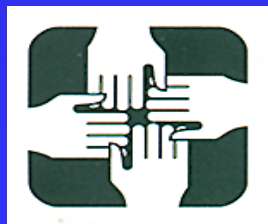


Screening, Education, and Intervention for Traumatic Head Injury in a Basic Clinic Setting

**Webinar Session 2: Basic Concepts and Principles in
the Care of Torture Survivors with Traumatic
Head Injury**

R. Richard Sanders MS CCC MTS



Spaulding Rehabilitation Hospital
Boston, MA

Webinar Session 2 Outline

- I. THI/TBI Definitions and characteristics
- II. Identification and screening for TBI/Mild TBI
- III. Therapy principles and referral options

I. Traumatic Brain Injury (TBI): Definition

- an insult to the brain, not degenerative or congenital in nature, but caused by an external, mechanical force, which may cause a diminished or altered state of consciousness, and results in impairments of cognitive, physical and emotional functioning.

biausa.org

TBI: Epidemiology

- Incidence of 100 in 100,000.
- 52,000 deaths annually.
- 1.4 million sustain TBI annually
- 1 million treated and released from ER.
- 80,000 annually lifelong disabilities
- Brain injury occurs every 23 seconds

Rehabilitation of Persons with Traumatic Brain Injury. *NIH Consensus Statement*. 1998;16(1):1-41.

US Dept of Health and Human Services , Center for Disease Control 2004

TBI: Epidemiology

- Highest incidence 15-24yrs; (75+, <5).
- Males 2-3x females.
- Alcohol in 50% of all TBIs.
- 50% MVAs*; falls leading cause in 65+yrs.
- Blasts are a leading cause of TBI for active duty military personnel in war zones.
- Prevalence 5.3 million; 2.5-6.5 million.

*discuss recent CDC data

Figure 2.4
Areas of Cortical Contusion

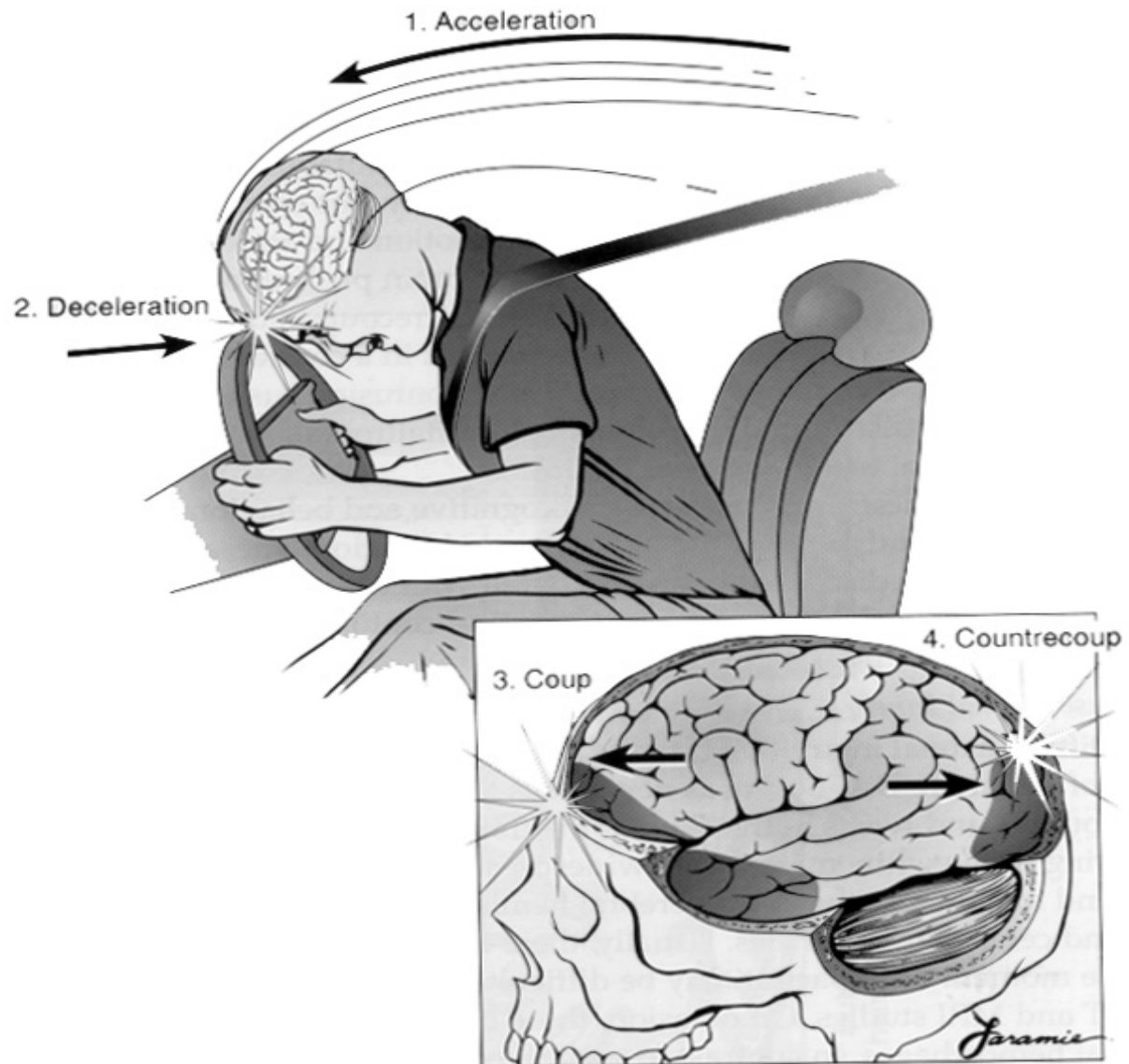


Figure 2.3
Intracranial Hemorrhages

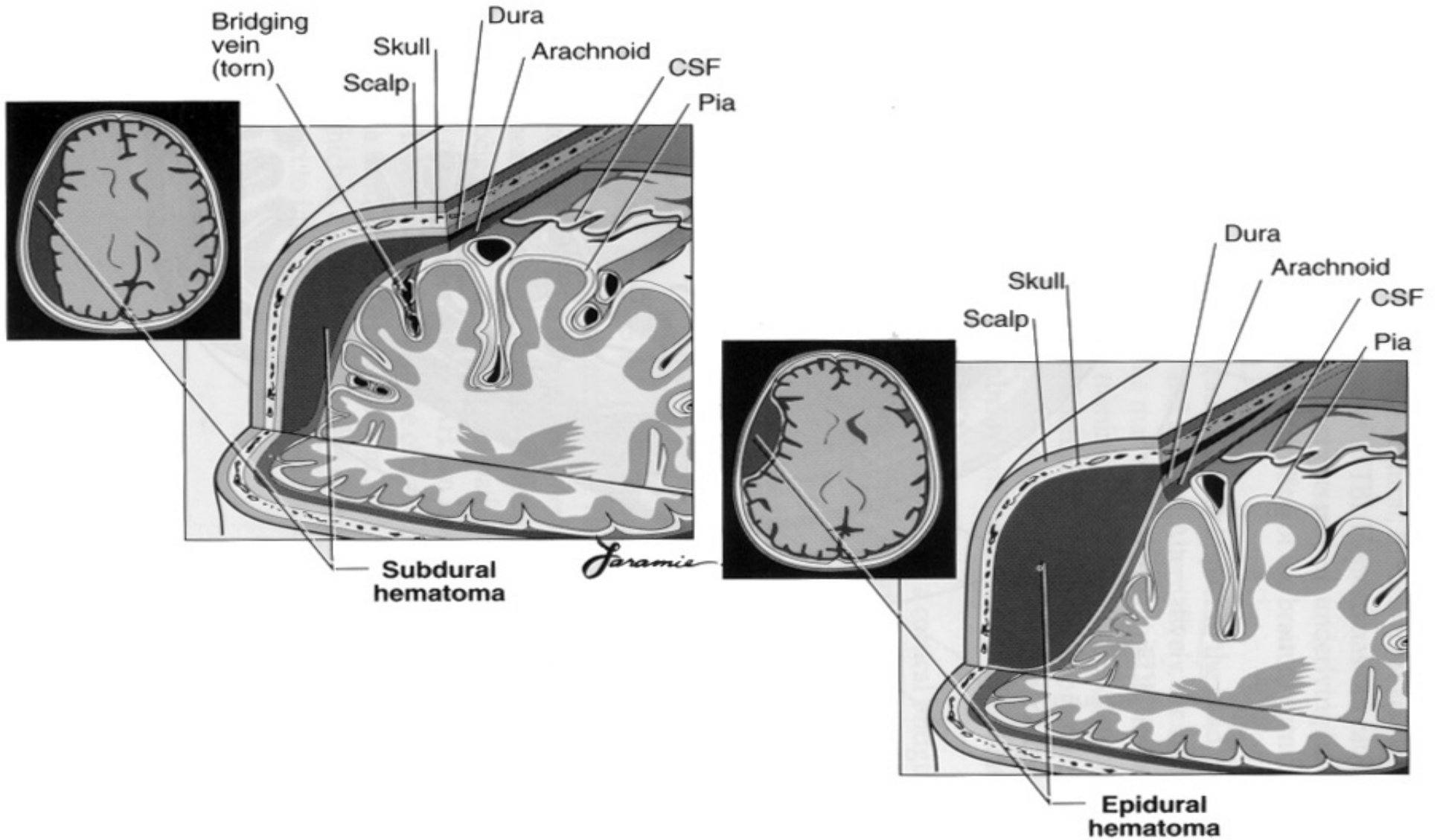
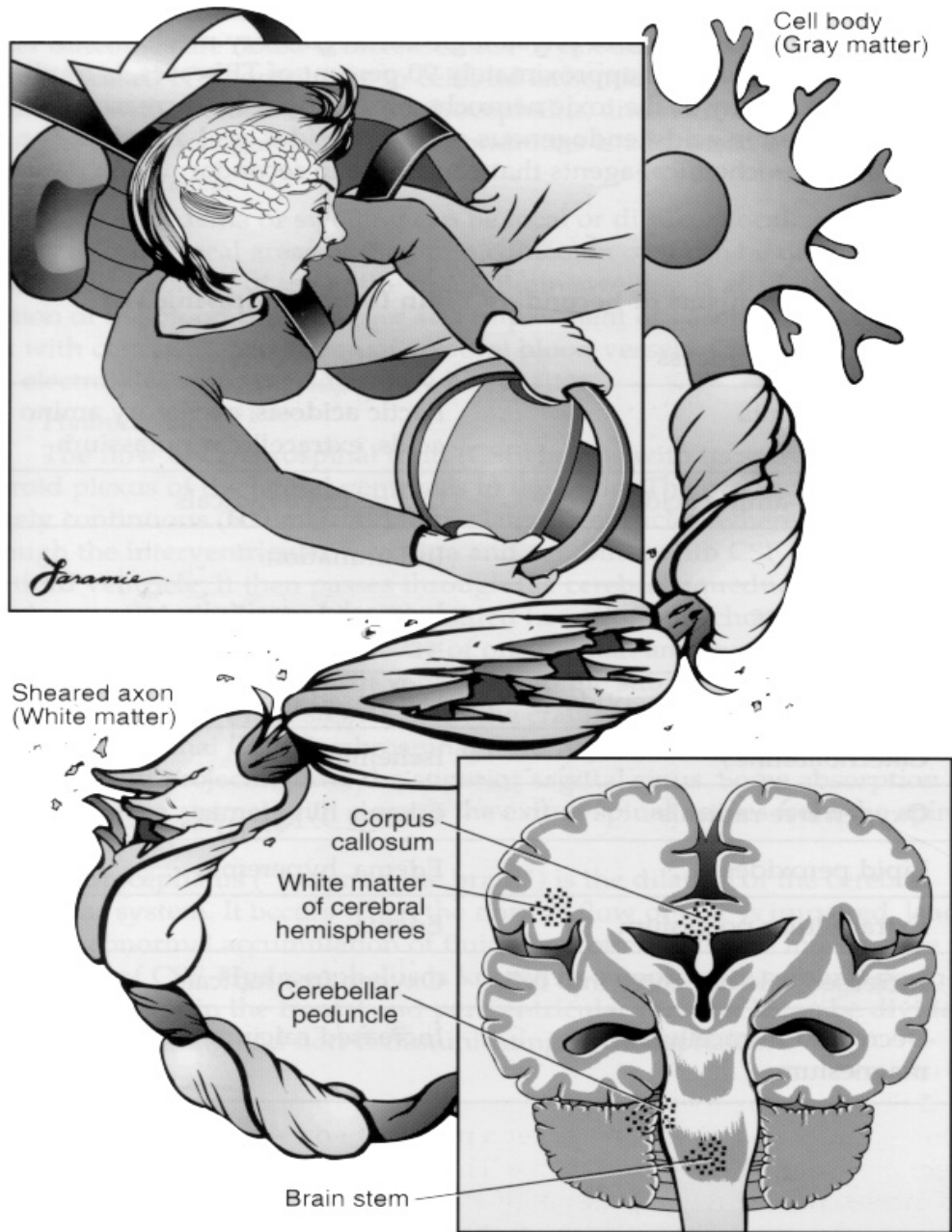


Figure 2.5
Diffuse Axonal Injury



Neuropathology of TBI

- Blood and oxygen deprivation / anoxia
 - ◆ Low BP--bleeding, cardiac failure
 - ◆ Disrupted respiration—suffocation
 - ◆ Affects hippocampus, memory for new learning

- Generator and regulator function
 - ◆ Brainstem controls heartbeat, breathing, arousal, emotions
 - ☛ Subdural /epidural hemorrhage create pressure on brainstem
 - ☛ Monitor ICP to evacuate hematoma

- Diffuse Axonal Injury (DAI)
 - ◆ Subcortical, white matter tracts

- Lobe functions
 - ◆ All cortical functioning, hemispheric specializations, cerebral dominance

Neuropathology of TBI

■ Cerebral Contusion

◆ Orbitofrontal

- ☞ Disinhibited, impulsive, distractible, irritable

◆ Dorsolateral

- ☞ Lack of affect, lethargic, pseudo-depressed

◆ Anterior temporal

- ☞ Understanding and memory for auditory information

◆ Base of forebrain

- ☞ CN I Olfactory—sense of smell

Neuropathology of TBI

Later Consequences

- Chronic Subdural hematoma
 - ◆ HA
 - ◆ Subtle hemiparesis
 - ◆ Regression in function, tx
 - ◆ Variation in arousal
- Hydrocephalus
 - ◆ Shunt obstruction
 - ◆ Changes in function: gait, behavior, dementia
- Depression
- Medical Management

TBI: Chronic Symptomatology

- PHYSICAL:

Headache

Dizziness/Balance

Nausea

Blurred vision

Sleep disturbance

Fatigue

Weakness

TBI: Chronic Symptomatology

■ SENSORY:

Vision

diplopia, homonymous hemianopsia, cortical blindness, agnosia, neglect

Hearing

auditory nerve deafness, partial hearing loss, hyperacusis, tinnitus, deficits in processing pitch, rhythm, tone

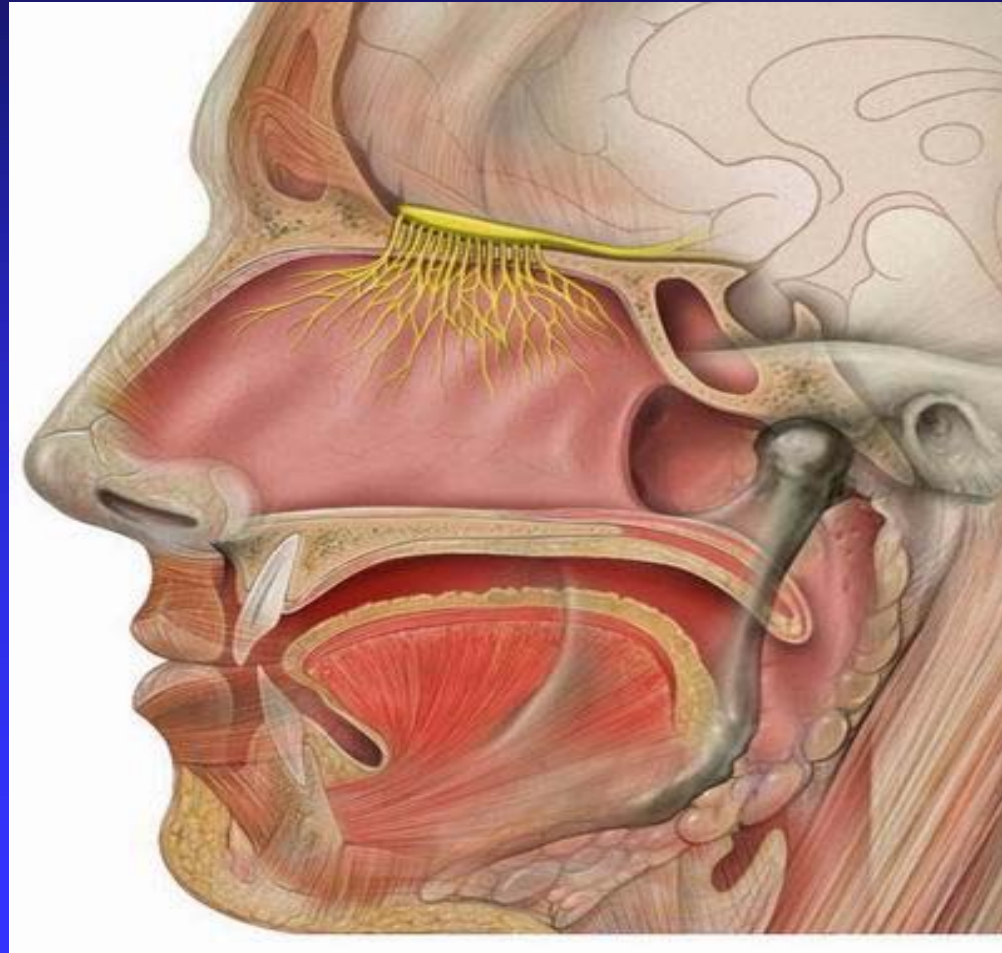
Smell and Taste

olfactory nerve damage impairs sense of taste

Touch

Proprioception, kinesthesia, sensation of pain

CN I. Olfactory Nerve



TBI: Chronic Symptomatology

- COGNITIVE:

Attention

Concentration

Perception

Memory

Processing speed

Executive functioning

Insight

Judgment

TBI: Chronic Symptomatology

- COMMUNICATION:

Verbose and tangential

Decreased organization of discourse

Dysnomia/Anomia

Dysarthria, articulation deficits

Decreased auditory processing

Decreased social awareness

TBI: Chronic Symptomatology

- EMOTIONAL:

Irritability

Quickness to anger

Egocentricity

Childishness

Impulsivity

Lability

Stages of grieving: denial, anger, depression...

Apathy

Dependency

TBI: Chronic Symptomatology

■ FAMILY:

Impacts family relationships:

Marital, parental, sibling, extended family

Impacts family functions:

Financial, daily care, recreation, affection, socialization, self-definition, education, vocation

Impacts family life cycle:

Couple, birth and early childhood, school age, adolescence, young adult, post-parental, aging/senior

II. TBI: Identification and Screening

- History and interview
 - ◆ Include family, significant others
 - ◆ Note mechanism of injury, LOC, HA, vomiting

- Pay attention to the “universal” triad of cognitive deficits
 - ◆ Attention
 - ◆ Memory
 - ◆ Speed of processing

- Screening Tools
 - ◆ Post Concussion Symptom Scale
 - ◆ Rivermead Post Concussion Symptoms Questionnaire
 - ◆ NeuroRehab Survey

- Observation in functional settings

SYMPTOM RATING SCALE

Please rate the severity of the following symptoms on a scale of 1-5 with 5 indicating the most severe (circle one):

						<u>Comments</u>
1. Fatigue	1	2	3	4	5	
2. Trouble concentrating	1	2	3	4	5	
3. Anxiety	1	2	3	4	5	
4. Dizziness	1	2	3	4	5	
5. Nausea	1	2	3	4	5	
6. Slower thinking	1	2	3	4	5	
7. Problems with memory and learning	1	2	3	4	5	
8. Moodiness	1	2	3	4	5	
9. Depression	1	2	3	4	5	under control now
10. Sleep disturbances	1	2	3	4	5	
11. Difficulty putting ideas into words	1	2	3	4	5	
12. Easily overwhelmed	1	2	3	4	5	
13. Visual changes (blurring/double vision)	1	2	3	4	5	thinks vision worse since stroke
14. Hearing problems/ringing in ears	1	2	3	4	5	always thinks his hearing is bad, but tests OK. ringing in ear has had for years but better since stroke
15. Sensitivity to lights or sounds	1	2	3	4	5	
16. Difficulty processing information	1	2	3	4	5	
17. Trouble with organization and time management	1	2	3	4	5	
18. Apathy	1	2	3	4	5	

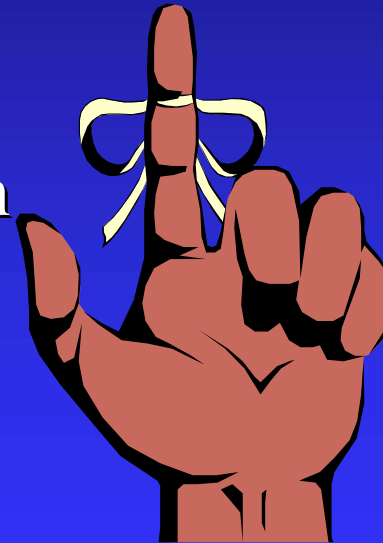
Attention (concentration)

- Attention: multidimensional matrix of states, processes and abilities supporting cognition.
 - ◆ Sustained
 - ☞ Mental stamina; maintaining focus over time
 - ◆ Selective
 - ☞ Focus on the target while screening out background noise or images
 - ◆ Divided
 - ☞ Multi-tasking; keeping track of several things at a time



Memory

- Memory: an information processing system necessary for new learning.
 - ◆ Attention
 - ◆ Memory for new information
 - ☞ Encoding/Storage/Retrieval
 - ◆ Working memory
 - ☞ Mental clipboard



TBI/PTSD: organic vs. emotional causes

■ Lack of consensus

- ◆ Recent articles on U.S. soldiers returning from Iraq
- ◆ Earlier articles on persistent post concussive symptoms with negative MRI
- ◆ Eitinger Norway study 1964
- ◆ Training and experience of physicians vs. therapists

■ Response to treatment

- ◆ If treating solely for PTSD, ask if cognitive symptoms still present

TBI/PTSD: organic vs. emotional causes

■ Case study

- ◆ 52 y.o. female
 - ☞ trauma therapist, doctoral student
- ◆ Hx of abuse by father and by husband, followed by PTSD symptoms
- ◆ MVA 1983 resulting in paraplegia, PTSD, no TBI
- ◆ Second MVA 2007 resulting in TBI

TBI/PTSD: organic vs. emotional causes

- Many overlapping symptoms
 - ◆ concentration
 - ◆ sleep disturbance
- TBI symptoms:
 - ◆ slower thinking, diminished speed of processing
 - ◆ poor working memory
 - ◆ poor memory for new information
- PTSD symptoms:
 - ◆ flashbacks, re-experiencing events
 - ◆ nightmares
 - ◆ hypervigilance

III. THI/TBI: Therapy principles

- Education
- Environmental modification
 - ◆ Decrease ambient noise
 - ◆ Decrease bright light
 - ◆ Decrease multiple task demands
- Organization and planning strategies
 - ◆ Daily planner
 - ☞ Inexpensive options
 - ◆ Audio reminders
 - ◆ Visual reminders

THI/TBI: Therapy principles

- Attention and memory strategies
 - ◆ Note-taking templates
 - ◆ Verbalize
 - ◆ Pocket digital recorders
- Mental stamina
 - ◆ Pacing, pacing, pacing
 - ◆ Avoid cognitive hangover / fatigue
- Insight (anosognosia)
 - ◆ Functional tasks
 - ◆ Group therapy and feedback
 - ◆ Standardized assessment
- Pain management

THI/TBI: Referrals

- M.D. Psychiatry
- Neuropsychology
- Speech-language pathology
- Occupational therapy
- Physical therapy / vestibular therapy
- Psychiatry
- Psychology
- Social Work
- Neuro-ophthalmology
- Otolaryngology / Audiology

Community Resources

- Brain Injury Association of America
 - ◆ <http://biausa.org/>
- State chapters--Brain Injury Association of Massachusetts
 - ◆ <http://www.biama.org/>
- Support groups
- Conferences (survivor and caregiver)

Governmental Agencies

- Massachusetts Rehabilitation Commission (MRC)
 - ◆ <http://www.mass.gov/mrc>
 - ◆ Vocational rehabilitation program (VR)
 - ☛ Diagnostic Evaluations
 - ☛ Interest and Aptitude Testing
 - ☛ College or Vocational Training
 - ☛ Job Placement Assistance
 - ☛ Counseling and Guidance
 - ☛ Supported Work
 - ☛ Skills Training
 - ☛ Job Coaches and Tutors
 - ☛ Vehicle Modifications
 - ☛ Housing Modifications
 - ☛ Injured Worker's Program
 - ☛ Assistive and/or Rehabilitation Technology
 - ☛ Programs for Individuals Turning 22 (Ch. 688)
 - ☛ Consultation to Employers

Governmental Agencies

■ Office of Community Services (CS)

- ◆ Brain Injury and Specialized Community Services for individuals with an acquired/traumatic head injury
- ◆ Protective Services for persons with physical disabilities who may be abused by their caregiver
- ◆ Supported Living Services for persons with disabilities needing assistance to live independently at home
- ◆ Independent Living Center Services providing information, referral, and peer counseling for persons with disabilities to live independently in the community
- ◆ Independent Living Programs for individuals turning 22
- ◆ Assistive Technology Program to enable individuals with severe disabilities equal access to employment and community life through the use of assistive technology and training.
- ◆ Home Care assistance for persons with disabilities ages 18-59.
- ◆ Consumer Involvement to improve the Commission's services by working cooperatively with members of the disability community on projects of mutual interest.



The End

Thank you for attending.

rrsanders@partners.org