

Step 1 - Online Curriculum Includes:

A. Spasticity Overview

1. Muscle Overactivity Syndromes: Definition and Pathophysiology
 - Define muscle overactivity syndromes
 - Distinguish between spasticity and other muscle overactivity
 - Describe the pathophysiology of the upper motor neuron syndrome
 - Describe incidence and impact (positive and negative) of spasticity in neurologic diseases
2. Spasticity and Other Movement Disorders: Comparison of Spinal and Cerebral Origin Spasticity
 - Define spasticity
 - Compare and contrast spasticity and other movement disorders
 - Explain the differences between spinal and cerebral origin spasticity
3. Spasticity Co-morbidities
 - Describe other organ systems spasticity may affect
 - Appreciate the instances spasticity may be beneficial
 - Understand consequences suboptimally treated spasticity can have
4. Effects of Spasticity on Muscle Extracellular Matrix (ECM) in Adults and Pediatrics
 - Define extracellular matrix in relation to muscle histology
 - Understand how extracellular matrix differs in patients with spasticity
 - Learn how ultrasound imaging can detect abnormal muscle in patients with spasticity
5. Impact of Spasticity on Growth and Development - Cerebral Palsy as a Clinical Construct
 - Describe impact of spasticity on growth, development, function and quality of life and care givers

B. Spasticity Assessment

1. Measuring Spasticity
 - Review the Modified Ashworth Scale
 - Understand the performance of the Tardieu Scale
 - Review the performance of goniometric measures
 - Understand their role in spasticity treatments
2. Functional Evaluation and Treatment of Muscle Overactivity
 - Explain an approach to classifying problems associated with the Upper Motor Neuron Syndrome (UMNS)

- Describe 3 different scales that may be used in the assessment of patients with UMNS
 - Discuss 3 elements to consider in setting treatment goals
3. Goal Setting for Management of the UMNS with Case Scenarios
- Identify 3 sources of information when determining a patient's goals for spasticity management
 - Describe 3 variables that should be considered in determining the appropriateness of goals for treating spasticity
 - Describe 3 elements on the physical examination that can help in the identification of meaningful and appropriate goals

C. Common Patterns in Spasticity and Dystonia

1. Common Clinical Patterns of Spastic Limbs and Cervical Dystonia
- Identify muscles related to usual spastic patterns of upper limb
 - Identify muscles related to usual spastic patterns of lower limb
 - Recognize the common patterns of cervical dystonia including involved muscles

D. Treatment Options and Considerations

1. Adult and Pediatric Limb Spasticity Management
- Describe systemic interventions to manage spasticity
 - Review surgical interventions for spasticity management
 - Differentiate spasticity from contracture

E. Intrathecal Baclofen Therapy

1. Identify Candidates for Intrathecal Baclofen Therapy
- Appreciate the role of ITB therapy in the treatment of spasticity
 - Outline an appropriate selection process for ITB therapy
 - Differentiate between the absolute and relative contraindications for ITB pump therapy
2. Preparation for ITB Screening Test
- Understand indications for ITB screening tests
 - Know how to prepare for a screening test
 - Be able to decide if oral medications should be weaned prior to a screening test

3. Executing an Intrathecal Baclofen Test Dose
 - Review the technique for executing a intrathecal baclofen test dose via lumbar puncture with two localization techniques
 - Visual / palpation guidance
 - Fluoroscopic guidance
4. Bleeding and Infections: Guidelines for Intrathecal Management
 - Describe the appropriate antimicrobial prophylaxis measures for intrathecal drug delivery procedures
 - Describe the appropriate approach to anticoagulants relative to intrathecal drug delivery procedures
5. Intrathecal Baclofen Dosing and Long-Term Maintenance
 - Discuss initiation of ITB therapy and dose titration
 - Review routine management and monitoring of patients with ITB pumps
 - Discuss management of patients with suboptimal response to ITB therapy
6. Intrathecal Baclofen Management
 - Perform successful access of intrathecal baclofen pump Reservoir Port
 - Perform successful access of intrathecal baclofen pump Catheter Access Port
 - Perform reservoir port access with ultrasound guidance
 - Prepare intrathecal baclofen solutions
7. Executing a Pump Refill with Ultrasound Guidance
 - Describe a technique for using ultrasound guidance for refilling intrathecal pumps
 - Recognize the potential utility of using ultrasound in the management of intrathecal therapy systems
8. Management of Intrathecal Baclofen Withdrawal and Overdose
 - Recognize symptoms of and causes of ITB withdrawal and overdose
 - Describe management of intrathecal baclofen withdrawal
 - Describe management of intrathecal baclofen overdose
9. Imaging Intrathecal Delivery Systems
 - Describe the various imaging techniques used during the management of intrathecal delivery systems
10. The Utility of Electrodiagnostic Studies in the Management of Intrathecal Delivery Systems
 - Describe the potential utility of electrodiagnostic testing in the management of intrathecal baclofen therapy
11. Interpreting Laboratory Data Relative to Intrathecal Baclofen Therapy Management
 - Review the interpretation of laboratory data relative to management of intrathecal baclofen therapy

12. Off Label Discussions for Intrathecal Baclofen Therapy

- Review various off-label procedures relative to intrathecal baclofen therapy

13. Flex and Bolus Dose Programming

- Perform intrathecal baclofen programming including complex programming, and bridge / priming bolus delivery for the most common intrathecal delivery system

F. Nerve and Motor Point Blocks

1. Diagnostic Nerve Blocks

- Describe the mechanism of action of a diagnostic nerve block
- Review the properties of blocking agents commonly used for spasticity
- Identify the role of the procedure in the context of a comprehensive spasticity management program

2. Phenol and Ethanol Blocks

- Compare phenol and ethanol
- Identify indications, advantages, contraindications & potential adverse events of phenol & ethanol blocks
- Describe the neurolysis/motor point block technique

3. Phenol and Alcohol Blocks in Adults and Children

- Discuss mechanism of phenol and alcohol
- Explain how to get consent for alcohol and phenol blocks
- Review injection techniques with nerve stimulator and ultrasonography guided injections

4. Motor Point Blocks

- Discuss localization of muscle groups in the lower limb
- Discuss technical considerations in the performance of motor point blocks
- Understand the use of stimulation in motor point localization

G. Botulinum Toxin Injections

1. Botulinum Toxin Mechanism of Action and Injection Preparation

- Know the MOA of BoNT
- Know the steps in performing BoNT injections
- Know how to prep/reconstitute BoNTs
- Describe the indications, benefits, risks, and potential adverse events of BoNT

2. All About Botulinum

- Understand the differences in the botulinum toxins
- Understand the differences in dosing the different toxins
- Identify which muscles and dosing are on-label or off-label for each toxin for pediatrics and adults

3. Use of Botulinum Toxin in Pediatric Hypertonia

- Identify which muscles and dosing are on-label and off label for Botulinum toxin (BoNT) for pediatric use
- Discuss indications and goals for BoNT in Cerebral Palsy (CP)

4. Guidance Techniques for Neurotoxin Injections

- Learn different types of guidance techniques for neurotoxin injections
- Learn the benefits and limitations of each method

5. Ultrasound Guided Botulinum Toxin Injections for Focal, Task Specific Lower Limb Dystonia Demo Video

6. Ultrasound Guided Botulinum Toxin Injections for Post Stroke Dystonia/Spasticity Demo Video

7. Ultrasound Guided Botulinum Toxin Injections for Dystonia Associated with Cerebral Palsy Demo Video

8. Ultrasound Guided Botulinum Toxin Injections for Task Specific Focal Hand Dystonia Demo Video

9. Demonstration of Ultrasound Guided In-Plane Injections Demo Video

10. Causes for Secondary Non-Response

- Define non-response
- Know how to assess for non-response
- Recognize the most common reasons for non-response

11. Use of EMG for Localization of Gastrocnemius Demo Video

12. Electrical Stimulation Demo Video

13. Evaluating Non-response to Treatment with Botulinum Toxin

- Differentiate primary non-response from secondary non-response
- Identify at least four causes of primary non-response or treatment failure
- Discuss the evaluation when secondary non-response is suspected

14. Safety Considerations for Botulinum Toxin Injections

- Identify 2 major contraindications to toxin
- Describe risk factors for inadvertent spread
- Review special considerations in patients on anticoagulation and antiplatelet therapy

H. Surgical Management for Spasticity

1. What Can Orthopedics Do for Your Patients?
 - Learn how Orthopedic Surgery can Treat or be an adjunct to treatment of spasticity
 - Identify specific pathologies that can benefit from surgery
 - Know when referral is recommended
2. Neuro-Orthopaedics: Surgical Treatment of Spastic Limb Deformities
 - Identify orthopedic surgical options for spasticity management including tendon lengthening, tendon transfers, contracture release, tenotomy
 - Describe the risks and benefits of all surgical options

I. Spasticity Practice Management

1. Intrathecal Baclofen (ITB) Therapy: Practice Management
 - Review the practice management issues relative to intrathecal baclofen therapy
 - Understand the costs of intrathecal medications
 - Understand the difference between branded and compounded intrathecal drugs
2. Understanding the Costs of Toxins and Other Neurolytics
 - Review the cost of the various toxins used for spasticity management
 - Review the cost of other neurolytics
 - Understand possible costs associated with various methods of guidance
3. Practice Management in Academic Medicine
 - Understand the cost of toxins and other neurolytic agents.
 - Ensure you are being paid in the academic setting.
 - Do the right thing for your patient.
4. Coding for Interventional Spasticity
 - Understand the required documentation and proper coding for procedures relating to targeted drug delivery, chemo-denervation and chemical neurolysis
 - Discuss medication preparation for neurotoxins
5. Practice Management
 - Become familiar with considerations in treating a “spasticity” patient population
 - Understand the financial considerations associated with different “sites of service”
 - Understand the clinical impact of financial considerations
6. Marketing Yourself as a Spasticity Expert

7. Managing and Growing a Spasticity Practice

- Discuss creating effective documentation systems relevant to spasticity treatment
- Review methods for regulating clinic appointments to optimize spasticity control and avoid potential for ITB withdrawal
- Discuss the various options for obtaining pharmaceuticals utilized in spasticity treatment
- Review emergency and on-call protocols for a spasticity practice

J. Emerging Techniques for Managing Spasticity

1. Dry Needling for Spasticity Management

- Learn what is dry needling and its possible effects on spastic muscles
- Become familiar with current literature on spasticity management
- Understand its potential role in practice

2. Combining Spasticity Interventions

- Describe the different spasticity interventions
- Understand the role of combining spasticity interventions for improved outcomes

3. Combined Use of Phenol and Botulinum Toxin (BoNT) for Spasticity Management

- Understand differences between botulinum toxin and phenol treatment
- Know the need and advantages of combined use of BoNT and phenol treatment
- Know the common practice pattern of the combined treatment

4. Emerging and Alternative Spasticity Treatments

- Become familiar with the types of emerging spasticity treatments
- Understand current literature on different spasticity treatments
- To be cautious with their applications, particularly the safety issues