

Practical Approach to the Neurologic History and Examination

**Dr. Kathryn Giles MD, MSc, FRCPC
Neurologist
Cambridge, Ontario**

Copyright © 2017 by Sea Courses Inc.

All rights reserved. No part of this document may be reproduced, copied, stored, or transmitted in any form or by any means – graphic, electronic, or mechanical, including photocopying, recording, or information storage and retrieval systems without prior written permission of Sea Courses Inc. except where permitted by law.

Sea Courses is not responsible for any speaker or participant's statements, materials, acts or omissions.

Faculty/Presenter Disclosure

- **Faculty: Dr. Kathryn Giles**
- **Relationships with commercial interests:**
 - **Grants/Research Support:**
 - Biogen Idec, Genzyme
 - **Speakers Bureau/Honoraria:**
 - Bayer, Biogen Idec, EMD Serono
 - **Consulting Fees:**
 - Biogen Idec, EMD Serono, Genzyme
 - **Other:**
 - none

Disclosure of Commercial Support

- **Potential for conflicts of interest:**
 - **none**

Patients Present With...

- **Complaints – either specific or vague**
- **Very little knowledge or concern over which “specialty” or “body system” that is affected**
- **Physicians must rapidly and efficiently narrow down complaints into usable information to begin the diagnostic process**
- **The medical history is our most important tool**

Neurologic Complaints

- **Pain**
- **Dizziness**
- **Loss/Altered Consciousness**
- **Cognitive Difficulties**
- **Visual Disturbance**
- **Speech Difficulties**
- **Swallowing Difficulties**
- **Taste/Smell Alteration**

Neurologic Complaints

- **Numbness/Altered Sensation**
- **Weakness/Muscle Complaints**
- **Tremor**
- **Gait Difficulties**
- **Bladder and Bowel/ Sexual Disturbances**

3 Min Neuro Exam: Tools

- **Ophthalmoscope**
- **Reflex hammer**
- **Straight pin**
- **Vibrating tuning fork**



3 Minute Neurologic Examination

- **History (screen cognition, speech)**
- **Fundi**
- **EOM (horizontal and vertical eye movements)**
- **Strength (deltoid, fingers, hip flexors, rapid movements of hands and feet)**
- **Finger/nose**
- **Reflexes**
- **Sensation (pinprick crossed proximal/distal and vibration in the feet)**
- **Gait (walk, heels, toes, tandem)**

Pain

- **Standard pain history (location, character, radiation, aggravating/relieving factors, progression)**
- **Headache:**
 - **Episodic**
 - **Aura/accompanying neurologic symptoms**
 - **Nausea, photophobia, phonophobia**
 - **Effect of exercise/bending over**
 - **Effect of posture**
 - **Temporal profile**
 - **Medication taken (daily/weekly/monthly – include OTC)**
 - **Triggers (hormonal, food, environment, stress, depression)**

Headache: 3 Min Neuro Exam Plus

- **Check neck ROM and check trigger points**
- **Look at pupils**
- **Look at the head and area of pain!**
- **Palpate the temporal arteries**

Pain

- **Back Pain:**
 - **Radiation – define carefully**
 - **Leg vs. back**
 - **Associated weakness, numbness, gait, bladder, bowel**
 - **Secondary gain**
 - **Treatments sought**
 - **Medication taken – narcotics and long term muscle relaxants ineffective**
- **Neck Pain:**
 - **- periscapular pain**

Pain: 3 Min Neuro Exam Plus

- **Back Pain:**

- **Straight leg raise**
- **Atrophy**
- **Reflexes (knee is L3/4, Hamstring is L5, ankle is S1)**
- **Dermatomal sensation**
- **walk on heels and toes**

- **Neck Pain:**

- **Move neck into extension to the side of pain**
- **Reflexes (bicep C5/6, tricep C7, supinator C6, finger jerk C8)**
- **Dermatomal sensation**

Dizziness

- **Vertigo**
 - **Sensation of movement**
 - **Often triggered by movement**
 - **Episodic**
 - **Vertigo in isolation is not CNS**
 - **Gait disturbance/limb incoordination**
- **Non Specific**
 - **Vague, continual, difficult to describe, presyncope**
- **Remember Heart/ Lungs/Metabolic**

Dizziness: 3 Min Neuro Exam Plus

- **Nystagmus:**
 - **Check horizontal gaze (rotatory is peripheral)**
 - **Check vertical gaze ((vertical nystagmus is central)**
- **Hearing:**
 - **Conductive hearing loss – tuning fork behind the ear**
- **Cerebellar function:**
 - **Scanning dysarthria**
 - **Limb ataxia (finger nose and rapid movements)**
 - **Gait/tandem – midline cerebellar function**

Loss/Altered Consciousness

- **Seizure**

- **Focal onset (taste, smell, deja-vu, disembodiment, rising sensations, visual alterations) – often occur in isolation, often brief**
- **Confirm episode (talk to witness), ask about movement, changes in breathing, incontinence, tongue biting, injury**
- **Define post ictal – muscle aching, fatigue, confusion**
- **Carefully search for prior episodes, nocturnal seizures**
- **Often no trigger (not postural, exertion)**

Loss/Altered Consciousness

- **Syncope**
 - **Triggered (postural change, hunger, exhaustion, fear)**
 - **Ask about palpitation, associated symptoms (sweating, pale, tremulous, nausea)**
 - **Remember can have jerking movements and incontinence**
 - **Not truly post ictal**

LOC 3 Min Neuro Exam Plus

- **Should be normal**
- **Check pulse, BP**

Cognitive Difficulties

- **Dementia**
 - **Multiple cognitive domains (memory, executive functioning, attention, language, visuospatial)**
 - **Generally perceived first by others**
 - **Ask about ADL (cooking, banking, driving, shopping, social activities) and work (difficulties, complaints, demotions)**
 - **Personality change**
 - **Sleep change**

Cognitive Difficulties

- **Pseudo dementia**
 - **Generally memory (short term), attention/concentration, word finding difficulties**
 - **Explore depression, anxiety, stress, sleep**
 - **Generally noticed mainly by the person and of great concern**
 - **Generally functioning normally**

Cognitive: 3 Min Neuro Exam Plus

- **Listen carefully:**
 - **Do not let the accompanying person answer**
 - **Engage in general conversation to put patient at ease and to truly listen**
- **MMSE and /or MoCA**
- **Frontal Release Signs**
- **Good physical and bloodwork**

Visual Disturbance

- **Loss of Vision**
 - **Unilateral (eye) vs. field defect (brain) – cover/uncover**
 - **Positive or negative symptoms**
 - **Timeframe (sudden vs. subacute; brief vs. prolonged)**
 - **Associated symptoms (headache, eye pain)**
 - **Past history of migraine, stroke, neuro symptoms**
- **Diplopia**
 - **Cover/uncover (never triple)**
 - **Direction of gaze where maximal**
 - **Timeframe/ associated symptoms/ past history**

Visual: 3 Min Neuro Exam Plus

- **Visual loss:**
 - **Acuity**
 - **Visual fields (finger counting)**
- **Diplopia:**
 - **Extra-ocular eye movements (while asking patient what they see)**
 - **Cover each eye in turn if diplopia**
 - **Look for ptosis (sustain upward gaze for 1 minute)**
 - **Look at the eyes for protuberance**

Speech Difficulties

- **Dysphasia**
 - **Speech output (word substitutions, fluency, word finding)**
 - **Comprehension (following conversations, commands, understanding television/radio)**
 - **Reading and writing**
- **Dysarthria**
 - **Only mechanical abnormality**
 - **Swallowing often involved**
- **Benign**
 - **Mild word finding difficulty**

Speech: 3 Min Neuro Exam Plus

- **Listen to speech**
- **For dysphasia – conversation, commands, naming, reading and writing**
- **Do palatal (kuh) , lingual (tuh), labial (puh) sounds**
- **Quality of disturbance:**
 - **Hoarse/Nasal – neuromuscular or laryngeal**
 - **Scanning/irregular – cerebellar**
 - **Slow and laboured, slurred – upper motor neuron (check jaw jerk and facial spasticity) or lower motor neuron (check for tongue fasciculation)**

Swallowing Difficulties

- **Neuromuscular**
 - **Liquids often more difficult than solids**
 - **Fatigable (worse as meal progresses)**
 - **Often dysarthria**
 - **Ask about weight loss, pneumonia**
- **Mechanical**
 - **Solids first**
 - **Sticking sensation/regurgitation**
- **Benign**
 - **Variable, no weight loss**

Swallowing:3 Min Neuro Exam Plus

- **Listen to the speech as neurologic dysphagia does not occur in isolation:**
 - **Hoarse/nasal**
 - **Slurred/spastic**
- **Look at the tongue (fasciculation) and mouth**
- **Check for fatiguable weakness (arms, legs)**

Taste/Smell Alteration

- **Taste is smell (tongue – bitter, salt, minimal sweet – protective)**
- **Cooking, eating, perfumes and scents, smoke**
- **Onset (abrupt or gradual)**
- **Nose congestion, pain, other symptoms**
- **Medication changes (herbals)**
- **Head injury, headache**

Taste/Smell: 3 Min Neuro Exam Plus

- **Just use a common smell (soap or hand sanitizer)**

Numbness/Altered Sensation

- **Distribution**
 - **unilateral, single limb (dermatomal vs. radicular), stocking glove, face, crossover**
- **Characteristic**
 - **Negative (lack of sensation – ask about temperature and pain perception)**
 - **Positive (paresthesia)**
 - **Neuropathic pain (burning, freezing, lancinating, hypersensitivity) – walking in bare feet**

Numbness/Altered Sensation

- **Onset:**
 - **Abrupt, subacute, gradual**
 - **Triggers (infection, medication, injury)**
- **Accompanying symptoms:**
 - **Pain – back, neck, limb**
 - **Weakness**
 - **Gait/balance changes – walking on uneven ground or in the dark, shower with eyes closed, rapid rotational changes/ pivoting**
 - **Bladder/bowel/sexual/sweating and autonomic**

Sensory: 3 Min Neuro Exam Plus

- **Lateral columns (pain and temperature):**
 - **Stocking glove with pinprick**
 - **Dermatomal**
 - **Sensory level**
- **Posterior columns (vibration and joint position sense):**
 - **Tuning fork on toes and 5th fingers; move up until felt**
 - **Rhomberg**
- **Face (corneal reflex and nasal tickle)**

Weakness/Muscle Complaints

- **Distribution:**
 - **Global (general fatigability)**
 - **Focal (face, arm(s), leg(s))**
 - **Unilateral/bilateral**
 - **crossed**
- **Onset:**
 - **Acute/subacute/gradual**
- **Triggers:**
 - **Injury/concurrent illness/medication**
 - **Associated pain or myalgia**

Weakness/Muscle Complaints

- **Functional Difficulty:**
 - **Most important**
 - **Upper extremities – overhead fatigability, manual dexterity (not dropped coffee cup!)**
 - **Lower extremities – changes gait such as stumbling, shuffling, slowness - proximal weakness (chairs, tubs, toilet) - downstairs>upstairs**

Weakness/Muscle Complaints

- **Specific muscle symptoms:**
 - **Cramping – nocturnal vs. daytime (ETOH, hydration, diet, change exercise, muscle weakness)**
 - **Myalgia**
 - **Fasciculation – general vs. focal; prolonged vs. sporadic**
 - **Wasting – focal vs. generalized (always associated weakness)**

Motor: 3 Min Neuro Exam Plus

- **Observe:**
 - **bulk (measure)/fasciculation**
- **Muscle Tone:**
 - **Fine rapid movements**
- **Muscle strength:**
 - **CNS – pyramidal distribution of weakness (distal hand and hip flexor) – tapping fingers and feet!**
 - **PNS – distal weakness hands/feet**
 - **Muscle – proximal (get out of chair or off floor)**

Motor Neuro Exam

- **Reflexes:**
 - **Increased in CNS, decreased in PNS, normal in muscle disease**
 - **Biceps (C5/6), triceps (C7), supinator (C6), finger jerk (C8), knee (L3/4), hamstring (L5), ankle (S1)**
 - **Toes – Babinski in CNS**
- **Gait:**
 - **Observe walking in and out of the office**
 - **Walk on toes and heels, hop, run**
 - **Look at the shoes**

Tremor

- **Resting:**
 - **Explore other symptoms of Parkinson's (bradykinesia, rigidity, postural instability)**
- **With Activity**
 - **Aggravating (caffeine, stress)/Relieving (ETOH)**
 - **Family history**
 - **Head and voice tremor**
 - **Coordination issues and balance**

Tremor: 3 Min Neuro Exam Plus

- **Observe at true rest**
- **Observe with arms and hands extended forward**
- **Finger nose**
- **Check for cogwheeling rigidity**
- **Gait – step size, pivot, check for retropulsion**

Gait Difficulties

- **Define – slow, stiff, shuffling, stumbling, tripping, balance**
- **Falls? – trigger, frequency, injury**
- **Can you keep up?**
- **Noticed by others?**
- **Associated symptoms – weakness, numbness, bladder/bowel/sexual, pain**

Gait: 3 Min Neuro Exam Plus

- **Observe walking in and out of office**
- **Observe pivoting**
- **Walk on heels and toes**
- **Hop and run**
- **Tandem**
- **Look at the shoes**

Bladder and Bowel/ Sexual Disturbances

- **All 3 go together – ask!**
- **Bladder:**
 - **Urgency, frequency (night and day), hesitancy, dribbling, incomplete emptying, incontinence, infections, pain**
- **Bowel:**
 - **Urgency, constipation, incontinence**
- **Sexual Disturbance:**
 - **Men – ED, premature ejaculation**
 - **Women – lubrication, ability to orgasm**

Bladder/Bowel: 3 Min Neuro Exam Plus

- **Rectal tone**
- **Cremasteric reflexes in males**

Summary

- **Careful specific symptom based history along with a symptom specific neurologic exam allows answers to the following questions:**
 - **Neurologic or not (most important)**
 - **Localize the lesion (partially – brain, cord, peripheral)**
 - **Define the lesion (perhaps)**
 - **Define where and how to image/test**
 - **Define need to refer (helps neurologist to triage the referral)**

Questions?