Management of Neurobehavioral Disorders in the Acute Rehabilitation Setting

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Today’s Goals

- The nature and scope of behavior problems in TBI
- Behavior issues in early recovery
- An overview of behavioral theory and practice
- General considerations in designing behavior interventions
- Methods of impacting behavior
- Strategies for working with specific early behavior problems
- If time, solve global warming and explain Donald Trump
Behavior changes are common after brain injuries and can be the most disabling aspect of them.
Behavioral Consequences of TBI: The Scope of the Problem

33% of persons with TBI exhibit aggressive behavior within 6 months post-injury.

84% of families c/o personality, emotional, and behavior changes 10 years post TBI.

77% of TBI patients had psychiatric disturbances 6 yrs. post vs. 46% of these judged to have social maladjustment at baseline.

12-29% of TBI patients had neuropsychiatric disorders, 40% had behavior disorders at 5 yrs.

25% have behavior problems that interfere with daily life, 50% have depression, fatigue, anxiety.

Stages of Recovery from Diffuse Axonal Injury
(Katz, 1997)

Coma: Unresponsive, eyes closed

Vegetative state: Unresponsive, gross wakefulness, sleep/wake cycles

Minimally conscious state: Some purposeful responding, often mute
• Confusional state: PTA, agitation, lability, att’n impaired, hypoarousal

• Postconfusional: Out of PTA, improved cognition, more independent in ADLs, better social interaction
Social competence, community reentry: Recovering cognition, social skills, goal-directed behavior, community independence, return to work/school
Intervention approaches evolve with recovery
(Sohlberg & Mateer, 2001)

As recovery from TBI progresses, so does the person’s capacity for self-management, and so do behavioral interventions:

• Early stages: Primarily “external” strategies are used:
  • Environmental modifications
  • Behavior therapy
  • Cues, prompts
  • Pharmacological treatment
In later stages of recovery, more “internal” approaches are possible:
• Cognitive-behavioral interventions
• Self-regulatory strategies
• Compensatory strategies
• Psychotherapy
<table>
<thead>
<tr>
<th>Behavioral Excesses</th>
<th>Behavioral Deficits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disinhibition: verbal, social, sexual</td>
<td>Decreased initiation</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>Apathy</td>
</tr>
<tr>
<td>Restlessness, agitation</td>
<td>Flat affect</td>
</tr>
<tr>
<td>Anger dyscontrol, Abusive/assaultive</td>
<td>Unawareness of disability</td>
</tr>
<tr>
<td>Lability</td>
<td>Inattention</td>
</tr>
<tr>
<td>Delusions, Jealousy, Paranoia</td>
<td>Cog. rigidity, perseveration</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
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Special considerations in behavior therapy with brain-injured vs. non brain-injured persons

- BI may be evolving in terms of various cognitive, emotional, and physical domains
- Memory impairment: may not recall recent experiences and new contingencies (incentives)
- May be less responsive to usual incentives/disincentives
- May be less attentive to pertinent cues for behavior; may have reduced arousal generally
- May be less able to regulate own behavior
- Physical limitations may reduce behavioral repertoire (e.g., escape from discomfort)
Special considerations in behavior therapy with brain-injured persons

- For inpatients, done in medical rather than more behaviorally-oriented settings
  - LOS/Time available for L-T behavior plans
  - Availability of behavior specialists
  - Other staff expertise
  - Primary treatment goals (behavior goals often seen as ancillary)
  - Staff time available

more on this later....
Behavioral techniques are not just for problem behaviors

- Behavioral approaches have been used to improve:
  - Muscle strength
  - Range of motion
  - Wheelchair use
  - Dysarthria
  - Word finding
  - Perseverative speech
  - ADLs
  - Social and vocational skills
Understanding the causes of behavior: Applied Behavior Analysis

- Allows prediction and prevention
- Allows proactive treatment of cause rather than simply reaction to the problem
- Fosters objectivity by giving a framework from which to view and respond to problem behaviors
- Provides a model for generalized use toward other therapeutic goals,
  - Or simply teaching your dog to fetch a beer.....
Understanding Behavior
B = P(E)
B=P(E)

PERSON FACTORS

Brain injury
Injury-related factors

• Brain areas vulnerable to injury are associated with behavior changes
  • Frontal cortex and subcortical WM, midbrain structures incl. basal ganglia, temporal lobes, rostral brainstem

• Brain circuitry
  • Dorsolateral frontal-subcortical, lateral orbitofrontal-subcortical, anterior cingulate-subcortical

• Neurotransmitter changes
  • Catecholaminergic (epinephrine, norepinephrine, dopamine), cholinergic, and possibly serotonergic

• Arousal, motivation, mood, cognition, social behaviors

McAllister, 2013
B = P(E)

PERSON FACTORS

Premorbid characteristics
  Impulse control
  Frustration tolerance
  Response to authority
  Skills
  Motivation
PERSON FACTORS

Medical Factors
- Pain
- Infection
- Sleep disruption, fatigue
- Incontinence
- Inactivity
- Dietary restrictions
B = P(E)

PERSON FACTORS

Reaction to injury

Denial
Depression
Anxiety
Need for normal
(Homeostasis)
SOME ENVIRONMENTAL FACTORS IN THE HOSPITAL SETTING

What year is it?

Do This/Don’t Do That

You leave when WE say

Snoring roommate

This may hurt…

Why does she want to shower with me?

But I never made brownies before the accident…

Trust us…

Time for your suppository

Nurse Ratchet is cranky today
Changing Behavior: General Goals

• Consider: What defines a behavior problem? Is it really a problem? (May depend on one’s point of view.) Who’s problem is it? Whose responsibility is it to change it?

• To increase adaptive behavior through teaching, prompts, and reinforcement.

• BEHAVIOR PLANS SHOULD BE A TOOL FOR TEACHING, NOT SUPPRESSION!!!
  • Any behavior plan that lacks an identified desired behavior and means of eliciting and reinforcing it is doomed.
A word on psychoactive medications

• Can be essential in helping reduce or foster some behaviors (e.g., psychotic symptoms, anxiety/depression, arousal)
• Medication are often not designed to change behaviors of interest (e.g., reduction of aggression)
• All have side effects (e.g., unwanted sedation)

• A behavior plan is more than giving a pill, and should include means of fostering behavior change via behavioral strategies...
Considerations in designing behavioral interventions in the inpatient setting

Do you have the resources for **formal behavior planning**?

- **Time** to meet, specify and agree on well-defined undesired and desired behaviors, antecedent cues, reinforcers, monitoring strategies, etc. (? 30 min. mtgs.)

- **Staff** designated to run meetings, compile data, observe treatment, train staff? (Ph.D., M.A., B.A.; ongoing tasks)
Considerations in designing behavioral interventions

• Plans can run from simple (“we’ll cue and reinforce X behavior”) to complex (e.g., token economy).

• Decide what you can do and do your best with the right approaches in mind
Considerations in designing behavioral interventions

• Must maximize the success to failure ratio for the patient.

• Allowing the person the opportunity for input into the plan will increase likelihood of success

• Consider the capacities of the person in developing a plan: Can they do what you’re asking? Would you expect them to do it?

(Plug: this is where data from Neuropsych, Speech, and other evals come in handy)
Behavior Analysis: ABC

• We must strive to understand what’s driving the Behavior, and treat the cause, not the symptom. In other words, diagnosis before treatment.

• Behavior serves a purpose and can be affected by both preceding events and by what follows.

• Triggers or Antecedents can be internal or external, single or multiple
  • Pain, perceived insult, fatigue, restrictions, frustration, demands, overstimulation

• Consequences: ANYTHING that follows a behavior may be reinforcing it. E.g., ATTENTION, escape
Defining the Behavior

• Begin with a clear, observable description of the behaviors of interest, so there’s no room for misinterpretation, and so the patient knows exactly what’s expected—remember, we are teaching and cueing.

• Define both the problem and desired behaviors

• Desired behaviors are stated in terms of WHAT YOU WANT TO SEE, not what you don’t want to see—do the “mental flip-flop”
Defining the Behavior

• Problem: The patient is “behavioral” or “agitated” or “inappropriate”

  --Are vague; not specific enough descriptions for reliable observation, communication, and measurement

More specific problem: “Aggressive” = Striking out at staff
Defining the Behavior

Flip-flop into desired behavior: “Not being aggressive”

What does that mean??

More specific desired behavior:

“What will keep hands to self during ROM exercises to R arm, and will tell the therapist when the pain is too intense, and verbally rather than physically express frustration or need for a break in a nonthreatening manner…”

This clarifies for us and for the person what’s expected, like a job description.
Defining the Behavior

Problem: “Noncompliance”

Specified problem: “Lack of attendance and effort in rehab therapies”

Desired behavior: Get with the program

Specified desired behavior:

“Attendance of at least 75% of scheduled therapy sessions per day, with performance of at least 75% of requested activities per session, with adequate effort as judged by staff based on knowledge of patient’s capacity”

--THIS CAN BE OBSERVED AND MEASURED
Increasing Behavior: Antecedents

• Antecedents cue and drive behavior: the context in which the behavior occurs

• Brain injury often results in difficulty discriminating relevant environmental stimuli from irrelevant

• Because of the cognitive and behavioral nature of TBI, most behavioral programming with the brain-injured should emphasize managing antecedents over consequences
Some potential antecedents to consider in behavior analysis and treatment planning: \( B=P(E) \)

<table>
<thead>
<tr>
<th>Environment</th>
<th>Person</th>
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<tbody>
<tr>
<td>Noise</td>
<td>Restlessness</td>
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<tr>
<td>Light</td>
<td>Fatigue</td>
</tr>
<tr>
<td>Instructions</td>
<td>Irritability</td>
</tr>
<tr>
<td>People</td>
<td>Pain</td>
</tr>
<tr>
<td>Time of day</td>
<td>Preexisting attitudes</td>
</tr>
<tr>
<td>Location</td>
<td>Capacity (after and before injury)</td>
</tr>
<tr>
<td>Activity</td>
<td>Anxiety</td>
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</table>
Using antecedents to affect behavior: Examples

• Reduce noxious stimulation (sometimes that’s US)
• Cue for upcoming steps in activities and desired behaviors
• Take breaks
• Wait until a better time
• Pre-therapy pain meds
• Modify expectations based on capacities/strengths
• Anxiety management strategies
Using antecedents to affect behavior: Examples

• Approach is everything!
• Smile.

• Be assertive but encouraging and sympathetic!
• Use humor along these lines to sympathize and defuse.
Using Antecedents: Error-Free Learning

(B.A. Wilson and J.J. Evans, 1996)

• Mistakes are strengthened merely by repetition
• Cue or provide correct response to prevent mistakes, cues are gradually reduced
• Learning may be highly specific to task
Using Consequences to Affect Behavior

• Positive reinforcement: Attention, praise, privileges, incentives

• Negative reinforcement: Cessation of unwanted stimuli (pain, activities, high stim)

• Punishment: Research has consistently shown this to be less effective than reinforcement for producing and maintaining behavior change: negative behavior resumes when punisher is absent:
Using Reinforcers: Tips

• Add rewards rather than making patient work for current ones
• Don’t be stingy, esp. when establishing a behavior. Reward frequently, fade slowly.
• Don’t raise the stakes until the behavior is well-established
Using Reinforcers: Tips

• Immediate and concrete consequences are better than delayed, esp. for confusional and memory-impaired patients

• Use natural consequences when possible
  • E.g., attention for appropriate behavior and vice-versa
Using Reinforcers: Still more tips

• Look for the leverage: What does *the person* think is rewarding? What does *she* want?

• You get what you pay for: Make a fair contract. You may have to expend extra time and effort!

• Control the currency
<table>
<thead>
<tr>
<th>Listening</th>
<th>Time</th>
<th>Talk</th>
<th>Privacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rest/return to bed</td>
<td>Food</td>
<td>Drink</td>
<td>Phone calls</td>
</tr>
<tr>
<td>Recognition</td>
<td>Music</td>
<td>Personal belongings</td>
<td>Jokes</td>
</tr>
<tr>
<td>Games</td>
<td>Passes</td>
<td>Optional care</td>
<td>Completion of activity</td>
</tr>
<tr>
<td>Touch</td>
<td>Achieving a goal</td>
<td>Freedom</td>
<td>ETC.</td>
</tr>
</tbody>
</table>
The *cheapest*, most *available*, most *effective* reinforcer is.....

(Drum roll, please)
Praise!

Well, I think you’re wonderful!
Behavioral Shaping

• If the person is not already demonstrating the desired behavior at times:
• Start small, with the first step, establish that, and then the next step
• E.g., Pt. won’t get OOB: Start with pt. in bed talking about tx goals, then sitting up in bed doing tx, then at edge of bed, then standing, then walking in room, then walking in hall.
• Heavily reinforce all along the way!
• So, reward small approximations until consistent, “chaining” these, until end behavior is achieved
Trouble-Shooting Behavior Programs

- Is the behavior adequately specified?
- Was the behavioral goal attainable?
- Were antecedents (context) considered and modified?
- Was the reinforcer motivating enough?
- What was the success/failure ratio?
- Were short-term, frequent rewards used?
- Have other consequences interfered?
- Did everyone stick with the program?
Working with “Difficult Patients” (i.e., patients with difficult behaviors)
First, separate the behavior from the person,
then separate your reaction from your intervention.
The patient who is physically aggressive: Behavior analysis

<table>
<thead>
<tr>
<th>COMMON Antecedents</th>
<th>Behaviors</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interrupting/redirecting</td>
<td>Directed hitting, slapping, biting, throwing objects, kicking, etc.</td>
<td>Escape from: pain, demands, frustration, anxiety</td>
</tr>
<tr>
<td>Requiring an activity</td>
<td></td>
<td></td>
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<tr>
<td>Physical intrusion</td>
<td></td>
<td></td>
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<tr>
<td>Frontal lobe lesions</td>
<td></td>
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<tr>
<td>Lower cognitive functioning</td>
<td></td>
<td></td>
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<tr>
<td>Infections</td>
<td></td>
<td></td>
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<tr>
<td>Depression</td>
<td></td>
<td></td>
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<tr>
<td>Poor premorbid social functioning</td>
<td></td>
<td></td>
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<tr>
<td>Hx of alcohol/substance abuse</td>
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</tbody>
</table>

Bogner et al., 2015; Giles et al., 2013; Tateno et al., 2003
The patient who is physically aggressive: Treatment

<table>
<thead>
<tr>
<th>Antecedents</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff training in prevention and management of aggressive behavior</td>
<td>REINFORCE appropriate expression and performance of activity</td>
</tr>
<tr>
<td>Decreased stimulation in all its forms (e.g., verbal)</td>
<td>Rests, quicker completion of uncomfortable procedures</td>
</tr>
<tr>
<td>Cue for appropriate expression</td>
<td></td>
</tr>
<tr>
<td>Reassurance, cue to next steps in activity</td>
<td></td>
</tr>
<tr>
<td>Staff maintain distance whenever feasible</td>
<td></td>
</tr>
<tr>
<td>Minimize hands-on</td>
<td></td>
</tr>
<tr>
<td>Set up ahead of time</td>
<td></td>
</tr>
<tr>
<td>Adequate number of staff</td>
<td></td>
</tr>
</tbody>
</table>
A word (or more) on deescalation

• First “take your own pulse,” check your breathing rate and calm yourself
• Use a calm voice and short clear statements
• Listen to patients’ concerns and validate these, even if confusional
• Allow patients to vent feelings without contradicting them (and reinforce appropriate expression!)
• Offer reasonable alternatives—be flexible
• Immediately REINFORCE desired changes in behavior
Deescalation: Decrease the Stimulation

• Redirect to quieter, more private, and/or safer environment

• In patient room:
  • Close door if safe, turn TV off

• Reduce number of instructions

• One person at a time addresses patient

• Switch staff if needed (if patient is targeting or aggravated by a particular person)

• DO NOT CROWD an already aggravated or anxious patient!
When Physical Intervention is Necessary: Clear and Present Danger

• Immediate threat of harm by assault, self-injury
  • Is this worse than that posed to patient and staff by physical restraint?

  • The case of the Number 2 Pencil wielder.....
When Physical Intervention is Necessary: General Rules

• Least restrictive procedures
  • Use verbal and environmental interventions prior to (and during) use of physical restraint and behavior medications
  • Use only as much physical restraint as is necessary to control the patient, and release if calmed
• Try to deescalate on the spot rather than moving an agitated patient
General Rules for Physical Interventions

• Who’s in charge? CHARGE PERSON directs intervention
  • Restraint, whether to move patient, etc.
  • Is the only one to address patient

• Take the time to **debrief:**
  • What may have provoked the behavior?
  • Could less restrictive strategies have been used?
  • What interventions seemed effective?
  • What should we do next time?
The essential art of redirection

• Especially with a confused patient, start with where they are
• Redirect within the person’s reality/goals
• Use attentional and memory impairment for a therapeutic goal
• Redirect onto:
  • Something immediate and concrete (easier to attend to)
  • Something in which the patient is interested
  • Something of which the patient is capable
The patient who is “disruptive”: Example: The Hallway Yeller

What usually happens:

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting in hallway</td>
<td>Yells out: attention seeking</td>
<td>Gets attention</td>
</tr>
<tr>
<td>No attention</td>
<td></td>
<td>Less bored</td>
</tr>
<tr>
<td>Bored</td>
<td></td>
<td>Reassured</td>
</tr>
<tr>
<td>Anxious</td>
<td></td>
<td>Get needs met</td>
</tr>
<tr>
<td>Disinhibited</td>
<td></td>
<td>Yells more often</td>
</tr>
</tbody>
</table>

What oughta happen:

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behavior</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>As above</td>
<td>Yells out: attention-seeking</td>
<td>All staff ignore/extinguish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cue re contingencies (e.g., quiet for 5 mins gets attn.)</td>
</tr>
<tr>
<td>Patient quiet</td>
<td>Patient quiet</td>
<td>Staff attend</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pt. quieter, staff saner</td>
</tr>
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The patient who is unaware

Consider:

- Does it interfere with treatment?
- Does it lead to unsafe behavior?

Intervention depends on cause(s):

- Brain injury:  ? if changeable, external strategies
- Reaction to injury:  Psychotherapeutic approaches
- Premorbid traits:  Gain trust, praise often, confront carefully
- Lack of knowledge:  Educate
- Due to cognitive deficits:  Make confrontation concrete, repeat

Consider:
- Does it interfere with treatment?
- Does it lead to unsafe behavior?
Management Suggestions for Unawareness

Gain trust: Therapeutic alliance, supportive confrontation
Inform when asked, or as the problem occurs
Use relevant tasks in therapy
Compare to premorbid performance
Allow safe failures
Concrete feedback
Impulsivity

• Use antecedent cues leading up to and immediately before activities/environments in which problematic impulsivity has been observed:
  • E.g., impulsive self-transfers from W/C to bed

• Use praise and other reinforcement for self-control
Anxiety

- Probably underappreciated by care providers and others
- Consider: stress of injury, removal from familiar, demands of hospitalization, fear re future
- INQUIRE on ongoing basis about anxiety and respond to it:
  - History of problem? Chronic or recent? Generalized or specific?
  - Frequent reassurance re progress, performance, available support
  - Calm approach, simpler instructions, shorter-term goals
  - Breaks, work in less anxiety-arousing environment
  - Recruit family, friends
  - Medications, psychotherapy
Depression

• Again, history of problem
• Easily achieved treatment goals
• Incorporate previously-enjoyed activities
• Don’t feel that you can necessarily change it
• Medications and counseling
“People don’t care that you know unless they know that you care.”

--Will Rogers

(1879-1935)