

# **Back To Chiropractic CE Seminars**

## **Neurology: Made Easy~ 6 Hours**


**Welcome to Back To Chiropractic Online CE exams:**

**This course counts toward your California Board of Chiropractic Examiners CE. (also accepted in other states, check our website or with your Chiropractic State Board)**

**The California Board requires that you complete all of your CE hours BEFORE the end of your Birthday month. We recommend that you send your chiropractic license renewal form and fee in early to avoid any issues.**

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- 2. Open a new window or a new internet tab & drag it so it's side-by-side next to this page.**
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- 5. Click on the Exam for the course you want to take. No passwords needed.**
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- 7. Upon passing the exam you'll be able to immediately download your certificate, and it'll also be emailed to you. If you don't pass, you can repeat the exam at no charge.**

**Please retain the certificate for 4 years.**

**If you get audited and lose your records, I'll have a copy.**

**I'm always a phone call away... 707.972.0047 or email: [marcusstrutzdc@gmail.com](mailto:marcusstrutzdc@gmail.com)**

**Marcus Strutz, DC**

**Back To Chiropractic CE Seminars**



# Neurology Made Easy

presented by

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Look SMART on PAPER



**All the forms for this lecture  
are available to you for FREE**

**[www.hbtinstitute.com](http://www.hbtinstitute.com)**

User Name – great

Password - doctor

(They are also supplied in the notes)

# What Specialists to Use?

Pain Management (for most radiculopathies)

Psychologist (for PTSD & concussions)

Psychiatrist (for PTSD & concussions)

Neuropsychologist (for concussions)

Orthopedic Surgeon (for extremity surgery)

Neurosurgeon (for spine surgery)

Neurologist (as a last resort if you don't

know any of the ones above

OR that neuro is REALLY good)

Where is the  
Life-changing  
Injury?

This patient has  
a torn anterior  
longitudinal  
ligament. You  
cannot see it  
on a neutral  
flexion film



This same patient has “intermittent” upper extremity numbness & tingling because of a torn ligament in the neck.

Neurological?  
Absolutely



Nothing Much  
On Flexion Film

George's Line  
does not show  
any significant  
stair-stepping.

But the patient  
still has tingling  
in the fingers.



Do you see it  
the Life-changing  
injury on the  
Extension Film?

It is at C2-3.

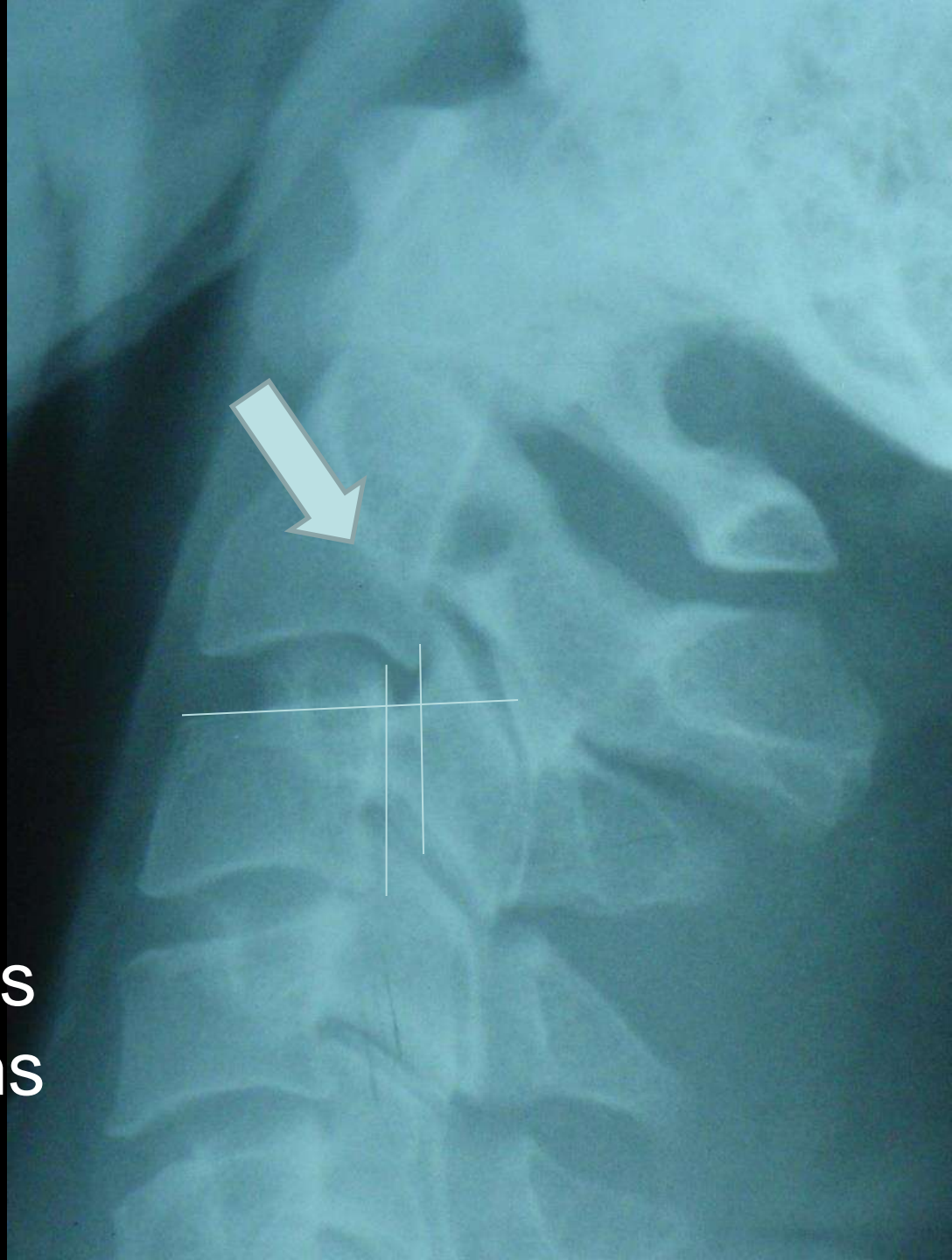
It is a torn A.L.L.



If you can't see  
it now...

You just committed  
**MALPRACTICE**

Stair stepping on  
flexion and extension  
films means torn  
neck ligaments **AND**  
intermittent numbness  
and tingling symptoms



# When to order TESTS

Order “Stress” plain film x-rays when the patient has intermittent radiculopathies because when spine ligaments are torn, the bones move excessively with certain movements and hit the spinal nerve root (hence, intermittent tingling.)

Stress films include:

Lateral flexion and extension (assess the ALL, PLL and interspinous ligaments)

APOM in side flexion (both ways assess the alar and accessory ligaments for tears.)

# When to order TESTS

When the “Stress” plain film x-rays show vertebral instability (stair stepping on George’s line or excessive movement), the patient has one or more torn neck ligaments.

Order video fluoroscopy to assess all 22 neck ligaments for tears.

You will find the reason for “intermittent” numbness or tingling in the extremities.

# Case Study

## Whiplash-25 Years Later

Original Rear End Car Accident in 1985

Follow up x-rays in:

1998, 2003, 2006, 2010 and 2012

Torn ligaments CAUSE DJD & “intermittent”  
radiculopathies.



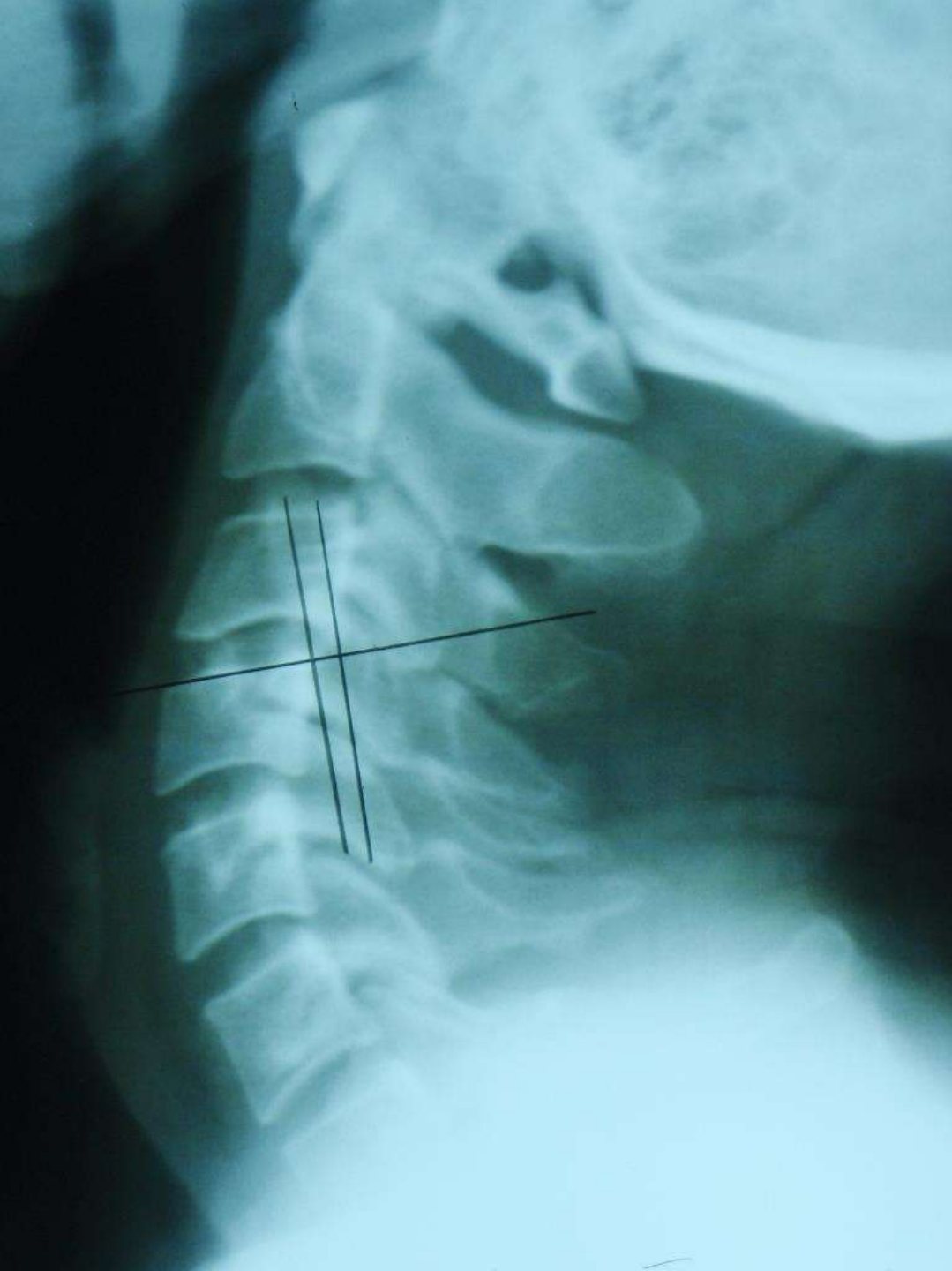
1994

9 years Post Accident

The injury is at  
C3-4.

It is a torn A.L.L.

You cannot see it  
on neutral lateral.



# George's Line

Injury... Torn A.L.L.

The injury is  
visible just one  
day after the  
accident...

**IF YOU LOOK**



# 1998

13 years post accident

DJD is obvious at  
anterior bodies of  
C3 & C4 from the  
torn A.L.L.  
(Anterior  
Longitudinal  
Ligament)



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DATE: 8/26/03 NO: \_\_\_\_\_

# 2003

18 years post accident

Anterior bodies of  
C3-C4 are already  
fusing at the site  
of the torn A.L.L.  
back in 1985

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mer Avenue — Fountain Valley, CA 92708

leston, Stephen

5/18/20



# 2010

25 years post accident

C3-4 are almost  
completely fused  
from the torn A.L.L.  
in 1985



# 1994

The 4mm of stair stepping is obvious on the extension lateral plain film at C3-4.

This causes “intermittent” radiculopathies like numbness & tingling and eventual fusion of the spine



# 1994

There is also 1.5mm stair stepping at C4-C5 from the same car accident in 1985.

This caused only moderate DJD 25 years later as seen on the next x-ray.

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# 2010

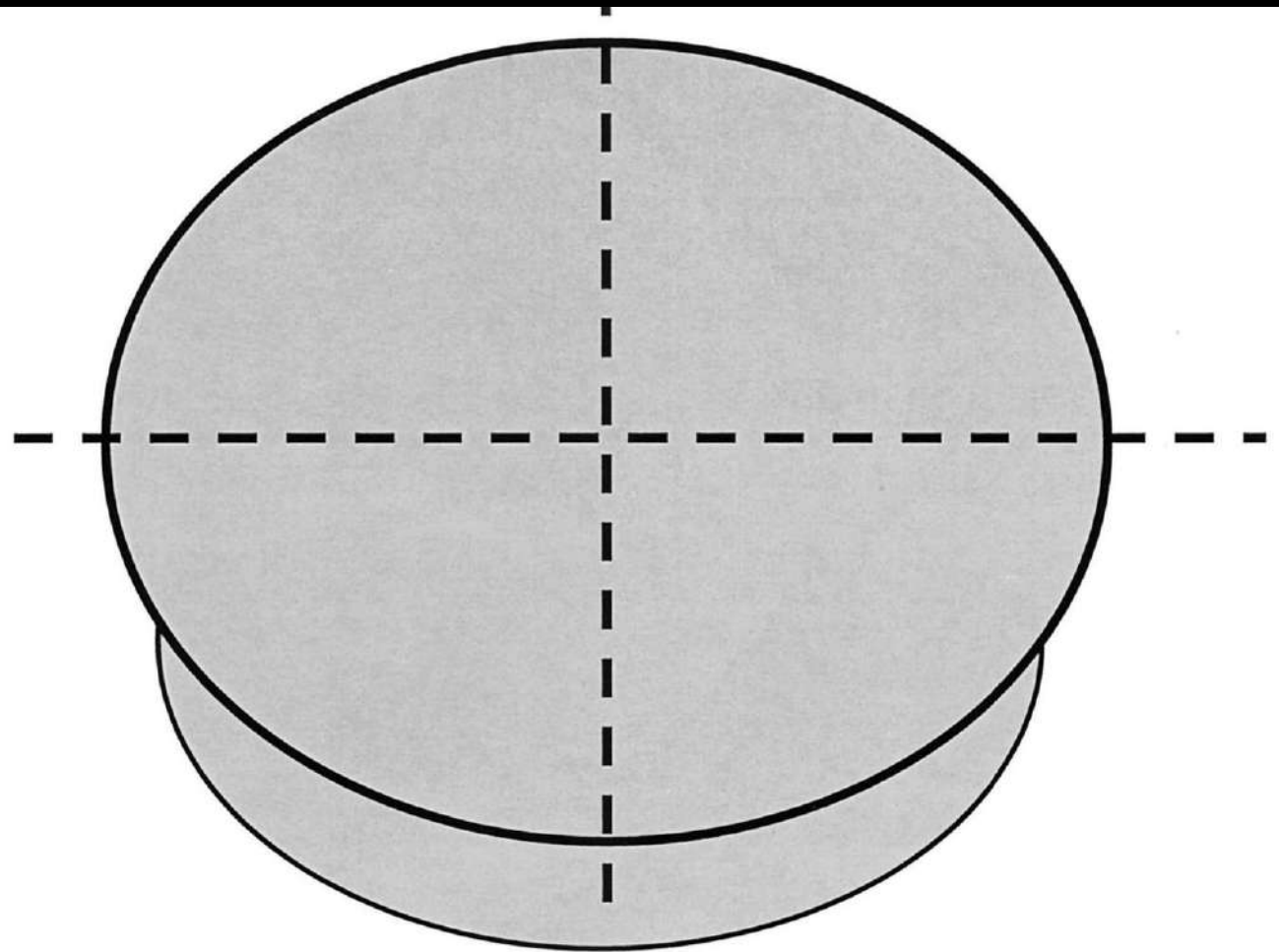
25 years post accident

C3-4 are almost  
completely fused  
from the BADLY  
torn A.L.L.  
in 1985

C4-5 only have  
mild to moderate  
DJD from a slightly  
torn ligament in 1985

# Disc Herniations cause “CONSTANT” Numbness

Timing of the nerve symptoms is the key to accurate diagnosis and you know which test to order (MRI)



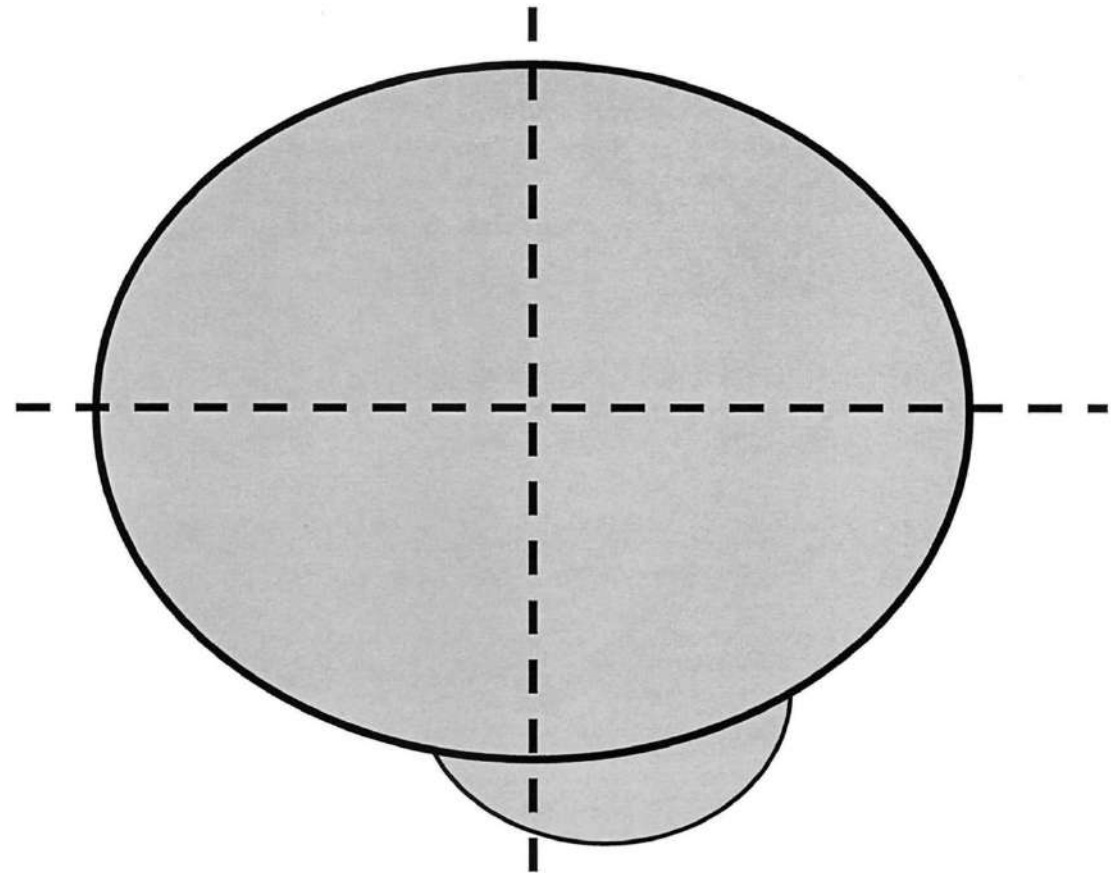
## Broad-based Herniation

Figure 7. By convention, a “broad-based” herniation involves between 25% and 50% (90–180°) of the disc circumference.

# “Focal” Herniations Cause One Sided Numbness

Broad based herniations can cause bilateral numbness/tingling

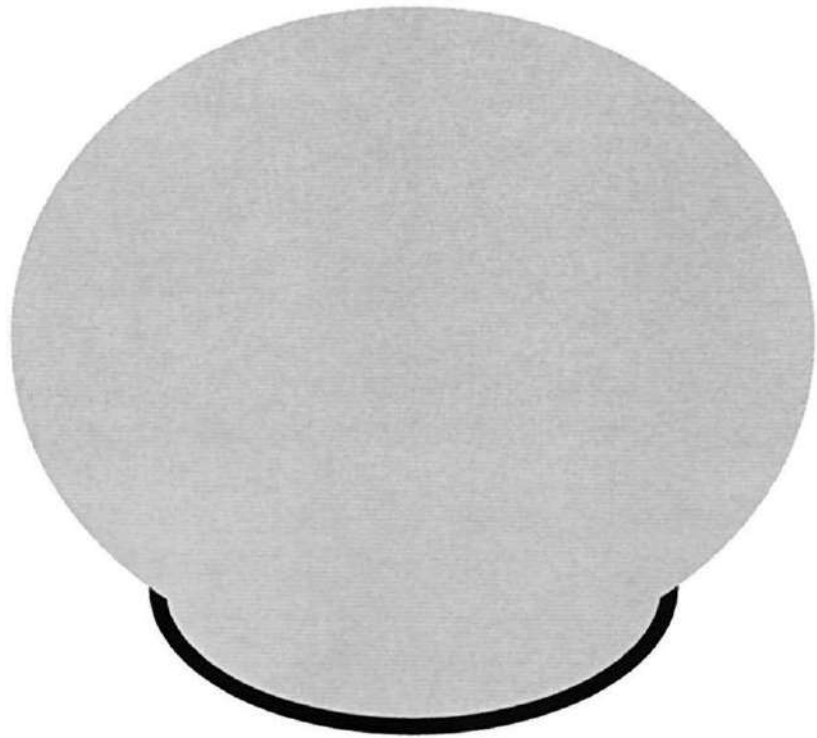
Focal Herniations usually cause only one sided numbness/tingling



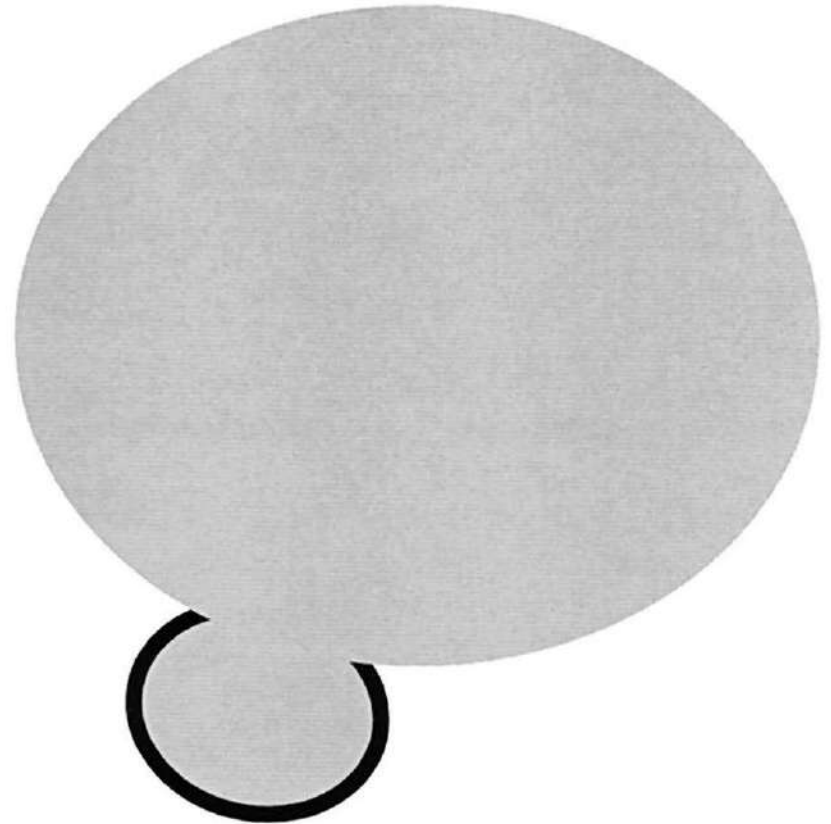
Focal Herniation

Figure 6. By convention, a “focal herniation” involves less than 25% (90°) of the disc circumference.

A disc “bulge” is age-related and NOT caused by trauma. ALL “bulging” discs are greater than 50% of the circumference of the disc.

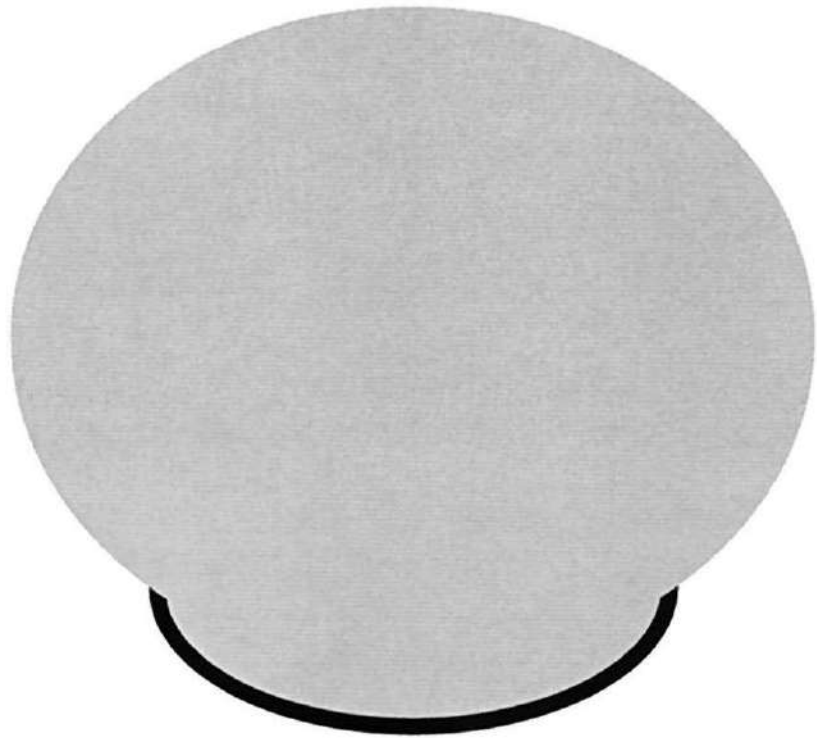


Protrusion

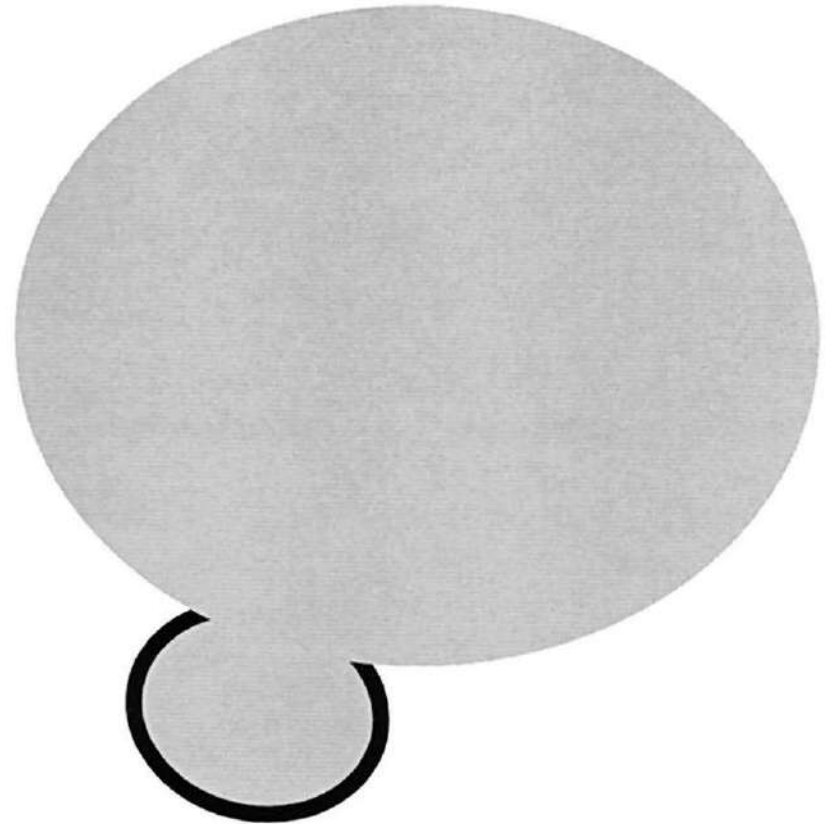


Extrusion

Herniations (2 types are protrusion and extrusion) are caused by trauma. If the radiologist uses the word “bulge” to describe these, he/she is wrong.



Protrusion



Extrusion

# When to order TESTS

Since herniated discs (protrusions and extrusions) are trauma related and cause “constant” radiculopathies (such as numbness, tingling, reflex abnormalities and pain), the best test to order for constant neurological symptoms in the extremities (upper or lower) is

# MRI

# When to order TESTS

If you order an MRI when the patient has “intermittent” radiculopathy, you will not find the cause of the extremity neurological symptoms because MRI studies look for disc herniations and those cause “constant” radiculopathies.

Intermittent radiculopathies are caused by torn spine ligaments and vertebra that move around too much and strike the nerve root in certain positions.

# Basics of Neuro Screening Exam

## Signs of Upper Motor Neuron (UMN) and Lower Motor Neuron (LMN) Lesions

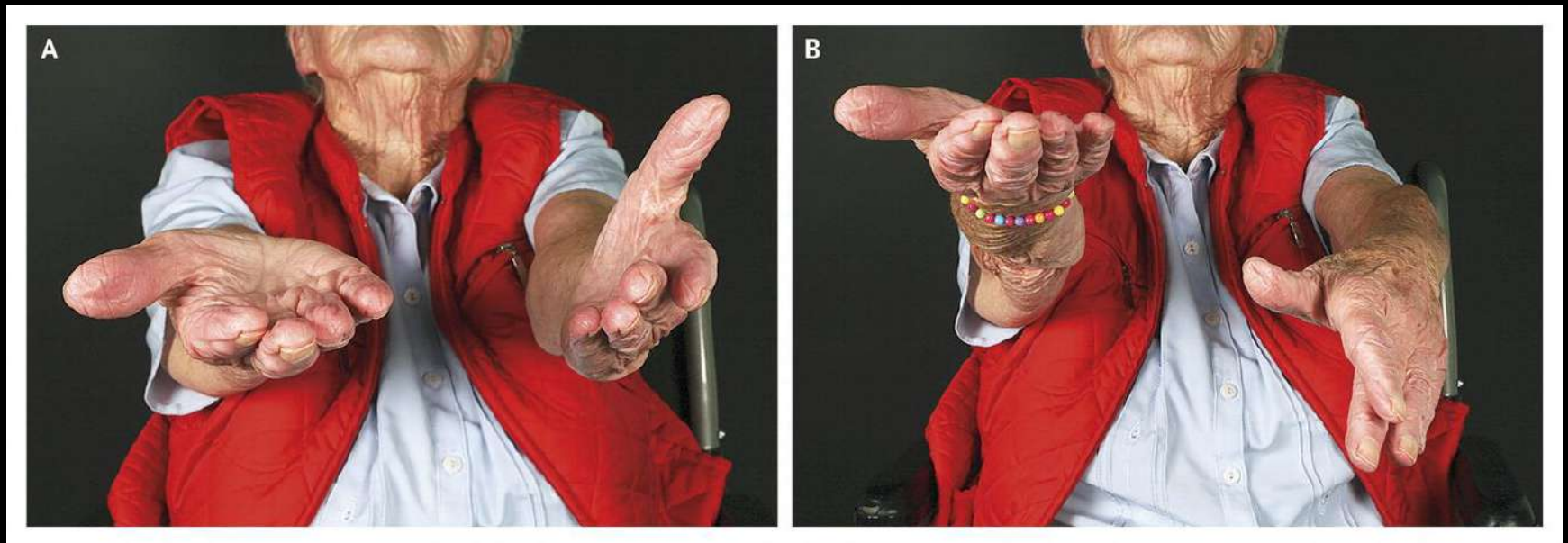
| Sign           | UMN Lesions | LMN Lesions |
|----------------|-------------|-------------|
| Weakness       | Yes         | Yes         |
| Atrophy        | No*         | Yes         |
| Fasciculations | No          | Yes         |
| Reflexes       | Increased   | Decreased   |
| Tone           | Increased   | Decreased   |

\*Mild atrophy may develop due to disuse.

# What is Neurological “Drift”?

If only one motor test could be done in a patient, the best single test would be to examine the drift.

# What is Neurological “Drift”?



## Pronator Drift

Patient's hand pronates & drops down

# Drift Components to Watch For

Downward arm movement

Upward arm movement

Outward (lateral) arm movement

Forearm Pronation (or lack of)

Flexion of Wrist & Elbow

# Watch Patient for 30 Seconds

Drift happens within about 30 seconds

To speed it up:

- 1) Tap on the palms and/or
- 2) have patient turn head back & forth

# Interpreting Neurological “Drift”?

Upward & Outward drift with pronation (eyes closed) is a sign of cerebellar lesion.

**Upward and/or outward drift WITHOUT pronation = Functional limb motor weakness**

# Interpreting Neurological “Drift”?

Pronator Drift with eyes CLOSED =  
SENSORY deficit caused by a problem in  
the posterior column (UMN)

Pronator Drift with eyes OPEN = MOTOR  
deficit caused by a problem in the brain.

Downward drift WITHOUT pronation =  
Functional limb motor weakness

# Writing the Findings for Drift

DESCRIBE in your notes exactly what you observed. For example...

With eyes closed, the patient's left hand drifted upward and outward with no pronation  
-or-

With eyes closed, the patient's right hand drifted downward with pronation  
-or-

No evidence of drift in the upper extremities

# Refer to Neurologist if you see Drift

Dear Neuro,

I refer this patient to you because I observed drift in the left hand downward with pronation after the patient was in a motor vehicle accident 14 days ago. Please evaluate and treat.

Sincerely,

A. Gud Chiro

## What if there is Drift WITHOUT Pronation?

Drift without pronation is a sign of functional motor weakness in an arm or leg. This diagnosis is made when all the tests are negative.

They used to call these people malingering but modernly we know that after trauma there can be a functional weakness in a limb that is transitory and self-limiting.

DOCUMENT IT. Call it “**Post-traumatic functional right/left arm/leg weakness**” in the patient’s chart

# Symptoms/Signs of Functional Limb Weakness

Dropping things

Handwriting or signature looks different

Handwriting feels “weird” to the patient and they struggle (and have to think about) handwriting

Heaviness down one side

Feeling that limb is “not normal” or “doesn’t feel part of me”

# Neurological Tests of Functional Limb Weakness

Reflexes are normal

Neurological system is not damaged... it is just not working properly.

Since all neurological tests are “normal”, the insurance company doctor will call the patient “malingering”. Your CAREFUL documentation can overcome this if you use the right words and describe in detail what you see (drift without pronation) and what the patient tells you.

## Documenting Functional Limb Weakness

I observed drift of the upper/lower extremity without pronation. I believe this is a subtle motor weakness caused by the recent trauma and falls into the category of functional limb weakness.

Test drift MONTHLY to document how long the functional limb weakness lasts.

“The patient’s post-traumatic right arm functional weakness lasted nine months and then returned to normal.”

# Do YOUR Job

- The Chiropractor's job is to
  - Thoroughly CONSULT and know all the patient's SYMPTOMS so you know where to examine
  - Examine ALL body areas with symptoms
  - Diagnose every symptom confirmed by exam
  - TREAT every diagnosis! (or get help)

# Cranial Nerve Dysfunction after Trauma

When should a chiropractor test the cranial nerves?

1. When the patient describes a symptom
2. After trauma

# **Trauma Causes Cranial Nerve Injuries**

The brain stem is located at/near the foramen magnum. During Whiplash, the 13-15 pound human head whips around and the bony foramen magnum can bruise or damage the brain stem.

# Symptoms of Brain Stem Trauma

1. Abnormal Sleeping Patterns
2. Deficit in verbal working memory (word finding problems) (w/ Cerebellum)
3. Loss of balance / Vertigo (w/ Cerebellum)
4. Muscle weakness (functional limb weakness) (w/ Cerebellum)
5. Cranial nerve dysfunctions

# Traumatic Cranial Nerve Dysfunctions

## I. Olfactory

### a. Symptoms

1. Some food or drink tastes weird or funny
2. Test BOTH nostrils using different things

## II. Optic

### a. Symptoms

1. Blurry Vision after brain concussion is most common
2. Ask patient about blurry vision
3. Diagnose concussion
4. Refer to Optometrist for new glasses

# Traumatic Cranial Nerve Dysfunctions

III, IV & VI Oculomotor, Trochlear & Abducens

Symptom – “Bright lights bother me”

Test pupil reflex w/ flashlight because a pupil not contracting will let in too much light and will make the patient sensitive to bright lights

Observe for a drooping eyelid

Observe for Nystagmus

# Traumatic Cranial Nerve Dysfunctions

V - Trigeminal Nerve

Trigeminal neuralgia is a rare injury from Whiplash

You will know it if the patient has it... It REALLY hurts

# Traumatic Cranial Nerve Dysfunctions

IX and X: Glossopharyngeal and Vagus Nerves

Whiplash can occasionally cause loss of gag reflex so it should be tested (especially if you found loss of smell or blurry vision.)

# Traumatic Cranial Nerve Dysfunctions

IX and X: Glossopharyngeal and Vagus Nerves

Whiplash can occasionally cause loss of gag reflex so it should be tested (especially if you found loss of smell or blurry vision.)

NOTE: The other cranial nerves not yet mentioned should be tested if you find deficits in these already taught. Otherwise, if these are all normal, it would be rare to find deficits in others.

# Neuro-Otological Signs from Whiplash

- Two tests are early predictors of chronic whiplash:
  - **Auditory brainstem response tests (ABR)**
  - **Oculomotor function tests**, including evaluation of **saccades** (the rapid, step-like voluntary motion of the eyes used when reading or scanning an image).
- *Wenngren BI, Pettersson K, Lowenhielm G, Hildingsson C. Eye motility and auditory brainstem response dysfunction after whiplash injury. Acta Otolaryngologica 2002;122:276-283.*

# Neuro-Otological Signs from Whiplash

- This study provides two important pieces of information about chronic whiplash: 1) ABR and saccade tests are an objective way to measure altered neurology in these patients; 2) some patients may have actual brain injury from whiplash collisions.
- *Wenngren BI, Pettersson K, Lowenhielm G, Hildingsson C. Eye motility and auditory brainstem response dysfunction after whiplash injury. Acta Otolaryngologica 2002;122:276-283.*

# Documenting Brain Stem Trauma

- I found objective evidence of brain stem trauma. The following cranial nerves (located in the brain stem) are abnormal: I and II. I am making a referral for ABR and Oculomotor function tests (including saccades) to further evaluate this patient's brain stem injury.

# How Neck Pain Causes Vertigo/Dizziness

- The cervical spine plays a key role in how the brain maintains balance, and signals from the injured cervical spine travel through the spinal cord to the brainstem—specifically the vestibular and oculomotor nuclei. This is the same part of the brain that receives the signals from the inner ear, via the eighth cranial nerve. A painful neck can cause overexcitation of the nerve pathways, resulting in altered functioning of the brainstem. These alterations in the brainstem can in turn cause dysfunction in eye motility and balance, since these different systems all work together as the Posture Control System.

# Neurological Injuries

- Spinal Cord Symptoms-Neurosurgeon STAT
- Blurry Vision (Behavioral optometrist, neuropsychologist, psychiatrist, neurologist because this is a concussion)
- Traumatic HPTN (Internist, Cardiologist or Endocrinologist because this is concussion related)
- Sleep Disorder (Pulmonary Internist, Sleep MD because this is concussion-related or PTSD-related)

# Neurological Injuries

- Fatigue (Endocrinologist, Neuropsychologist, Psychiatrist because this is concussion or PTSD related)
- **Endocrine System (Endocrinologist)**
  - TSH – Thyroid Stimulating Hormone (Fatigue)
  - **ACTH – Adrenocorticotrophic Hormone (fatigue, excessive pain patterns)**
  - LH – Leutenizing Hormone (loss of libido)
  - **FSH – Follicle Stimulating Hormone (loss of libido)**
  - ADH – Antidiuretic Hormone/Vasopressin (HPTN)

# Neurological Injuries

- CNS hearing loss from concussion
- Vestibular System Injury
- Tinnitus (perceived sounds that originate from within a person rather than the outside world)
  - Traumatic
  - Salicylate ingestion
- Equilibrium
  - Dizziness (general term)

–ENT for these-

# Neurological Injuries

- Concussion (Psychiatrist, Neuropsychologist)
  - Central & Obstructive Sleep Apnea
  - Arousal & Sleep Disorders
  - Narcolepsy
  - Mental Status & Cognition
  - Emotional & Behavioral Impairments
  - Upper Extremity CNS Dysfunction
  - Complex Regional Pain Syndrome
  - Craniocervical Pain (HA)
  - Mental & Behavioral Disorders

# Want to be a Cowboy Chiropractor?

- It is malpractice to misdiagnose a patient.
- 40-50% of car accident patients have a concussion.
- You cannot treat 40-50% of your car accident cases without help from:
  - Psychiatrist/Neuropsychologist
  - Endocrinologist
  - Neurologist

# Blurry Vision

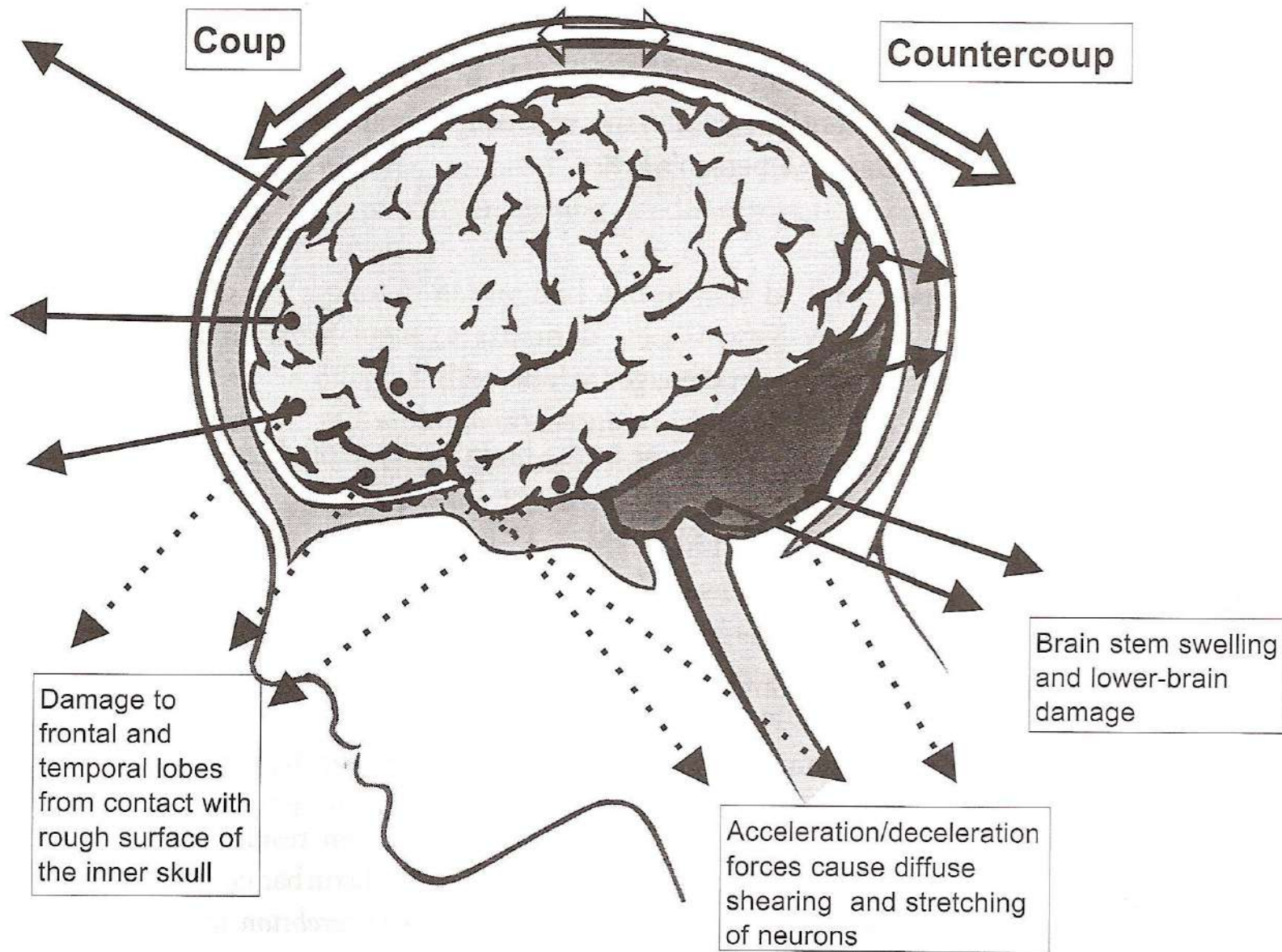
- Behavioral optometrists have special training in diagnosing and treating brain concussions.
- Brain concussions cause blurry vision.
- Send these patient to BOTH a behavioral optometrist AND neuropsychologist / psychiatrist

# Back-and-Forth Movement

Coup

Countercoup

Impact Surface



Damage to frontal and temporal lobes from contact with rough surface of the inner skull

Brain stem swelling and lower-brain damage

Acceleration/deceleration forces cause diffuse shearing and stretching of neurons

Dizziness  
Difficulty Concentrating  
Memory Loss  
Irritability  
Sleep Disturbances  
Impaired Comprehension  
Impaired Learning  
Loss of Coordination  
Vertigo  
Anxiety  
Depression  
Personality Changes  
Flashbacks to Accident Scene  
Social Withdrawal

# The Mild Traumatic Brain Injury WORKBOOK

Your Program for Regaining  
Cognitive Function &  
Overcoming Emotional Pain

- Recognize the symptoms • Assess the damage
- Recover brain function • Improve memory and learning
- Increase attention span • Cope with depression and anxiety
- Regain self-esteem

DOUGLAS J. MASON, PSY.D.

Foreword by Gottfried Jean-Louis, MD

From the author of  
*The Memory Workbook*

# Treating the MTBI involves Mental Exercises

This book has dozens of  
Them you can use if you  
Want to treat or co-treat  
The patient.

# Neuropsychologist is the BEST appropriate referral

# Whiplash

&

## Motor Vehicle Collisions

Second Edition



Headaches, Ankle, Wrist, Posture, Vestibular,  
Difficultly Concentrating & Other Symptoms Explained

Steven C. Eggleston, DC, EdD.

Here is another book useful to a chiropractor who wants to know what is wrong with the patient...

# 5 Areas Affected by MTBI

- Emotional
- Behavioral
- Social
- Cognitive
- Physical



# Emotional

- Depression
- Anxiety
- Hopelessness
- Helplessness
- Reduced Confidence
- Apathy
- Irritability
- Intense Fear (PTSD)



Counsel the patient (use -21 modifier or time code 99354 if E & M time exceeded)

# Behavioral

- Impatience
- Anger
- Frustration
- Confrontational Behaviors
- Impulsivity
- Anxiety in Car, near scene
- Social withdrawal



# Social



- Relationship changes/difficulties
- Changed ability to engage in hobbies and leisure activities (LOEOL form)
- Decreased ability to perform at work or school (DUD form)
- Isolation & increased alienation from others

**Counsel the patient's spouse & family**

# Cognitive

- Poor Attention
- Memory difficulties
- Taking longer to think
- Confusion & disorientation
- Difficulty making decisions
- Difficulty planning or organizing
- Easily Distracted
- Judging distances, spatial relations difficulties
- Language comprehension or speaking problem



# Physical

- Chronic Pain
- Fatigue
- Weakness or numbness
- Changes in vision, hearing, smell
- Sleep Disturbances
- Appetite Changes
- Dizziness
- Nausea
- Changes in libido
- Lack of inhibition



# Neurological Injuries (Mistakes)

- Physical symptoms of brain concussion are **OFTEN** misinterpreted by Chiropractors as *actual* physical symptoms.
- Headaches, Dizziness, & Chronic Pain are the three most often misunderstood.

# MTBI Primary Brain Damage

- Alteration in cerebral blood flow
- Diffuse axonal injury
- Intracranial lesions
- Vestibular damage
- Slowed information processing

# MTBI Secondary Brain Damage

- Neurotransmitter (chemical) dysfunction
- Intracranial hematoma (swelling)
- Cellular degeneration
- Decreased glucose uptake
- Pulmonary complications & hypoxia

**How to you adjust that**

# ACE

## Acute Concussion Evaluation

### ACUTE CONCUSSION EVALUATION (ACE)

#### PHYSICIAN/CLINICIAN OFFICE VERSION

Gerard Gioia, PhD<sup>1</sup> & Micky Collins, PhD<sup>2</sup>

<sup>1</sup>Children's National Medical Center  
<sup>2</sup>University of Pittsburgh Medical Center

Patient Name: \_\_\_\_\_

DOB: \_\_\_\_\_ Age: \_\_\_\_\_

Date: \_\_\_\_\_ ID/MR#: \_\_\_\_\_

**A. Injury Characteristics** Date/Time of Injury \_\_\_\_\_ Reporter:    Patient    Parent    Spouse    Other   

#### 1. Injury Description

- 1a. Is there evidence of a forcible blow to the head (direct or indirect)?    Yes    No    Unknown
- 1b. Is there evidence of intracranial injury or skull fracture?    Yes    No    Unknown
- 1c. Location of Impact:    Frontal    Lt Temporal    Rt Temporal    Lt Parietal    Rt Parietal    Occipital    Indirect Force
2. Cause:    MVC    Pedestrian-MVC    Fall    Assault    Sports (specify) \_\_\_\_\_ Other \_\_\_\_\_
3. **Amnesia Before (Retrograde)** Are there any events just BEFORE the injury that you/ person has no memory of (even brief)?    Yes    No Duration \_\_\_\_\_
4. **Amnesia After (Anterograde)** Are there any events just AFTER the injury that you/ person has no memory of (even brief)?    Yes    No Duration \_\_\_\_\_
5. **Loss of Consciousness:** Did you/ person lose consciousness?    Yes    No \_\_\_\_\_
6. **EARLY SIGNS:**    Appears dazed or stunned    Is confused about events    Answers questions slowly    Repeats Questions    Forgets recent info
7. **Seizures:** Were seizures observed? No    Yes    Detail \_\_\_\_\_

**B. Symptom Check List\*** Since the injury, has the person experienced any of these symptoms any more than usual today or any day?

Indicate presence of each symptom (0=No, 1=Yes). \*Low scores are better

| PHYSICAL (10)   |     | COGNITIVE (4)                |                          | SLEEP (6)  |  |
|---|-----|------------------------------|--------------------------|--|--|
| Headache  | 0 1 | Feeling mentally foggy       | 0 1                      | Drowsiness   | 0 1                                      |
| Nausea  | 0 1 | Feeling unsteady             | 0 1                      | Sleeping less than usual   | 0 1 N/A                                  |
| Vomiting  | 0 1 | Difficulty concentrating     | 0 1                      | Sleeping more than usual   | 0 1 N/A                                  |
| Balance problems  | 0 1 | Difficulty remembering       | 0 1                      | Trouble falling asleep   | 0 1 N/A                                  |
| Dizziness   | 0 1 | <b>COGNITIVE Total (0-4)</b> | <b>SLEEP Total (0-4)</b> |  |  |
| Visual problems   | 0 1 | <b>EMOTIONAL (4)</b>         |                          |  |  |
| Fatigue   | 0 1 | Irritability                 | 0 1                      | <b>Exertion:</b> Do these symptoms worsen with:  |  |
| Sensitivity to light                                    | 0 1 | Sadness                      | 0 1                      | Physical Activity  | <u>  </u> Yes <u>  </u> No <u>  </u> N/A |
| Sensitivity to noise                                    | 0 1 | Moodiness                    | 0 1                      | Cognitive Activity   | <u>  </u> Yes <u>  </u> No <u>  </u> N/A |
| Numbness/tingling                                       | 0 1 | Appetite changes             | 0 1                      | <b>Overall Rating:</b> How different is the person acting compared to his/her usual self? (circle) |  |
| <b>PHYSICAL Total (0-10)</b>                            |     | <b>EMOTIONAL Total (0-4)</b> |                          | Normal   | 0 1 2 3 4 5 6 Very Different             |
| <b>(Add Physical, Cognitive, Emotion, Sleep totals)</b> |     |                              |                          |  |  |
| <b>Total Symptom Score (0-22)</b>                       |     |                              |                          |  |  |

#### C. Risk Factors for Protracted Recovery (check all that apply)

| Concussion History  | Headache History?            | Developmental History                    | Psychiatric History        |
|---|------------------------------|--|----------------------------|
| Previous # <u>  </u> 1 <u>  </u> 2 <u>  </u> 3 <u>  </u> 4 <u>  </u> 5 <u>  </u> 6+         | Prior treatment for headache | Learning disabilities                    | Anxiety                    |
| Longest time to return to normal <u>  </u> weeks <u>  </u> months <u>  </u> Years <u>  </u> | History of migraine headache | Attention-Deficit/Hyperactivity Disorder | Depression                 |
| History of concussions, less force  | Personal _____               | Other developmental disorder             | Sleep disorder             |
| History of head injury? Yes <u>  </u> No <u>  </u>  | Family _____                 |  | Other psychiatric disorder |
| Other comorbid medical disorders or medication usage (e.g., hypothyroid, seizures)          |                              |  |                            |

**D. RED FLAGS for acute emergency management:** Refer to the emergency department with sudden onset of any of the following:

- \* Headaches that worsen
- \* Looks very drowsy/ can't be awakened
- \* Can't recognize people or places
- \* Neck pain
- \* Seizures
- \* Repeated vomiting
- \* Increasing confusion or irritability
- \* Unusual behavioral change
- \* Focal neurologic signs
- \* Slurred speech
- \* Weakness or numbness in arms/legs
- \* Change in state of consciousness

**E. Diagnosis (ICD):**    Concussion w/o LOC 850.0    Concussion w/ LOC 850.1    Concussion (Unspecified) 850.9    Other (854)   

#### F. Follow-Up Action Plan Complete ACE Care Plan and provide copy to patient/family.

   No Follow-Up Needed

   Physician/Clinician Office Monitoring: Date of next follow-up \_\_\_\_\_

   Referral:

   Neuropsychological Testing

   Physician: Neurosurgery    Neurology    Sports Medicine    Physiatrist    Psychiatrist    Other \_\_\_\_\_

   Emergency Department

ACE Completed by: \_\_\_\_\_ MD RN NP PhD ATC

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This form is part of the "Heads Up: Brain Injury in Your Practice" tool kit developed by the Centers for Disease Control and Prevention (CDC).

Do not bill it, Day 1 and every Re-exam

# ACE

## Home Care Instructions

### ACUTE CONCUSSION EVALUATION (ACE)

#### CARE PLAN

Gerard Gioia, PhD<sup>1</sup> & Micky Collins, PhD<sup>2</sup>  
<sup>1</sup>Children's National Medical Center  
<sup>2</sup>University of Pittsburgh Medical Center

|                 |                    |
|-----------------|--------------------|
| Patient Name:   | _____              |
| DOB:            | _____ Age: _____   |
| Date:           | _____ ID/MR# _____ |
| Date of Injury: | _____              |

You have been diagnosed with a concussion (also known as a mild traumatic brain injury). This personal plan is based on your symptoms and is designed to help speed your recovery. Your careful attention to it can also prevent further injury.

**Rest is the key.** You should not participate in any high risk activities (e.g., sports, physical education (PE), riding a bike, etc.) if you still have any of the symptoms below. It is important to limit activities that require a lot of thinking or concentration (homework, job-related activities), as this can also make your symptoms worse. If you no longer have any symptoms and believe that your concentration and thinking are back to normal, you can slowly and carefully return to your daily activities. Children and teenagers will need help from their parents, teachers, coaches, or athletic trainers to help monitor their recovery and return to activities.

| Today the following symptoms are present (circle or check). |                      |                          |                        | No reported symptoms     |
|---|----------------------|--------------------------|------------------------|--------------------------|
| Physical  |                      | Thinking                 | Emotional              | Sleep                    |
| Headaches   | Sensitivity to light | Feeling mentally foggy   | Irritability           | Drowsiness               |
| Nausea  | Sensitivity to noise | Problems concentrating   | Sadness                | Sleeping more than usual |
| Fatigue   | Numbness/Tingling    | Problems remembering     | Feeling more emotional | Sleeping less than usual |
| Visual problems   | Vomiting             | Feeling more slowed down | Nervousness            | Trouble falling asleep   |
| Balance Problems  | Dizziness            |                          |                        |                          |

| RED FLAGS: Call your doctor or go to your emergency department if you suddenly experience any of the following |                                     |                                      |                         |
|--|-------------------------------------|--------------------------------------|-------------------------|
| Headaches that worsen  | Look very drowsy, can't be awakened | Can't recognize people or places     | Unusual behavior change |
| Seizures   | Repeated vomiting                   | Increasing confusion                 | Increasing irritability |
| Neck pain  | Slurred speech                      | Weakness or numbness in arms or legs | Loss of consciousness   |

#### Returning to Daily Activities

1. Get lots of rest. Be sure to get enough sleep at night- no late nights. Keep the same bedtime weekdays and weekends.
2. Take daytime naps or rest breaks when you feel tired or fatigued.
3. **Limit physical activity as well as activities that require a lot of thinking or concentration. These activities can make symptoms worse.**
  - Physical activity includes PE, sports practices, weight-training, running, exercising, heavy lifting, etc.
  - Thinking and concentration activities (e.g., homework, classwork load, job-related activity).
4. Drink lots of fluids and eat carbohydrates or protein to main appropriate blood sugar levels.
5. **As symptoms decrease, you may begin to gradually return to your daily activities. If symptoms worsen or return, lessen your activities, then try again to increase your activities gradually.**
6. During recovery, it is normal to feel frustrated and sad when you do not feel right and you can't be as active as usual.
7. Repeated evaluation of your symptoms is recommended to help guide recovery.

#### Returning to Work

1. Planning to return to work should be based upon careful attention to symptoms and under the supervision of an appropriate health care professional.
2. Limiting the amount of work you do soon after your injury, may help speed your recovery. It is very important to get a lot of rest. You should also reduce your physical activity as well as activities that require a lot of thinking or concentration.
  - Do not return to work. Return on (date) \_\_\_\_\_.
  - Return to work with the following supports. Review on (date) \_\_\_\_\_.

#### Schedule Considerations

- Shortened work day \_\_\_\_\_ hours
- Allow for breaks when symptoms worsen
- Reduced task assignments and responsibilities

#### Safety Considerations

- No driving
- No heavy lifting or working with machinery
- No heights due to possible dizziness, balance problems

WORK VERSION

# Rivermead Post-Concussion Symptoms Questionnaire

After a head injury or accident, some people experience symptoms which can cause worry or nuisance. We would like to know if you now suffer any of the symptoms given below.

As many of these symptoms occur normally, we would like you to compare yourself now with before the accident. For each one, please circle the number closest to your answer.

# Rivermead Post-Concussion Symptoms Questionnaire

0 = Not experienced at all

1 = no more of a problem now than  
before the accident

2 = a mild problem now

3 = a moderate problem now

4 = a severe problem now

# Rivermead Post-Concussion Symptoms Questionnaire

Headaches

Feelings of dizziness

Nausea and/or vomiting

Noise sensitivity, or easily upset by  
loud noise

Sleep disturbance



# Rivermead Post-Concussion Symptoms Questionnaire

Fatigue, tiring more easily

Being irritable, easily angered

Feeling depressed or tearful

Feeling frustrated or impatient

Forgetfulness, poor memory

Poor Concentration



# Rivermead Post-Concussion Symptoms Questionnaire

Taking longer to think

Blurred vision

Light sensitivity, or easily upset  
or irritated by bright lights

Double vision

Restlessness



# Rivermead Post-Concussion Symptoms Questionnaire

[www.HBTinstitute.com](http://www.HBTinstitute.com)



## The Rivermead Post-Concussion Symptoms Questionnaire\*

Patient \_\_\_\_\_ DOI: \_\_\_\_\_ Today's Date \_\_\_\_\_

After a head injury or accident some people experience symptoms which can cause worry or nuisance. We would like to know if you now suffer any of the symptoms given below. As many of these symptoms occur normally, we would like you to compare yourself now with before the accident. For each one please circle the number closest to your answer.

- 0=Not experienced at all
- 1=no more of a problem now than before the accident
- 2=a mild problem now
- 3=a moderate problem now
- 4=a severe problem now

Compared with before the accident, do you now (i.e. over the last 24 hours) suffer from:

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| Headaches   | 0 | 1 | 2 | 3 | 4 |
| Feelings of dizziness   | 0 | 1 | 2 | 3 | 4 |
| Nausea and/or vomiting  | 0 | 1 | 2 | 3 | 4 |
| Noise sensitivity, or easily upset by loud noise                | 0 | 1 | 2 | 3 | 4 |
| Sleep disturbance   | 0 | 1 | 2 | 3 | 4 |
| Fatigue, tiring more easily                                     | 0 | 1 | 2 | 3 | 4 |
| Being irritable, easily angered                                 | 0 | 1 | 2 | 3 | 4 |
| Feeling depressed or tearful                                    | 0 | 1 | 2 | 3 | 4 |
| Feeling frustrated or impatient                                 | 0 | 1 | 2 | 3 | 4 |
| Forgetfulness, poor memory                                      | 0 | 1 | 2 | 3 | 4 |
| Poor Concentration  | 0 | 1 | 2 | 3 | 4 |
| Taking longer to think  | 0 | 1 | 2 | 3 | 4 |
| Blurred Vision  | 0 | 1 | 2 | 3 | 4 |
| Light sensitivity, or easily upset or irritated by bright light | 0 | 1 | 2 | 3 | 4 |
| Double Vision   | 0 | 1 | 2 | 3 | 4 |
| Restlessness  | 0 | 1 | 2 | 3 | 4 |

Are you experiencing any other difficulties?  
Please specify, and rate as above.

1. \_\_\_\_\_ 0 1 2 3 4  
2. \_\_\_\_\_ 0 1 2 3 4

\*King, N., Crawford S., Wenden F., Moss, N., and Wade, D. (1995) J. Neurology 242: 587-592.

# Interpreting the Rivermead

There is no “magic” number to add up to like the Epworth test.

This is the patient’s perception of their dysfunction in these areas of the brain.

# Rivermead Post-Concussion Symptoms Questionnaire

Fight back...

Document brain injuries  
so your patients get  
what they deserve...



# Epworth Sleepiness Scale (ESS)

ESS was developed by Dr. Murray Johns as director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia.

It was first published in 1991 and has world fame and respect

## EPWORTH SLEEPINESS SCALE (ESS)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

How likely are you to doze off in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to answer how you believe they would have affected you. Use the following scale to choose the most appropriate number for each situation:

- 0 = no chance of dozing
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

| Chance of Dozing | Situation   |
|------------------|---|
| 0 1 2 3          | Sitting and reading   |
| 0 1 2 3          | Watching TV   |
| 0 1 2 3          | Sitting inactive in a public place (theater, church or meeting) |
| 0 1 2 3          | As a passenger in a car for an hour without a break             |
| 0 1 2 3          | Lying down to rest in the afternoon when circumstances permit   |
| 0 1 2 3          | Sitting and talking to someone                                  |
| 0 1 2 3          | Sitting quietly after a lunch where you did not drink alcohol   |
| 0 1 2 3          | In a car while stopped for a few minutes in traffic             |
|                  | Total Score   |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

ESS was developed by Dr. Murray W. Johns as Director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia. The ESS was first published in 1991 (Murray W. Johns. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale, Sleep, 1991; 14 (6): 540-545).

# Epworth Sleepiness Scale (ESS)

“A score of 10/24 on the ESS is a Class 2 sleep impairment equivalent to **10% to 29% WHOLE BODY** impairment.”

(Quote from the AMA Guides to the Evaluation of Permanent Impairment 5<sup>th</sup> Edition)

## EPWORTH SLEEPINESS SCALE (ESS)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

How likely are you to doze off in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to answer how you believe they would have affected you. Use the following scale to choose the most appropriate number for each situation:

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- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

| Chance of Dozing | Situation   |
|------------------|---|
| 0 1 2 3          | Sitting and reading   |
| 0 1 2 3          | Watching TV   |
| 0 1 2 3          | Sitting inactive in a public place (theater, church or meeting) |
| 0 1 2 3          | As a passenger in a car for an hour without a break             |
| 0 1 2 3          | Lying down to rest in the afternoon when circumstances permit   |
| 0 1 2 3          | Sitting and talking to someone                                  |
| 0 1 2 3          | Sitting quietly after a lunch where you did not drink alcohol   |
| 0 1 2 3          | In a car while stopped for a few minutes in traffic             |
|                  | Total Score   |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

ESS was developed by Dr. Murray W. Johns as Director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia. The ESS was first published in 1991 (Murray W. Johns. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale, Sleep, 1991; 14 (6): 540-545).

# Epworth Sleepiness Scale (ESS)

The patient fills it out.

The doctor reviews it.

Bill for it.

## EPWORTH SLEEPINESS SCALE (ESS)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

How likely are you to doze off in the following situations, in contrast to feeling just tired?  
This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to answer how you believe they would have affected you.  
Use the following scale to choose the most appropriate number for each situation:

- 0 = no chance of dozing
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

| Chance of Dozing | Situation   |
|------------------|---|
| 0 1 2 3          | Sitting and reading   |
| 0 1 2 3          | Watching TV   |
| 0 1 2 3          | Sitting inactive in a public place (theater, church or meeting) |
| 0 1 2 3          | As a passenger in a car for an hour without a break             |
| 0 1 2 3          | Lying down to rest in the afternoon when circumstances permit   |
| 0 1 2 3          | Sitting and talking to someone                                  |
| 0 1 2 3          | Sitting quietly after a lunch where you did not drink alcohol   |
| 0 1 2 3          | In a car while stopped for a few minutes in traffic             |
|                  | Total Score   |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

ESS was developed by Dr. Murray W. Johns as Director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia. The ESS was first published in 1991 (Murray W. Johns. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale, Sleep, 1991; 14 (6): 540-545).

# Epworth Sleepiness Scale (ESS)

“How likely are you to doze off in the following situations?”

0 – No chance

1 – Slight chance

2 – Moderate chance

3 – High chance

## EPWORTH SLEEPINESS SCALE (ESS)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

How likely are you to doze off in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to answer how you believe they would have affected you. Use the following scale to choose the most appropriate number for each situation:

- 0 = no chance of dozing
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

| Chance of Dozing | Situation   |
|------------------|---|
| 0 1 2 3          | Sitting and reading   |
| 0 1 2 3          | Watching TV   |
| 0 1 2 3          | Sitting inactive in a public place (theater, church or meeting) |
| 0 1 2 3          | As a passenger in a car for an hour without a break             |
| 0 1 2 3          | Lying down to rest in the afternoon when circumstances permit   |
| 0 1 2 3          | Sitting and talking to someone                                  |
| 0 1 2 3          | Sitting quietly after a lunch where you did not drink alcohol   |
| 0 1 2 3          | In a car while stopped for a few minutes in traffic             |
|                  | Total Score   |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

ESS was developed by Dr. Murray W. Johns as Director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia. The ESS was first published in 1991 (Murray W. Johns. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale, Sleep, 1991; 14 (6): 540-545).

# Epworth Sleepiness Scale (ESS)

Sitting & reading  
Watching TV  
Sitting in public place  
As passenger for 1 hour  
Lying down to rest  
Sitting/talking to someone  
Sitting quietly after lunch  
In a car stopped in traffic

## EPWORTH SLEEPINESS SCALE (ESS)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

How likely are you to doze off in the following situations, in contrast to feeling just tired?  
This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to answer how you believe they would have affected you.  
Use the following scale to choose the most appropriate number for each situation:

- 0 = no chance of dozing
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

| Chance of Dozing | Situation   |
|------------------|---|
| 0 1 2 3          | Sitting and reading   |
| 0 1 2 3          | Watching TV   |
| 0 1 2 3          | Sitting inactive in a public place (theater, church or meeting) |
| 0 1 2 3          | As a passenger in a car for an hour without a break             |
| 0 1 2 3          | Lying down to rest in the afternoon when circumstances permit   |
| 0 1 2 3          | Sitting and talking to someone                                  |
| 0 1 2 3          | Sitting quietly after a lunch where you did not drink alcohol   |
| 0 1 2 3          | In a car while stopped for a few minutes in traffic             |
|                  | Total Score   |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

ESS was developed by Dr. Murray W. Johns as Director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia. The ESS was first published in 1991 (Murray W. Johns. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale, Sleep, 1991; 14 (6): 540-545).

# Epworth Sleepiness Scale (ESS)

As soon as you start asking your whiplash patients about sleep disruptions, you will know how incredibly common and debilitating it is.

## EPWORTH SLEEPINESS SCALE (ESS)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

How likely are you to doze off in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to answer how you believe they would have affected you. Use the following scale to choose the most appropriate number for each situation:

- 0 = no chance of dozing
- 1 = slight chance of dozing
- 2 = moderate chance of dozing
- 3 = high chance of dozing

| Chance of Dozing | Situation   |
|------------------|---|
| 0 1 2 3          | Sitting and reading   |
| 0 1 2 3          | Watching TV   |
| 0 1 2 3          | Sitting inactive in a public place (theater, church or meeting) |
| 0 1 2 3          | As a passenger in a car for an hour without a break             |
| 0 1 2 3          | Lying down to rest in the afternoon when circumstances permit   |
| 0 1 2 3          | Sitting and talking to someone                                  |
| 0 1 2 3          | Sitting quietly after a lunch where you did not drink alcohol   |
| 0 1 2 3          | In a car while stopped for a few minutes in traffic             |
|                  | Total Score   |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

ESS was developed by Dr. Murray W. Johns as Director of the Sleep Disorders Unit at Epworth Hospital in Melbourne, Australia. The ESS was first published in 1991 (Murray W. Johns. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale, Sleep, 1991; 14 (6): 540-545).

# **Post-Traumatic Stress Disorder (PTSD)**

National Institutes of Mental Health stated:

**“Car accidents are a common cause of PTSD”**

# **When to test for PTSD?**

The last 10 questions on the bottom right of my Symptoms form ask about PTSD Symptoms.

When the patient has these, have the patient (or help the patient) fill out the “Assessment of Reactions to a stressful Car Accident.”

# Assessment of Reactions (PTSD) Form

Rate the problems 1 to 5:

1. Repeated, disturbing memories, thoughts or images of a stressful experience from the past
2. Repeated, disturbing dreams of a stressful experience from the past

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

**INSTRUCTIONS:** Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|   | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|---|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were <i>happening again</i> (as if you were reliving it)?   | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something <i>reminded you</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when something <i>reminded you</i> of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                           | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because they <i>reminded you</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?  | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?  | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?   | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future will somehow be cut short</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 16. Being <i>"super-alert"</i> or watchful or on guard?   | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>fuzzy</i> or easily startled?  | 1          | 2            | 3          | 4           | 5         |

# Assessment of Reactions (PTSD) Form

Rate the problems 1 to 5:

3. Suddenly acting or feeling as if a stressful experience were happening again (reliving it)
4. Feeling very upset when something reminded of a stressful past event

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

**INSTRUCTIONS:** Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|  | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|--|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were happening again (as if you were reliving it)?   | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something reminded you of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                    | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because they reminded you of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?   | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?   | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?  | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 16. Being <i>"super-alert"</i> or watchful or on guard?  | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>jumpy</i> or easily startled?   | 1          | 2            | 3          | 4           | 5         |

# Assessment of Reactions (PTSD) Form

Rate the problems 1 to 5:

5. Having physical reactions (heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

**INSTRUCTIONS:** Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|  | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|--|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were <i>happening again</i> (as if you were reliving it)?                                  | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something reminded you of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                    | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because they reminded you of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?   | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?   | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?  | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 16. Being <i>"super-alert"</i> or watchful or on guard?  | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>fuzzy</i> or easily startled?   | 1          | 2            | 3          | 4           | 5         |

# Assessment of Reactions (PTSD) Form

Rate the problems 1 to 5:

6. Avoiding thinking about or talking about a stressful experience from the past or avoiding having feelings related to it

7. Avoiding activities or situations because they remind you of the event

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

**INSTRUCTIONS:** Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|  | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|--|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were happening again (as if you were reliving it)?   | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something reminded you of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                    | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because they reminded you of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?   | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?   | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?  | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 16. Being <i>"super-alert"</i> or watchful or on guard?  | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>jumpy</i> or easily startled?   | 1          | 2            | 3          | 4           | 5         |

# Assessment of Reactions (PTSD) Form

Rate the problems 1 to 5:

8. Trouble remembering important parts of the stressful experience
9. Loss of interest in activities that you used to enjoy
10. Feeling distant or cut off from other people

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

INSTRUCTIONS: Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|  | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|--|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were happening again (as if you were reliving it)?   | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something reminded you of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                    | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because they reminded you of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?   | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?   | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?  | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 16. Being <i>"super-alert"</i> or watchful or on guard?  | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>jumpy</i> or easily startled?   | 1          | 2            | 3          | 4           | 5         |

# Assessment of Reactions (PTSD) Form

- Rate the problems 1 to 5:
11. Feeling emotional numb or being unable to have loving feelings for those close to you
  12. Feeling as if your future will somehow be cut short
  13. Trouble falling or staying asleep

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

**INSTRUCTIONS:** Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|  | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|--|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were happening again (as if you were reliving it)?   | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something reminded you of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                    | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because they reminded you of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?   | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?   | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?  | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future</i> will somehow be cut short?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 16. Being <i>"super-alert"</i> or watchful or on guard?  | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>jumpy</i> or easily startled?   | 1          | 2            | 3          | 4           | 5         |

# Assessment of Reactions (PTSD) Form

Rate the problems 1 to 5:

14. Feeling irritable or  
having angry outbursts

15. Having difficulty  
concentrating

16. Being “Super-alert” or  
on guard

17. Feeling jumpy or easily  
startled

## Assessment of Reactions to a Stressful Car Accident

Name \_\_\_\_\_ Date of Injury \_\_\_\_\_ Date Today \_\_\_\_\_

**INSTRUCTIONS:** Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

|   | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|---|------------|--------------|------------|-------------|-----------|
| 1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 3. Suddenly <i>acting or feeling</i> as if a stressful experience were <i>happening again</i> (as if you were reliving it)?   | 1          | 2            | 3          | 4           | 5         |
| 4. Feeling <i>very upset</i> when something <i>reminded you</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when <i>something reminded you</i> of a stressful experience from the past? | 1          | 2            | 3          | 4           | 5         |
| 6. Avoiding <i>thinking about or talking about</i> a stressful experience from the past or avoiding <i>having feelings</i> related to it?                           | 1          | 2            | 3          | 4           | 5         |
| 7. Avoiding <i>activities or situations</i> because <i>they reminded you</i> of a stressful experience from the past?   | 1          | 2            | 3          | 4           | 5         |
| 8. Trouble <i>remembering important parts</i> of a stressful experience from the past?  | 1          | 2            | 3          | 4           | 5         |
| 9. <i>Loss of interest</i> in activities that you used to enjoy?  | 1          | 2            | 3          | 4           | 5         |
| 10. Feeling <i>distant or cut off</i> from other people?  | 1          | 2            | 3          | 4           | 5         |
| 11. Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?   | 1          | 2            | 3          | 4           | 5         |
| 12. Feeling as if your <i>future will somehow be cut short</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 13. Trouble <i>falling or staying asleep</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 14. Feeling <i>irritable</i> or having <i>angry outbursts</i> ?   | 1          | 2            | 3          | 4           | 5         |
| 15. Having <i>difficulty concentrating</i> ?  | 1          | 2            | 3          | 4           | 5         |
| 16. Being “ <i>super-alert</i> ” or watchful or on guard?   | 1          | 2            | 3          | 4           | 5         |
| 17. Feeling <i>jumpy</i> or easily startled?  | 1          | 2            | 3          | 4           | 5         |

# Do Your Patients have PTSD?

You will only find out if you ASK...

Statistics show that if you treat car accident patients, you have PTSD patients in your office.

# How to Document PTSD in Patient's Chart

There is a 4 hour online course that I teach on the site [www.backtochiropractic.net](http://www.backtochiropractic.net) which can teach you a lot more about examining and treating your PTSD patients.

Write, "This patient exhibits numerous symptoms of PTSD. I am referring this patient to a psychologist for further testing of the PTSD that was caused by this car accident."

# Make the Referral... Please

PTSD is the weirdest feeling and your patients that have it are suffering more than you could ever know.

You will do your patients a GREAT service if you identify it, diagnose it and make a referral to someone who can help them.

Please don't think adjustments will help it... These patients need more help than you can provide as a chiropractor... Co-treat it with someone

# Folstein MMSE Exam

The *Doctor* (or assistant)  
must fill out this form

Ask the questions and the  
patient answers. Score as it  
is shown on the form

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

Scoring: A score of 24 or above is considered normal. 23 or below is indicative of abnormal cognition.

Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam



Be prepared with:

- (1) A blank piece of paper
- (2) A pen or pencil
- (3) The Folstein Form

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

Task Instructions \_\_\_\_\_ Scoring \_\_\_\_\_

*Date Orientation:* "Tell me the date?" Ask for omitted items \_\_\_\_\_/5  
One point each for year, season, date, day of week, and month (5 points total)

*Place Orientation:* "Where are you?" Ask for omitted items \_\_\_\_\_/5  
One point each for state, county, town, building and floor or room (5 points total)

*Register 3 Objects:* Name three objects slowly and clearly. Ask patient to repeat them \_\_\_\_\_/3  
One point for each item correctly repeated (3 points total)

*Serial Sevens:* Ask the patient to count backwards from 100 by 7. Stop after 5 answers \_\_\_\_\_/5  
(Or ask the patient to spell "world" backwards.)  
One point for each correct answer (or letter) (5 points total)

*Recall 3 Objects:* Ask the patient to recall the objects mentioned above. \_\_\_\_\_/3  
One point for each item correctly remembered. (3 points total)

*Naming:* Point to your watch and ask the patient, "what is this?" Repeat with a pencil. \_\_\_\_\_/2  
One point for each correct answer. (2 points total)

*Repeating a Phrase:* AS the patient to say, "no ifs, ands, or buts." \_\_\_\_\_/1  
One point if successful on the first try. (1 point total)

*Verbal Commands:* Give the patient a plain piece of paper and say, "take this paper \_\_\_\_\_/3  
in your right hand, fold it in half, and put it on the floor."  
One point for each correct action. (3 points total)

*Written Commands:* Show the patient a piece of paper with "CLOSE YOUR EYES" \_\_\_\_\_/1  
printed on it. One point if the patient's eyes close. (1 point total)

*Writing:* Ask the patient to write a sentence. \_\_\_\_\_/1  
One point if sentence has a subject, a verb, and makes sense. (1 point total)

*Drawing:* Show the patient a drawing with 2 intersecting pentagrams. Ask patient \_\_\_\_\_/1  
to draw the same thing onto a piece of paper.  
One point if the figure has ten corners and two intersecting lines. (1 point total)

Total \_\_\_\_\_/30

Scoring: A score of 24 or above is considered normal. 23 or below is indicative of abnormal cognition.

Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam

“Tell me the date”

Let the patient answer, then prompt the patient for missing items, like “what season is it?”

Score 1 point for each correct answer.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task/Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter). (5 points total)            | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

Scoring: A score of 24 or above is considered normal. 23 or below is indicative of abnormal cognition.

Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam

“Where are you?”

Let the patient answer,  
then prompt the patient  
for missing items, like  
“what county are we in?”

Score 1 point for each  
correct answer.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards)<br>One point for each correct answer (or letter) (5 points total)              | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

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Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam

Say slowly and clearly,  
“Dog, tree, car” (or any 3  
objects)

Wait 5 seconds, then ask  
the patient to repeat the  
3 objects.

Score 1 point for each  
correct answer.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

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Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam



Say, "Count backwards from 100 by 7's.

100, 93, 86, 79, 72

Gets 5 points

BUT... if they miss one, they still get points for correctly subtracting 7 from the last number he/she gave you.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

Task Instructions \_\_\_\_\_ Scoring \_\_\_\_\_

*Date Orientation:* "Tell me the date?" Ask for omitted items \_\_\_\_\_/5  
One point each for year, season, date, day of week, and month (5 points total)

*Place Orientation:* "Where are you?" Ask for omitted items \_\_\_\_\_/5  
One point each for state, county, town, building and floor or room (5 points total)

*Register 3 Objects:* Name three objects slowly and clearly. Ask patient to repeat them \_\_\_\_\_/3  
One point for each item correctly repeated (3 points total)

*Serial Sevens:* Ask the patient to count backwards from 100 by 7. Stop after 5 answers \_\_\_\_\_/5  
(Or ask the patient to spell "world" backwards.)  
One point for each correct answer (or letter) (5 points total)

*Recall 3 Objects:* Ask the patient to recall the objects mentioned above. \_\_\_\_\_/3  
One point for each item correctly remembered. (3 points total)

*Naming:* Point to your watch and ask the patient, "what is this?" Repeat with a pencil. \_\_\_\_\_/2  
One point for each correct answer. (2 points total)

*Repeating a Phrase:* AS the patient to say, "no ifs, ands, or buts." \_\_\_\_\_/1  
One point if successful on the first try. (1 point total)

*Verbal Commands:* Give the patient a plain piece of paper and say, "take this paper \_\_\_\_\_/3  
in your right hand, fold it in half, and put it on the floor."  
One point for each correct action. (3 points total)

*Written Commands:* Show the patient a piece of paper with "CLOSE YOUR EYES" \_\_\_\_\_/1  
printed on it. One point if the patient's eyes close. (1 point total)

*Writing:* Ask the patient to write a sentence. \_\_\_\_\_/1  
One point if sentence has a subject, a verb, and makes sense. (1 point total)

*Drawing:* Show the patient a drawing with 2 intersecting pentagrams. Ask patient \_\_\_\_\_/1  
to draw the same thing onto a piece of paper.  
One point if the figure has ten corners and two intersecting lines. (1 point total)

Total \_\_\_\_\_/30

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# Folstein Exam

An alternative way is to ask the patient to spell “world” backward

5 points for Spelling it backward

Correctly. (1 point per letter)

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

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# Folstein Exam

In the AMA Guides to the Evaluation of Permanent Impairments, 5<sup>th</sup> Edition, you'll note that it describes a patient with an impairment and says, "patient can spell world backward."

This is the test used by The AMA Guides.

Colossus uses the AMA Guides so we use this test...

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| <b>Total</b>   | ___/30  |

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# Folstein Exam

Say, "Tell me the 3 objects I mentioned a minute ago."

1 point for each of the words they remember (dog, tree, car)

Make sure the examiner remembers them...

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

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# Folstein Exam

Point to your watch  
and say, "what is this?"

Repeat with a pencil.

Note: Any common object can be used if you don't have a watch on. Point to something on the table that everyone would know what it is, or the pen in your hand.

1 point for each of the 2  
Items correctly identified.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ____/5  |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ____/5  |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ____/3  |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ____/5  |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ____/3  |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ____/2  |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ____/1  |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ____/3  |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ____/1  |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ____/1  |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ____/1  |
| Total  | ____/30 |

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# Folstein Exam

Say, “repeat after me... no ifs, ands, or buts.”

1 point for repeating it  
Accurately on the first try

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ____/5  |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ____/5  |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ____/3  |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ____/5  |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ____/3  |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ____/2  |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ____/1  |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ____/3  |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ____/1  |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ____/1  |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ____/1  |
| Total  | ____/30 |

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# Folstein Exam

Say, “take this paper in your right hand, fold it in half, and put it on the floor.”

Wait 3 seconds, then hand the patient the blank piece of paper.

You are testing whether the Patient can process 3 commands in a series. One point for each Step followed exactly.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions   | Scoring |
|---|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)  | ____/5  |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)   | ____/5  |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)   | ____/3  |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)          | ____/5  |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)   | ____/3  |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)  | ____/2  |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)   | ____/1  |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ____/3  |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES" printed on it. One point if the patient's eyes close. (1 point total)   | ____/1  |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)   | ____/1  |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ____/1  |
| Total   | ____/30 |

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# Folstein Exam

Print on the blank paper, "CLOSE YOUR EYES."

Hold it up for the patient to read

1 point for closing his/her eyes, which means he/she can visually process information

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

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# Folstein Exam

Hand the patient the blank piece of paper and a pen. Say, “write a sentence.”

1 points if the sentence has a subject, a verb, and generally makes sense.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ____/5  |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ____/5  |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ____/3  |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ____/5  |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ____/3  |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ____/2  |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ____/1  |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ____/3  |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ____/1  |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ____/1  |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ____/1  |
| Total  | ____/30 |

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# Folstein Exam

Draw two intersecting pentagrams on the blank paper (that was folded and the patient wrote a sentence on.) Say, "Draw this."

1 point if the figure has 10 corners (2 pentagrams) and 2 of the sides intersect

## Folstein Mini Mental State Examination

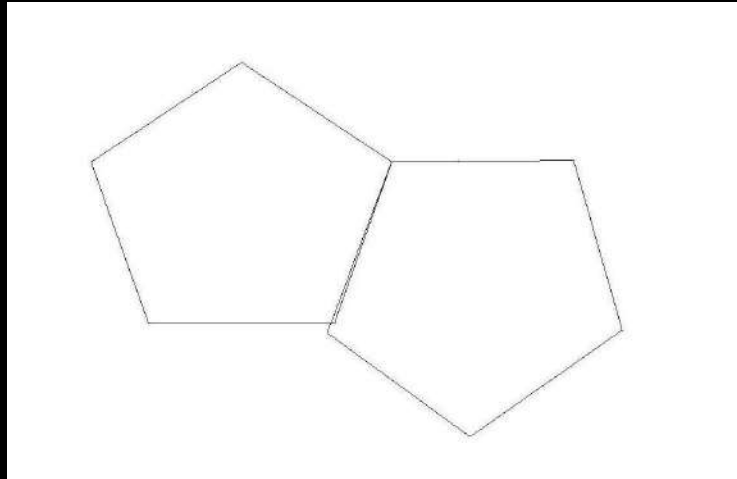
Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ____/5  |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ____/5  |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ____/3  |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ____/5  |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ____/3  |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ____/2  |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ____/1  |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ____/3  |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ____/1  |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ____/1  |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ____/1  |
| Total  | ____/30 |

Scoring: A score of 24 or above is considered normal. 23 or below is indicative of abnormal cognition.

Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam



You show that patient a drawing like this, then they should be able to copy it.

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions   | Scoring |
|---|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)  | ____/5  |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)   | ____/5  |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)   | ____/3  |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)            | ____/5  |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)   | ____/3  |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)  | ____/2  |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)   | ____/1  |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)            | ____/3  |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)  | ____/1  |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)   | ____/1  |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ____/1  |
| <b>Total</b>  | ____/30 |

Scoring: A score of 24 or above is considered normal. 23 or below is indicative of abnormal cognition.

Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Folstein Exam

Add up the patient's score. 23 or below is Abnormal Cognition

This test is also used for Alzheimer patients.

Interesting that patients in car accidents have the same mental problem as Alzheimer patients...

## Folstein Mini Mental State Examination

Patient \_\_\_\_\_ Today's Date \_\_\_\_\_ Date of Injury \_\_\_\_\_

| Task Instructions  | Scoring |
|--|---------|
| <i>Date Orientation:</i> "Tell me the date?" Ask for omitted items<br>One point each for year, season, date, day of week, and month (5 points total)   | ___/5   |
| <i>Place Orientation:</i> "Where are you?" Ask for omitted items<br>One point each for state, county, town, building and floor or room (5 points total)  | ___/5   |
| <i>Register 3 Objects:</i> Name three objects slowly and clearly. Ask patient to repeat them<br>One point for each item correctly repeated (3 points total)  | ___/3   |
| <i>Serial Sevens:</i> Ask the patient to count backwards from 100 by 7. Stop after 5 answers<br>(Or ask the patient to spell "world" backwards.)<br>One point for each correct answer (or letter) (5 points total)             | ___/5   |
| <i>Recall 3 Objects:</i> Ask the patient to recall the objects mentioned above.<br>One point for each item correctly remembered. (3 points total)  | ___/3   |
| <i>Naming:</i> Point to your watch and ask the patient, "what is this?" Repeat with a pencil.<br>One point for each correct answer. (2 points total)   | ___/2   |
| <i>Repeating a Phrase:</i> AS the patient to say, "no ifs, ands, or buts."<br>One point if successful on the first try. (1 point total)  | ___/1   |
| <i>Verbal Commands:</i> Give the patient a plain piece of paper and say, "take this paper<br>in your right hand, fold it in half, and put it on the floor."<br>One point for each correct action. (3 points total)             | ___/3   |
| <i>Written Commands:</i> Show the patient a piece of paper with "CLOSE YOUR EYES"<br>printed on it. One point if the patient's eyes close. (1 point total)   | ___/1   |
| <i>Writing:</i> Ask the patient to write a sentence.<br>One point if sentence has a subject, a verb, and makes sense. (1 point total)  | ___/1   |
| <i>Drawing:</i> Show the patient a drawing with 2 intersecting pentagrams. Ask patient<br>to draw the same thing onto a piece of paper.<br>One point if the figure has ten corners and two intersecting lines. (1 point total) | ___/1   |
| Total  | ___/30  |

Scoring: A score of 24 or above is considered normal. 23 or below is indicative of abnormal cognition.

Adapted from Folstein et al, Mini Mental State, J PSYCH RES 12:196-198 (1975).

# Here is how you know when to use the ACE, Rivermead, Epworth Scale and MMSE

They are on the Symptoms Form..!!!

## Symptoms

Patient Ima Hurt Date 7/26/08 Date of Injury 7/25/08

Please fill in all symptoms you currently have that you did not have before the accident.

### Orthopedic & Musculoskeletal Symptoms

- "Clunk" Sound with Neck Movements
- Neck Pain
- Upper Back Pain
- Low Back Pain
- Shoulder Pain
- Upper Arm Pain
- Elbow Pain
- Forearm Pain
- Wrist Pain
- Hand Pain
- Hip Pain
- Upper Leg Pain
- Knee Pain
- Lower Leg Pain
- Ankle Pain
- Foot Pain
- Jaw Pain
- Clicking in Jaw
- Pain when Chewing
- Face Pain
- Chest Pain
- Stomach Pain
- Bruise/Contusion to Right knee, chest, neck
- Scrape/Cut to Right knee, neck, chest
- Other Symptom \_\_\_\_\_
- Other Symptom \_\_\_\_\_

### Neurological Symptoms

- Numb/Tingling Arm / Hand  L  R
- Numb/Tingling Leg / Foot  L  R
- Weakness Arm / Hand  L  R
- Weakness Leg / Foot  L  R

### Symptoms Associated with Injuries

- Range of Motion Problems
- Headaches
- Muscle Spasms
- Dizziness
- Visual Disturbances
- Sleep Disruption
- Radiating Pain
- Anxiety
- Depression
- I am taking over-the-counter pain meds

### Brain/Neuropsych/MTBI Symptoms

- Wanting to be Alone
- Sleepiness
- Nausea/vomiting
- Difficulty Concentrating
- Day Dreaming/Staring Mindless Staring
- Mood Swings
- Agitation
- Sadness or tearful
- Blurry Vision
- Double Vision
- Disoriented
- Confused
- Difficulty Speaking
- Feelings of Isolation from Others
- Attention Problems
- Appetite Change
- Pupils Different Sizes
- Room Spins/ Woozy Feeling
- Balance Problems
- Difficulty Walking
- Difficulty Focusing/Easily Distracted
- Very Tired
- Dozing During The Day
- Personality Change
- Can't Remember Numbers
- Reading Problems
- Writing Problems
- Difficulty with Adding/Subtracting
- Poor Attention
- Difficulty Learning New Things
- Difficulty Understanding
- Difficulty Remembering Things
- Re-reading Things to Understand It
- Anger
- Difficulty Making Decisions
- Change in Sexual Functioning
- Reduced Confidence
- Helplessness
- Apathy (Don't Care)
- Irritable
- Change in Sense of Taste or Smell
- Flashbacks to Accident
- Impatience
- Frustration
- Hearing Problems
- Difficulty Planning or Organizing

# *Whiplash & Motor Vehicle Collisions*

- “Many individuals who sustain an MTBI are not hospitalized or receive no medical care at all. An unknown proportion of those who are not hospitalized may experience long term problems such as persistent headache, pain, fatigue, vision or hearing problems, memory problems, confusion, sleep disturbances, or mood swings. Symptoms of concussion may appear mild, but can lead to lifelong impairment affecting an individual’s ability to function physically, cognitively, and psychologically.”

# *Whiplash & Motor Vehicle Collisions*

- “Since chiropractors are so frequently consulted after a whiplash, you should ask your chiropractor if he or she has studied brain concussions and knows how to diagnose them. Many of them are quite advanced in their knowledge and understanding of brain concussion. Very often your chiropractor and neurosurgeon will co-treat your various injuries.”

# Do You Know These Neurological Injuries?

MTBI – Mild Traumatic Brain Injury (Concussion)

PSTHI – Psychosis Secondary to Head Injury

SCIWORA – Spinal Cord Injury Without  
Radiographic Abnormality.

# 3 EARLY Predictors of PCS

Anxiety

Noise Sensitivity

Trouble Thinking

These are the **3 most important concussion symptoms** because when all are present, a study showed that you can accurately predict the patient will have a LONG post-concussion recovery time.

# Head Injury Follow Up Questionnaire

Have concussion patients fill this out every 30 days

Bill for it, too.

## HEAD INJURY FOLLOW UP QUESTIONNAIRE (HIF)

Patient \_\_\_\_\_ Date of Injury \_\_\_\_\_ Today's Date \_\_\_\_\_

We would like to know if your brain concussion symptoms are improving, staying the same or getting worse. Please mark the box for each symptom to tell us how you are doing.

| Symptom   | Getting Worse | Staying Same | Getting Better | 100% Well | Never Had |
|---|---------------|--------------|----------------|-----------|-----------|
| Anxiety, nervousness or worry                           |               |              |                |           |           |
| Depression, crying or more emotional                    |               |              |                |           |           |
| Irritable or getting angry easily                       |               |              |                |           |           |
| Difficulty finding simple words when talking            |               |              |                |           |           |
| Difficulty concentrating or thinking slowly             |               |              |                |           |           |
| Memory problems or forgetting things                    |               |              |                |           |           |
| Understanding what people say to me                     |               |              |                |           |           |
| Sleep disturbance or disruption of sleep patterns       |               |              |                |           |           |
| Fatigue, tiring more easily or low energy               |               |              |                |           |           |
| The overall level of my physical pain(s)                |               |              |                |           |           |
| Feeling behind, never caught up or overwhelmed          |               |              |                |           |           |
| Relationship with my partner or family                  |               |              |                |           |           |
| Ability to enjoy my hobbies or leisure activities       |               |              |                |           |           |
| Ability to exercise or play sports I enjoy              |               |              |                |           |           |
| The quality or quantity of how much work I can do       |               |              |                |           |           |
| How much I enjoy life                                   |               |              |                |           |           |
| Loud noises, noisy rooms or crowds bother me            |               |              |                |           |           |
| Bright lights bother me or I have to wear sunglasses    |               |              |                |           |           |
| Feeling like I want to socialize with friends or family |               |              |                |           |           |
| Other   |               |              |                |           |           |

Would you like a referral to a specialist for mental or emotional issues?  Yes  No  
Would you like a referral to a specialist for help with physical pain?  Yes  No

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

# Rivermead Follow Up Questionnaire

Have concussion patients fill this out every 90 days

Bill for it, too.

## RIVERMEAD HEAD INJURY SERVICE FOLLOW UP QUESTIONNAIRE (RHFUQ) Outcome Assessment (Every 3 months after injury)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

After a head injury or accident some people experience problems which can cause worry or nuisance. We would like to know if you have difficulties with any of the activities listed below. We would like you to compare yourself now with before the accident/injury. For each one please circle the number closest to your answer.

- 0 = No change - I'm that same as before the injury
- 1 = No recent change but still more difficult than before injury
- 2 = A mild change in my ability compared to before injury
- 3 = A moderate change in my ability compared to before injury
- 4 = A very marked change in my ability compared to before injury

Compared with before the accident/injury, has there been a change in your...?

|   |   |   |   |   |  |
|---|---|---|---|---|--|
| 0   | 1 | 2 | 3 | 4 | Ability to participate in conversation with one person         |
| 0   | 1 | 2 | 3 | 4 | Ability to participate in conversation with 2 or more people   |
| 0   | 1 | 2 | 3 | 4 | Performance of routine domestic activities                     |
| 0   | 1 | 2 | 3 | 4 | Ability to participate in previous social activities           |
| 0   | 1 | 2 | 3 | 4 | Ability to enjoy previous leisure activities                   |
| 0   | 1 | 2 | 3 | 4 | Ability to maintain your previous work load or quality of work |
| 0   | 1 | 2 | 3 | 4 | Finding work more tiring                                       |
| 0   | 1 | 2 | 3 | 4 | Relationship with previous friends                             |
| 0   | 1 | 2 | 3 | 4 | Relationship with your partner                                 |
| 0   | 1 | 2 | 3 | 4 | Ability to cope with or handle family demands                  |
| 0   | 1 | 2 | 3 | 4 | Other difficulties _____                                       |
| 0   | 1 | 2 | 3 | 4 | Other difficulties _____                                       |
| 0   | 1 | 2 | 3 | 4 | Other difficulties _____                                       |
| 0   | 1 | 2 | 3 | 4 | Other difficulties _____                                       |
| Would you like a follow up appointment for further advice? <input type="checkbox"/> Yes <input type="checkbox"/> No |   |   |   |   |  |

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

RHFUQ was published in 1996 in the Journal of Neurology, Neurosurgery and Psychiatry by Crawford et al from the Oxford Head Injury Service, Rivermead Rehabilitation Centre, Abingdon Road, Oxford, OX1 4XD, United Kingdom. The conclusion of this study stated, "The RHFUQ is a short, simple, adequately reliable, and valid measure of outcome, across the entire range of severity, but particularly after mild to moderate head injury."

# Head Injury Outcome Assessment (HIO)

Have concussion patients fill this out every 90 days

Bill for it, too.

## HEAD INJURY OUTCOME ASSESSMENT (HIO)

Patient \_\_\_\_\_ DOI \_\_\_\_\_ Today's Date \_\_\_\_\_

Patients can experience post-concussion symptoms for days, weeks, months or even years. Now that a number of months have passed since your brain concussion, we would like to know which symptoms you are still experiencing and how much they have changed your life. Please circle below the number closest to your answer.

- 1 = I am exactly the same as before my injury
- 2 = I still have mild symptoms or this makes my life a little different than before
- 3 = I still have moderate symptoms or this makes my life a lot different than before
- 4 = I still have severe symptoms or this makes my life completely different than before

|   |   |   |   |  |
|---|---|---|---|--|
| 1 | 2 | 3 | 4 | Anxiety, nervousness, tightness in my chest or sweaty palms          |
| 1 | 2 | 3 | 4 | Depression, crying, more emotional or don't want to get out of bed   |
| 1 | 2 | 3 | 4 | Wishing my life was over or not optimistic about my future           |
| 1 | 2 | 3 | 4 | Irritability or anger that causes relationship problems for me       |
| 1 | 2 | 3 | 4 | Difficulty finding simple words when I am talking                    |
| 1 | 2 | 3 | 4 | Difficulty concentrating, thinking slowly or thinking makes me tired |
| 1 | 2 | 3 | 4 | Memory problems, forgetting things or I have to write things down    |
| 1 | 2 | 3 | 4 | I don't understand what people to say to me unless I concentrate     |
| 1 | 2 | 3 | 4 | I don't understand what I read unless I really concentrate           |
| 1 | 2 | 3 | 4 | Loud noise, noisy rooms or many voices make me uncomfortable         |
| 1 | 2 | 3 | 4 | I feel behind all the time, never catch up or get overwhelmed easily |
| 1 | 2 | 3 | 4 | I get no joy or happiness from my hobbies or sports activities       |
| 1 | 2 | 3 | 4 | My sleep is different that before my injury                          |
| 1 | 2 | 3 | 4 | I am tired, have no energy or don't feel like doing anything         |
| 1 | 2 | 3 | 4 | I have physical pain so bad that it is depressing to me              |
| 1 | 2 | 3 | 4 | My life now is not as good as the life I had before my injury        |
| 1 | 2 | 3 | 4 | Difficulty participating in conversations with 2 or more people      |

Would you like a referral to a specialist for help with your life?  Yes  No

Patient Signature \_\_\_\_\_ Doctor Signature \_\_\_\_\_

The HIO is based on the book, Whiplash & Motor Vehicle Collisions by Steven C Eggleston. (1st Ed. 2010, 2nd Ed. 2014). It was designed to be used by clinicians beginning 3 months after a head injury and every 3 months until the patient is well.

# Neuro-Endocrine Dysfunction

There are five major hormones that come from and/or are controlled by the Pituitary gland:

- (1) TSH;
- (2) ACTH;
- (3) LH;
- (4) FSH; and
- (5) ADH.

The function of these five hormones that have their origin and/or control inside the human brain and they appear to link together these seemingly unrelated concussion symptoms.

# Thyroid Stimulating Hormone (TSH)

Concussion can cause the Pituitary gland to not secrete the right amount of TSH which can lead to:

Hypothyroidism

Hyperthyroidism

# Hypothyroidism from Concussion

Too little thyroid hormone causes:

**weight gain**

dry skin

**Constipation**

cold intolerance

puffy skin

hair loss

menstrual irregularity in women

**fatigue.**

Moral of the story: Since excessive fatigue and drowsiness during the day are very common symptoms of brain concussion, REFER these patients to an endocrinologist.

# Hyperthyroidism from Concussion

Too much thyroid causes:

rapid heart rate

anxiety

weight loss

difficulty sleeping

tremors in the hands

weakness

diarrhea

sensitivity to light

visual disturbances.

REFER these patients to an endocrinologist.

# AdrenoCorticoTrophic Hormone (ACTH)

Corticosteroid chemicals are important in controlling **inflammation** in your body, helping you handle **stress**, and controlling your **behavior**.

Cortisol is produced by your adrenal glands (where adrenalin comes from.) When it is secreted, it increases your blood sugar level, suppresses your immune system and helps your body metabolize carbohydrates, fat and protein that you eat.

# Luteinizing Hormone (LH)

LH affects the production of testosterone produced by the Leydig cells in your body.

Studies showed that 80 of concussion patients have low testosterone within one (1) year

Testosterone is crucial for the repair and regeneration of tissue (healing)

(Refer concussion patients to Endocrinologist)

# Follicle Stimulating Hormone (FSH)

FSH regulates the development, growth and reproductive processes of the body. It is a companion to LH in the reproductive system. It also causes the secretion of Inhibin which, together with Activin, affects your body's ability to repair wounds (healing the physical injuries from the trauma).

(Refer concussion patients to Endocrinologist)

# Anti-Diuretic Hormone (ADH)

ADH affects how much water is reabsorbed by your kidneys so it has an important effect on the regulation of water, glucose and salts in your blood.

(Refer concussion patients to Endocrinologist)

# Neurological Studies Show

The rest of these notes/slides show first the title page of various recent neurological studies followed by the most important finding of that study on the next slide/page.

ALL of these studies can be downloaded at [www.HBTinstitute.com](http://www.HBTinstitute.com) in the Doctor Forms section. (User name = great, PW = doctor)

Click [HERE](#) to go to this page.

Look for [Bibliography of Studies and Articles](#) at the bottom of the page

# Sleep Disorders & MTBI Results

“Treatable sleep disorders seem to be common in the sleepy TBI population, but may be largely undiagnosed and untreated.”

Arch Phys Med Rehab Vol. 82 Oct 2001

Moral of the story: You should diagnose sleep disorders and get help for your patients.

# Head Injury is Psychiatric Risk Factor

Head injury is associated with a higher risk of:

Schizophrenia

Depression

Bipolar Disorder

“The authors demonstrated a higher risk of ALL psychiatric outcomes following head trauma... greater than for skull fracture.”

PSTHI is the new term that means Psychosis  
Secondary To Head Injury

Am J Psychiatry 2014; 171:463-369

# DTI MRI & White Matter Changes

Diffuse Tensor Imaging (DTI) MRI can demonstrate changes/abnormalities in white matter tracts within 6 months after a brain concussion.

Journal of Neurotrauma in July 2015 stated DTI imaging results correlate with full neuropsychological testing results AND the more damaged the white matter is visually, the worse the patient performs in neuropsychological testing

Moral of the story: We are now able to objectively demonstrate brain concussions.

# Post-Traumatic Vertigo

Head injuries occur in 5% of population annually.

Head and neck trauma causes tinnitus lasting from 3 to 9 months.

Post-traumatic Meniere's causes imbalance

Benign Paroxysmal Positional Vertigo (BPPV) is common after trauma & all of these symptoms need an ENT referral..!!!

*Post-Traumatic Vertigo* by Timothy C. Hain, MD

# Acute Peripheral Vestibular Injuries

Whiplash is a dynamic inertial event.

25% to 50% of whiplash patients have vertigo.

5% to 14% of whiplash patients have tinnitus.

24% to 34% have memory, cognitive and changes in vision.

*Acute Peripheral Vestibular Deficits After Whiplash Injuries* by Vibert & Hausler

# *Vestibular Deficits after Whiplash*

by Vibert & Hausler

Lesions of the Vestibular Organs after whiplash are underestimated because chiropractors erroneously blame the vertigo and dizziness on cervical damage and CNS injury.

*Ann Otol Rhinol Laryngol* 112:2003

# Sleep Disorders & Concussion

by Castriotta et. Al.

Concussion patients had 39% abnormal sleep studies.

23% had OSA (Obstructive Sleep Apnea)

3% had posttraumatic hypersomnia

5% had narcolepsy

7% had PLMS (limb movement in sleep)

21% had significant daytime sleepiness

# Post-trauma Sleep Apnea

Patients treated with CPAP reduced from 31 apneas/night to only 3/night

However... concussion patients STILL had daytime sleepiness

Conclusion: Concussion causes daytime sleepiness independent from sleep disorder.

Refer patient to BOTH psychiatrist AND sleep medicine doctor.

J Clin Sleep Med April 15, 2009

# TBI & Sleep Disorders

by Verma & Jayakar

TBI is a “silent epidemic”

Sleep disorders make concussion healing time longer

Recognize and treat BOTH conditions & make referrals to both psychiatrist and sleep medicine doctor

# CTE – Chronic Traumatic Encephalopathy

See the movie “Concussion” to see how Dr. Bennett Omalu discovered Tau deposits in the brains of 4 former Pittsburgh Steelers who committed suicide in the 40s.

# SPECT Imaging

Single Photon Emission Tomography gives dynamic information about concussed brain.

Detects blood flow in brain.

Decreased blood flow (and oxygen) from damaged small vessels gives more accurate information than MRI or CT of the brain.

MRI & CT show structure damage, not MTBI

# Crimes & Concussions

Concussions lead to arrest and prison

PSTHI (Psychosis Secondary To Head Injury)

Concussion = Psychosis = violent crime

There is medical evidence that concussions lead to lives of crime. You are REALLY helping your patients when you diagnose concussion and refer them to a specialist.

# Sleep Disorders & MTBI

46% of concussion patients also have a sleep disorder

25% of concussion patients also have excessive daytime sleepiness

Concussions must be recognized, diagnosed and treatment for the MTBI & the sleep disorder must be given to the patient.

**Moral of the story: Make the referral..!!**

# Concussion and Sleep Apnea

“Persons who have sustained a traumatic brain injury are at a significantly increased risk for sleep disorders.”

“The effects of untreated sleep apnea on a patient’s cognitive decline and the development of behavioral deficits have only recently been identified.”

by Mollayeva et. al. Univ. Toronto, Canada

# Concussion and Sleep Apnea

Patients with Sleep Apnea make snoring and gasping noises in their sleep. Each gasp sound indicates breathing had stopped. Each time breathing stops, blood oxygen levels drop (damaging cells in the body).

This leads to high blood pressure, stroke, heart failure, diabetes, depression & more.

**Moral of the story: Find the concussions and make referrals so your patients get well.**

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**Authors' Contribution:**

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Data Interpretation
- E** Manuscript Preparation
- F** Literature Search
- G** Funds Collection

# Spinal Cord Injury without Radiographic Abnormality (SCIWORA) – Clinical and Radiological Aspects

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## Summary

The acronym SCIWORA (Spinal Cord Injury Without Radiographic Abnormality) was first developed and introduced by Pang and Wilberger who used it to define "clinical symptoms of traumatic myelopathy with no radiographic or computed tomographic features of spinal fracture or instability". SCIWORA is a clinical-radiological condition that mostly affects children. SCIWORA lesions are found mainly in the cervical spine but can also be seen, although much less frequently, in the thoracic or lumbar spine. Based on reports from different authors, SCIWORA is responsible for 6 to 19% and 9% to 14% of spinal injuries in children and adults, respectively. Underlying degenerative changes, including spondylosis or spinal canal stenosis, are typically present in adult patients. The level of spinal cord injury corresponds to the location of these changes. With recent advances in neuroimaging techniques, especially in magnetic resonance imaging, and with increasing availability of MRI as a diagnostic tool, the overall detection rate of SCIWORA has significantly improved.

**MeSH Keywords:**

**Central Cord Syndrome • Magnetic Resonance Imaging • Spinal Cord Injuries**

**PDF file:**

<http://www.polradiol.com/abstract/index/idArt/890944>

# SCIWORA

Spinal Cord Injury Without Radiologic Abnormality.

Describes “Clinical symptoms of traumatic myelopathy with no radiologic or computed tomographic features of spinal fracture or instability.”

Most common area is in the Cervical Spine

by Szwedowski & Walecki, Dept of Radiology & Trauma, Torun, Poland

# SCIWORA

Underlying degenerative changes are “typically present” such as spondylosis or spinal canal stenosis.

SCIWORA occurs after trauma to the level of the cervical spine where the degenerative changes are seen.

Special MRI studies increase chance to diagnose the cord injury... pay attention to DJD

# Stem Cell Therapy

“Someday we may be able to replace brain cells and restore memory” using neural stem cells.

Generally, stem cell therapy is THE most promising cure for physical injuries (joints) and concussions.

Go out and find someone doing stem cell injections. It being widely used NOW.

# QEEG

Quantative Electro Encephalography is an inexpensive and detailed test for concussion (and other brain defects like ADHD, etc.)

Find a neuropsychologist who does QEEG and also biofeedback

# Concussion and Sleep Apnea

New research shows traumatic brain injury (TBI) and obstructive sleep apnea (OSA) go hand in hand and that a causal relationship is stronger than ever.

“Blunt” head trauma is a higher risk for OSA than invasive head trauma.

by Christopher J. Lettieri, MD

# Concussion and Sleep Apnea

Postconcussion syndrome can lead to weight gain...

...which leads to OSA...

...which leads to mood & anxiety disorders

Especially PTSD and Major Depressive Disorder (MDD)

J Clin Sleep Med by Babson et. al.  
(Stanford University)

# Concussion and Sleep Apnea

1.7 million TBIs in U.S. every year

Only 1.4 million seek treatment

250,000 hospitalizations a year

50,000 deaths a year

70-90% of these are MILD TBIs

72.5% have impaired sleep/wake disturbances  
which developed AFTER the TBI

55% of concussion patients have insomnia but  
only 34% develop OSA

by Christopher J. Lettieri, MD 11/11/2013

# Transcranial Low Level Laser

NIH says transcranial laser treatments (the kind chiropractor can do with the lasers they already own) DEFINITELY help concussion patients.

Also helps stroke patients.

Moral of the story: If you already own a laser, find out the settings for transcranial laser and help your patients get well.

# Bright Light Therapy for MBTI

Bright light therapy (which chiropractors can do) helps patients recover from concussion.

Read this study to find out how you can do this treatment.

*J Clin Sleep Med* May 30, 2013

# Long Term Effects of TBI

Research on Canadian hockey players shows that the brain damage lasts for decades **AFTER** the symptoms appear to have resolved.

**Moral of the story:** It might not be good to return young athletes to competition after their concussion symptoms go away.

**Research by Maryse Lassonde, Ph.D. on Montreal Canadians hockey team.**

# PSTHI Equal in TBI & MTBI

The development of Psychosis Secondary to Head Injury is virtually the same incidence whether the head injury is mild, moderate or severe.

Severe TBI causes a higher INITIAL risk

Mild TBI causes LONGER psychosis symptoms

*Arch Gen Psychiatry 2004, 61(1):53-61*

# Major Depression & TBI

“Major depression is a frequent psychiatric complication among patients with TBI.”

33% of patients with TBI were diagnosed with MAJOR depression” within 1 year of the TBI

76% of those had comorbid anxiety

56% had aggressive behavior

*Arch Gen Psychiatry 2004, 61(1):42-50*

# Psychosis & TBI

Psychosis Disorder Following TBI (PDFTBI) patients showed significantly lower intelligence, vocabulary, verbal memory and executive functioning compared with control group. Schizophrenia patients had similar results.

TBIWP (TBI without psychosis) patients showed NO difference in intelligence, vocabulary, verbal memory and executive function compared to normal control group.

*J Neuropsychiatry Clin Neurosci 10:306-314*

*August 2004*

# Psychosis & TBI

TBI can result in serious and disabling psychiatric disorders such as cognitive deficits and personality disorder as well as “severe and chronic psychosis”

SLP (Schizophrenia-like Psychosis) is linked to TBI, has a gradual onset, mimics regular schizophrenia, included persecutory delusions, auditory hallucinations, and other delusions.

Temporal & frontal lobe TBIs cause this most

# Screening for Depression

ALL patients with concussion should be routinely screened for depression since 30-38% of them will have depression from the concussion.

*Arch Phys Med Rehabil. 2003 Nov;  
84(11):1621-8*

# 30 year Concussion Study

“Major” depression 26.7%

Alcohol abuse or dependence 11.7%

Panic Disorder 8.3%

Specific Phobia 8.3%

Psychotic Disorders 6.7%

Personality Disorder 23.7%

Avoidant Personality Disorder 15%

Paranoid Personality Disorder 8.3%

Schizoid Personality Disorder 6.7%

*Am J Psychiatry 2002 Aug; 159(8):1315-21*

# Psychotic Patient Plus a TBI

Psychiatric illness actually causes an increased risk for subsequent TBI.

Risky behavior, poor decision making, etc.

Imagine... TBI, then psychosis, then their life spirals down and down with additional TBIs

*J Neurol Neurosurg Psychiatry. 2002 May;  
(72(5): 615-20*

# TBI in Older patients

Older patients with concussion fare worse than younger patients.

Older patients need aggressive rehabilitation following concussion.

Moral of the story: Make the referral

*Curr Psychiatry Rep. 2002 Oct; 4(5):354-62*

# Depression after TBI

“Depression is a phenomenon common after head injury.”

Get help... refer out... help your patients

*The Phenomenology of Depression After Brain Injury* by Starkstein & Lischinsky

*Neurorehabilitation 2002; 17(2):105-13*

# Neuropsychiatric Aspects of TBI

Primary symptoms of concussion include:

Irritability

Fatigue

Sleep Disturbance

Affective Lability

Impaired Cognition

It takes a specialist to determine whether the patient has primary concussion symptoms OR has comorbid depression symptoms that are the exact same symptoms... refer out.

*Curr Treat Options Neurol. 2000 Mar; 2(2):186-186*

# Rate of Psychiatric Illness 1 year After Traumatic Brain Injury

21.7% of Postconcussion patients has psychosis compared with 16.4% of control group.

13.9% of TBI patients had depression compared to 2.1% of the control group.

9% of TBI patients had panic disorder compared to 0.8% of the control group.

NOTE: Compensation claims had NO EFFECT on the rate of psychiatric claims.

# Children with Concussions

Children with concussions are at risk for development of psychiatric illnesses in the “2<sup>nd</sup> year” following the concussion.

Moral of the story: Don't treat lightly your young patients with concussions. Proper referrals and treatment can prevent them from literally becoming Psychotic. Early signs are resuming bedwetting and “acting out” behaviors

# Depressed Patients Worse Off

Depressed patients following TBI perceive their injuries as more severe than TBI patients who don't get depressed.

Test them, screen them & get them help.

*Am J Psychiatry* 1995 Oct; 152(10):  
1493-9

# Secondary Mania Following TBI

9% of patients with TBI are diagnosed with mania disorder

*Am J Psychiatry 1993 Jun; 150(6):916-21*

# “Mild” MTBI KILLS brain cells

Even with a “mild” brain injury, we found we still have these ischemic blood vessels, and if blood flow is not restored, synapses start to die.

Damaged blood vessels = ischemia = no O<sub>2</sub>

Hyperbaric Oxygen therapy seems to help this and helps the patient LONG TERM

# Predictors of Long-Term Whiplash

The greater the car damage, the longer the treatment for whiplash.

Being “admitted” to the hospital is a predictor of long term whiplash treatment.

Moral of the story: There may be some truth to the insurance company belief that more car damage = worse injuries.

Sept. 26, 2000 by Hijioka et. al. Fukuoka, Japan

# Early Predictors of PCS

There are only 3 concussion symptoms that can accurately predict long term post concussion syndrome (PCS)

Anxiety

Noise Sensitivity

Trouble Thinking

When these 3 are present refer IMMEDIATELY

*J Trauma 2009 Feb; 66(2): 289-96*

# BDNF Test

“Day of injury serum BDNF (Brain-Derived Neurotrophic Factor) is associated with TBI diagnosis and also provides 6 month prognostic information regarding recovery from TBI.”

Find a facility that you know does this test and get the patient to them within 24 hours after the car accident..!!!

*J Neurotrauma 2016 Jan 15; 3(2): 215-25*

# HBOT > 1 Year after MTBI

This study debunks the myth that Hyperbaric Oxygen Therapy (HBOT) is only helpful in the first year after concussion.

This study shows it increases neural plasticity when used on patients several years after the concussion.

*Trial Registration: [ClinicalTrials.gov](https://clinicaltrials.gov)  
NCT 00715052 by Boussi-Gross et. al.*

# Neurobiological Consequences of Traumatic Brain Injury

This study explains the chemistry of brain concussion.

Understanding this paper helps you accurately predict for your patient how long the concussion will last.

*By Thomas W. McAllister, MD*

# Chiari Malformation after Trauma

This is a blog by an attorney explaining Chiari malformations from trauma. Notice all the people commenting who are upset because their doctors missed this important diagnosis...

# Questions?



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