# PREPARATION AND TEST-TAKING STRATEGIES

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– Matthew McCoyd, MD

## Lecture Outline

- Resources
- Study strategies
- Exam content
- High yield material
- Test-taking strategies
- General information

## Resources

### Resources

- Beat the Boards Neurology Review Course
  - Pay attention to high-yield material
  - Commit tables to memory
  - Revisit and review lectures
  - Take and retake practice exams (practice video cases included)
- Other Resources
  - Laughing your Way to Passing the Neurology Boards (Amy McGregor, MD, $90) → great high yield tables (Epilepsy and Anatomy)
  - Neuroanatomy Through Clinical Cases (Hal Blumenfeld, MD, PhD, $75)
  - "Neurologic Exam" website—Case videos, MCQs, etc
    http://library.med.utah.edu/neurologicexam/html/contacts.html

## Study Strategies

- Listen to lectures multiple times
- Making your own tables and diagrams help to reinforce your knowledge and recall
- Don't focus on recent journal articles/findings to study; the board avoids controversial issues or new breakthroughs
- Review all high yield tables 1–2 nights prior to the exam

### Overall Exam Content
### Part A: Neuroscience (125 Q)

| Topics | # of Questions |
|---|---|
| Neuroanatomy | 18 |
| Neuropathology | 18 |
| Neurochemistry | 14 |
| Neurophysiology | 24 |
| Neuroimmunology | 14 |
| Neurogenetics | 14 |
| Neuroendocrinology | 6 |
| Neuropharmacology | 18 |

Notes:

## Part B: Behavioral Neurology, Cognition, & Psychiatry (85 Q)

| Topics | # of Questions |
|---|---|
| Developmental lifecycle | 17 |
| Diagnostic procedures | 8 |
| Psychiatric principles, clinical / meds | 33 |
| Behavioral neurology | 25 |

## Part C: Clinical Neurology (vignettes, videos, imaging, etc.)

| Topics | # |
|---|---|
| Headache | 8 |
| Pain | 8 |
| Epilepsy | 8 |
| Sleep | 8 |
| Genetic disorders | 8 |
| Congenital disorders | 8 |
| Cerebrovascular disease | 8 |
| Neuromuscular disease | 10 |
| Cranial Nerve Palsies | 8 |
| Spinal cord diseases | 8 |
| Movement disorders | 8 |
| Demyelinating diseases | 8 |
| Neuroinfectious disease | 8 |
| Critical care / trauma | 8/8 |
| Neuro-ophth0 / otology | 8/8 |
| Neurologic complications of systemic diseases | 8 |
| Neuro-oncology / toxicology | 12 |
| Pregnancy and Neurology | 6 |
| Child Neurology | 13 |
| Clinical diagnostic & therapeutic procedures | 13 |
| Ethics and Communications | 10 |
| Systems-based practice issues | 4 |

## High Yield Material

### High Yield Material Part A: Neuroscience

- Neuroanatomy
  - Brainstem/cerebellar/thalamic anatomy*; Cranial nerve anatomy (auditory and visual system); and Neuromuscular junction / muscle
- Neuropathology
- Neurochemistry
  - Neurotransmitters*; Axonal transport; Biochemistry of membranes / receptors/ ion channels; neurotoxins
- Neurophysiology
  - Synaptic transmission and membrane physiology; reticular systems: mechanism of sleep and arousal, consciousness and circadian rhythms; cortical syndromes/aphasias*
- Neuroimmunology
  - Prion disease
- Neurogenetics
  - Channelopathies* (see table later)
- Neuropharmacology
  - Anticonvulsants (channels and undesirable side effects) neuromuscular junction; vitamins; pain receptors

***Starred material is key***

Notes:

**High Yield Material Part B: Behavioral Neurology, Cognition, and Psychiatry**

- Development through life cycle
  - Defense mechanisms*; 0-8 years
- Diagnostic tests
  - Neuroimaging basics; aptitude tests*
- Psychiatric principles/clinical/meds*
  - Schizophrenia; mood disorders; anxiety; somatoform disorders
  - TIP: Focus on risk factors; diagnostic criteria (timing is a distinguishing feature : 6 months, 1 year, 2 months) comorbid conditions; antipsychotic medicines, mood stabilizers, anti-depressants
- Behavioral neurology*
  - Delirium; dementia (Alzheimer's dementia, Lewy body dementia, frontal temporal dementia (Pick's disease), Huntington's disease)
  - Parkinson's disease and Parkinson-Plus syndromes (MSA → parkinsonism + Autonomic dysfunction; PSP → symmetric parkinsonism, falls, supranuclear vertical gaze palsy; CBD)
  - TIP
    - Focus on classic presentations and distinguishing features of each disease

***Starred material is key***

**High Yield Material Part C: Clinical Neurology (vignettes, videos, imaging)**

- Headache
  - Primary migraine; cluster (classic)
- Pain disorders
  - Central pain syndromes (thalamic)
- Epilepsy
  - Absence*****; JME; Lennox Gastaut
- Sleep
  - REM; sleep apnea
- Genetic disorders
  - Angelman syndrome; Retts syndrome; Down syndrome; Lysosomal disorders; Wilson disease*****
- Congenital Disorders
  - Chiari Malformations; Synringomyelia; MR
- Cerebrovascular Disease
  - Intracerebral hemorrhage; subarachnoid hemorrhage (subhyaloid hemorrhage*****)
- Neuromuscular Disease
  - Muscular dystrophies; congenital myopathies; channelopathies*****; FHPP; paramyotonia congenita
- Spinal cord Disease
  - Congenital malformations
- Movement Disorders
  - Parkinson Disease* and syndromes
- Demyelinating Disease
  - MS; NMO*
- Neuro-infectious Diseases
  - PML; Toxo; HIV
- Critical care / Trauma
  - Botulism (adult and child) vs. GBS
  - Concussion; epidural / subdural hematoma
- Neuro-optho/otology
  - Pupil, chiasmal, retrochiasmal disorders
  - Acoustic Neuroma
- Neuro-oncology
- Neuro-toxicology**
  - Organophosphates*, arsenic, mercury, lead
- Child neurology
  - Video and EEG patterns*
- Ethics
  - End of life; brain death
- Clinical procedures
  - EEG; imaging; EMG; NCS
- Systems-based practice issues

***Starred material is key***

Notes:

## High Yield Material Focus on Channel Mutations! You will rarely get gene/locus questions [1]

| Epilepsy | Gene Product | Gene | Locus |
|---|---|---|---|
| Benign Familial Neonatal Convulsions (EBN1) | **Voltage-gated potassium channel** | KCNQ2 | 20q13.3 |
| Benign Familial Neonatal Convulsions (EBN2) | **Voltage-gated potassium channel** | KCNQ3 | 8q24 |
| Benign Familial Neonatal-Infantile Seizures | **Voltage-gated sodium channel** | SCN2A | 2q24 |
| Generalized Epilepsy with Febrile Seizures Plus (Type 1) | **Voltage-gated sodium channel** | SCN1B | 19q13 |
| Generalized Epilepsy with Febrile Seizures Plus (Type 2) | **Voltage-gated sodium channel** | SCN1A | 2q24 |
| Generalized Epilepsy with Febrile Seizures Plus | **Voltage-gated sodium channel** | SCN2A | 5q31 |
| Generalized Epilepsy with Febrile Seizures Plus (Type 3) | **GABA A receptor** | GABRG2 | 5q31 |
| Childhood Absence Epilepsy and Febrile Seizures | **GABA A receptor** | GABRG2 | 20q13 |
| Autosomal Dominant Nocturnal Frontal Lobe Epilepsy | **Nicotinic acetylcholine receptor** | CHRNA4 | 1q21 |
| Autosomal Dominant Nocturnal Frontal Lobe Epilepsy | **Nicotinic acetylcholine receptor** | CHRNB2 | 10q24 |

## Focus on Channel Mutations[1]

| Epilepsy | Gene Product |
|---|---|
| Benign Familial Neonatal Convulsions (EBN1) | Voltage-gated potassium channel |
| Benign Familial Neonatal Convulsions (EBN2) | Voltage-gated potassium channel |
| Benign Familial Neonatal-Infantile Seizures | Voltage-gated sodium channel |
| Generalized Epilepsy with Febrile Seizures Plus (Type 1) | Voltage-gated sodium channel |
| Generalized Epilepsy with Febrile Seizures Plus (Type 2) | Voltage-gated sodium channel |
| Generalized Epilepsy with Febrile Seizures Plus | Voltage-gated sodium channel |
| Generalized Epilepsy with Febrile Seizures Plus (Type 3) | GABA A receptor |
| Childhood Absence Epilepsy and Febrile Seizures | GABA A receptor |
| Autosomal Dominant Nocturnal Frontal Lobe Epilepsy | Nicotinic acetylcholine receptor |
| Autosomal Dominant Nocturnal Frontal Lobe Epilepsy | Nicotinic acetylcholine receptor |

## High Yield Material[1] Easy 1–3 Questions

| Hypothalamic Nucleus | Function |
|---|---|
| Anterior | Detects elevated body temperature and triggers cooling mechanisms, stimulates the parasympathetic nervous system |
| Arcuate | Produces dopamine |
| Lateral | Controls appetite |
| Medial preoptic | Controls the release of gonadotropic hormones from the pituitary |
| Paraventricular | Synthesizes antidiuretic hormone and oxytocin, responsible for neuroendocrine and autonomic responses to stress, provides excitatory input to preganglionic sympathetic neurons |

## High Yield Material[1] Again, know the channels involved

| Antiepileptic drug | Primary Mechanism(s) |
|---|---|
| Carbamazepine (Tegretol) | Sodium channel blockade |
| Diastat (rectal Valium) | Increases frequency of opening of GABA A chloride channel |
| Ethosuximide (Zarontin) | Calcium channel blockade (voltage-dependent T-type calcium channel alpha-1G subunit) |
| Felbamate (Felbatol) | Sodium channel blockade, acts on NMDA receptor, acts at GABA A receptor |

[1]Source: Laughing Your Way to Passing the Neurology Boards, Amy M. McGregor

Notes:

## Test-Taking Strategies

### Test Taking Strategies

- Question content
  - Question are DIRECT (1–2 liners). Most are factual
  - Generic medication names are used
  - First line: pay attention to demographics in the stem (age, race, sex gender, location occupation may clue you in to the answer)
  - Last line: what are they asking?
  - Read the answers
  - Then read the entire stem

### Test Taking Strategies Question Approach

- Flag questions you are unsure about and revisit them
- For the vignettes, replay video
- Clinical Cases→ Similar to Step 3 clinical cases. Lots of videos with a group of 5-6 questions pertinent to the case but don't get nervous; sometimes you may get the first question wrong but the second one will yield the first clue and you will get 4/5 questions right
- Take note of key words: EXCEPT, NOT, ALL, ALWAYS
- Don't leave any answers blank: Guess if you have to!
- The correct answer is also often between two similar answers
- Wrong answers sometimes have grammatical inconsistencies with the questions
- Make associations when studying (eg, topiramate [Topamax] = Kidney stones)

### Sample Question 1

A 70-year old man with 6 months of frequent falls is brought in by his wife for being forgetful. On further questioning, he reports visual hallucinations and fluctuating periods of attention. Examinations reveals cogwheeling rigidity and tremor on the in the left arm MRI shows minimal atrophy. What is the most likely diagnosis?

A. Parkinson's Disease
B. Frontotemporal dementia with Parkinsonism
C. Dementia with Lewy Body
D. Progressive Supranuclear Palsy
E. Pick's Disease

### Sample Question 2

Generalized Epilepsy with Febrile Seizure Type 2 is associated with a mutation in which channel?

A. Ligand-gated sodium channel
B. GABA A receptor
C. Voltage-gated potassium channel
D. Voltage-gated sodium channel
E. Acetylcholine receptor

### Sample Question 3

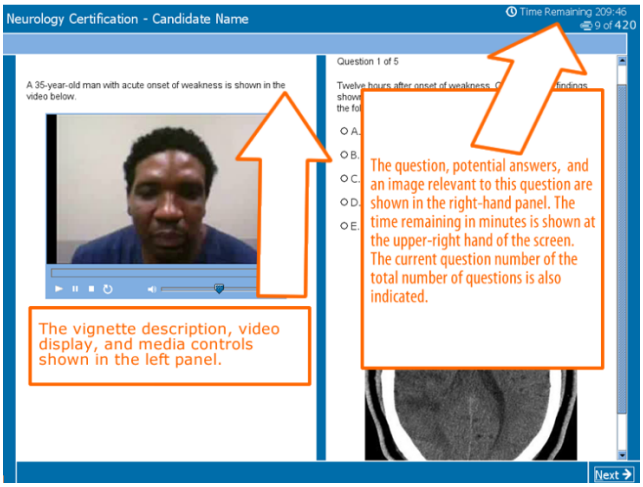
Information about proprioception, vibration and light touch traveling through the medial lemniscus arrive at which thalamic nucleus?

A. Ventral Posterior Lateral nucleus
B. Ventral Anterior nucleus
C. Medial Geniculate Body
D. Ventral Posterior Medial nucleus
E. Pulvinar nucleus

Notes:

## Notes on Video Questions

- May be 10 or more video questions on exam
- Length/duration: close to 1 minute, up to 2-3 min
- Each video case may have 2-3 (or more) questions associated
- Any topic is fair game, but look for video questions on
  - Movement disorders
  - Seizures/epilepsy
  - Neuro-ophthalmology
  - Neuromuscular disorders
  - Cranial nerves/sleep/vascular cases
- Look for images associated with the video case for additional information (MRI/CT/X-Ray/EEG/EMG, etc)
- Testing center will have headphones
- This Neurology prep course has more than 40 video practice questions available in practice exams




Source: http://www.abpn.com/candidates.htm

## General Information

### Exam Day

- Good sleep hygiene 1 week prior to exam.
- Healthy breakfast (protein): eggs, yogurt, juice (not too much caffeine) and healthy snacks
- Dress comfortably; just in case, take a jacket/sweater (too cold/hot)
- Arrive 30 min before appointment time
- Use the bathroom before testing. Take breaks when given the opportunity during the test
- Don't eat too much for lunch

### General Information

- 2 forms of valid ID
- Avoid cell phones, pagers, watches, wallets, purses books or notes (but you will get a locker)
- Erasable white board for notes/headphones for clinical vignettes
- Remember
  - You only need >70% or more to pass
  - You can get up to 120 Q wrong and still pass!
  - It is simpler and more manageable than you think

**GOOD LUCK!**

Notes:

**Answer Key**

**Sample Question 1**
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