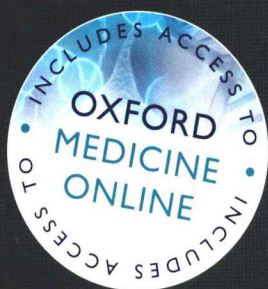
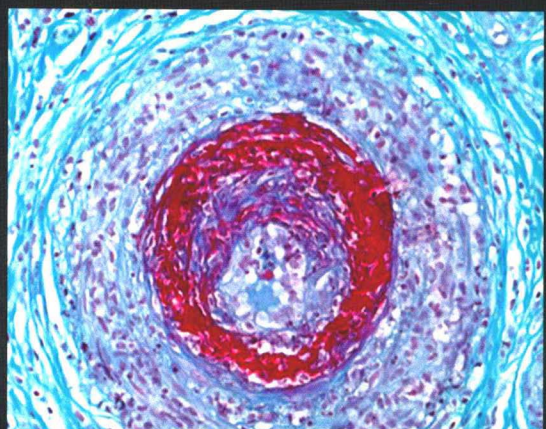
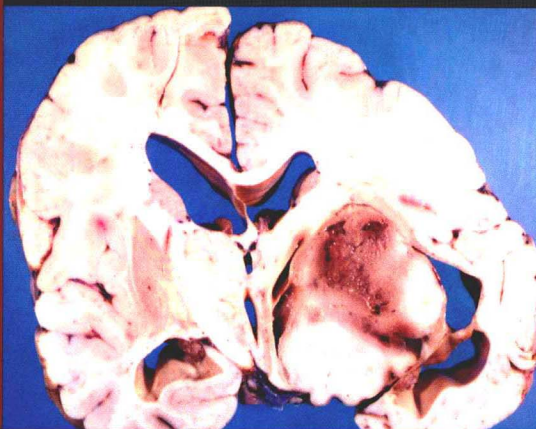
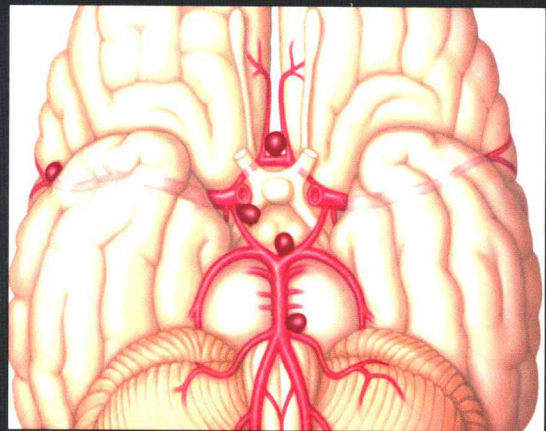
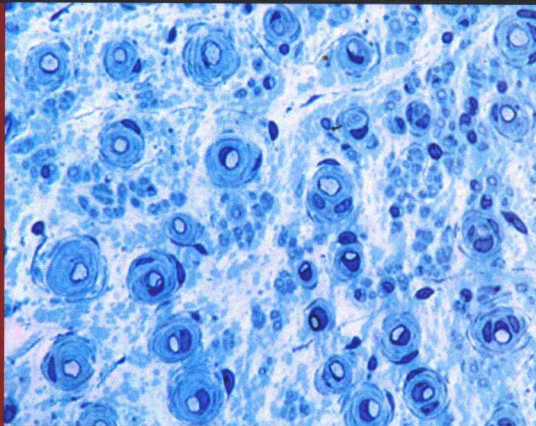


Mayo Clinic Neurology Board Review *Clinical Neurology for Initial Certification and MOC*



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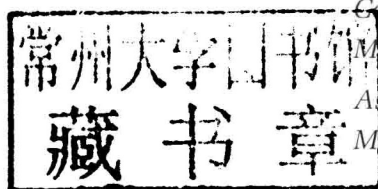
MAYO CLINIC NEUROLOGY BOARD REVIEW: CLINICAL NEUROLOGY FOR INITIAL CERTIFICATION AND MOC

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To my family for their patience and understanding. To the students and residents that inspire me.

Kelly D. Flemming, MD

To Amie, Katherine, Nathaniel, and Charlotte for their limitless patience and support. To the brilliant, talented residents of the Neurology Residency Program at Mayo Clinic in Rochester, Minnesota, without whom I would not have the best job in the world.

Lyell K. Jones Jr, MD

Foreword

The Department of Neurology at Mayo Clinic has a long-standing dedication to excellence in clinical neurology and values-driven care to our patients and to the education of colleagues across the career continuum, in all fields of medicine. Our ongoing dedication to education comes at a time of evolution and remarkable advances in the field and in an era of increasing subspecialization. Diagnostic imaging allows us to see more detail in a noninvasive manner, and there are few areas of the field unaffected by the tools of molecular genetics. Treatment options are increasing in number and improving in efficacy, and evidence-based management strategies have been advocated for many neurologic disorders. All these factors contribute to the excitement of being in such a dynamic specialty. There is an ongoing need for a core fund of knowledge for all providers to patients with neurologic disease. The current textbook takes the broad range of subspecialty neurology and distills a tremendous amount of information into a 2-volume text, the *Mayo Clinic Neurology Board Review*.

The current textbook is edited by 2 outstanding Mayo Clinic clinician-educators. They have sought the input of their colleagues from all neurology subspecialties and from neurosurgery, psychiatry, and neuro-ophthalmology, developing a concise review textbook of neurology. The book provides the most important information needed as one is studying for neurology board examinations or for a maintenance of certification (MOC) examination. The extensive use of superb diagrams and tables within the context of concise text provides a framework for efficient learning and attainment of information. The textbook is available as 2 separate volumes, so readers can select the material that is most relevant to them. For those in

training or preparing for initial board certification examinations, the first volume nicely summarizes the basic neuroscience, neuroanatomy, and psychiatric information that will be of use for that examination. Volume 2 will provide an outstanding review of clinical neurology for those studying for their initial neurology board examination, for applicants for recertification, for advanced practice clinician colleagues in neurology, and for colleagues in fields of psychiatry, neurosurgery, physical medicine and rehabilitation, family medicine, and internal medicine.

Several other features make the book of tremendous interest. There are over 300 self-assessment questions providing the reader with feedback regarding potential areas requiring further study. For those using the book for recertification, there is an overview of the MOC process, and *American Medical Association Physician's Recognition Award Category 1 Credits* for continuing medical education and self-assessment are provided for those who are interested.

For a neurologist in training or in practice, the text will provide an excellent review for an in-service examination, for neurology boards or MOC, or as a well-written, high-level, beautifully illustrated summary of the field. For the non-neurologist, there is a wealth of information presented in a learner-friendly manner that will demystify many aspects of the evaluation and management of neurology patients, who are seen so commonly in most any field of medicine.

I congratulate Drs Flemming and Jones and all their contributing colleagues on the completion of this superb textbook. The legacy of the collective Mayo Clinic Department of Neurology, across all sites, continues as

the Department enters its second century of existence—a group of colleagues with the highest level of dedication to excellence in the care of patients in clinical practice, to the education of their colleagues, and to the advancement of the field through innovative clinical and basic science research. This book is a testament to that legacy. Most importantly, this textbook will provide readers with an additional tool to solidify their knowledge base, leading

to improved clinical care of patients with neurologic disorders.

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Preface

Neurology is an exciting and rapidly expanding area of medicine. We have designed *Mayo Clinic Neurology Board Review* to assist both physicians-in-training who are preparing for the initial American Board of Psychiatry and Neurology (ABPN) certification examination and neurologists who are preparing for recertification. Trainees and other physicians in related specialties such as psychiatry, neurosurgery, or physiatry may also find this book useful in preparation for their own certification examinations. While we have erred on the side of thoroughness, *Mayo Clinic Neurology Board Review* is not intended to replace an in-depth textbook or serve as a guide to the most current therapies. Instead, this book provides a core of essential knowledge of both basic and clinical aspects of neurology. The emphasis is on clinical knowledge related to diagnostic and therapeutic approaches to patient management. In addition, this text has an expansive array of illustrations, pathology, and radiologic images.

With this book, we have acknowledged that there are different needs for those who are taking the initial board examination and for those who are recertifying. Thus, this book is published in 2 volumes: Volume 1 covers basic sciences and psychiatry, and Volume 2 covers clinical neurology. It is intended that people taking the board examination for the first time will purchase both Volume 1 and Volume 2, whereas those recertifying may wish to buy only Volume 2. In both volumes, we have included high-yield facts and questions for your review.

This volume, which is Volume 2 of *Mayo Clinic Neurology Board Review*, contains an extensive review of clinical neurology required for the recertification examination. If you are preparing for the initial certification examination, you should also purchase and review Volume 1 (in other words, Volume 2 alone does not provide complete preparation for the initial certification). Volume 1 contains an extensive review of the basic neuroscience, neuroanatomical, and psychiatric material required for the initial certification examination.

Those who are preparing for the recertification examination will be aware of the multifaceted process of Maintenance of Certification (MOC). *Mayo Clinic Neurology Board Review* uniquely offers not only a navigation guide to the MOC process but actual *American Medical Association Physician's Recognition Award Category 1 Credit* for continuing medical education and self-assessment that can be applied to MOC. Readers who are interested in claiming these credits may go to www.cmestore.mayo.edu to find the corresponding self-study course and further details on purchasing and documenting earned credits toward MOC, which have been approved for this purpose by the ABPN.

The faculty responsible for this text includes Mayo Clinic staff physicians in the Department of Neurology, the Department of Neurologic Surgery, the Department of Ophthalmology (Neuro-ophthalmology Team), the Department of Physical Medicine and Rehabilitation, the Division of Sleep Medicine, the Division of Infectious Diseases, and the Department of Psychiatry and Psychology at all 3 sites: Minnesota, Arizona, and Florida. We are deeply grateful to these incredibly talented experts who have provided such high-quality content. We also thank Nima Mowzoon, MD, for creating many of the wonderful illustrations and for spending countless hours gathering many of the figures that appear in this work.

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Cover images, clockwise from upper left: Figure 40.1B, Semithin sections of peripheral nerve in Charcot-Marie-Tooth disease; Figure 15.1, Common locations of intracranial aneurysms; Figure 40.8B, Fibrinoid necrosis appears red with trichrome stain in vasculitis; Figure 56.10A, Glioblastoma multiforme.

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Continuing Medical Education Information

Activity Description and Target Audience

This educational activity is part of a larger curriculum regarding the clinical practice of neurology; the curriculum includes several continuing medical education (CME) offerings at Mayo Clinic. This year is the first year that this educational resource will be available for CME and Maintenance of Certification (MOC) Part II credit. The resource will provide a broad-based review of the knowledge required for all neurologists in practice. There is no other review activity in the United States like this one; this Mayo Clinic offering is an innovative solution providing preparatory material and simultaneous CME and MOC credit. This activity is a comprehensive review of all aspects of neurologic disease evaluation, diagnosis, and treatment. This review is appropriate for neurologists, neurology trainees, providers in related specialties, and generalists.

Accreditation and Credit Designation Statement

Mayo Clinic College of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide CME for physicians.

Mayo Clinic College of Medicine designates this enduring material for a maximum of 77.25 *AMA PRA Category 1 Credits*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

This text also features ABFN-approved self-assessment activities. Once you review the content, a post-test and evaluation are accessible online at ce.mayo.edu (search

Mayo Clinic Neurology Board Review). Fees will apply depending on the CME or MOC desired. The Mayo School of Continuous Professional Development (CPD) requires learners score at least 80% to pass; they are allowed 1 retake. Upon passing, a certificate of attendance and completion will be available online for your immediate receipt.

Learning Objectives

1. Demonstrate mastery of the broad medical knowledge requirements for clinical practice.
2. Demonstrate an understanding of the multifaceted MOC process.
3. Demonstrate an understanding of the concepts of medical professionalism and interpersonal and communication skills and how they apply in complex practices reflected in today's health care environments.

How to Request or Obtain Credit

Once you review the content, a post-test and evaluation are accessible online at www.cmestore.mayo.edu. The Mayo School of Continuous Professional Development (CPD) requires that learners score at least 80% to pass; they are allowed 1 retake. Upon passing, a certificate of attendance and completion is awarded from the Mayo School of CPD and will be available online for your immediate receipt.

Owing to the extensive length of the book, the ability to claim credit has been divided into segments. This allows the learner to claim credit on smaller portions of the book as desired.

An individual report providing the questions, the learner's answers, the correct answers, and references to seek additional information will be provided for each participant. Comparable responses of the participants will also be provided.

Disclosures

As a provider accredited by the Accreditation Council for Continuing Medical Education (ACCME), Mayo Clinic College of Medicine (Mayo School of CPD) must ensure balance, independence, objectivity, and scientific rigor in its educational activities. The course director(s), Planning Committee members, faculty, and all others who are in a position to control the content of this educational activity are required to disclose all relevant financial relationships

with any commercial interest related to the subject matter of the educational activity. Safeguards against commercial bias have been put in place. Faculty also will disclose any off-label or investigational use of pharmaceuticals or instruments that are described within this book. Disclosure of these relevant financial relationships is published so that participants may formulate their own judgments regarding the material. Disclosures are shown starting on the following page.

Commercial Support

No commercial support was received in the production of this activity.

Questions

For assistance with obtaining CME or MOC credits, contact the Mayo School of CPD (email: cme@mayo.edu).