The Evidence for Community Based Services: Part I

James F. Malec, PhD, ABPP-Cn, Rp
Professor and Research Director
Department of Physical Medicine and Rehabilitation, Indiana School of Medicine-Indianapolis/Rehabilitation Hospital of Indiana
Professor Emeritus of Psychology, Mayo Clinic

Presentation Overview

- Evolution of post-hospital brain injury rehabilitation
- Types of programs
- Comparative outcome data
- Potential program components
- Adjunctive interventions
- Program philosophies/approach
- Conclusions

Rehabilitation Did Not Always Begin After the Hospital

- 1980s = 2-3 month inpatient rehab stays
- Currently = 2-3 weeks to "mobilize and stabilize"
Evolution of Post-hospital Rehabilitation

- Increasing specificity of interventions
  - Right treatment for the right patient at the right time
- Increasing availability of long-term support programs
- Increasing availability of community-based rehabilitation
- Increasing interest in resource facilitation and need to treat the environment, not just the patient

Types of Programs

Post-hospital Brain Injury Rehabilitation

- Supportive
  - Residential
  - Community-based
- Intensive
  - Inpatient/residential
  - Outpatient/Community-based
Post-hospital Supportive Rehabilitation Programs

- Slow-to-recover
- Long term residential supported living
- Long term community-based, outpatient supported living, Clubhouse

Slow-To-Recover

- **Persons served**: Minimally responsive
- **Goals**: Maintain health and physical status, improve responsiveness
- **Primary methods**: Pharmacology, therapy for maintenance and stimulation
- **Staff**: Interdisciplinary team directed by physician

Long-term Residential Supported Living

- **Persons served**: Chronic, unable to live independently
- **Goals**: Maintain health status and support community re-integration
- **Primary methods**: Applied Behavior Analysis, support, supervision
- **Staff**: Professional/paraprofessional team
Long-term Community-Based Supported Living

- **Persons served**: Chronic, able to live independently but require assistance in some IADLs
- **Goals**: Maintain health status and support community re-integration
- **Primary methods**: Applied behavior analysis, support, supervision
- **Staff**: Professional/paraprofessional team

Post-hospital Intensive Rehabilitation Programs

- Short-term residential/inpatient neurobehavioral
- Traditional outpatient rehabilitation
- Community-based rehabilitation
- Intensive holistic day treatment

Short-term residential/inpatient neurobehavioral

- **Persons served**: Severe or dangerous behavior issues
- **Goals**: Reduce/eliminate severe behavior problems
- **Primary methods**: Pharmacology, applied behavior analysis
- **Staff**: Interdisciplinary team with emphasis on neuropsychiatry and behavioral analysis
Traditional Outpatient

- **Persons served:** Individuals with isolated impairment(s), reasonable awareness of disabilities
- **Goals:** Impairment remediation to improve function
- **Primary methods:** Medically-supervised PT, OT, Speech as indicated
- **Staff:** Multidisciplinary team

Community-based

- **Persons served:** Strong potential of independent living and work, reasonable awareness of disabilities, social or family support
- **Goals:** Increase independent living and community re-integration
- **Primary methods:** PT, OT, Speech, Psychology, family counseling, cognitive rehab, medical consultation
- **Staff:** Interdisciplinary team

Holistic Day Treatment

- **Persons served:** Severe and pervasive cognitive and behavioral disabilities, impaired self-awareness, psychiatric/substance-related co-morbidities
- **Goals:** Increase independent living and community re-integration
- **Primary methods:** Holistic milieu-oriented therapy, group treatment, specific cognitive rehabilitation, behavior modification as indicated; family involvement, work and independent living trials
- **Staff:** Transdisciplinary team
OUTCOMES FOR 604 INDIVIDUALS IN FOUR TYPES OF POST-HOSPITAL BRAIN REHAB PROGRAMS


The Pennsylvania Association of Rehabilitation Facilities (PARF)

Participants

- 31% women/69% men
- Type of Brain Insult
  - Average age = 38.33 years (SD=12.78 yrs)
  - Closed TBI = 73%
  - Open TBI = 6%
  - Anoxia = 5%
  - Other acquired brain injury (e.g., stroke, tumor, infection) = 13%
  - Unclassified = 1%
- Average chronicity = over 7 years (2639 dys)
  - Large variance (SD = 3062 dys or 8.4 yrs; lowest quartile<1.2 yrs, highest quartile>10 yrs)
1. **Intensive Residential Rehabilitation**
   - Goal-directed, therapy-intensive
   - Goals focusing on establishing mood and behavioral stability, improving neurocognitive skills and developing a stable activity plan
   - For individuals who:
     - Exhibit behavioral problems
     - Typically require an intensively structured environment with 24-hour-a-day onsite supervision
     - Have a low staff-to-client ratio
     - Receive an average of 10 hours or more a week of rehabilitation therapies

2. **Long-term Residential Supported Living**
   - Designed to preserve optimal level of health
   - Assisted, supervised residential setting.
   - Assist participants in their ability to:
     - Care for themselves
     - Participate in a stable activity plan
     - Preserve medical, physical, neurocognitive, mood and behavioral stability

3. **Intensive Outpatient and Community-based Rehabilitation**
   - Goal-directed, therapy-focused program
   - Treatment goals focusing on neurocognitive skills, establishing a stable activity plan, and establishing mood and behavioral stability
   - For individuals who:
     - Live in their own homes or apartments
     - Receive daily to weekly rehabilitation therapies
Program Types

4. Long-term Community-based Supported Living
   - Provides ongoing support and structure to help participants
   - Preserve ability to care for themselves
   - Participate in a stable activity plan
   - Preserve medical, physical, neurocognitive, mood and behavioral stability
   - For individuals who live in their own homes or apartments

MPAI-4 Total T-scores by Program Type Over time

Programmatic Differences in Outcome Expectations
   - Stability = Goal of supported living programs
   - Progress = Goal of intensive programs
   - Goals achieved
   - Chronicity and severity of disability on admission affect outcome
Community-based: Effectiveness Example


MPAI-4 Participation Index Standard Score by Group on Admission, Discharge, and 3- and 12-month Follow-up

MPAI-4 Total Standard Score for Chronic Cases (Time since Injury > 1 year) by Group at Admission and Discharge
Holistic Day Treatment: Effectiveness

- Evidence-based reviews
- Positive outcomes reported for case series and controlled trials

Holistic Day Treatment: Efficacy Example

- 34 individuals post-TBI in each of two conditions
  - Holistic Day Treatment
  - Standard Outpatient Rehabilitation
- Holistic Day Treatment resulted in superior community integration, quality of life, self-efficacy and vocational outcome

Holistic vs. Standard Rehab

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Holistic vs. Standard Rehab

POTENTIAL PROGRAM COMPONENTS

Commonly Used Interventions

- Pharmacology
- Traditional rehabilitation therapies (OT, PT, Speech)
- Behavioral analysis and modification
- Group therapy
  - Supported peer feedback
  - Cognitive-behavioral therapy
Commonly Used Interventions

- Cognitive rehabilitation
  - Cues and prompts
  - Attention process training
  - Systematized memory notebook
  - Problem-solving format
  - Executive function training
  - Pragmatic communication skill training

Recommendations: Attention Training

Practice Standard

- Insufficient evidence exists to distinguish the effects of specific attention training during acute recovery and rehabilitation from spontaneous recovery or from more general cognitive interventions.

Sohlberg & Mateer: Attention Process Training

- Sustained Attention
  - Listening or watching for targets on sequence of stimuli
  - Listening to stories for comprehension

- Alternating Attention
  - Sequencing numbers, letters or other symbols alternatively – auditory or visual
  - Switching between addition and subtraction or multiplication and division in a series of numbers
Sohlberg & Mateer: Attention Process Training

- Selective Attention
  - Sustained attention task with background distraction - auditory or visual
  - Paper-and-pencil tasks with distracting plastic overlay
- Divided Attention
  - Reading for comprehension and scanning for a target word
  - Multi-tasking, e.g., sustained attention task while performing mental arithmetic

Gradually increase difficulty and complexity

Plan for generalization: homework

Sohlberg & Mateer: Attention Strategies

- Pacing
- Avoiding fatigue
- Spaced practice
- Avoid/minimize distractions
- Building habits of self-reflection: how am I doing?
- Developing system of social prompts and supports
Memory Remediation

Recommendations: Memory

Practice Standard
- Compensatory memory strategy training is recommended for people with mild memory impairments due to TBI.
- This may include either internalized memory strategies (e.g., visual imagery) or the independent use of external memory compensations (e.g., memory notebook).

Memory Rehabilitation Interventions & Cognitive Impairment

Increasing Memory and Executive Cognitive Impairment
- Self-directed internal memory strategies
- Self-directed use of external memory aids
- Domain-specific training (procedural learning)
- Externally-directed prompts and cues
Internalized memory strategies

- Imagery
- Pegword
  - One is for nun, the ______ is with the nun.
  - Two is for shoe, the ______ is with the shoe.
- Method of Loci
- Acronyms

Self-directed use of memory aids

Examples of memory aids:

- Checklists
- Personal recorders
- Electronic organizers
- Computers
- Pill boxes, files, alarms, timers, other organizers
- Systematized memory notebook

Self-directed use of memory aids

- Systematized memory notebook
  - Select a format that suits the patient
  - Carefully select appropriate sections for the notebook
  - Start small: prompt referring to or recording specific information; check off completion
  - Gradually expand use and diminish cues
  - Homework for generalization
Domain specific training
- Procedural learning
- Practice, practice, practice
- Develops specific skill – not memory itself
- Priming/vanishing cues
- Backward rehearsal
- Careful selection of critical activities for this type of training

Externally directed systems
- Social prompts
- Cues
- Reminders
- Paging systems

Remediation of Executive Dysfunction
**Recommendations: Executive Dysfunction**

**Practice Guideline**

- Training of formal problem solving strategies and their application to everyday situations and functional activities is recommended during post-acute rehabilitation for people with stroke or TBI

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**Problem-solving Format**

**State problem:**

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<th>Possible solutions</th>
<th>Rate solutions</th>
<th>Try solution and rate success (1-5)</th>
<th>Try another? And rate success (1-5)</th>
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<td>Borrow from friend</td>
<td>2</td>
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<td></td>
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<tr>
<td>Do job for father</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Borrow from mother</td>
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Methods and Measures

- Goal Management Training (Levine et al., JINS, 2000, 6, 299–312)

GMT Process

Commonly Used Interventions

- Guided self-discovery
- Supported risk-taking
- Supported work/independent living trials
- Training in community resource use
- Family involvement
- Consistent team approach
**PROGRAM PHILOSOPHIES/ APPROACHES**

**Varying Program Philosophies and Approaches**

- Impairment focus vs. goal/outcome focus
  - Medical Model
    - Intervention directed at the individual who is ill or injured
  - Vs. Social Model
    - Intervention directed at the social system in which the “disabled” or “ill” person operates
- Milieu/group-oriented vs. individual-focused

**Varying Program Philosophies and Approaches**

- Team orientation
  - Multidisciplinary: each member of team provides treatment independently
  - Interdisciplinary: team members meet to develop coordinated treatment plan and delivery
  - Transdisciplinary: team members provide coordinated treatment and can assume each others’ roles as required
    - characteristic of high performance teams
Varying Program Philosophies and Approaches

- Explicit development of therapeutic alliance
- Top-down
  - Executive and metacognitive skills
- Vs. bottom-up
  - Specific cognitive abilities (e.g., attention, memory)
- Inclusion of adjunctive and environmental interventions

ADJUNCTIVE INTERVENTIONS

Adjunctive and Environmental Interventions

- Alcohol and other substance abuse treatment
- Family/significant other involvement/intervention
- Vocational/Resource Facilitation
Conclusions

- Post-hospital rehab is no longer a "one size fits all" model
- Increasing specificity of intervention
- TBI as a "chronic disease"
  - Some individuals may need long-term support and intermittent intensive intervention

Conclusions

- Intensive interventions yield positive change
- Supportive interventions yield stability
- Social Model assessment/interventions are distinct from Medical model
  - Either or both models may be appropriate to specific case or context
- Treating the environment
  - Resource facilitation...to be continued

Reference
