



Traumatic Brain Injury: Screening

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Screening for TBI

- Screening is asking about the history of brain injury and asking this question more than once, in more than one way, and in multiple settings.
- Through screening, you may be the first person to identify that the client may have a brain injury.
- If you do screen for brain injury, it is important to have a process in place for any follow-up that is indicated.





Red Flags for Screening



- Your intuition or professional senses are alarmed
- When obvious physical symptoms are present
- When clients disclose injury/disease information
- When post-concussive complaints are offered
- When your usual interventions or intervention strategies prove ineffective
- When affective and emotional responses are not parallel to stimulus/environment
- When medication regimens prove ineffective or the person exhibits effects different from those expected



Traumatic Brain Injury: Assessment

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Department of Child Neurology

Acute Assessment

YEAR: 08	INCIDENT NUMBER: []	NUMBER: 839	COMPANY: A	ALARM DATE: 10/30	UNITS PROVIDING CARE: E37	UNITS PROVIDING CARE: []	TRANS UNIT: []
ADDRESS: 357 - d southpark	EMT/CEP # A: 33046	EMT/CEP # B: 40114	EMT/CEP # C: []	EMT/CEP # D: []			
TIME APPROXIMATE: 212	PT CONTACT: 2125	IV HOSP: []	AT HOSP: 2152	PT TRANSFER: []			
SERVICE DELIVERED: NE <input type="checkbox"/> BLS <input type="checkbox"/> ALS <input checked="" type="checkbox"/> HOSPITAL <input checked="" type="checkbox"/> REASON <input checked="" type="checkbox"/> REFUSAL <input type="checkbox"/> RELEASE <input type="checkbox"/>							
NAME: Rob Rob ?	AGE: UNK	SEX: M	WT: []	DOB: UNK	SSN: []		
ADDRESS: []	CITY: []	STATE: []	ZIP: []	APPX TIME: 2135-2150			
PMH: CARDIAC <input type="checkbox"/> HBP <input type="checkbox"/> CVA <input type="checkbox"/> RESP <input type="checkbox"/> SEIZ <input type="checkbox"/> DIAB <input type="checkbox"/>	BP: 110/70						
CA <input type="checkbox"/> PREG <input type="checkbox"/> G <input type="checkbox"/> P <input type="checkbox"/> DUE DATE: []	PULSE: 116						
DENIES: UNK	RESP: 20						
RX/S DENIES: UNK	SKIN: 2/1000/2/1000						
ALLERGIES DENIES: UNK	PUPILS: REACTIVE 7MM/2-3MM						
GROUP: []	GCS / ETCOL: 2/5/10						
CVC: HEAD TRAUMA	CAP RFL: 2/100/2000						
HP/MOI: UPON ARRIVAL @ SCENE P.D. P STRAINING PT. LYING SUPINE IN DRAINAGE AREA, MORNING & COMBATIVE. R. REPORTEDLY WAS BEATEN ABOUT THE HEAD & NECK WITH BAR OF METAL OBJECT. UNKNOWN AGE OR NAME OF PT.	PULSE OX: RA 100%						
ONSET TIME: []	PAIN: NONE <input type="checkbox"/> MIN <input type="checkbox"/> MOD <input type="checkbox"/> SEVERE <input type="checkbox"/> 1-10 SCALE						
CLINICAL FINDINGS				REPORTED HISTORY OF			
LOC AWAKE <input type="checkbox"/> ALERT <input type="checkbox"/> ORIENTED <input type="checkbox"/> PERSON <input type="checkbox"/> PLACE <input type="checkbox"/> TIME <input type="checkbox"/> EVENTS <input type="checkbox"/>	UNCON YES <input type="checkbox"/> NO <input type="checkbox"/> UNK <input checked="" type="checkbox"/>			NEAR SYNCOPE YES <input type="checkbox"/> NO <input type="checkbox"/> UNK <input checked="" type="checkbox"/>			
NO CLINICAL FINDINGS				PT'S STATED NEEDS			
HEAD/FACE: PATIENT AIRWAY, 2 INCOMPRESSIBLE WOUNDS & NUMEROUS LAC & HEMATOMAS TO HEAD & FACE.							
NECK: []							
CHEST: []							
ABD: []							
PELVIS: []							
EXT: SPINAL TENDRONS @ LEG (LOWER)							
BACK: []							
UNIT / EMT / CEP	APPX TIME	TREATMENT / PROCEDURE	RESPONSE TO TREATMENT	HOSPITAL COMMUNICATION @			
E37	2105	NA 15, F8, NASAL CANNULA, FACE MASK	3A	CN <input type="checkbox"/> RF <input type="checkbox"/> PATCH <input type="checkbox"/> AB <input type="checkbox"/>			
33046	2135	EKG: 5 MINUTE MAT @ 100 BPM		PATCH <input type="checkbox"/> RF <input type="checkbox"/> CN <input type="checkbox"/> PATCH <input type="checkbox"/>			
40114	2150	IV: #10 @ AC. MEDS @ 20-40-100		CONTACT PERSON: [] ACKN: [] BASE: []			
		MANUAL C-SPINE PREVENTION WITH		HOSPITAL DIVERSION: YES <input type="checkbox"/> NO <input type="checkbox"/>			
		CALL 43 HB BLS		NFO <input type="checkbox"/> PHYSICIAN'S ORDER: []			
		ENROUTE PT. ROSE V 50 12 PM		MISCELLANEOUS PROCEDURES			
		3 MORNS. 12 IN COMPRESSIBLE		BLOOD GLUCOSE: []			
		SOUNDS (UNRESPONSIVE). UPON		BLOOD GLUCOSE: []			
		ARRIVAL @ SS.		FULL SPINE: 2130			
STATUS O/A HOSP: []		EKG: CHANGED <input type="checkbox"/> UNCHANGED <input type="checkbox"/>	INTUBATION YES <input type="checkbox"/> NO <input type="checkbox"/>	IV PATIENT YES <input type="checkbox"/> NO <input type="checkbox"/>	OIA YES <input type="checkbox"/> NO <input type="checkbox"/>	TOTAL FLUIDS: 200	OGG: []

Acute Assessment

APPX TIME:	2135	2150		
BP	180/145	148/110	1	1
PULSE	120	46		
RESP	18	12		
SKIN	w/most w/most			
PUPILS	reactive, fixed 2-3mm			
GCS / ETCO ₂	2	0	1	1
CAP RFL	250 250			
PULSE OX	RA	100%	100%	

Acute Assessment

PHYSICAL EXAM

BP: 137/78 HR: 100 RR: 18 O2 sat: 98 %

Temp: _____

Eye Opening

- 4 Spontaneously
- 3 To Speech
- 2 To Pain
- 1 None

Motor Response

- 6 Obeys
- 5 Localizes
- 4 Withdraws
- 3 Flexion
- 2 Extends
- 1 None

Verbal Response

- 5 Oriented
- 4 Confused
- 3 Inappropriate Words
- 2 Inappropriate Sounds
- 1 None

Glasgow Coma Scale:

3

Disability	GLASCOW COMA SCALE				Time	Score	Time	Score
	Eye Opening	Motor Response	Verbal Response					
4 Spontaneously	6 Obeys (age appropriate)	5 Oriented (cos / babbles)	2158	3T	2T			
3 To Speech	5 Localizes	4 Confused (irritable cry)	2300	3T (medicate)				
2 To Pain	4 Withdraws	3 Inapp. Words (cries pain)						
1 None	3 Flexion	2 Inapp. Sounds (moans & pain)						
	2 Extends	1 None						
	1 None							

Primary Sur

FRONT BACK

LEFT RIGHT
PALM DORSAL PALM DORSAL

GLASCOW COMA SCALE

Code:

- A = ABRASION OSW = GUNSHOT WOUND
- AP = AMPUTATION L = LACERATION
- B = BURN P = PUNCTURE
- C = CONTUSION SW = STAB WOUND
- E = EVISCERATION DL = DISLOCATION
- FXQ = FRACTURE (OPEN) DY = DEFORMITY
- T = TENDER

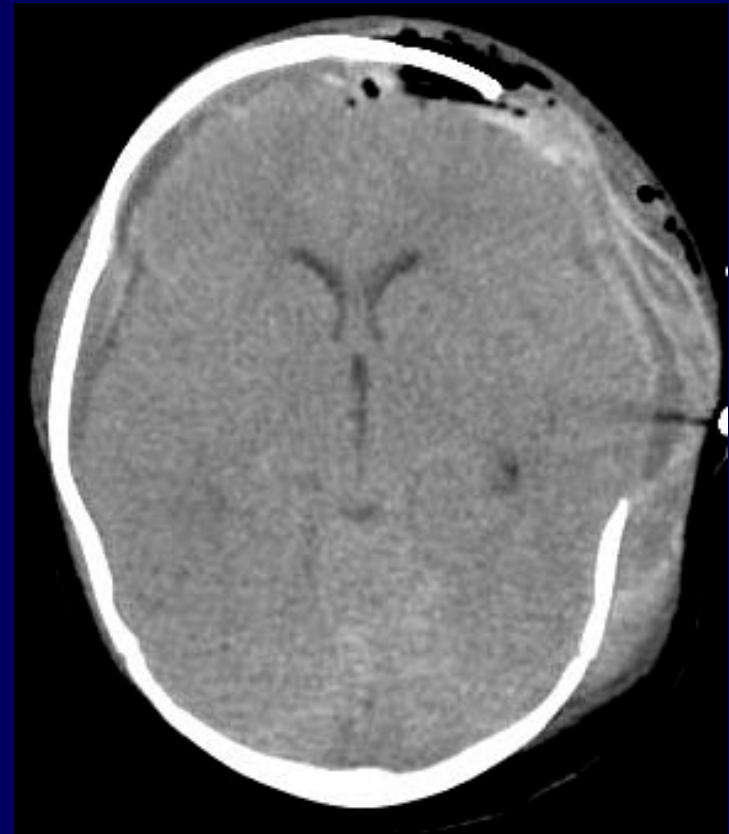
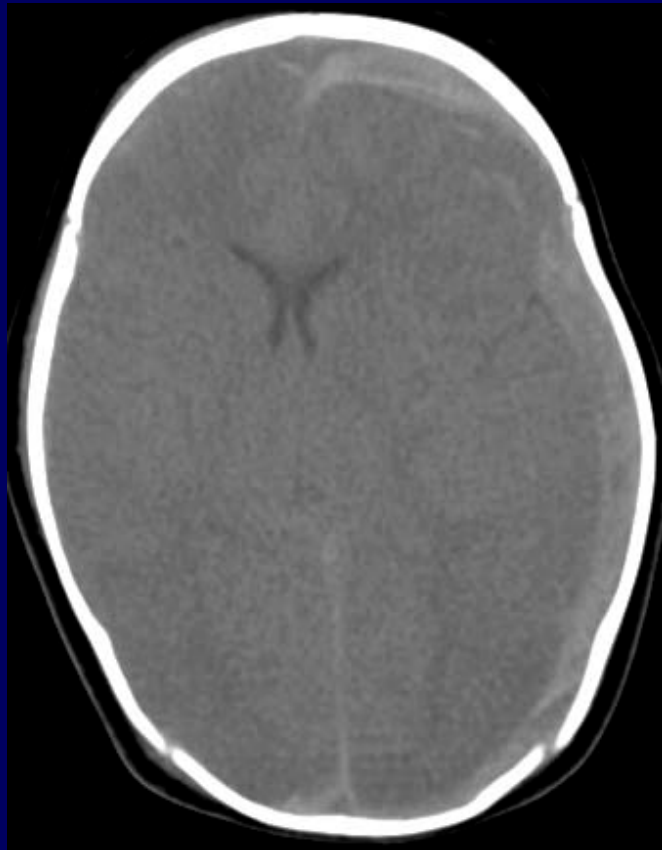
OB Triage:
LMP _____
EDC _____
G _____ P _____

Membranes Intact Y/N
FHT Absent
Fetal Monitor
FHT's Present

Secondary Survey Time: 2208

Comments: TSHH 1PH
Pressure
Nasal bx
R Zygoma

Decompressive Craniectomy



Posttraumatic Seizures

■ Immediate

- Within 5 minutes of TBI
- Does not represent epilepsy
- Should be considered response to head injury – i.e. provoked

■ Early

- Within 7 days of TBI

■ Late

- After 7 days of TBI

■ Risk factors

- Surgically evacuated SDH
- Intracerebral hematoma
- GCS < 8
- Depressed skull fracture
- Penetrating injury
- Parietal lesions on CT scan

Sub-acute/ Post-acute Assessment

■ Physical Symptoms

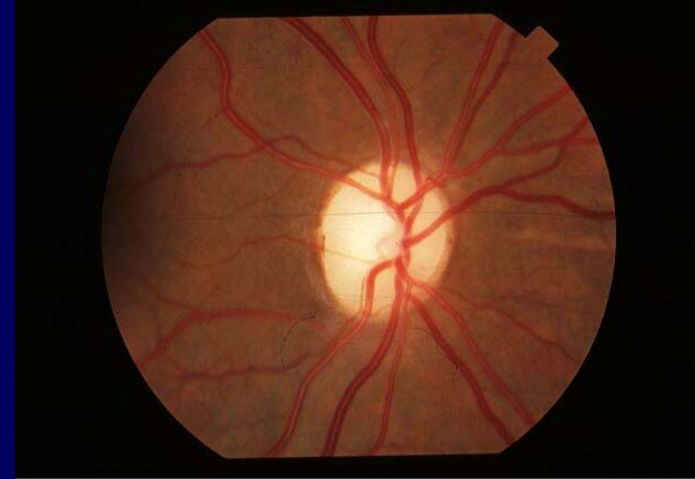
- Headache: Papilledema
- Weakness: Hyperreflexia
- Vertigo: Nystagmus
- Imbalance: dysmetria/ataxia

■ Behavioral Symptoms

- Flat affect
- Emotional lability

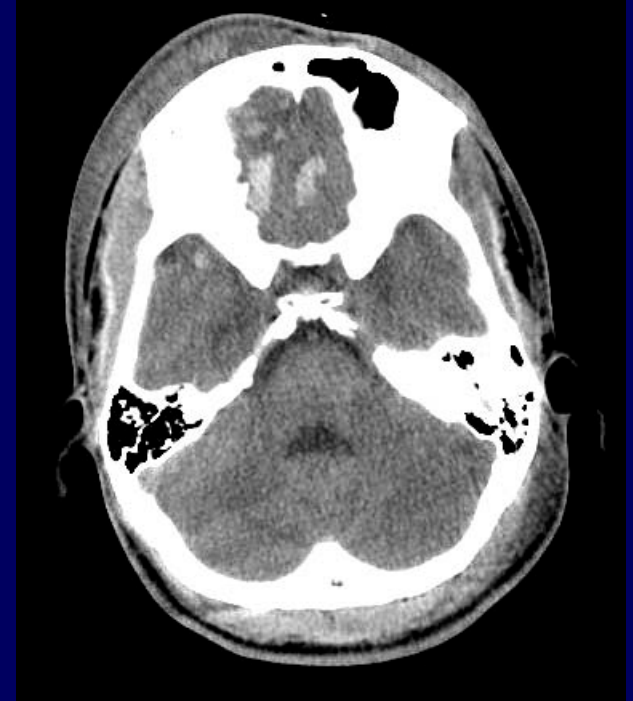
■ Cognitive Symptoms

- Word finding
- Calculation
- Processing speed



Assessment Tools

- CT scan
 - Pros:
 - fast
 - sensitive to blood and bone
 - Cons:
 - Less sensitive to tissue



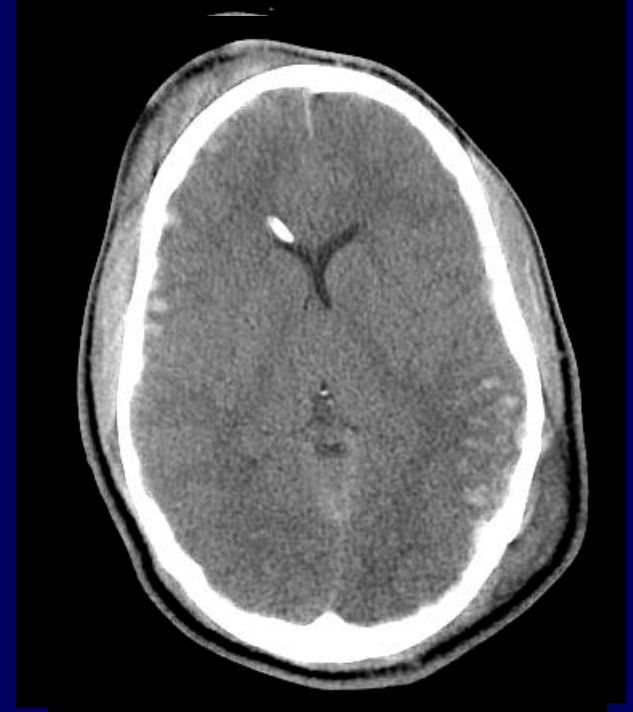
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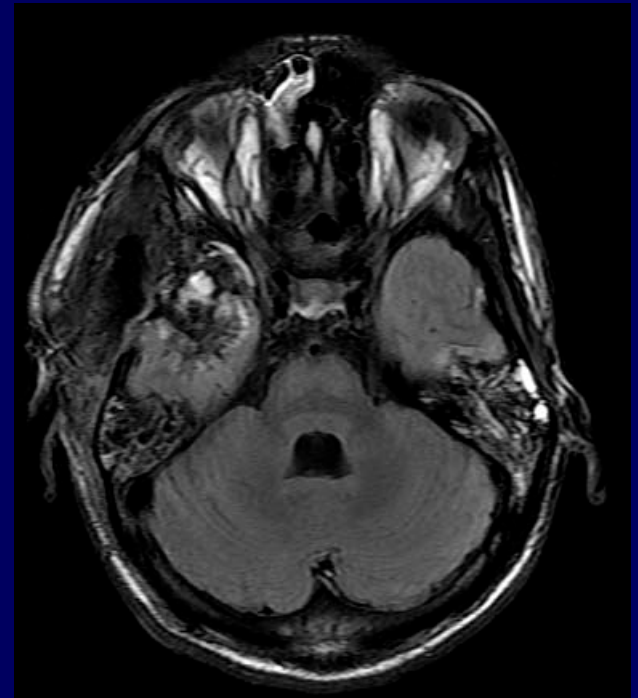
Assessment Tools

■ CT scan

- Pros:
 - fast
 - sensitive to blood and bone
- Cons:
 - Less sensitive to tissue

■ MRI

- Pros:
 - Sensitive to brain tissue
- Cons:
 - Slow
 - expensive



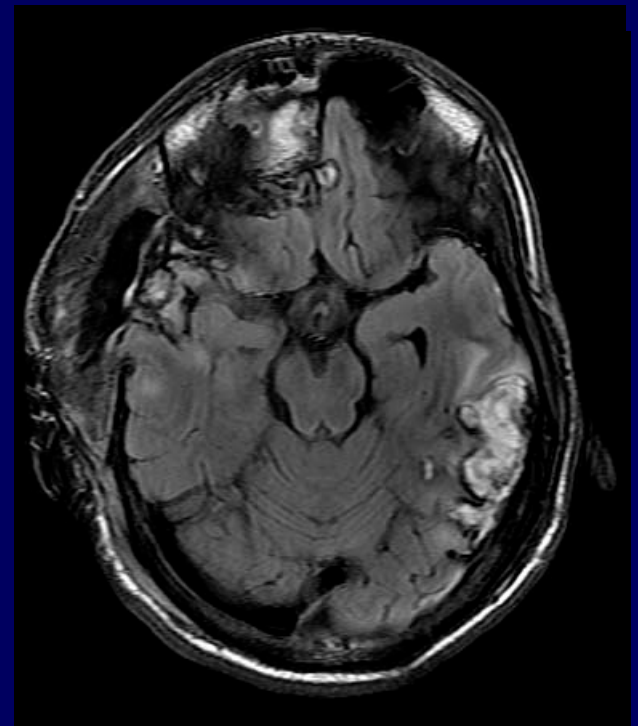
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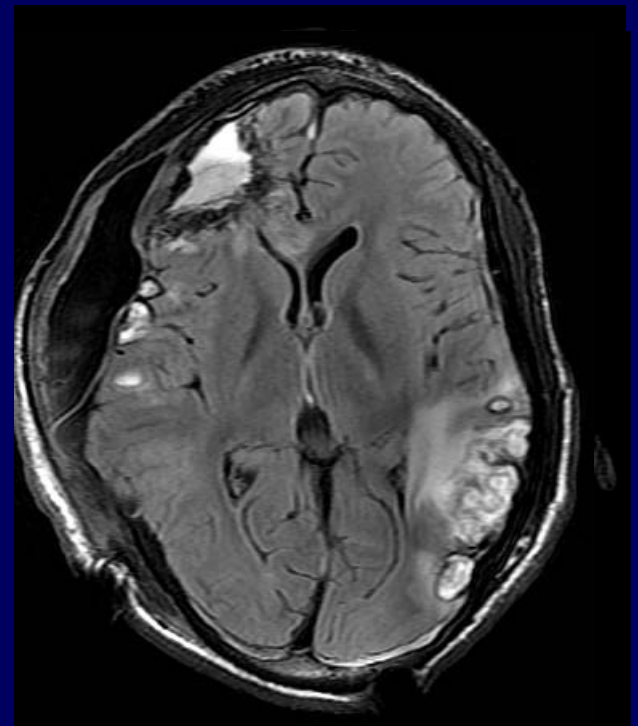
Assessment Tools

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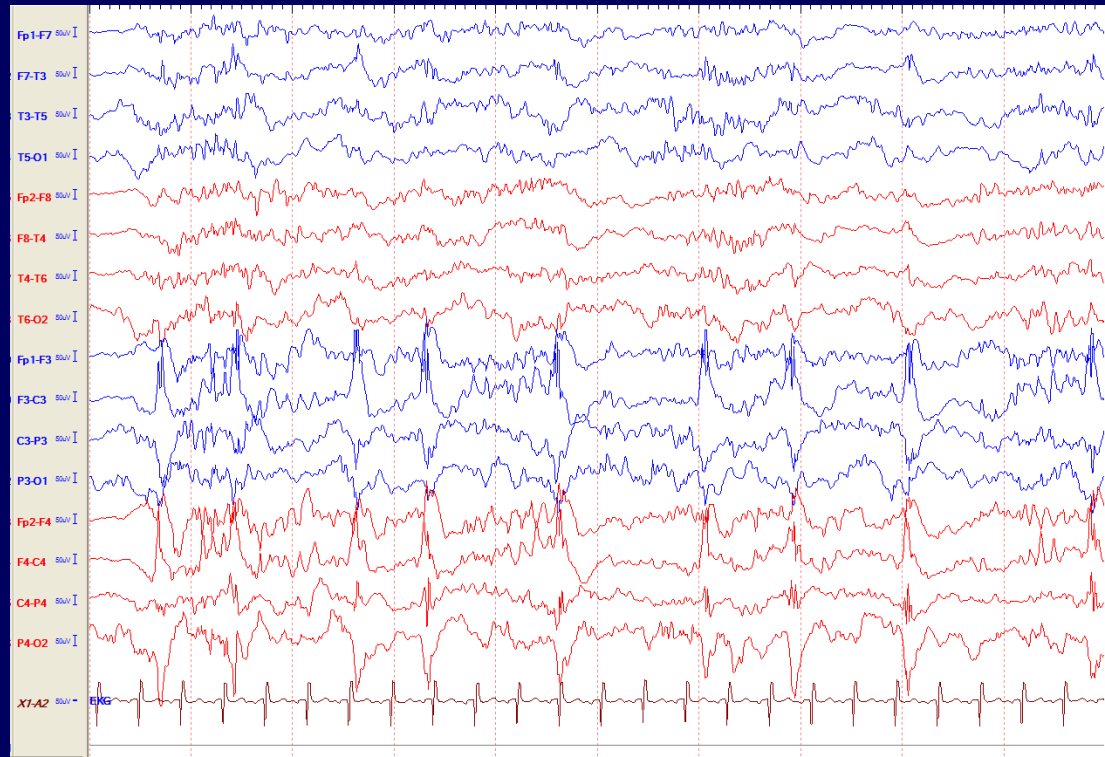
■ MRI

- Pros:
 - Sensitive to brain tissue
- Cons:
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Assessment Tools

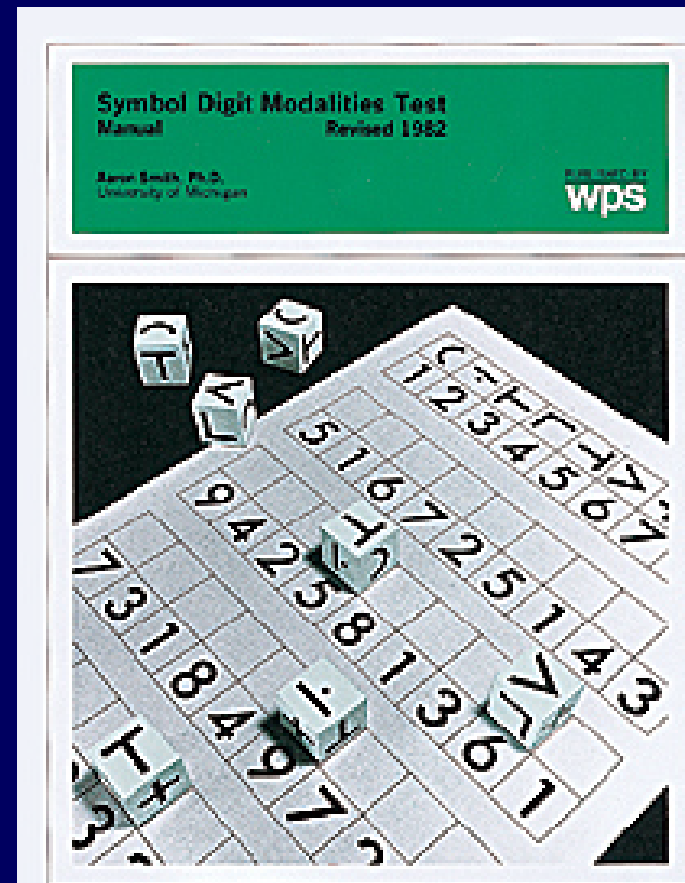
- Electroencephalogram
 - Clinically relevant for seizures and/or encephalopathy



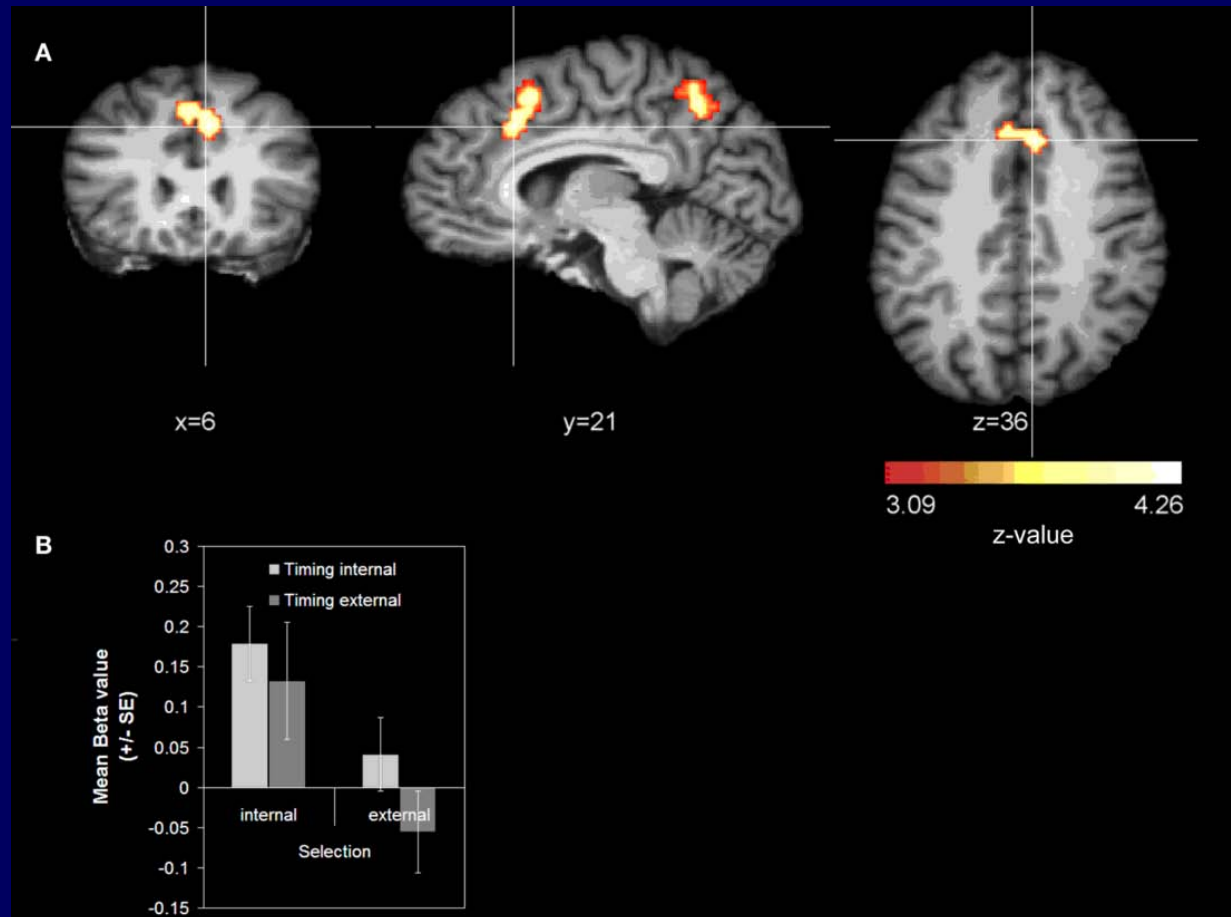
Assessment Tools

- Electroencephalogram
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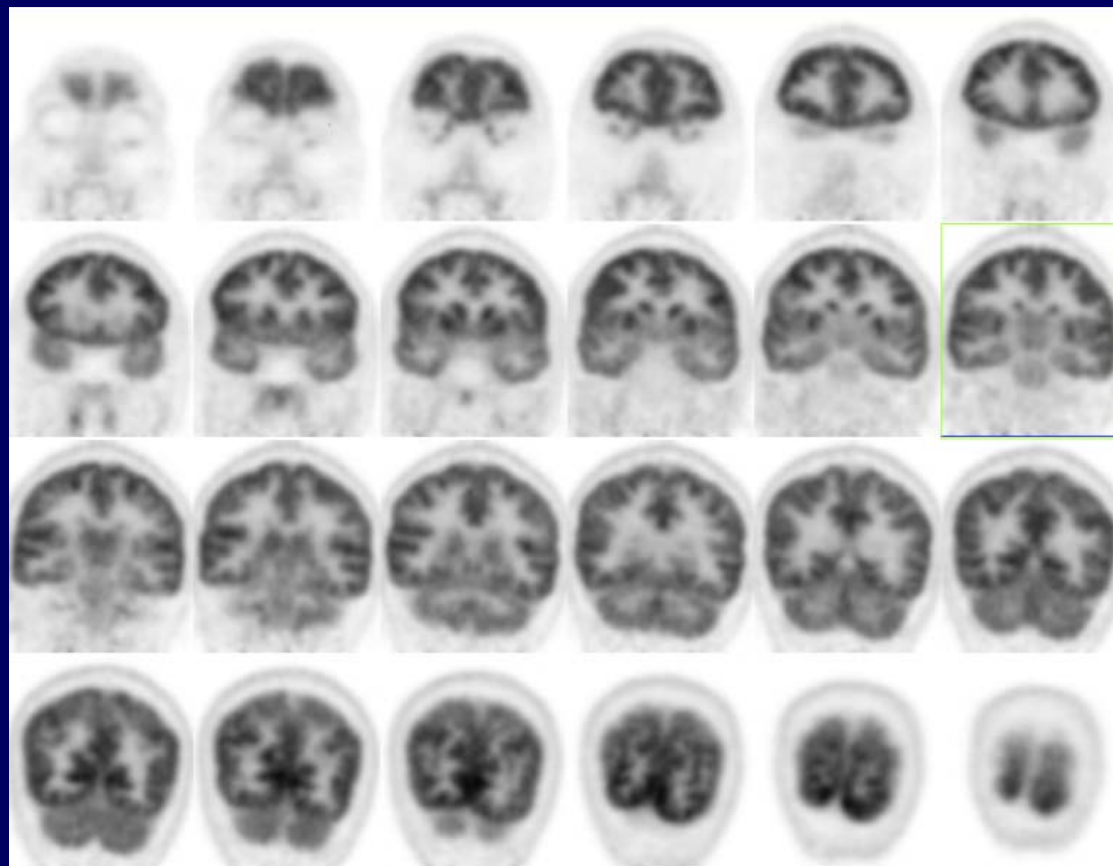
- Neuropsychological testing
 - screening



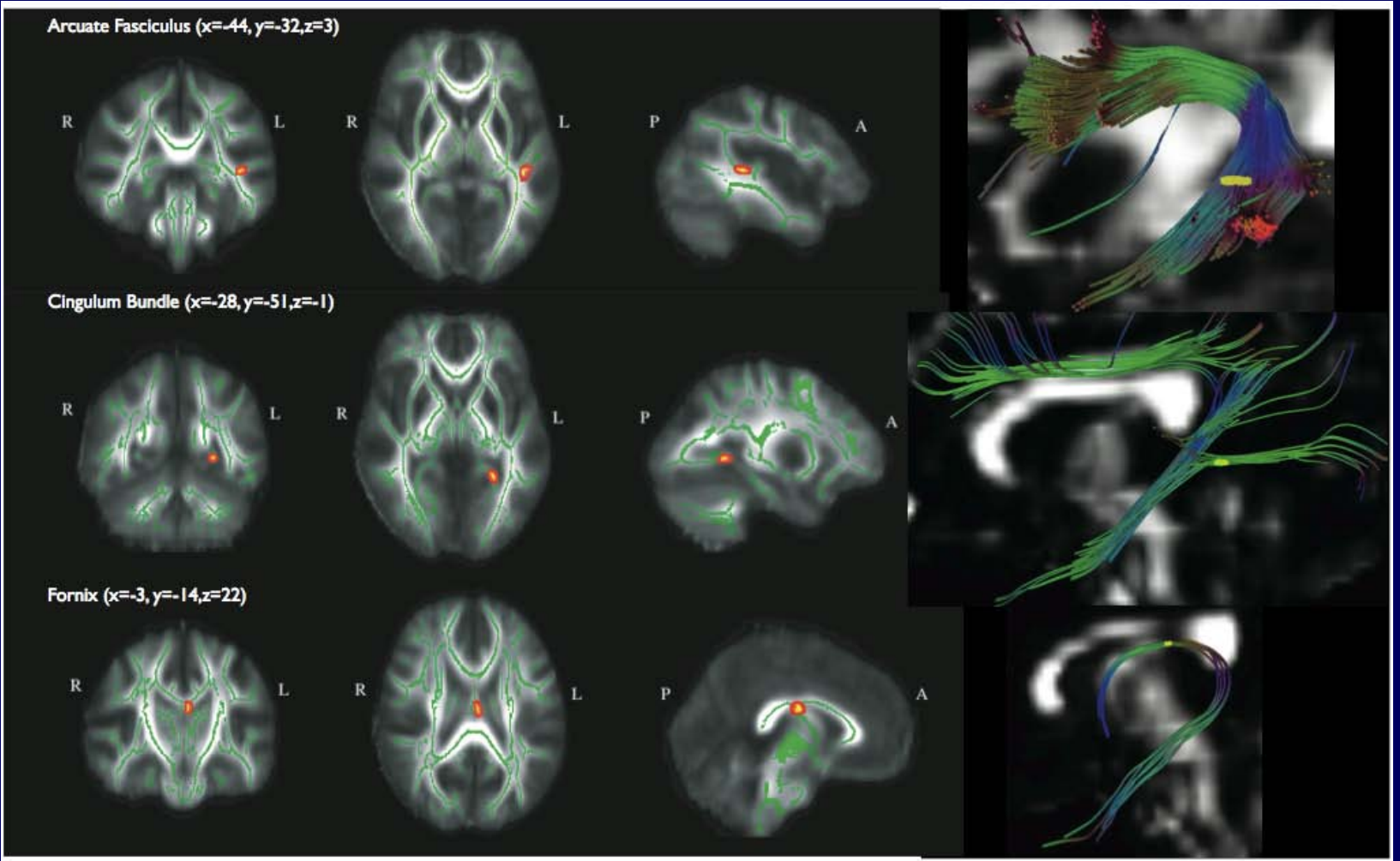
Future Tools



Future Tools



Future Tools



Traumatic Brain Injury: Interventions

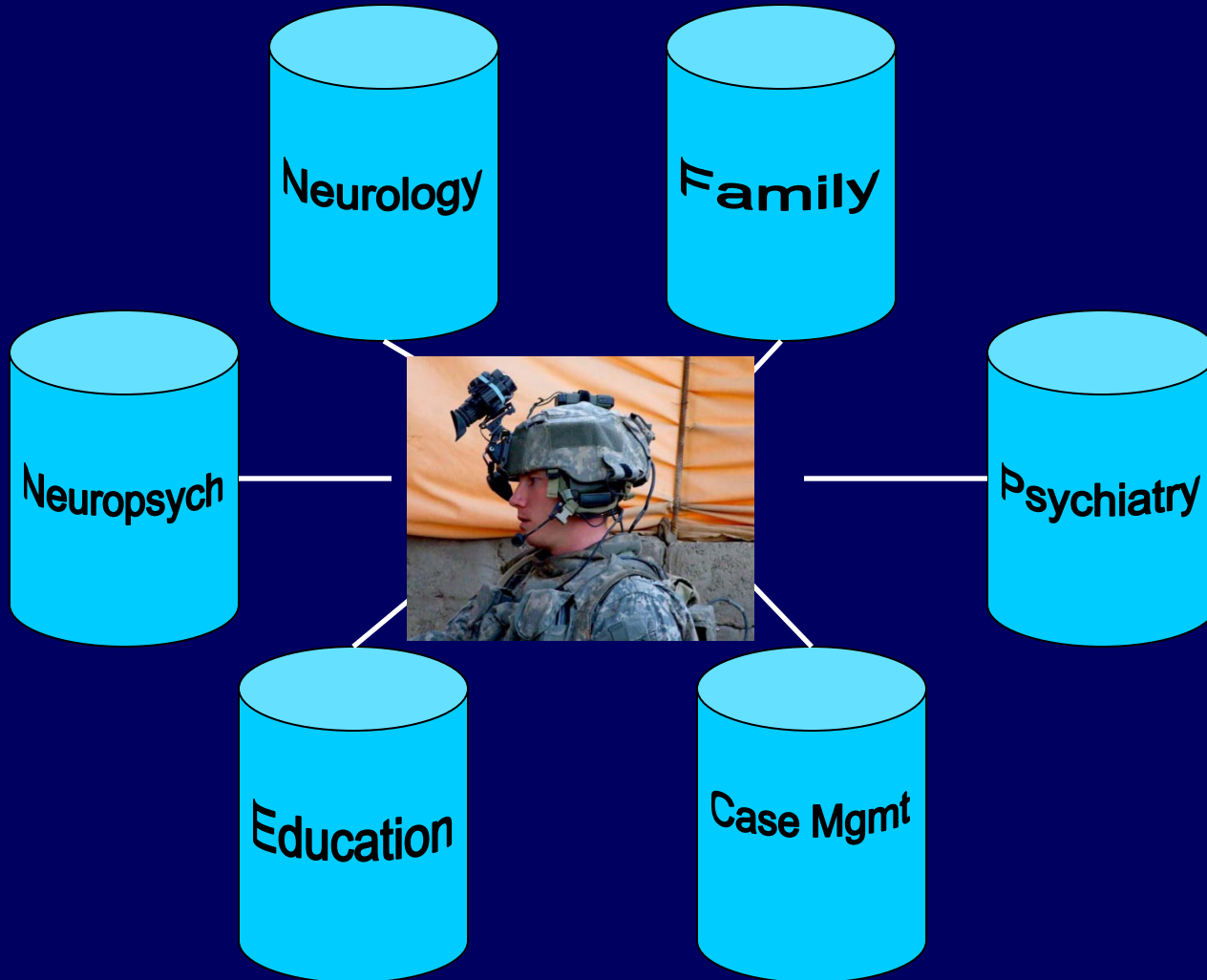
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Approach to Interventions



Why a multidisciplinary approach?

- 230 pts with CHF
 - 115 randomized to multidisciplinary clinic
 - 115 standard care
- 39% readmission rate vs 57% in standard group
- Hospital stay 514 days in multidisciplinary group
 - 815 days in control group
- Quality of life better in multidisciplinary group
- Mortality – no difference

Why a multidisciplinary approach?

- 344 ALS patients
 - 262 general neurology clinic
 - 82 multidisciplinary clinic
- Outcomes
 - Median survival in specialty clinic group 7.5 months longer
 - One-year mortality decreased by 29.7%
 - Prognosis of bulbar onset patients extended by 9.6 months

Why a multidisciplinary approach?

- Multidisciplinary clinic for myelomenigocele patients 1963 – 1988 (disbanded)
- 87 patients followed
 - 52% failed to have regular medical and specialty care (despite continued availability of services)
 - Higher rates of nephrectomy
 - Higher rates in amputation

Interventions

- Anticipatory Guidance
 - Fewer readmissions
- Medical Rx
 - Headaches
 - Seizures
 - Sleep
 - Fatigue
- Rehabilitation
 - TBI outcomes better than non traumatic brain injury
 - Cognitive therapy

Interventions

- Rehabilitation (cont)
 - Physical Therapy
 - Occupational Therapy
- Psychological/ Psychiatric care
 - Combo therapy
- Case Management
 - Service member support
 - Family member support

Future Interventions

- Acute therapy
 - Hypothermia
 - Progesterone
 - NMDA receptor antagonists

- Subacute therapy
 - Amantadine
 - Improved cognition, alertness and memory in multiple studies
 - Atomoxetine
 - Bromocriptine
 - Fluoxetine
 - Selegeline
 - Methylphenidate
 - Glutamate receptor agonists
 - GABA modulation



Arizona Resources

- Brain Injury Association of Arizona
 - Information
 - Support for Survivor and Family
 - Direction to services and resources
- TriWest
- VA
- State Vocational Rehabilitation

