

END-2530: INTERMEDIATE POLYSOMNOGRAPHY II

Cuyahoga Community College

Viewing: END-2530 : Intermediate Polysomnography II

Board of Trustees:

June 2022

Academic Term:

Fall 2022

Subject Code

END - Electroneurodiagnostic

Course Number:

2530

Title:

Intermediate Polysomnography II

Catalog Description:

Presentation and discussion of parameters, digital and technical specifications of polysomnography, the staging and scoring of adult and pediatric sleep patterns, and identification/classification of various forms of sleep disordered breathing and movement disorders. Discussion of sleep calculations and daytime sleep studies (MSLT/MWT). Discussion on advanced PAP therapies (ASV) and esophageal pH and NPT testing. Discussion of aspects of sleep disorders lab management, and Home Sleep Testing (HST).

Credit Hour(s):

3

Lecture Hour(s):

2

Lab Hour(s):

2

Requisites

Prerequisite and Corequisite

END-2412 Neurophysiology of Electroencephalography/Sleep Disorders, and END-2520 Intermediate Polysomnography I, and END-2915 Polysomnography Directed Practice I.

Outcomes

Course Outcome(s):

Apply the American Association of Sleep Medicine (AASM) Rules for Sleep Staging.

Objective(s):

1. Analyze and correctly identify various stages of non-REM sleep (NREM) and REM sleep in recorded polysomnograms.
2. Analyze and correctly identify EEG arousals from NREM and REM sleep patterns.
3. Apply formulas to accurately calculate percentages of NREM and REM sleep in recorded sleep studies.
4. Apply rules for scoring daytime sleep studies (Multiple Sleep Latency Testing and Maintenance of Wakefulness Testing).

Course Outcome(s):

Apply the American Association of Sleep Medicine (AASM) Rules for Event Scoring.

Objective(s):

1. Analyze and correctly identify various sleep disordered breathing events in recorded polysomnograms.
 2. Analyze and correctly identify various movement disorders in recorded polysomnograms.
 3. Apply formulas to accurately calculate events and event indexes in recorded sleep studies.
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Course Outcome(s):

Discuss Advanced/Alternative Monitoring of sleep studies.

Objective(s):

1. Discuss aspects and utility/efficacy and advantages/disadvantages of Home Sleep Testing (HST).
 2. Discuss additional monitoring during pediatric sleep studies.
 3. Discuss advanced positive airway pressure devices for treatment of sleep disordered breathing.
 4. Discuss alternative devices and therapies for treatment of sleep disordered breathing.
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Course Outcome(s):

Discuss aspects of Sleep Lab Management.

Objective(s):

1. Discuss staffing issues in sleep labs.
 2. Discuss various sleep software systems.
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Methods of Evaluation:

1. Quizzes
2. Exams
3. Comprehensive final exam
4. Laboratory worksheets
5. Laboratory quizzes
6. Laboratory competencies
7. Laboratory comprehensive final exam, including full Polysomnogram scoring analysis

Course Content Outline:

1. Artifacts and troubleshooting
 - a. Artifact in sleep recordings
 - i. EEG/EOG channels
 - ii. Respiratory channels
 - iii. EMG channels
 - b. Reduction/elimination of artifacts
 - c. Filter ranges
2. Scoring of sleep stages
 - a. Adult
 - i. NREM
 - ii. REM
 - b. Pediatric
 - i. NREM
 - ii. REM
3. Scoring of respiratory events
 - a. Adult
 - i. Obstructive passes
 - ii. Central apneas
 - iii. Mixed apneas
 - iv. Hypopneas
 - b. Pediatric
 - i. Obstructive apneas
 - ii. Central apneas
 - iii. Mixed apneas
 - iv. Hypopneas
4. Scoring of movement events
 - a. Adult
 - b. Pediatric
5. Scoring of abnormal cardiac events
 - a. Adult
 - b. Pediatric

6. Advanced discussion of parasomnias
 - a. NREM
 - b. REM
 - c. Montage selection
7. Sleep calculations
 - a. Total Sleep Time (TST)
 - i. TST in various sleep stages
 - b. Sleep efficiency
 - i. Sleep efficiency in various sleep stages
 - c. Arousal index
 - i. Arousal index for various sleep stages
 - d. Respiratory indexes
 - i. Respiratory indexes in various sleep stages
 - ii. Respiratory disturbance index (RDI)
 - iii. Apnea-Hypopnea Index (AHI)
 - e. PLM Index
8. Daytime sleep Testing
 - a. Multiple Sleep Latency Test (MSLT)
 - i. Protocol/Utility
 - ii. Scoring criteria for diagnosis of Narcolepsy
 - b. Multiple Wakefulness Test (MWT)
 - i. Protocol/Utility
 - ii. Clinical implications of MWT results
9. Aspects of laboratory management
 - a. Laboratory set-up/patient room management
 - b. Staffing issues in sleep lab
 - i. Overnight procedures
 - ii. Daytime procedures
 - c. Marketing of sleep lab services
 - d. Development of Policy and Procedure manuals
 - i. Overnight testing
 - ii. Daytime testing
10. Home Sleep Testing (HST)
 - a. Types of home sleep testing devices
 - b. Categories of HST
 - c. Clinical utility of HST
 - d. Ethical aspects of HST
 - e. Possible effects of HST on Laboratory-based sleep testing
11. Esophageal pH monitoring
 - a. Technical aspects of pH monitoring
 - b. Purpose and function of pH monitoring
 - c. Analysis of PH monitoring data
12. Advanced PAP therapy
 - a. Automatic-Servo Ventilation (ASV)
 - i. Utility of ASV
 - ii. Efficacy of ASV
 - iii. Technical aspects of ASV
 - iv. Patient population for application of ASV

Resources

Butkov, Nic. *Atlas of Clinical Polysomnography*. Vol. 1 2. Ashland, OR: Synapse Media, Inc., 1996.

Kryger, M, Roth, T, and Dement, W. *Principles and Practice of Sleep Medicine*. 6th. Philadelphia:Saunders, 2017.

Spriggs, William. *Essentials of Polysomnography*. 2nd. St. Louis: Mosby, 2015.

Chokroverty, Sudhansu, Robert Thomas, and Meeta Bhatt. *Atlas of Sleep Medicine*. Boston:Butterworth Heinemann, 2005.

American Academy of Sleep Medicine. *International Classification of Sleep Disorders*. 2nd ed. Westchester, IL: American Academy of Sleep Medicine, 2005.

American Academy of Sleep Medicine. *A Technologist's Handbook for Understanding and Implementing the AASM Manual for the Scoring of Sleep and Associated Events*. Westchester, IL: American Academy of Sleep Medicine, 2009.

American Academy of Sleep Medicine. *The AASM Manual for the Scoring of Sleep and Associated Events Rules, Terminology, and Technical Specifications*. version 2.5. Darien, IL American Academy of Sleep Medicine, 2018.

Mattice, C., Brooks, R, Lee-Chiong, T. *Fundamentals of Sleep Technology*. 2nd. Philadelphia Wolters Kluwer/Lippincott Williams Wilkins, 2012.

Robertson, B., Marshall, B., Carno, M-A. *Polysomnography for the Sleep Technologist*. 1st. Philadelphia Elsevier/Mosby, 2014.

Jardis, Des Terry. *Cardiopulmonary Anatomy Physiology*. 6th. Clifton Park, NY Delmar, 2012.

Hrayr, A., Nidhi, U. *Atlas of Electroencephalography in Sleep Medicine*. 1st. Springer Science Business Media, Springer, NY, 2012.

Resources Other

- A. American Academy of Sleep Medicine, Rochester, MN <http://www.aasmnet.org>
- B. American Electroneurodiagnostic Technologist, Carroll, Iowa <http://www.aset.org>
- C. CD-ROM, Sleep Multimedia, version 7.0, Scarsdale, NY
- D. American Association of Sleep Technologists <http://www.aastweb.org>

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