Intensity and Aphasia Rehabilitation: Current Evidence and Clinical Considerations

Presentation by

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Objectives

- Describe the factors that define intensity
- Summarize the literature on treatment intensity
- Summarize Aphasia LIFT outcomes
- Describe process and components of Aphasia LIFT
- Describe barriers and facilitators to delivering intensive treatments
Defining Intensity

“More intense” treatment can mean

- greater number of therapeutic events in a shorter amount of time
- greater number of hours spent in therapy in a shorter amount of time
- greater number of total hours spent in therapy
Defining Intensity

- Dose form- activity/task
- Dose- number of trials or exposures
- Session frequency- times per week
- Duration
  - session- number of minutes
  - intervention- weeks/months

Baker (2012); Warren, Fey & Yoder (2007)
Intensive Aphasia Treatment

**Dose**

- 10
- 30
- 60

**Frequency**

- 1 day
- 3 days
- 5 days

**Duration**

- 1 wks
- 2 wks
- 3 wks
- 4 wks

**Cumulative Intensity** = 30 trials x 5 days/wk x 3 wks = **450 productions**
Intensive Aphasia Treatment

The last 15 years of research....
## Intensive Aphasia Treatment

### Robey 1998

- **12 pre-post treatment effects**
  - low (≤1.5 hrs/wk)
  - moderate (2-3 hrs/wk)
  - high (>5 hrs/wk)

### Table: Treatment Effects

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<thead>
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<th>Acute</th>
<th>Post-Acute</th>
<th>Chronic</th>
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<tr>
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<tr>
<td>Moderate</td>
<td>1.78</td>
<td>0.40</td>
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<tr>
<td>Low</td>
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<td>0.63</td>
<td>0.34</td>
<td>0.05</td>
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>2 hrs/wk = positive outcomes
Intensive Aphasia Treatment

Boghal, Teasell & Speechley (2003)

- 8 studies
  - PICA and Token Test
  - 4 positive, 4 negative
  - No difference on FCP

8.8 hrs/wk for 11.2 wks (98.4 hrs) = positive outcomes
2 hrs/wk for 22.9 wks (43.6 hrs) = negative outcomes

More hours per week = better outcome

**Total hours of therapy were greater in more intense studies**
Cherney et al., (2008)

- 6 studies
- 5 clinical questions
  - time point
  - ICF domains
  - maintenance

High intensity = positive outcomes on impairment measures

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<tr>
<td>Language Impairment</td>
<td>+ intensive</td>
<td>+ intensive</td>
</tr>
<tr>
<td>Activity/Participation</td>
<td>--</td>
<td>equivocal</td>
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<tr>
<td>Maintenance</td>
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Kelly, Brady & Enderby (2010)

- 3 studies
  - high = 5-10 hrs/wk
  - low = 2-4 hrs/wk

- Significantly more withdrawals from intensive treatment

- Treatment delivered by trained/supervised volunteers equally effective

High intensity = positive outcomes for written language; trend for receptive language
Cherney, Patterson & Raymer (2011)

- 11 studies
- Same clinical questions
- Different results

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Intensive Aphasia Treatment

Brady, Kelly, Godwin & Enderby (2012)

- 5 studies added
  - high = 4-20 hrs/wk
  - Low = 1.5-15 hrs/wk

- More participants dropped out of high intensity treatment

High intensity = positive outcomes for functional communication, written language, severity of aphasia
Intensive Aphasia Treatment

1998

Robey

(+) Impairment

(--) Activity/Participation

2003

Bhogal et al.

(+) Impairment

(--) Activity/Participation

2008

Cherney et al.

(+) Impairment

(--) Activity/Participation

2010

Kelly et al.

(+) Impairment

(--) Activity/Participation

2011

Cherney et al.

(--) Impairment

(+) Activity/Participation

2012

Brady et al.

(+) Impairment

(+) Activity/Participation
Intensive Aphasia Treatment

Some issues with current evidence:

- Too few studies
  - effects of different treatment approaches
  - effects across domains

- Dosage not controlled in most studies

- Lack of information on implementation
Intensive Aphasia Therapy

Controlled dosage

12 Therapy Sessions

3-4 weeks

Advantage for intensive therapy immediately after treatment but it was not maintained

12 Therapy Sessions

6-12 weeks

Raymer, Kohen, & Saffell, 2006
Intensive Aphasia Therapy

Controlled dosage

10 Therapy Sessions

2 weeks

Gains in the non-intensive therapy significantly better maintained one month after treatment

10 Therapy Sessions

5 weeks

Sage, Snell, & Lambon-Ralph, 2011
Aphasia LIFT

**Partnership with family and friends**
- Collaborative goal-setting
- Training, support, and education

**Neuroplasticity-based individual treatment**
- Intensity Matters
- Salience Matters
- Repetition Matters

**A positive approach**
- Supportive, aphasia friendly environment
- Challenge task
Intensive Aphasia Therapy

Controlled dosage (48 hours)

LIFT
n=16
5 days/wk
3 weeks

D-LIFT
n=16
3 days/wk
8 weeks

Dignam et al, 2015
Outcome Measures

**Language Impairment**
- Boston Naming Test

**Functional Communication**
- Communicative Effectiveness Index
- Communication Confidence Rating Scale for Aphasia

**Communication - related QOL**
- Assessment for Living with Aphasia

Assessment at pre-treatment, post-treatment and one month post
Treatment

Impairment

- skill-based: combined SFA/PCA
Treatment

Impairment
  • skill-based: Combined SFA/PCA

Functional
  • context-based: conversation, role-playing, supported communication
Treatment

- **Functional Goal:**
  - To make travel arrangements for an upcoming holiday.

- **Approach:**
  - Task analysis was used to identify the actions related to arranging travel.
  - A written script was developed to assist with relaying information and asking questions.
Treatment

- **Impairment**
  - skill-based: SFA/PCA

- **Functional**
  - context-based: conversation, role-playing, supported communication

- **Group**
  - aphasia education, living successfully with aphasia, life after LIFT
Impairment
- skill-based: SFA/PCA

Functional
- context-based: conversation, role-playing, supported communication

Group
- aphasia education, information exchange, living successfully with aphasia, “next steps”

Computer
- StepByStep
- Aphasia Scripts
30 words chosen for treatment were divided into three sets of 10 words.

As 10 words were treated in the impairment-based session, 20 words were treated in the computer-based sessions.

Tasks
- word production
- sentence production
- spelling

Built in cues (semantic, phono, whole word, written)

Can add your personal photos, sounds, sentences and videos!
AphasiaScripts™

- Listen
- Rehearse
- Converse

Rehabilitation Institute of Chicago, 2007
Treatment

Impairment
- skill-based: SFA/PCA

Functional
- context-based: conversation, role-playing, supported communication

Challenge Task

Group
- aphasia education, information exchange, living successfully with aphasia, “next steps”

Computer
- StepByStep
- Aphasia Scripts
Results

- At baseline, no difference between groups:
  - age
  - time post onset
  - gender
  - handedness
  - language impairment
  - functional communication

Dignam et al., 2015
Results

- All 16 participants completed intensive LIFT
- Two D-LIFT participants withdrew because of illness that started after therapy (n=14 completed)
- Intensity characteristics were not significantly different
  - Dose-- 8.5 inputs vs. 8.2 inputs per session
  - Number of hours– 47.7 vs. 47.9
  - Cumulative intensity– 118.3 vs. 114.3

Dignam et al., 2015
Results

Language Impairment (BNT)

- Significant positive change immediately post and one-month later for intensive LIFT ($p=.003$, $p=.02$)

- Significantly positive change immediately post and one month later for D-LIFT ($p<.001$)

- Covaried for pre-therapy BNT naming performance, there was a significant difference between groups immediately after and one-month later ($p=.04$, $p=.002$)
Results

Functional Communication (CETI)

- Significant positive change immediately post and one-month later for intensive LIFT and D-LIFT ($p<.001$)

- Covaried for pre-therapy CETI performance, there was a trend for better ratings post-therapy (not significant) and no significant differences at follow-up

Dignam et al., 2015
Results

Functional Communication (CCRSA)

- Significant positive change immediately post and one-month later for intensive LIFT ($p=0.02$, $p=0.03$)

- Significantly positive change immediately post and one month later for D-LIFT ($p<0.001$)

- No significant difference between groups

Dignam et al., 2015
Results

Communication-related QOL (ALA)

- Significant positive change immediately post and one-month later for intensive LIFT ($p = .02$, $p = .007$)

- Significantly positive change immediately post and one month later for D-LIFT ($p = .005$, $p = .01$)

- No significant difference between groups

Dignam et al., 2015
Conclusions

- Supporting evidence across ICF domains for comprehensive programs

- Distributing practice over time
  - better for picture naming (impairment)
  - did not affect functional communication or communication-related QOL
Conclusions

Considerations

- Distributed comprehensive therapy may be more feasible for implementation
- 6-7 hours of therapy per week is still fairly intensive
- Not possible to identify which components contribute to the outcome
Conclusions

Future Directions

- More controlled studies on intensive vs. distributed comprehensive treatments
- More controlled studies on single treatment approaches across domains
Setting Goals

(Hersh et al, 2013)
Setting Goals

- Shared - patient and family preparation
- Monitored – ongoing discussions of change/lack of change
- Accessible – extra time, aphasia-friendly materials
- Relevant – previous experience, skills, activities, interests
- Transparent – links between broad goals/subgoals; record
- Evolving – revise and revisit goals
- Relationship-centered – get to know patient and family

Hersh et al, 2013
Selecting Stimuli

- Identifying meaningful words
  - picture bank as a guide (Bank of Standardized Stimuli)
  - “Blank page” approach for personal words

- Other resources available
  - 357 words from adults conversations
  - 1000 most commonly used words (across word types)

- Consider: high frequency words represent many different word classes

Renvall, Nickels, & Davidson, 2013
Selecting Outcome Measures

- Measure outcomes across the ICF and across time
- Select measures that correspond best with treatment
- All outcome measures don’t perform the same
  - type of measure (objective vs. subjective)
  - sensitivity/specificity, validity/reliability
- Consider more than one perspective
  - PWA, caregivers, and researchers/clinicians
Aphasia LIFT sounds amazing but....
Barriers and Facilitators

Patient-related

**Barriers**
- Medically Unstable
- Sensory, motor and cognitive deficits
- Post-stroke fatigue

**Facilitators**
- Carefully planned treatment
- Motivation!
- Support system
Barriers and Facilitators

**Institutional**

**Barriers**
- Limited staff/resources
- Time constraints
- Prioritization of other disorders
- Access to services

**Facilitators**
- Computer-based treatment
- Trained volunteers or AHA
- Group therapy
- Telerehabilitation
Can intensive treatment be made more cost-effective?

- 9 hrs/week for 11 weeks vs. standard (3hr/week)
  - individual + computer
  - individual + group
  - individual + SLPA

- Cost was 30% lower per hr/per client for intensive treatment groups that used computer therapy and group therapy

Wenke et al., 2014
Can “intensive” therapy be administered without extending the amount of time a patient spends in treatment?
Platform Naming Treatment

- Present picture: Attempt word
- Picture + Written Word: Attempt word
- Picture + Spoken Word: Repeat word
- Pause
- Picture: Attempt word
- Picture + semantic description+written word: Attempt word
- Picture: Attempt word
- Picture + phonologic features+written word: Attempt word
- Picture + Spoken Word: Repeat word
- Picture+Written Word: Produce word

Harnish et al., 2014
Intensive treatment may be effective for some patients in some contexts for some treatment approaches.

Distributed treatment may be more effective for some treatment approaches.

Increased exposure and repetition during therapy can increase intensity within treatment sessions.

Computer and group-based therapy may facilitate increased intensity (with additional benefits).
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