Medication and Behavioral Health: Managing Behavioral Issues During Acute Rehabilitation after Traumatic Brain Injury

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Objectives

- Review common behavioral problems arising during acute rehabilitation following moderate-severe traumatic brain injury (TBI)
- Discuss premorbid factors contributing to behavioral problems
- Analyze interventions, including medications, employed to address behavioral issues.

Traumatic Brain Injury

- Results in diffuse axonal injury
- Certain areas are highly vulnerable and contribute to behavioral challenges
  - Fontal Cortex
  - Subfrontal White Matter
  - Deep Midline structures
    - Basal Ganglia
    - Upper brainstem
    - Hippocampi (Medial Temporal lobe)

Cerebral Injury After TBI Contributes to Behavioral Challenges

- Damage to the Dorsolateral Prefrontal Circuit impairs decision making, problem solving, and mental flexibility
- Damage to the Lateral Orbitofrontal Cortex impairs intuitive, reflexive, and social behaviors and the capacity to self monitor and self correct in social context
- Damage to the anterior cingulate impairs memory, emotional memory, emotional expression

Neurotransmitter Disruption Following TBI Contributes to Behavioral Challenges

- Catecholaminergic System (Arousal, Attention, Motivated Behavior, Working Memory)
  - Epinephrine
  - Norepinephrine
  - Dopamine
- Cholinergic System (Attention/Memory)
  - Acetylcholine
- Serotonergic System (Mood/Aggression)
  - Serotonin

TBI Has a Broad Impact

- Physical deficits
- Cognitive deficits, including attention, processing speed, memory, and reasoning
- Mood disorders, including depression, anxiety, and lability
- Behavioral challenges

What behaviors are we talking about?

Behavioral Challenges During Acute Rehabilitation

- Impulsivity
  - Manifested by verbal utterances, physical actions, snap decisions, and poor judgment from failure to consider implications of a given action.
- Irritability
  - Easily angered, response that is out of proportion to the particular stimulus.
- Awareness of Deficits
  - Unable to appreciate their abilities are different since the injury

Behavioral Challenges After TBI

- Apathy
  - Lack of interest in goals or inability to generate goals
  - Misinterpreted as laziness or depression
- Restlessness/Agitation
  - Unable to be still or remain focused
  - Misdirected behaviors
- Confabulation
  - Inaccurate recall of information
  - Can be misinterpreted as lying
- Non-compliance

Factors Contributing to Behavioral Challenges Following TBI

- Behavioral challenges often reflect:
  - Pre-existing personality, psychiatric, and behavioral issues
  - Cognitive disorder
  - Depression
  - Anxiety

Consequences of Changes in Cognition, Behavior, and Mood after TBI

- Disrupts survivors core sense of self
- Alters how loved ones and friends view the them
- Limit rehabilitation progress
  - Can have an effect on how staff/therapists engage with them
- Negatively impact quality of life for the survivor and caregivers

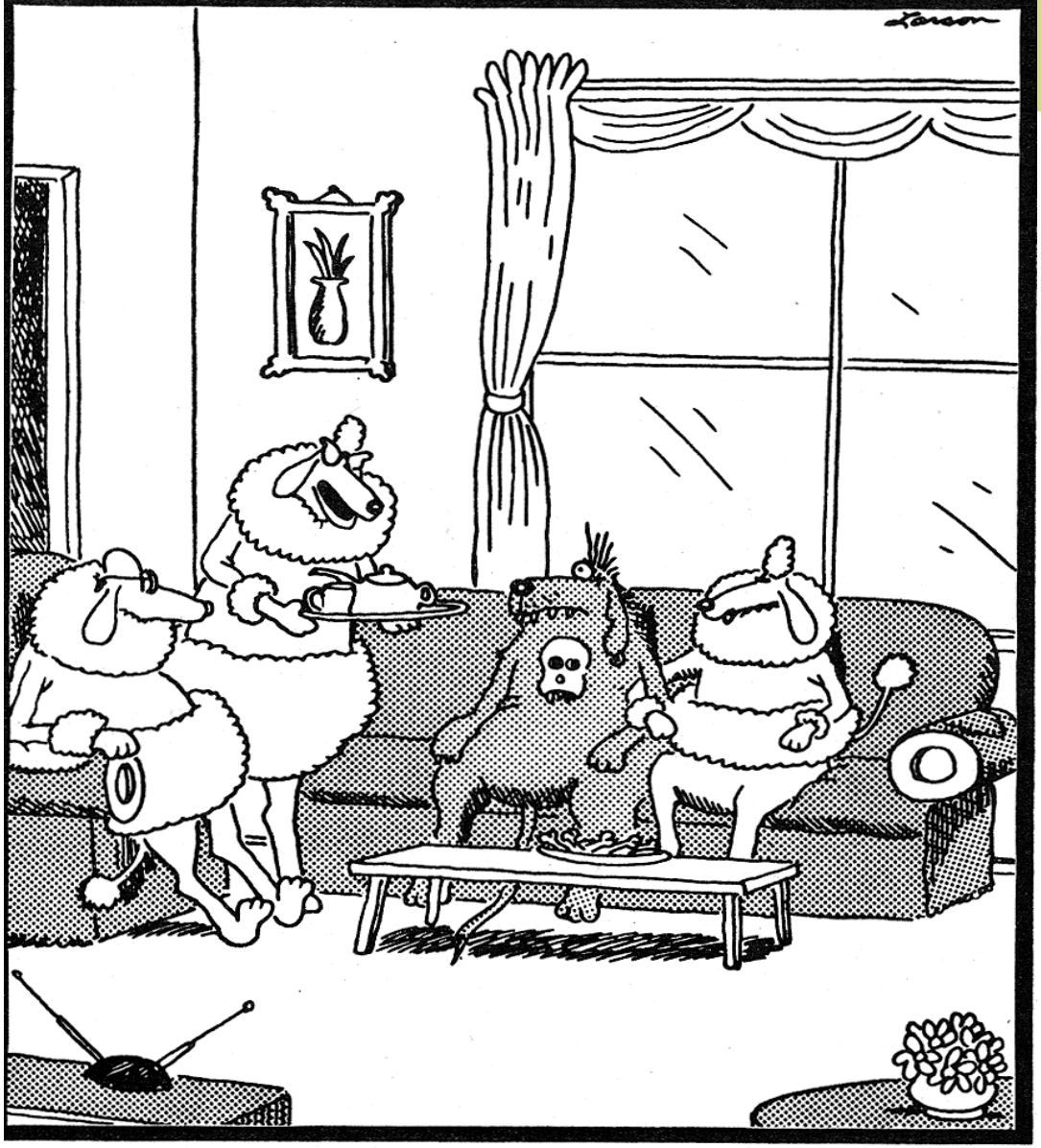

YOUR FRIEND'S CONDITION ISN'T EXACTLY CONTAGIOUS, BUT HE IS MAKING THE NURSES SICK.
THAVES 6-16

Premorbid Issues

- Keep in mind that these problems can occur without any brain disorder and may have been pre-existing
- Often a brain disorder magnifies pre-existing cognitive, mood, and behavior problems
- We are not capable of curing behavior problems, particularly those that pre-existed an injury
- Our goal is to minimize these problems and manage them when they occur so the person obtains maximum benefit from acute rehabilitation

Substance Abuse

- Half of all TBI's involve the use of alcohol.
- Many survivors have patterns suggestive of substance abuse
- Acute withdrawal symptoms are usually addressed prior to admission to acute rehabilitation
- It can be difficult to determine the contribution of substance abuse to cognitive and behavioral problems during acute rehabilitation
- Discharge planning can be challenging



"So, Raymond ... Linda tells us you work in the security division of an automobile wreckage site."

Contribution of Cognitive and Emotional Difficulties to Behavioral Challenges

- **Restlessness/agitation**—attentional and reasoning problems; anxiety
- **Temper outbursts/irritability**—reasoning problems; anxiety or depression
- **Confabulation**—memory problems, executive deficits
- **Diminished insight/self-awareness**—attention, memory, reasoning problems; anxiety

Contribution of Cognitive and Emotional Difficulties to Behavioral Challenges

- **Impulsivity/socially inappropriate behavior**– executive deficits, attention, reasoning problems; anxiety
- **Apathy**-memory, reasoning, attention problems; depression
- **Noncompliance**—poor self-awareness and memory; depression or anxiety

Essential Principles

- Recognize the contribution of premorbid factors, cognitive deficits, and emotional state
- Avoid being personally offended
- Focus on changing the environment and not the person
- Employ basic behavior management strategies
- Safety is the primary concern

Essential Principles

- You cannot force people to do things
- The goal is to minimize problem behaviors, not to remove them
- The only people we can control is ourselves

Temper Outbursts

- Typical pattern
- Family tolerance varies
- Consider antecedent stimuli (“triggers”)
- Be aware of signs of impending anger
- Remain calm, avoid arguing
- Withdrawal of social reinforcement
- Provide correction/suggestions after the outburst
- Use the Agitated Behavior Scale to measure
- Medication

Confabulation

- Provide gentle correction
- Avoid arguing
- Redirect attention

Poor Self-Awareness

- Recognize the emotional needs as well as the neurological component
- Provide correction, but do not argue
- Proceed with a guided activity if possible
- Confront directly if safety is an issue

Socially Inappropriate Behavior

- Do not be personally offended
- Use nonverbal cues to prompt cessation of the behavior
- Avoid embarrassing the person
- Avoid crowds or conversations with more than one person
- Redirect behavior
- Avoid reinforcing the behavior

Socially Inappropriate Behavior

- Teach basic social skills by shaping behavior
  - Listening
  - Turn taking
  - Brief responses
- Role play

Restlessness/Agitation

- Provide a physical outlet
- Redirect attention
- Avoid overstimulation
- Speak slowly and quietly
- Avoid surprises
- Environmental controls (enclosure bed)
- Medication

Apathy

- Ask about the duration and quality of sleep
- Monitor mood
- Discuss personal goals and interests
- Be affirmative in comments
- Give choices of activity

Noncompliance

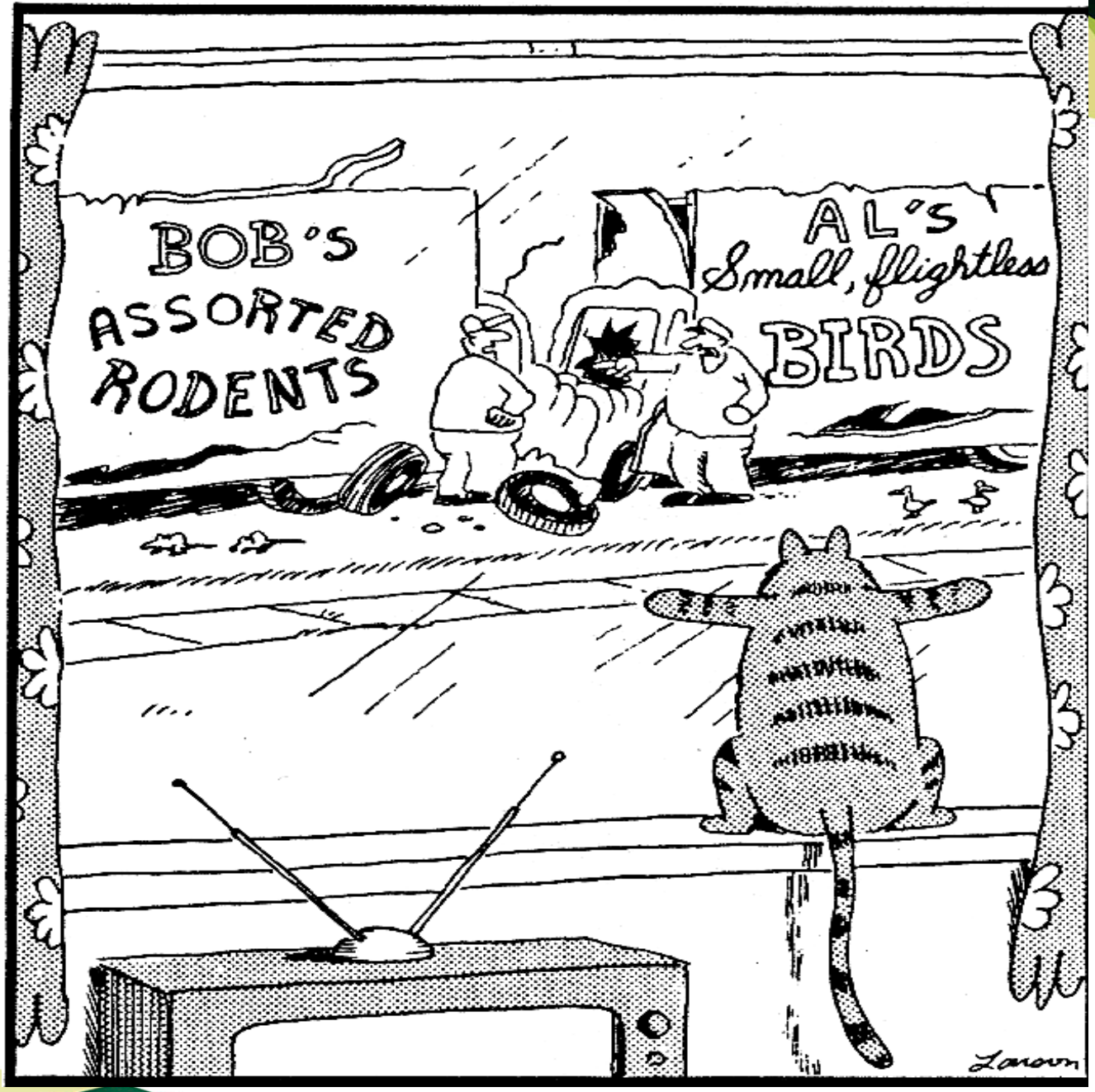
- Return to the activity or request at a later time
- Determine what is being refused and why
- Give choices of activities (all of which are desired)
- Negotiate

Rules of Engagement

- You are part of the environment of the injured person
- Treat each contact as if it is the first
  - Provide a greeting
  - Introduce yourself
  - Formally end the interaction

Rules of Engagement

- Speak slowly, softly, and briefly
- Avoid sudden moves or events that startle
- Explain what you intend to do
- Avoid touching the person without explanation
- Avoid repeatedly disagreeing with the person
- Employ humor when possible
- Use social reinforcement whenever possible



Why Not Just Use Medication?

- Side effect profile of medication
- Interaction with other medications
- Even with effective medication you still have to deal with behavior
- Modeling appropriate behavior for the injured person and family members
- Attribution issues

Medication Management

- Medication as mentioned previously is not always the first approach
- Individuals with TBI can have increased sensitivity to medication
- This can lead to delirium, tremor, gait issues, or emotional lability, the very issues your are trying to address

Brief Overview of Medications Used in Acute Rehabilitation

- Catecholaminergic
  - Dopamine agonists (amantadine, bromocriptine)
    - Believed to aid with arousal, initiation, and apathy
  - Norepinephrine/Dopamine reuptake inhibitors (methylphenidate)
    - Helps with attention, hyperactivity, alertness, and participation
- Serotonergic
  - Serotonin reuptake inhibitors (sertraline, escitalopram, etc.)
    - Helps with depression, anxiety, lability, and OCD
  - Serotonin and histamine inhibitor (trazadone)
    - Helps with anxiety and sleep

Brief Overview of Medications Used in Acute Rehabilitation

- Anticonvulsants (divalproex, lithium)
  - Can help with agitation, irritability
- Beta-Blockers (propranolol)
  - Helps with irritability, anxiety
- Benzodiazepines (lorazepam)
  - Can be used short term for aggressive/violent behavior
- Antipsychotics (risperidone, ziprasidone)
  - Can help with delusions/hallucinations

Summary of Behavioral Challenges

- Common to the point that almost all survivors display one or multiple behavioral issues during acute rehabilitation
- Behavioral challenges can impair effective interaction between the survivor, family, and staff.
- Failure to address these issues can impact progress in rehabilitation
- Treatment involves a coordinated approach involving behavioral, environmental, and medical strategies.

Questions?