The Complaint-based Neuro Exam

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Disclosures

- Funded by Abbott Laboratories to advance development of Abbott's TBI test for diagnosis and determination of severity of brain injury in adults and children

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Plan for today:

- Neuro's normal neuro exam
- ED normal neuro exam
- Tailoring the ED neuro exam
- GCS
- Dizziness…

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Normal Neuro Exam

GEN: NAD, pleasant, cooperative
NEURO
MENTAL STATUS: AAOx3, memory intact, fund of knowledge appropriate
LANG/SPEECH: Naming and repetition intact, fluent, follows 3-step commands
CRANIAL NERVES:
II: Pupils equal and reactive, no RAPD, no VF deficits, normal fundus
III, IV, VI: EOM intact, no gaze preference or deviation, no nystagmus.
V: normal sensation in V1, V2, and V3 segments bilaterally
VII: no asymmetry, no nasolabial fold flattening
VIII: normal hearing to speech
IX, X: normal palatal elevation, no uvular deviation
XI: 5/5 head turn and 5/5 shoulder shrug bilaterally
XII: midline tongue protrusion
MOTOR:
5/5 muscle power in Rt shoulder abductors/adductors, elbow flexors/extensors, wrist flexors/extensors, finger abductors/adductors. 5/5 in Rt hipflexors/extensors, knee flexors/extensors, ankle dorsiflexors and planter flexors.
5/5 muscle power in Lt shoulder abductors/adductors, elbow flexors/extensors, wrist flexors/extensors, finger abductors/adductors. 5/5 in Lt hipflexors/extensors, knee flexors/extensors, ankle dorsiflexors and planter flexors.
REFLEXES: 2/4 throughout, bilateral flexor plantar response, no Hoffman's, no clonus
SENSORY:
Normal to touch, pinprick, vibration, temp all limbs
No hemineglect, no extinction to double sided stimulation (visual & tactile)
Romberg absent
COORD: Normal finger to nose and heel to shin, no tremor, no dysmetria
STATION: normal stance, no truncal ataxia
GAIT: Normal; patient able to tip-toe, heel-walk.

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Brief Normal Neuro Exam:

NEURO:
MENTAL STATUS: AAOx3
LANG/SPEECH: Fluent, intact comprehension
CRANIAL NERVES: Pupils equal and reactive, normal visual fields, EOM intact, no facial droop
MOTOR: 5/5 in both upper and lower extremities
SENSORY: Normal to light touch in all extremities
COORD: Normal finger to nose and heel to shin, no dysmetria

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Brief ED Normal Neuro Exam:

NEURO: A&Ox3, fluent speech, PERRL, normal visual fields, EOM intact, no facial droop, 5/5 in both upper and lower extremities, normal to light touch in all extremities, normal finger to nose

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Stroke Code

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Brief ED Normal Neuro Exam:

NEURO: A&Ox3, fluent speech, PERRL, normal visual fields, EOM intact, no facial droop, 5/5 in both upper and lower extremities, normal to light touch in all extremities, normal finger to nose

Brief MCA stroke:

NEURO: awake, alert, follows simple commands – non-verbal, Expressive aphasia – follows simple commands Pupils equal and reactive, Rt hemianopia, EOM intact, no gaze preference or deviation, R facial droop, 3/5 in Rt upper and lower extremities – drift present, 5/5 in Lt upper and lower extremities, reacts to pain in all limbs

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Altered Mental Status

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Brief ED Normal Neuro Exam:

NEURO: A&Ox3, fluent speech, PERRL, normal visual fields, EOM intact, no facial droop, 5/5 in both upper and lower extremities, normal to light touch in all extremities, normal finger to nose

AMS:

Gen: Laying in bed, eyes closed, not following commands consistently
Neuro:
MS: Drowsy, awakens to repeated stimuli, not attentive, sometime tracks but not following commands.
Language: Not following simple commands, occasionally saying yes to random questions.
CNs: Pupils b/l equal 3mm, reactive, EOMI seems intact, face symmetric
Motor: Limited due to patient not following commands but moving all 4 extremities equally and spontaneously. Roughly 4+/5 throughout
Sensory: Intact to painful stimuli in all 4 extremities

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GCS

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Low GCS, how to assess GCS:

Best eye response (4)
1. No eye opening
2. Eye opening to pain
3. Eye opening to sound
4. Eyes open spontaneously

Best verbal response (5)
1. No verbal response
2. Incomprehensible sounds
3. Inappropriate words
4. Confused
5. Orientated

Best motor response (6)
1. No motor response.
2. Abnormal extension to pain
3. Abnormal flexion to pain
4. Withdrawal from pain
5. Localizing pain
6. Obeys commands

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Dizziness

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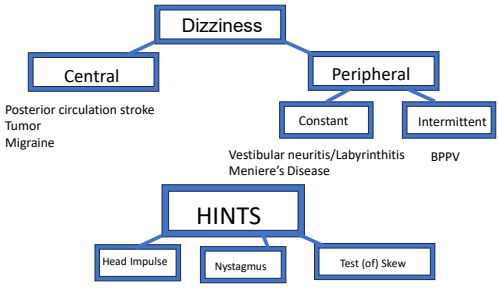

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Reassuring HINTS

- MUST HAVE **ALL** OF THE FOLLOWING:
  - Presents with constant vertigo & nystagmus
  - Abnormal Head Impulse Test
  - Unidirectional Nystagmus
  - No vertical skew deviation

Kattah JC, Talkad AV, Wang DZ, Hsieh Y-H, Newman-Toker DE. HINTS to diagnose stroke in the acute vestibular syndrome: three-step bedside oculomotor examination more sensitive than early MRI diffusion-weighted imaging. Stroke. 2009;40(11):3504-3510. doi:10.1161/STROKEAHA.109.551234.

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Scary HINTS

- **ANY** of the following:
  - Presents with constant vertigo and nystagmus
  - **Normal** Head Impulse Test
  - Direction-changing Nystagmus
  - Skew deviation

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HINTS, oh nasty, terrible HINTS

- **Patients MUST HAVE CONSTANT VERTIGO AND NYSTAGMUS.**
- **Distinguish vestibular neuritis vs. central vertigo**

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HINTS, oh nasty, terrible HINTS

- **H**ead **I**mpulse Test
- **N**ystagmus
- **T**est of **S**kew (Deviation)

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Head Impulse

https://novel.utah.edu/Newman-Toker/collection.php

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Head Impulse

https://novel.utah.edu/Newman-Toker/collection.php

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Nystagmus

https://novel.utah.edu/Newman-Toker/collection.php

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Nystagmus

https://novel.utah.edu/Newman-Toker/collection.php

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TIP: MISSED THAT? TRY FILMING NYSTAGMUS IN SLO-MO ON YOUR PHONE!

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Test of Skew

https://novel.utah.edu/Newman-Toker/collection.php

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Test of Skew

https://novel.utah.edu/Newman-Toker/collection.php

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Thank you!

Questions?

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