

Neurology

Description:

The Pediatric Neurology elective will give the resident the opportunity to learn how to obtain an appropriate history and perform a complete neurologic exam. Four to five half days will be spent in outpatient clinic examining patients with the neurologist. Consultations will be seen with the pediatric neurologist as requested by the treating physicians in the NICU, PICU, and General Inpatient area. It is anticipated that two half days will be available for the resident to read about the common neurologic problems. This will allow the resident to use an evidence based approach for evaluating patients.

Note:

The goals and objectives described in detail below are not meant to be completed in a single one month block rotation but are meant to be cumulative, culminating in a thorough and complete Pediatric Neurology experience at the end of residency.

Primary Goals for this Rotation

GOAL: Prevention, Counseling and Screening (Neurology). Understand the role of the pediatrician in preventing neurological diseases, and in counseling and screening individuals at risk for these diseases.

Provide routine neurological prevention counseling to parents and patients about:

1. Prevention of head and spinal cord trauma through use of seat belts, car seats, helmets, firearm safety, playground safety and diving injuries
2. Avoidance of environmental toxins including lead, insecticides and other household poisons
3. Public health and legislative strategies to reduce head and spinal cord injury

Provide specific counseling to parents and patients with neurological disorders, addressing:

1. Reducing long-term sequela from neurologic injury or congenital CNS disorders through rehabilitation and early intervention
2. Providing appropriate home stimulation for preterm infants at risk for developmental delay
3. The etiology and natural course of epilepsy, and treatment options and precautions for children with this condition
4. The expected course, resolution, risk of seizure disorder, and potential treatment of simple febrile seizures

GOAL: Normal Vs. Abnormal. Identify whether a child is normal or suffers from a neuropathological condition.

Describe normal neurological development, including language acquisition, cognition, motor development, loss of primitive reflexes, and socialization.

Explain the findings on clinical history and examination that suggest neurologic

dysfunction that requires further evaluation and treatment.
Differentiate a peripheral from a central nervous system lesion, diffuse from focal, and static from progressive neurologic dysfunction. Using this knowledge, correctly localize the site of any lesion.
Distinguish between a temporary neurological dysfunction (e.g., ataxia or lethargy due to anticonvulsant loading dose) from a pathological dysfunction (e.g., trauma, poisoning, severe infection, hypoglycemia, electrolyte imbalance).
Discuss the diagnostic value of tests to aid in the diagnosis of neurologic diseases, including indications, limitations, and costs. Discuss the following tests: electroencephalogram (EEG), head computerized tomography scan (CT), head magnetic resonance scan (MR), lumbar puncture, psychometric testing, electromyography (EMG) and nerve conduction velocity (NCV).
GOAL: Undifferentiated Signs and Symptoms. Evaluate, treat and/or refer patients with presenting signs and symptoms that may indicate a neurologic or neuromuscular disease process.
<p>Create a strategy to determine if the following signs and symptoms are caused by a neurologic or neuromuscular disease process:</p> <ol style="list-style-type: none"> 1. Vomiting 2. Weakness 3. Seizures 4. Failure to thrive 5. Feeding difficulties 6. Developmental delay 7. Spasticity 8. Hypotonia 9. Abnormal movement or tics 10. Headache 11. School problems 12. Behavior problems 13. Sleep problems
GOAL: Common Conditions Not Referred. Recognize and manage neurological disease conditions that generally do not require referral.
<p>Diagnose, explain, and manage the patient with the following neurologic conditions:</p> <ol style="list-style-type: none"> 1. Simple febrile seizures 2. Headaches, including migraine and tension headaches 3. Closed head trauma and simple linear skull fractures without evidence of concussion 4. Transient neurological disturbances due to drug ingestions (e.g., antihistamines, benzodiazepams) 5. Viral meningitis 6. Attention problems including ADHD 7. Simple tics
GOAL: Conditions Generally Referred. Recognize and initiate management of neurological conditions that generally require referral.
Identify, explain, initially manage and refer the following neurological or neuromuscular conditions:

1. Acute encephalopathy such as that caused by metabolic disturbances, lead ingestion, hypertension, anoxia, or drug/toxin overdose or ingestion
2. Bacterial meningitis
3. Brain tumor
4. Initial evaluation for cerebral palsy
5. Coma
6. Increased intracranial pressure
7. Encephalitis
8. Headaches that are severe, progressive, refractory to simple therapy, or suggestive of malignancy
9. Hydrocephalus
10. Abnormal movements (chorea, ataxia, complex tics)
11. Initial evaluation for mental retardation, loss of neurologic skills, autism
12. Muscle weakness, flaccidity, or paralysis suggestive of Guillain-Barre, muscular dystrophy or hypotonia
13. Neurocutaneous syndromes
14. Complex seizures that are difficult to diagnose or manage, or those that present with status epilepticus or are associated with progressive neurologic impairment
15. Stroke
16. Absence seizures
17. Static encephalopathy and cerebral palsy follow-up and co-management
18. Simple generalized tonic-clonic seizures

Identify the role and scope of practice of neurology; recognize situations where children benefit from the skills of specialists trained in the care of children; and work effectively with these professionals to care for children with neurologic disorders.

Identify the role of other specialists (e.g., neurosurgery, rehabilitative medicine, psychology, psychiatry and neuropsychology) in the treatment of children with common neurological disorders.

GOAL: Seizures. Evaluate, manage, and refer patients with seizures.

Explain the findings on clinical history, examination and investigation that suggest a seizure disorder and classify the seizure as generalized (including absence), focal or complex partial.

Manage uncomplicated seizures using a step-wise approach that begins with the most appropriate anticonvulsant for the type of seizure.

Develop a step-wise plan for evaluation and treatment for a patient in status epilepticus.

Identify the indicators that would lead to a neurology referral for a child with seizures, including infantile onset seizures, seizures that are complicated, intractable, or difficult to diagnose or manage, and status epilepticus.

Explain the characteristics of simple febrile seizures, including epidemiology, genetic predisposition, natural history, risk factors for a seizure disorder and treatment options.

Discuss common episodic events that may mimic seizures and the findings on history and examination that suggest that the event is not epileptic in origin (e.g., breath-holding spells, benign movement disorders, pseudoseizures, common sleep disorders).

GOAL: Headaches. Evaluate and manage headaches.

Take a thorough headache history including family history of headaches, location,

duration, frequency, character, triggers and associated symptoms.
Compare and contrast the symptoms associated with tension headaches, migraine headaches, chronic daily headaches and headaches associated with increased intracranial pressure and sinus disease.
Compare the therapeutic options, both pharmacologic and non-pharmacologic, for treatment of migraine and tension headaches in children. Include mechanism of action, effectiveness, side effects, and costs.
Identify the indicators for radiologic imaging (CT or MRI) in a patient with headaches.
Identify the indicators for a neurology consult or referral in a child with headaches.
Counsel families about strategies for helping children with headaches of possible psychosomatic or psychosocial origin.
GOAL: Neurological Pharmacology. Understand the indications for the use, side effects, and mode of action of commonly used neurological drugs.
Compare and contrast the indications, contraindications, side effects and common drug interactions of the most commonly used neurological drugs.
For each neurological drug, describe the laboratory tests needed to follow drug therapy, side effects and drug interactions.
Describe the effect on the CNS of other commonly used drugs with known CNS action, including: antihistamines, antidepressants, stimulants for attention deficit disorder, over-the-counter cold preparations, and tranquilizers.
GOAL: Pediatric Competencies in Brief. Demonstrate high standards of professional competence while working with patients under the care of a subspecialist.
Competency 1: Patient Care. Provide family-centered patient care that is development- and age-appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.
1. Use a logical and appropriate clinical approach to the care of patients presenting for neurologic care, applying principles of evidence-based decision-making and problem-solving.
2. Describe general indications for neurologic procedures and interpret results for families.
Competency 2: Medical Knowledge. Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.
1. Acquire, interpret and apply the knowledge appropriate for the generalist regarding the core content of neurology.
2. Critically evaluate current medical information and scientific evidence related to neurology and modify your knowledge base accordingly.
Competency 3: Interpersonal Skills and Communication. Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.
1. Provide effective patient education, including reassurance, for a

condition(s) common to neurology.
2. Communicate effectively with primary care and other physicians, other health professionals, and health-related agencies to create and sustain information exchange and teamwork for patient care.
3. Maintain accurate, legible, timely and legally appropriate medical records, including referral forms and letters, for neurology patients in the outpatient and inpatient setting.
Competency 4: Practice-based Learning and Improvement. Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.
1. Identify standardized guidelines for diagnosis and treatment of conditions common to neurology and adapt them to the individual needs of specific patients.
2. Identify personal learning needs related to neurology; systematically organize relevant information resources for future reference; and plan for continuing acquisition of knowledge and skills.
Competency 5: Professionalism. Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.
1. Demonstrate personal accountability to the well-being of patients (e.g., following up on lab results, writing comprehensive notes, and seeking answers to patient care questions).
2. Demonstrate a commitment to carrying out professional responsibilities.
3. Adhere to ethical and legal principles, and be sensitive to diversity.
Competency 6: Systems-based Practice. Understand how to practice high-quality health care and advocate for patients within the context of the health care system.
1. Identify key aspects of health care systems as they apply to neurology, including the referral process, and differentiate between consultation and referral.
2. Demonstrate sensitivity to the costs of clinical care in neurology, and take steps to minimize costs without compromising quality
3. Recognize and advocate for families who need assistance to deal with systems complexities, such as the referral process, lack of insurance, multiple medication refills, multiple appointments with long transport times, or inconvenient hours of service.
4. Recognize one's limits and those of the system; take steps to avoid medical errors.
Rotation Specific Competencies

Patient Care:

1. Understands and weighs alternatives for diagnosis and treatment
2. Elicits subtle findings on physical examination including a thorough neurologic exam
3. Obtains a precise, logical, and efficient history
4. Is able to manage multiple problems at once
5. Develops and carries out management plans
6. Competently understands/performs/interprets procedures:
 - _____ Lumbar Puncture
 - _____ CT Head: Indications and Interpretation
 - _____ MRI Head/Spine: Indications and Interpretation
 - _____ EEG: Indications

Medical Knowledge:

1. Is aware of indications, contraindications, and risks of commonly used medications and procedures
2. Applies the basic science, clinical, epidemiologic, and social-behavioral knowledge to the care of the patient

Interpersonal Skills and Communication:

1. Creates and sustains therapeutic and ethically sound relationships with patients and families
2. Provides education and counseling to patients, families, and colleagues
3. Works effectively as a member of the health care team

Practice-based Learning and Improvement:

1. Undertakes self-evaluation with insight and initiative
2. Facilitates that learning of students and other health care professionals

Professionalism:

1. Is honest, reliable, cooperative, and accepts responsibility
2. Shows regard for opinions and skills of colleagues
3. Is responsive to needs of patients and society, which supersedes self-interest

Systems Based Practice:

1. Applies knowledge of how to partner with health care providers to assess, coordinate and improve patient care
2. Advocates for high quality patient care and assists patients in dealing with system complexity

References:

1. American Board of Pediatrics, Content Specification, 2007
2. Ambulatory Pediatric Association
3. Association of Pediatric Program Directors
4. Pediatric RRC, January 2006