An Interdisciplinary Approach to an Intensive Comprehensive Aphasia Program:

Perspectives from OT and SLP

Anne Escher, MS, OTR/L
Anne Carney, MS, CCC-SLP

SNERC 2015 Conference
October 9, 2015
Acknowledgements

• **Core Intervention Team:**
  ▫ Elizabeth Hoover (SLP)- Principal Investigator
  ▫ Tami De Angelis (PT)
  ▫ Sue Berger (OT)
  ▫ Lauren Ferraro (Nutrition)

• **Research & Clinical Collaborators**
  ▫ Gloria Waters, David Caplan, Terry Ellis, Stacey Zawacki, Swathi Kiran, Elizabeth Gavett, Melanie Matthies

• **Donors**
  • Stephen Weber, Anonymous Donor

• **Students & Volunteers**
  • OT, PT, SLP, and Nutrition Sargent College Students
Objectives

- Participants will:
  - Be able to describe a community-based one-month interdisciplinary program for adults post-stroke with aphasia.
  - Describe the assessments used and outcomes that resulted from this program.
  - Understand the benefits and challenges to integrating students into this program.
  - Be able to translate aspects of the intensive program to a variety of practice settings.
Agenda

- Background & Overview of Program
- OT Program & Outcomes
- SLP Program & Outcomes
- Student Involvement
- Application to Other Practice Settings
BACKGROUND & OVERVIEW OF PROGRAM
Intensive Comprehensive Aphasia Programs (ICAPs)

- Intensive
- Completed by a cohort of participants
- Address individual and group therapy
- Address family education

(Rose, Cherney & Worrall, 2013)
International Survey of ICAPs

- Rose et al. (2013) – completed an international survey of 12 ICAP providers.

- Growth in ICAPs is recent:
  - 7 programs began in the last 3 years
  - 4 programs were in operation for between 5-12 years
  - 1 program was in operation for 20 years.
Intensive Comprehensive Aphasia Programs in US

Hinckley, J. (2014)
Development of *Interprofessional* Intensive Program at BU

- Speech-language Therapy
- Nutritional Counseling
- Occupational Therapy
- Physical Therapy
Program Development: Key Features

- Interprofessional (OT, PT, SLP, Nutrition)
- Intensive (6 hours/day; 5 days/week; 4 weeks)
- Addresses client-centered goals focused on meaningful and relevant domains using evidence-based intervention approaches
- Explicit training of goals across contexts
Program Development: Participant Recruitment

- Inclusion criteria
  - Post-stroke
  - Mild-moderate profile of aphasia
  - Potential to benefit from interprofessional intervention
  - Able to independently use bathroom
  - Able to ambulate independently (with or without device)

- Each participant agreed to:
  - complete 6 hours of baseline, pre, post, and follow-up testing
  - participate in 6 hrs. of intervention, 5 days/week, 4 weeks
Timing of Data Collection

- One Month prior to program
- Week prior to program
- Week after program
- Three months post program
BU Interprofessional ICAP

  - Within-subjects, delayed-treatment experimental design

- Summary Demographics
  - N=27
  - Mean Age: 56.3 years
  - Mean Years of Education: 15.9 years
  - Mean Time Post Onset: 4.9 years
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>Toastmasters</td>
<td>CILT/Individual</td>
<td>In the News</td>
<td>Individual</td>
<td>Book Club</td>
</tr>
<tr>
<td>10:30</td>
<td>OT</td>
<td>CILT/Individual</td>
<td>Newsletter</td>
<td>Constant Therapy</td>
<td>OT</td>
</tr>
<tr>
<td>11:00</td>
<td>Nutrition</td>
<td>Nutrition</td>
<td>Newsletter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td>Nutrition</td>
<td>Nutrition</td>
<td>Nutrition</td>
<td>Nutrition</td>
<td>Nutrition</td>
</tr>
<tr>
<td>12:30</td>
<td>iPad/Skype</td>
<td>OT</td>
<td>OT</td>
<td>OT</td>
<td>PT</td>
</tr>
<tr>
<td>1:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PT</td>
</tr>
<tr>
<td>1:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Functional Connection</td>
</tr>
<tr>
<td>2:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30</td>
<td>Language Games Group/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrap-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Reflections on Intensity…

- Video removed
**Team Approach towards a Community Goal**

**Participant Goal:** Independence in Dining Out

**PT:** Gait, Balance & Endurance Training
- Community Ambulation and Use of Public Transportation

**Speech:**
- Vocabulary, CILT, Script Training, etc.; Communicating to wait staff

**Nutrition:**
- Modify diet to meet nutritional & weight needs with increased activity
- Review menus of Restaurant

**OT:** Accessing public transportation; identifying restaurants in neighborhood
- Exploration of adaptive devices and strategies for eating

---

**Interdisciplinary Approach to ICAP**

10/9/15
OT PROGRAM & OUTCOMES
Occupational Therapy

- Change in intervention type (group vs. individual) over time
  - 2012, 2013: Four 1-hour group sessions
  - 2014, 2015: Two 1-hour group sessions, 1 co-treatment session with nutrition, Two 1-hour individual sessions with students

- Collaborative goal setting using Activity Card Sort, COPM, GAS
Group OT Sessions

- Opening jars, bottles, packages
- Cooking
- Photography
- Taking public transportation
- Planning community outings
Individual OT Sessions

- Volunteering/Working
- Playing ball with grandchildren
- Camping
- Knitting
- Golfing
Individual OT Sessions

- Photos removed
Interprofessional Activities

- Viewing of documentary *Afterwords*
- Participating in a family education session
- Working out at fitness center
- Visiting a museum
- Grocery Store
- Going to a Paint Venue
Outcome Measures: OT

- Stroke Impact Scale 3.0 (Duncan et al., 1999)
- Activity Card Sort (Baum & Edwards, 2008)
- Canadian Occupational Performance Measure (Law et al., 2005)
- Goal Attainment Scale (Kiresuk et al., 1994)
- Meaningful Activity Participation Assessment (Eakman et al., 2010)
- Wolf Motor Function Test (Wolf et al., 2001)
- Motor Activity Log (Uswatte et al., 2006)
Activity Card Sort (ACS)
(Baum & Edwards, 2008)

- Self-report

- Measures change in participation in IADLs, leisure, and social activities

- Modified “Community Living” test version
Results: ACS

- No significant results pre to post/follow-up (2014)
  - Collaborative goal setting
  - Sensitivity of tool to change
  - 2015- Further modification of categories (e.g., frequency of activity; want to work on, don’t want to work on)
Canadian Occupational Performance Measure
(Law, Baptiste, Carswell, McColl, Polatajko, & Pollock, 2005)

- Semi-structured interview process
- Measures self-perception of performance and satisfaction of daily activities
- Adapted using Tucker et al., 2012 recommendations
  (Modifying Health Outcome Measures for People with Aphasia)
COPM Photo Examples

Dialing a Telephone

Volunteering

Changing Hearing Aid Battery

Flossing Teeth
How good are you at this activity?

1  2  3  4  5  6  7  8  9  10   
            ...                      I am not good at this activity                                       I am very good at this activity
How do you feel about this activity?

I am not happy with how I do this activity

I feel good about how I do this activity
COPM results from 2012-2015

- **n= 13-** Analyzed with Wilcoxon (statistically significant if $p = .05$ or less)

  - **Performance**
    - Pre to Post: $p = .001$
    - Pre to 3-month follow up: $p = .002$

  - **Satisfaction**
    - Pre to Post: $p = .007$
    - Pre to 3-month follow up: $p = .011$
Goal Attainment Scaling (GAS)  
(Kiresuk et al., 1994)

- Individualized measure of change
- Involves defining a set of unique goals with a range of potential outcomes

<table>
<thead>
<tr>
<th>Score</th>
<th>Predicted goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2</td>
<td>Much greater than expected outcome</td>
</tr>
<tr>
<td>+1</td>
<td>Greater than expected outcome</td>
</tr>
<tr>
<td>0</td>
<td>Expected outcome</td>
</tr>
<tr>
<td>-1</td>
<td>Less than expected outcome</td>
</tr>
<tr>
<td>-2</td>
<td>Much less than expected outcome</td>
</tr>
</tbody>
</table>
Goal Attainment Scaling (GAS)

- By the end of the program…
  - **+2:** K will start attending an ongoing work or volunteer opportunity.
  - **+1:** K will apply for an ongoing work or volunteer opportunity with minimum assistance.
  - **0:** K will participate in an individual supported volunteer opportunity.
  - **-1:** K will identify a work or volunteer opportunity that interests her.
  - **-2:** K will explore work or volunteer opportunities that she wants to pursue with minimum assistance and minimal verbal cues.
GAS results from 2014-2015

- N = 13
- Results analyzed via Wilcoxon Signed Rank Test
- Statistical significance:
  - Baseline to immediately post ($p = .001$)
  - Baseline to 3-months post ($p = .016$)
  - Post to 3-months post ($p = .043$)
SPEECH & LANGUAGE PROGRAM
Sample SLP Program

- Individual goals targeted over three treatment types:
  - Individual ~ 3 hours/week
  - Dyadic ~ 2.5 hours/week
  - Group ~ 10 hours/week

- ~15.5 hours of SLP provided each week
Sample Group Treatment: (~10 hrs/week)

- iPad/Skype: 1.5 hrs/week
- Toastmasters: 1 hr/week
- Book Club: 1 hr/week
- Newsletter: 1 hr/week
- Debate/News: 1 hr/week
- Functional Connection: 1 hr/week
- Language Games: 1.5 hr/week
- Conversation/Current Issues/Wrap-Up: 1.5 hrs/week
- Constant Therapy: 0.5 hr/week
Integrating the iPad

- Surveyed Group Members
- Introduced Apps with Step-by-Step Instructions
- Reviewed Accessibility Features (e.g. text to speech)

- Provided Multiple Opportunities for Practice
  - During Program
    - Across Treatment Formats
    - Across Disciplines
  - Home Practice (Hoover & Carney, 2014)
Sample Apps

- Apps to support functional communication, areas of interest, activities of daily living, etc:

- Apps designed specifically for rehabilitation of speech and language:

- Individualized apps to support AAC needs:
Group Treatment: iPad Sample Handouts

Sending Emails

1. Touch the Mail app in your Home bar:

2. Begin a new message by selecting the pencil in the top right.

3. Click on the blue cross to choose a person from your contacts or to enter an email address. In the “To” field, type: kfelling@bu.edu
Group Treatment: Book Club

- Identify a relatively short book ~250 pages that is a current release
  - Participants read/listen to ~50-60 pages per week
Group Treatment: Book Club

Aphasia Resource Center

Book Club Summaries: Chapters 8 - 15

Chapter 8: “She’s Got Game”

*Topic:* Mary talks about sports.

*Key Words:* sports, addiction, baseball

*Summary:* Mary sometimes watches *sports* with her husband Ed, but she doesn’t understand or care about *sports*. Ed will try to teach her the rules of *baseball*, but his explanations never make sense to Mary. She also feels bad for professional *sports* players: people are always angry with them when they mess up. Finally, Mary reads a book about *sports addiction*, and thinks that maybe Ed is “fulfilling a need” with his *sports* watching. However, she decides to let it go, since Ed is still the “winningest guy she knows”.

Comments? Favorite funny parts? Did you like the chapter?

Chapter Summaries modeled after The Book Connection™ (Bernstein-Ellis & Elman)
“Book Club – Case Study”

- Video removed
Dyadic Treatment: 2.5 hours/week

- Inspired by the Constraint Induced Language Treatment (CILT)
  - Pulvermüller (2001); Cherney, Patterson et al (2008)

- Two components to each session:
  1) SFA/PACE with semantic features support sheet
  2) Modified CILT – interrogative individualized to carry over goals from individual therapy (i.e. addition of adjective modifiers, prepositional phrases, clauses, etc.)

- Functional, individualized stimulus targets

- Pairings were made based on similar goals and/or shared stimulus targets; barriers modified to allow for gesture, facial expression, etc.
# Speech & Language Outcome Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Narrative Production: picture description task.</td>
<td>Nicholas &amp; Brookshire (1996)</td>
</tr>
<tr>
<td>Psycholinguistic Assessment of Language</td>
<td>Caplan &amp; Bub, (1990)</td>
</tr>
<tr>
<td>a. Oral Repetition</td>
<td></td>
</tr>
<tr>
<td>b. Production of Affixed Words</td>
<td></td>
</tr>
<tr>
<td>c. Sentence Production</td>
<td></td>
</tr>
<tr>
<td>Discourse Comprehension Test</td>
<td>Brookshire &amp; Nicholas, (1993)</td>
</tr>
</tbody>
</table>
Test Statistics

1. ANOVA on repeated measures

2. If a significant difference was observed, paired t-test was calculated between:
   - One month pre-Immediately pre treatment
   - Immediately pre-post treatment
   - Immediately post-Follow-up
Tests of Confrontation Naming

<table>
<thead>
<tr>
<th></th>
<th>PNT</th>
<th>VNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-value</td>
<td>t=-1.186, 26, p=.246</td>
<td>t=-8.790, 26, p&lt;.001**</td>
</tr>
<tr>
<td></td>
<td>t=.417, 26, p=.885</td>
<td>t=.465, 26, p=.155</td>
</tr>
<tr>
<td></td>
<td>t=.471, 26, p=.641</td>
<td>t=-2.805, 26, p=.01**</td>
</tr>
</tbody>
</table>

One Month PreTx
One Week PreTx
One Week PostTx
Three Months PostTx

PNT
VNT
Psycholinguistic Assessments of Language

<table>
<thead>
<tr>
<th>Test Description</th>
<th>t-value</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetition</td>
<td>-0.687</td>
<td>26</td>
<td>0.498</td>
</tr>
<tr>
<td></td>
<td>-5.466</td>
<td>26</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>0.632</td>
<td>26</td>
<td>0.533</td>
</tr>
<tr>
<td>Sentence Production</td>
<td>-0.229</td>
<td>26</td>
<td>0.821</td>
</tr>
<tr>
<td></td>
<td>-2.238</td>
<td>26</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>0.375</td>
<td>24</td>
<td>0.711</td>
</tr>
<tr>
<td>Prod Affixed Words</td>
<td>-0.693</td>
<td>25</td>
<td>0.495</td>
</tr>
<tr>
<td></td>
<td>-3.531</td>
<td>26</td>
<td>&lt;0.01*</td>
</tr>
<tr>
<td></td>
<td>-1.051</td>
<td>25</td>
<td>0.303</td>
</tr>
</tbody>
</table>

**Graph:**

- PAL Rep
- PAL Sentence Production (Total)
- PAW

**Timeline:**
- One Month PreTx
- One Week PreTx
- One Week PostTx
- Three Months PostTx

**Institution:**
Boston University College of Health & Rehabilitation Sciences: Sargent College
Alphabetical Word Fluency

One Month PreTx  | One Week PreTx  | One Week PostTx  | Three Months PostTx

FAS

$t=.718, 26, p=.479$

$t=2.881, 26, p<.01^{**}$

$t=1.394, 25, p=.175$
Discourse Comprehension Test

- One Month PreTx
- One Week PreTx
- One Week PostTx
- Three Months PostTx

**Graph Analysis**

- DCT-R: $t = .689, 26, p = .497$
- **DCT**: $t = 2.984, 26, p < .006**
- DCT: $t = .900, 26, p = .376$
Narrative Analyses

<table>
<thead>
<tr>
<th></th>
<th># of words</th>
<th>26, ( p = .05 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>% CIU</td>
<td>t=-2.617</td>
<td>26, ( p = .015 )</td>
</tr>
</tbody>
</table>

Interdisciplinary Approach to ICAP

10/9/15
Stroke Impact Scale 3.0 (SIS)  
(Duncan et al., 1999)

- Self-report

- Measures perception of impact of stroke on health and life

- Focuses on: physical problems, memory and thinking, feelings, communication, daily activities, mobility, use of affected UE, participation
# SIS: Sample Questions

<table>
<thead>
<tr>
<th>In the past week, how difficult was it to…</th>
<th>Not difficult</th>
<th>A little difficult</th>
<th>Somewhat difficult</th>
<th>Very difficult</th>
<th>Could not do at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Think quickly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solve everyday problems?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reply to questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correctly name objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut food with knife and fork</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clip toenails?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn a doorknob?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Functional & Quality of Life Measures

ASHA FACS
\[ t = -2.697, \quad 22, \quad p = .013 \]

SIS
\[ t = -3.496, \quad 24, \quad p = .002 \]
STUDENT INVOLVEMENT
Students by Profession

- **OT (one OTR/L)**
  - 2 students: full time (independent study credit)
  - 4 students: 1-2 days week for 1:1 (volunteer)

- **Speech (two-three SLPs):**
  - 4 students: 3-5 days/week
  - 8 volunteers to support individual and dyadic treatment

- **PT (two PTs):** 3 DPT students

- **Nutrition (two RDs):** 1 Nutrition student
Student Participation

• Attended planning and weekly team meetings

• Participated in data collection (observation and administration)

• For OT: Planned, led, and documented group and individual OT intervention

• For SLP: Planned and led groups, provided individual treatment and documented treatment
Interprofessional Education Activities

- Group Orientation Prior to Program
  - Completed RIPLS, ITST, and series of weekly journal entries
- All students: Observed interventions of other professions
- Participated in co-treatments and group activities (e.g., community outings)
- Preparation of Weekly Caregiver Newsletter
- Participation in Weekly Rounds Meeting
- Program End Group Debrief Meeting
Student Outcomes

- 2013-2015
  - Pre/post Assessment Interprofessional Team Simulation Training (ITST) Questionnaire
  - N= 38 Students
ITST Outcomes

- Statistically significant change in the following:
  - Familiarity with working as part of an interprofessional team
  - Appreciation of other professionals
  - Value of training with students from other disciplines
Readiness for Interprofessional Learning Scale (RIPLS)

- Introduced in 2015
- \( N = 12 \) students
- Rated 19 items
  - 1 to 5 Likert scale
- Assesses 3 areas:
  - Teamwork & Collaboration
  - Professional Identity
  - Roles & Responsibilities
RIPLS Outcomes

- Statistically significant change pre to post:
  - Belief that learning with other health care students prior to qualification will contribute to better relationships after qualification:

\[ p-value: 0.0271 \]
RIPLS Outcomes

- Statistically significant change pre to post:
  - Willingness to work on small group health care projects with other students

*p-value: 0.0172*
RIPLS Outcomes

- Statistically significant change pre to post:
  - “I’m not sure what my professional role will be.”

\[ p\text{-value: 0.0128} \]
Narrative Reflections/NVivo Coding
Student Testimonials

- It was so beneficial to learn about the allied professions and the nature of their work. I just hope future teams are so collaborative and invested in outstanding patient care.

- I have a better understanding for what each individual profession can contribute and how each profession can work together to improve our clients' outcomes.

- I think my understanding of interprofessional education and practice has changed since the start of the program. Before, I only theoretically thought that it was good practice to combine different disciplines in patient care, but seeing it in action showed me its effectiveness. Different professions each bring a different way of viewing people, road blocks and solutions to a group, and I think combining the varying opinions is the best way to see results.

- *How to look at the patient as a complete person.*
BU ICAP Alums: Where Are They Now?

- Ongoing Participants in BU ARC Groups
- Participants in Aphasia Research Laboratory Studies
- Connected to other Community Programs
- Return to previous leisure activities
- Volunteer guests in BU academic/clinical courses
- Volunteers in the community
- Return to workforce
Critical Questions

What factors were instrumental in facilitating change?

- Interprofessional
- Intensive nature of program
- Group versus individual treatment
- Homogeneity of profiles

**Cost Benefit Considerations:** Insurance versus private pay

**Outcome Measures:** Counting what counts
APPLICATION TO OTHER PRACTICE SETTINGS
Application

- Interprofessionalism
- Collaborative & Integrated Goal Attainment
- Student Involvement
- Integration of the iPad
- Group Treatment
- Book Club
Contact Information

- Anne Escher
  - aaescher@bu.edu

- Anne Carney
  - acarney@bu.edu
Selected References


