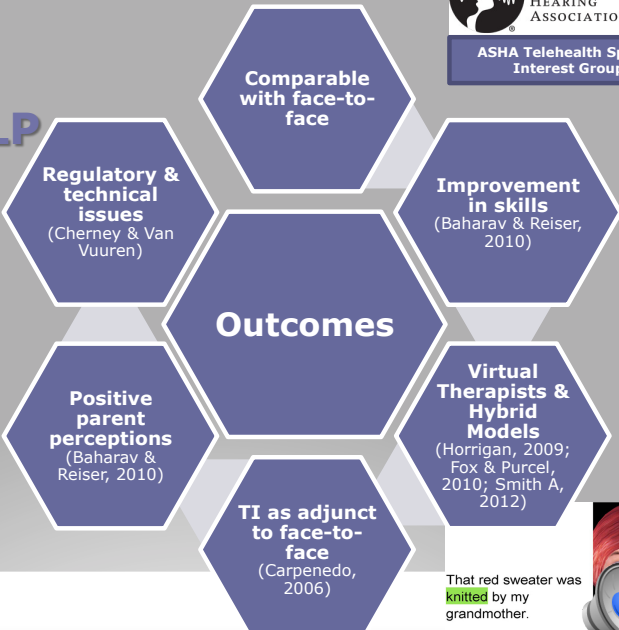
- Motor speech disorders** (Hill, Theodoros, Russell, Cahill, Ward, & Clark, 2006)

**Treatment:**

**Articulation** (Forducey, 2006; Jessiman, 2003; Baharav and Reiser, 2010)


**Language** (Jessiman, 2003; Baharav and Reiser, 2010)

**Stuttering** (Sicotte, Lehoux, Fortier-Blanc, & Leblanc, 2003)



**Outcomes**

- Comparable with face-to-face
- Improvement in skills (Baharav & Reiser, 2010)
- Virtual Therapists & Hybrid Models (Horrigan, 2009; Fox & Purcel, 2010; Smith A, 2012)
- TI as adjunct to face-to-face (Carpenedo, 2006)
- Positive parent perceptions (Baharav & Reiser, 2010)
- Regulatory & technical issues (Cherney & Van Vuuren)




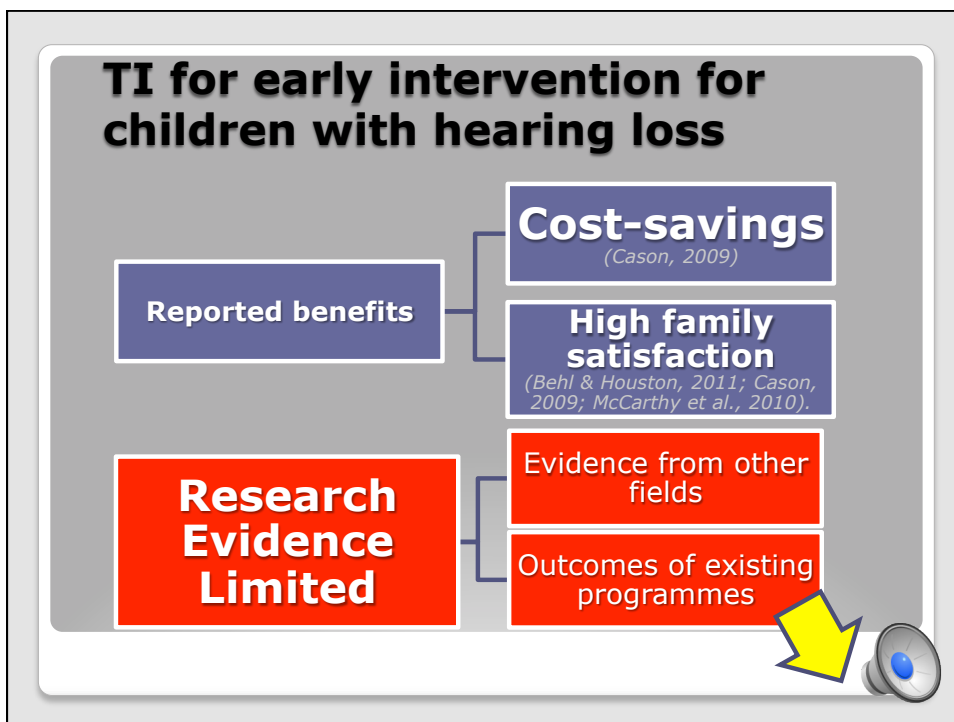
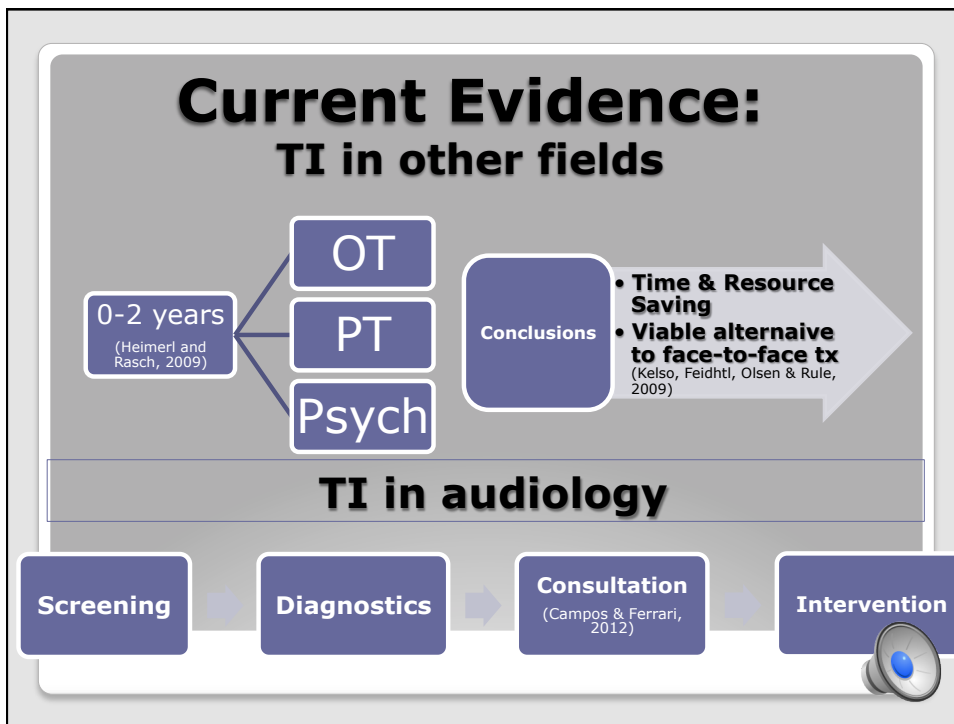
That red sweater was **knitted** by my grandmother.

## Survey

### SLP Perceptions: TI in schools

Limited use of TI in schools (1,8%)	Younger SLP's = more willing to use TI	Professional skepticism: Assessments via TI
Uncertainty about outcomes: meeting needs of students; establishing rapport	31% in favour of TI	Need: Establish procedures and guidelines for school-based TI

Tucker, 2011 



## The Royal Institute for Deaf and Blind Children, Australia

### Teleschool:

- The Royal Institute for Deaf and Blind Children (RIDBC)
- The largest and most comprehensive TI program for children with HL
- 100 deaf or blind children per year
- More than 170 families since initiation in 2002

### RIDBC Teleschool Guiding Principles for Telepractice



 Royal Institute for Deaf and Blind Children

## Parent reported benefits

### Highly satisfied

- Less waiting lists, less travel arrangements, less unforeseen obstacles
- Emotional support, reassurance, guidance
- Reduced feelings of anxiety and depression

### High quality services

- Children's progress comparable to progress from in-home visits
- But no developmental data collected as of yet, no comprehensive assessment
- Effective in delivering personal, immediate, and specialized services to these parents and their children
- Preferred it to telephone services



## Clinician reported benefits

Parents acquire EI skills more rapidly, only occasional involvement from therapist

In TI, the roles shift:  
**parent** = primary communication partner  
**therapist** = limited physical involvement

This set-up changes the focus of sessions from teaching the child to **coaching the parents** in implementing early intervention skills and techniques with their child.

Due to **flexibility** of scheduling:  
Increased participation fathers and other family members  
Less cancellations

*Dally & Conway, 20*






## Cost-effectiveness

- Limited data
- Cost of remote service delivery appears to be **higher** than that of face-to-face service delivery.
- Over time, however, these **findings may change** as:
  - Fuel costs increase
  - Internet costs decrease

*(Dally & Conway, 20*






## Sound Beginnings TI Program – Utah State University

### Outcomes


- Auditory Verbal Therapy (AVT)
- Parent reported benefits
- Challenges



## Sound Beginnings - AVT

- TI with experts in Auditory-Verbal Therapy (AVT)
- AVT is an effective early intervention for children with hearing loss.
  - parent-based treatment
  - promotes early diagnosis
  - one-to-one therapy
  - with active parental participation,
  - audiological management
  - and modern hearing technology (e.g. hearing aids and cochlear implants).
- The approach guides parents to develop their children's ***spoken language through listening***. The goal of AVT is to allow children with hearing loss to reach their full potential in the hearing world.

*(Eriks-Brophy, 2004; Dornan, Hickson, Murdoch & Houston, 2004; Dornan, Hickson, Murdoch & Houston, 2004)*



## Sound Beginnings - Outcomes

### Families

- Primary teacher of the child
- Active engagement
- Easier to integrate therapy strategies into everyday life
- TI more predictable, more consistent, less disruptive
- Fewer cancellations (NB for EI)

### Video

- Monitor development
- Fathers & other family members
- Avoid passing along illnesses

### Children

- More responsive
- Followed directions better
- Showed improved interactions
- More likely to reach listening and spoken goals



## Sound Beginnings - Challenges



### High quality, fast Internet

- Expensive
- Unavailable in some communities
- Extra costs: computer, camera, microphone
- Video/audio quality
- Technology can be fickle



### Participant/Caregiver

- Lack of confidence with technology
- Technical support person
- Ideal therapy space in house
- Some simply prefer clinician's physical presence



### NB:

*TI is just ONE possible vehicle of delivering quality, family-centered early intervention services.*

*(Behl & Houston, 2010)*





## Conclusion

Evidence suggests that tele-intervention could be used to **overcome barriers** like the **shortage** of trained early-intervention providers and the **high costs** of providing services to geographically dispersed families of children with hearing loss

*(McCarthy et al., 2010; Behl & Houston, 2010; Cherney & Vuuren, 2012; Cason, Behl et al., 2012)*



## However...

No conclusive evidence that **outcomes** for children or cost of delivery are comparable to those of face-to-face services.

*(Hersh, Helfand, Wallace et al., 2001; McCarthy et al., 2010; Hailey et al., 2004)*





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## New Study

### "Tele-intervention for Children with Hearing Loss"

- exploratory study

- **Aim:**

Describe comparability of tele-intervention versus conventional intervention

- 10 hearing impaired children

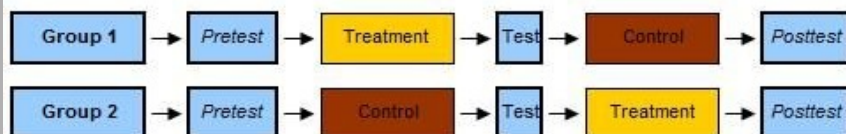
- **Sub-aims:**

1. To describe children's actual communication performance
2. To describe perceptions of their caregivers
3. To describe perceptions of early intervention specialists/therapists

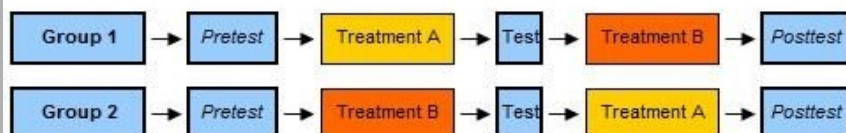


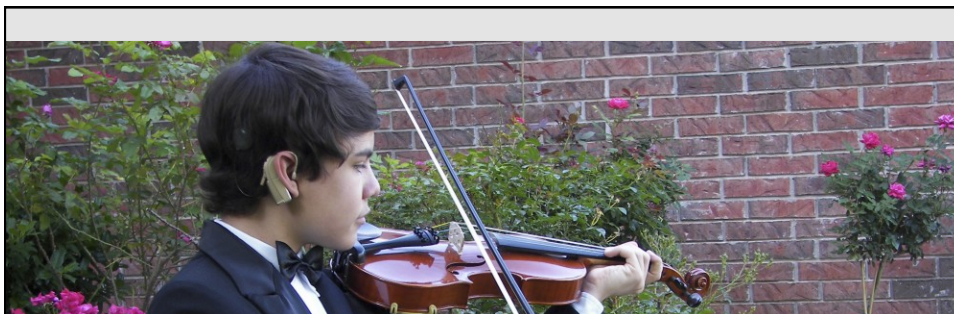
## Cross Over Design

### CROSSOVER - REPEATED MEASURES DESIGN



OR





*"Many things we need can wait.  
The Child cannot. Now is the time  
his bones are formed, his mind  
developed. To him we cannot say  
Tomorrow, his name is Today."*

*- Gabriela Mistral -*

