Dual Sensory Rehabilitation: Evidence-Based Practice & Knowledge Translation as our Guide

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The parts of my professional life...

- School of Optometry, University of Montreal
- Resident Researcher, CRIR/Centre de réadaptation MAB-Mackay du CIUSSS du Centre-Ouest-de-l’Île-de-Montréal
- Resident Researcher, CRIR/Institut Nazareth et Louis-Braille du CISSS de la Montérégie-Centre
- Adjunct Professor, School of Physical and Occupational Therapy
- Affiliate Assistant Professor, Department of Psychology, Concordia University
Plan for today

• Our origins
  – vision & hearing devices
  – early services: kids & adults
  – ...and then things got complicated...

• Models of Service Delivery

• How to use Knowledge Translation to elevate us to Evidence-based practice
Ancient vision history...

- Semi-precious stones as magnification devices

  - **Pliny (23 - 79)** describes how **Nero** watched gladiator fights through an emerald

  - **Abbas Ibn Firnas (810-887)**, Andalusian inventor, re-discovers and describes the dimensions of a crystal to create a “reading stone”
Assistive technologies

- 11th/12th Century
- Visby lenses – quartz/crystal
- Viking graves in Sweden

- Reading stone
- Béryl, bésyl,
  - « Besicle » en français,
  - « Brillen » in German...
Ancient hearing history...

• 5\textsuperscript{th} Century BC: Plato's Cratylus
  – Socrates says: "If we hadn't a voice or a tongue, and wanted to express things to one another, wouldn't we try to make signs by moving our hands, head, and the rest of our body, just as dumb people do at present? »

• 17\textsuperscript{th} Century: beginning of formalized recorded sign languages in Europe
• Chirogram from Chirologia, 1644
Assistive technologies

• ...into 19th Century
  – Ear Trumpet

• 1876
  – Alexander Graham Bell – first telephone lays foundation for hearing aid development (control volume, frequencies and sound distortions)
The beginnings of stigmatization?


Opera glasses
Needs of the “Modern” Era
Laura Bridgman (1829 – 1889)

- 1st deaf-blind American child to gain significant education in the English language

- Perkins Institute

- Before Hellen Keller 1880-1968
Educational Model

- Top-down communication
- Authoritarian
- Curriculum & Learning Objective
- Early life
- Assumes teacher knows: “student”
- Acquisition of knowledge

(Modified after Erdman et al., 1994)
WWI

« Gassed » by John Singer Sargent, 1919
Medical Model

• Top-down communication
• Authoritarian
• Diagnosis & Treatment
• Acute emergency
• Assumes clinician knows: “patient”
• Injury, disease & pathology

(Modified after Erdman et al., 1994)
Current Context

Age pyramid of the Canadian population as of July 1, 1971 and 2010

Notes: 1971 (final intercensal estimates).
2010 (preliminary postcensal estimates).
The Aging Population

• Are the Educational and Medical models suitable for their needs?

• Can we optimally provide rehabilitation services for combined age-related vision and hearing loss using these traditional approaches?
Additional Challenges

• Third party payers
  – $$ rules?

• Policy decisions
  – eligibility criteria versus functional abilities
  – e.g., vision vs. hearing vs. dual (if it exists)

• A new approach to services emerged:
Rehabilitation Model

- Horizontal Communication
- Interactive
- Identify & solve problem
- Chronic condition
- Assumes “client” is engaged
- Self-actualization & adjustment

(Modified after Erdman et al., 1994)
Can the rehabilitation model accommodate Deafblindness?

Blindness separates people from things; deafness separates people from people.

— Helen Keller —
Things to consider about...

... the person
- Body (shape, size, ...)
- Physiology (sleep, ...)
- Cognition (MCI, ...)
- Psychology (anxiety, ...)
- Sense of meaning (faith, ...)
- Motivation (drive, ...)
- Education (understanding, ...)
- Personality (optimist, ...)
- ...

... their environment
- Family (spouse, ...)
- Friends (network, ...)
- Economy (devices, ...)
- Politics (refund, ...)
- Culture (integration, ...)
- Religion (punishment, ...)
- Architecture (access, ...)
- Climate (outdoors, ...)
- ...

...
Things to consider about...

...what can this person accomplish in this environment?

- Communication
- Functional abilities
- Independence
- Participation

- Occupational Performance
How does this help us?

• Within this type of model we can plan, organize and evaluate our services and interventions

• Researchers & service providers can obtain relevant data (evidence-based practice)
  – on which to base their interventions
  – with which to demonstrate their success
  – and secure needed funding
Evidence-based Practice

• Finding the evidence
  – Capacity to access/search literature

• Assessing the evidence
  – Capability to judge what is presented

• Using the evidence
  – Ability to implement
Evidence

• In deafblindness, we do not have that much high-quality evidence

• We need to generate more and better data

• How to get there?
  – Knowledge Translation is the mechanism to improve research and practice
Innovations

Lost in Knowledge Translation: Time for a Map?

Ian D. Graham, PhD; Jo Logan, RN, PhD; Margaret B. Harrison, RN, PhD; Sharon E. Straus, MD, MSc; Jacqueline Tetroe, MA; Wenda Caswell, RN, MEd; and Nicole Robinson
Knowledge Creation Triangle

- Increased refinement and usability for clinic
- From uncut diamonds to practice guidelines

(Graham, et al., 2006)
Dynamic process, open to influence in all directions

(Graham, et al., 2006)
The KT Cycle

(Graham, et al., 2006)
Sensory and demographic characteristics of deafblindness rehabilitation clients in Montréal, Canada
Walter Wittich\textsuperscript{1,2}, Donald H Watanabe\textsuperscript{2} and Jean-Pierre Gagné\textsuperscript{1}

\textsuperscript{1}Centre de recherche institut universitaire de gériatrie de Montréal, Montréal, and \textsuperscript{2}MAH-Mackay Rehabilitation Centre, Montréal, Canada

Knowledge Inquiry: “first-generation knowledge that is in its natural state and largely unrefined”

- Chart review across 3 rehabilitation agencies offering integrated DS rehab services in Montreal
- Diagnostic combo for 31%: AMD + presbycusis
- Service delivery planning will need to strongly consider the growing presence of older adults
To review the existing vision & hearing screening tools that have been with older adults living with dementia

Scoping review of 5 databases.

Purpose: to develop a usable sensory screen for nurses working in long-term care
Knowledge Synthesis: “the aggregation of existing knowledge [...] often takes the form of systematic reviews”

- To review the existing definitions of terms related to deafblindness and their use.
- Systematic review of 5 databases.
- “Deafblind” was used mostly in clinical journals, whereas “dual sensory” and “combined impairment” more likely to be used in high-impact research journals.
Improving the quality of life of people with deafblindness

Julie Swann is an Independent Occupational Therapist

- Published in *British Journal of Healthcare Assistants*, which contains evidence-based articles providing **examples of good practice** in all areas of healthcare.

- By ensuring that appropriate equipment is provided, healthcare staff can enhance patients’ lives by helping them to manage their mobility and activities of daily living more easily.

Knowledge Tools/Products: “to provide explicit recommendations with the intent of influencing what stakeholders do […] thereby facilitating the uptake and application of knowledge”
Qualitative survey in which 68 stakeholders in deafblind rehabilitation from 6 countries described their perceived research and rehab priorities.

Overlap indicated that research and rehab efforts are moving in a congruent direction.
Screening for sensory impairment in older adults: Training and practice of occupational therapists in Quebec

Formation et pratique des ergothérapeutes du Québec dans le dépistage des troubles sensoriels chez les personnes âgées

Walter Wittich, Elizabeth A. Barstow, Jonathan Jarry, and Ailiki Thomas

• 102 survey respondents from the Quebec Order of OTs.
• Training on sensory-impairment-related topics was minimal and in stark contrast to the proportion who reported serving clients with a visual (92%), hearing (84%), or combined impairment (53%).
Telephone Accessibility for Individuals with Dual Sensory Impairments: A Case Study

Paul Evers, Paul Barber, and Walter Wittich

- Individually tailored intervention to make telephone services accessible for a man with progressive Charcot-Marie-Tooth disease.

- He is now capable of accessing telephone-based communication without the assistance of others.

Adapting Knowledge to Local Context: “the process individuals or groups go through as they make decisions about the value, usefulness, and appropriateness of particular knowledge to their setting and circumstances”
Conducting Interviews with People Who Are Deafblind: Issues in Recording and Transcription

Katrina Arndt

• Qualitative research approach
• Challenge for transcription of ASL, tactile ASL, spoken/signed English interviews
• Practical recommendations - rules

Assess Barriers to Knowledge Use:
“Implementers should assess for potential barriers that may impede or limit uptake of the knowledge”
Dual sensory loss: development of a dual sensory loss protocol and design of a randomized controlled trial

Hilde L Vreeken\textsuperscript{1,2*}, Ger HMB van Rens\textsuperscript{1,2,3}, Sophia E Kramer\textsuperscript{2,4}, Dirk L Knol\textsuperscript{5}, Joost M Festen\textsuperscript{2,4} and Ruth MA van Nispen\textsuperscript{1,2}

- A DSL protocol (for occupational therapists working in low vision rehabilitation) which focuses on optimal use of the senses and teaches DSL patients and their communication partners to use effective communication strategies
Screening for sensory impairment in older adults: Training and practice of occupational therapists in Quebec

Formation et pratique des ergothérapeutes du Québec dans le dépistage des troubles sensoriels chez les personnes âgées

Walter Wittich, Elizabeth A. Barstow, Jonathan Jarry, and Aliki Thomas

• Investigated the use of standardized screening tools for vision and hearing loss

Monitor Knowledge Use: “Necessary to determine how and the extent to which it has diffused throughout the potential-adopter group”
Dual sensory loss: development of a dual sensory loss protocol and design of a randomized controlled trial

Hilde L Vreeken¹,²*, Ger HMB van Rens¹,²,³, Sophia E Kramer²,⁴, Dirk L Knol⁵, Joost M Festen²,⁴ and Ruth MA van Nispen¹,²

To test its effectiveness and cost-effectiveness with an RCT

124 patients have been enrolled

Evaluate Outcome: “the only way to determine whether the efforts to promote its uptake were successful and worth it”
Transfer – From Knowledge to Action
The Sense of Being a Competent Partner to Persons with Congenital Deafblindness

Helle Buelund Selling, Flemming Ask Larsen, Anne V. Nafstad

Investigate transfer of knowledge in order to foster environments that strengthen the staff’s sense of being competent partners.
Now what?

• Reflect
• Read & Think
• Talk to your peers, students, boss, clients, anyone who inspires you
• Get involved in research
• Write (!) to let us know what became of your ideas
• Take DB services to the next level
• Use Evidence-Based Practice to break into the next Frontier for Deafblindness Rehabilitation
Want to study this?

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**Master’s in Vision Science**

*Option: Visual Impairment & Rehabilitation*

- Low Vision Therapy
- Orientation & Mobility
- Vision Rehabilitation Therapy

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**Low Vision Therapy (LVT)**

- **CORE PROGRAM** 15 credits
  - **University of Montréal**
    - **6004** Rehabilitation Services in Visual Impairment
    - **6020** Functional Consequences of Visual Pathology
    - **6017** Psychosocial Aspects of Blindness & Rehabilitation
    - **6036** Visual Impairment Across the Lifespan
    - **6050** Visual Impairment & Additional Disabilities

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**Orientation & Mobility (O&M)**

- **CORE PROGRAM** 15 credits
  - **University of Montréal**
    - **6034** Rehabilitation Services in Visual Impairment
    - **6020** Functional Consequences of Visual Pathology
    - **6017** Psychosocial Aspects of Blindness & Rehabilitation
    - **6036** Visual Impairment Across the Lifespan
    - **6050** Visual Impairment & Additional Disabilities

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**Low Vision Therapist** 23 credits

- **University of Montréal**
  - **6033** Low Vision Assessment (3 credits)
  - **6034** Low Vision Assessment 1 - Enhancing Visual Function (3 credits)
  - **6035** Low Vision Assessment 2 - Optical Devices (3 credits)
  - **6036** Low Vision Assessment 3 - High-Tech Devices (3 credits)
  - **6037** Seeing with a Visual Impairment (3 credits)
  - **6037A** Low Vision Internship I (2 credits)
  - **6037B** Low Vision Internship II (2 credits)

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**Orientation & Mobility Specialist** 23 credits

- **University of Montréal**
  - **6031** Assessment in Orientation & Mobility (3 credits)
  - **6032** Fundamentals of Orientation & Mobility (3 credits)
  - **6033** Strategies in Orientation & Mobility (3 credits)
  - **6016** O&M for Individuals with Low Vision (3 credits)
  - **6032** O&M Simulation & Techniques (3 credits)
  - **6077A** Internship in O&M I (2 credits)
  - **6077B** Internship in O&M II (2 credits)

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**Research** 7 credits

- **University of Montréal**
  - **6011** Research Seminar (3 credits)
  - **6046** Introduction: Ethics in Research (2 credits)
  - **6012** Directed Research Project (2 credits)

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*École d’optométrie*
Thank you / Merci