

## Simulation of the Reading Room Experience in Conjunction with the Advanced Neuroscience Course Reduces Neurophobia in CU TREK Medical Students.

### Purpose, Objective and Methods

Clinical neuroscience is often cited by medical students as one of the most challenging topics in medical school. Difficulty with neuroanatomy and neuroradiology are commonly listed as contributors to “neurophobia”. Pertinent to clinical practice, the most common indications for CT in the ED are neurological presentations, and clinicians of many specialties must interpret neuroimaging reports. Given this importance, the American Academy of Neurology and the Association of University Radiologists have both suggested CT and MRI neuroradiology training for undergraduate medical education. Unfortunately, neuroradiology preceptors are scarce, and reading room opportunities for medical students are limited.

To fill this gap, an interactive, small-group neuroradiology experience was developed using the Beginning-to-Advanced Radiology (BAR) Lab to recreate the reading room experience for 3rd-year medical students in the CU-TREK Advanced Neuroscience Course. The 3-hour session includes a short introduction and primer, followed by direct review of DICOM images from deidentified salient cases with the goals of teaching radiology techniques, applied anatomy, localization, and disease state recognition by students in groups of 2-3. Pre- and post-course surveys were collected to test the hypothesis that the BAR Lab can reduce neurophobia (NeuroQ metric) and improve student performance, confidence, and course satisfaction.

### Results

Student perception of the BAR lab improved following the implementation of this revised small group experience. Legacy 2021-2022 BAR sessions based on PowerPoint teaching only were rated as very useful/essential by only 15.1% of students; in contrast, 86.6% of students in Trek 2022-2023 rated the BAR experience as very good or excellent.

Wilcoxon signed-rank tests revealed significant improvements in BAR-lab student (n=70) self-perceived confidence levels in: their ability to understand neurological concepts ( $W=615.0$ ,  $p<.001$ ), study neurology ( $W=571.0$ ,  $p<.001$ ), localize a lesion of the nervous system ( $W=1690.0$ ,  $p<.001$ ), and evaluate patients with neurological problems ( $W=720.5$ ,  $p<.001$ ). Additionally, students found neurological concepts less difficult to understand ( $W=361.0$ ,  $p=0.002$ ) between the pre- and post-survey. Furthermore, students’ satisfaction levels with the quality of their neuroscience education significantly increased ( $W=175.0$ ,  $p=0.008$ ) between the pre- and post-survey

Overall neurophobia scores significantly decreased (i.e. reduced fear of neurology) between the pre- and post-course survey for BAR students ( $W=1578.0$ ,  $p<.001$ ). To further analyze student neurophobia levels, researchers added additional items to the NeuroQ to create the NeuroQ+. Analysis of NeuroQ+ scores also revealed significant decreases in neurophobia between the pre- and post-survey ( $t(69)=5.20$ ,  $p<.001$ ).

### Conclusion

Preliminary data analyses suggest a simulated reading room experience in conjunction with the Advanced Neuroscience Course improves self-perceived student enjoyment, confidence, and learning outcomes. Analysis of course outcomes, satisfaction, and Step 1 scores are ongoing as well as comparison between BAR vs. No-BAR students.