

Evaluation of an Electrodiagnostic Bootcamp Course for Physical Medicine and Rehabilitation Residents

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BRODY SCHOOL OF MEDICINE
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- Athanasios Tzaras, MD, ECU PM&R Resident, Assisted with collecting data and forming abstract
- Clinton Faulk, MD, ECU PM&R Faculty, Development and planning for Edx Bootcamp

- Understanding electrodiagnostic (EDx) studies is core competency for a Physical Medicine and Rehabilitation (PM&R) resident.
- To perform these studies, the provider requires an understanding of neuromuscular anatomy, nerve physiology, and the technical components of the EDx machine.
- Typically, rotations in the EDx lab start in the senior resident years (PGY3-4) for PM&R residency.
- EDx bootcamp course was designed and implemented at the beginning of the academic year.
- Goals are to improve competency with these procedures and to develop a program that can be repeated yearly.

| Procedure | Minimum |
|--|----------------|
| EMG/NCS (Total performed and observed) | 200 |
| EMG/NCS (Performed) | 150 |
| Axial Epidural Injection (Total) | 5 |
| Axial: facet, SI joint, nerve block (Total) | 5 |
| Periph joint/intra-artic inj/tendon sheath/bursa inj (Total) | 20 |
| Periph joint/intra-artic inj/tendon sheath/bursa inj (Performed) | 15 |
| Botulinum toxin injection (Total) | 20 |
| Botulinum toxin injection (Performed) | 15 |
| Ultrasound (Total) | 10 |

■ Setup

- 1st session: (PGY1-4s): EDx basics.
- 2nd session: (PGY3-4): Routinely performed studies.
- 3rd session: (PGY3-4): Less frequently performed studies.

■ Pre-course material

- Readings and Quizzes

■ Measures

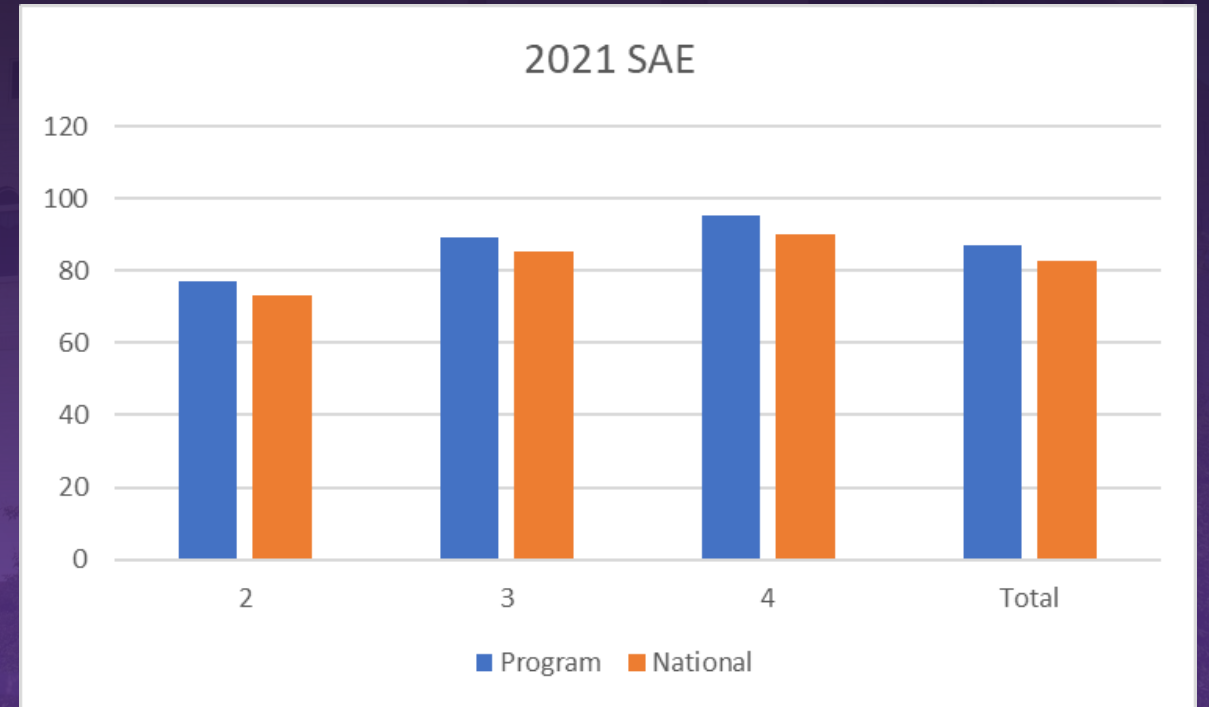
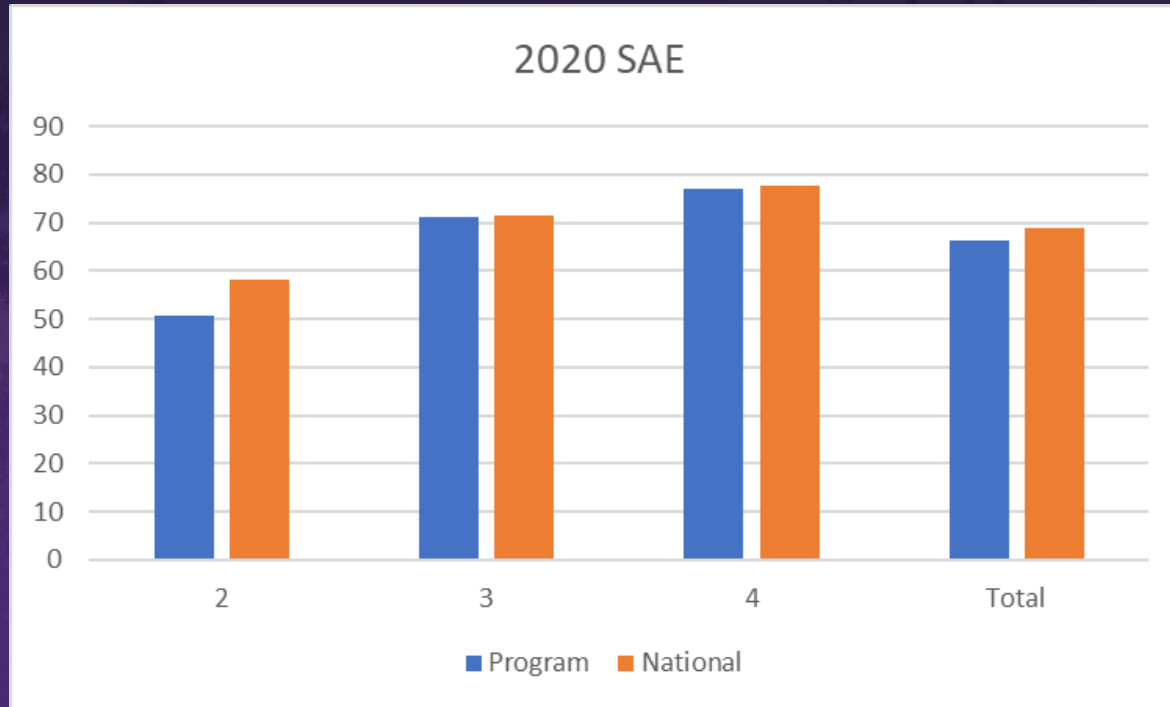
- Post-course survey: 7 questions measurable on a graded scale 1-4 with 1 being poor and 4 being excellent with a maximum possible score of 28 points
- Average scores on the EDx portion of the PM&R residency in-service exam (SAE) from 2020 were compared to the average scores for 2021

- Session 1: 14 residents participated (5 PGY1s, 4 PGY2s, 3 PGY3s, and 2 PGY4s).
 - Pre-quiz had 5 questions and the average score was a 60%.
 - Post-survey: 7 of 14 participants responded: average total score 27.9/28 points.
- Session 2: 9 residents participated (5 PGY3s and 4 PGY4s).
 - Pre-quiz had 11 questions and the average score was a 68%.
 - Post-survey: 6 of 9 participants responded: average total score 28/28 points.
- Session 3: 9 residents participated (5 PGY3s and 4 PGY4s).
 - Pre-quiz had 10 questions and the average score was a 51%.
 - Post-survey: 8 of 9 participants responded: average total score 28/28 points.

Results of SAE

| 2020 SAE | | |
|----------|---------|----------|
| Year | Program | National |
| 2 | 50.8 | 58.3 |
| 3 | 71.1 | 71.6 |
| 4 | 76.9 | 77.7 |
| Total | 66.3 | 69 |

| 2021 SAE | | |
|----------|---------|----------|
| Year | Program | National |
| 2 | 76.9 | 73.1 |
| 3 | 89.2 | 85.4 |
| 4 | 95.4 | 90.1 |
| Total | 87.2 | 82.5 |



- Plan for Routine Evaluation
 - Annual SAE exam in January for PGY 2-4s
 - Annual EDx SAE exam in May required for PGY 4s and optional for PGY 3s
 - Pre- and post-quizzes for each Bootcamp session

- Limitation with educators
 - Dr. Norbury lead each session
- Accountability for pre-course content
 - Pre-readings and pre-quizzes
- Difficult to simulate true pathology in a teaching session
- Difficult to simulate technical issues that can happen in the real world

- Bootcamp sessions reviewing high yield topics are an efficient way to teach a difficult topic
- Bootcamp sessions are repeatable and can ensure repetitive learning
- Dependent on faculty to dedicate time to education as each session was a few hours
 - Possibly include more faculty in the process

- Include into didactic schedule to repeat the Edx Bootcamp in June/July with the next cycle of residents
- Find other faculty or residents to share burden of education
- Find more ways to include technically challenging cases
- Possibly include ultrasound in the future as the field of neuromuscular ultrasound is growing

- John Norbury, MD

