VIRTUAL ROOM 2

Faculty Moderator: Tina Zhang, MD

Virtual Poster 1: A study which quantitatively assesses whether regular attendance at HYR sessions correlates with an increased percentage of correct answers on NBME-style multiple-choice examinations among first-year MD students.

Authors: Karl Aharonian, Victoria Winter, Edward Simanton, PhD, School of Medicine, University of Nevada, Las Vegas

Background: At the Kirk Kerkorian School of Medicine, "High Yield Review" (HYR) sessions are structured to support a diverse body of medical students, including those from socioeconomically disadvantaged backgrounds and first-generation college students. While previous research has highlighted the benefits of such instructional formats, the quantitative link between PRS attendance and academic performance, particularly in National Board of Medical Examiners (NBME) style examinations, remains unexplored1-2.
Hypotheses/Aim: This study aims to quantitatively assesses whether regular attendance at HYR sessions correlates with an increased percentage of correct answers on NBME-style multiple-choice examinations among first-year MD students. We hypothesize that consistent participation in HYR will be positively associated with performance.
Methods: A cohort of 67 first-year MD students was divided into a study group of 26 students who attended a minimum of five HYR sessions, and a control group of 31 students who did not attend any sessions. The attendance threshold was set to exclude sporadic attendance, which might not significantly impact learning. Attendance was tracked using specialized software. Academic performance was gauged through scores on regular curriculum-based examinations to ensure that the assessment was reflective of the standard educational experience.
Results: Analysis revealed a significant difference in the performance on the first basic sciences examination, with the study group showing an average improvement of 4.28% ($p = 0.030$) over the control group. However, the second examination, which focused on organ systems physiology, did not show a statistically significant difference in scores ($p = 0.702$), suggesting that the benefit of PRS may be more pronounced in foundational science subjects that require extensive content coverage in a limited time frame.
Conclusion: The study affirms that PRS, such as HYR, are correlated with better academic performance in foundational sciences. The impact of PRS diminishes as the curriculum shifts to more standardized material for which students commonly use various external resources. These findings suggest the need for strategic implementation of PRS in early medical education to enhance learning outcomes where they are most effective. Future studies should investigate the longitudinal quantifiable impact of PRS learning on students and their performance in later stages of education.

References:
1. Soriano RP, Blatt B, Coplit L, et al. Teaching medical students how to teach: a national survey of students-as-teachers programs in US medical schools. Acad Med. 2010;85(11):1725–1731.
2 . Wong, J. G., Waldrep, T. D., & Smith, T. G. (2007). Formal peer-teaching in medical school improves academic performance: the MUSC supplemental instructor program. Teaching and learning in medicine, 19(3), 216–220. https://doi.org/10.1080/10401330701364551

Virtual Poster 2: Post-COVID-19 Trends in Medical Student Procedural Exposure in the Neurology Clerkship

Authors: Samantha Hao, Diana Bongiorno, Brian Lo, Ashley Paul, Doris Leung, Rachel Salas

Background Since prior to the COVID-19 pandemic in 2020, the Neurology clerkship has undergone several structural changes. The effect of these changes on procedural exposures and competencies is unknown. Exposure and performance of lumbar puncture (LP) is especially emphasized by the American

Academy of Neurology's (AAN) clerkship guidelines; therefore, analyzing trends in student exposure to LP is crucial to assessing the effectiveness of the clerkship.

Hypotheses/Aim:

1) Quantify the proportion of students reporting observation, assistance, or performance of procedures in the Neurology clerkship.
2) Understand potential factors contributing to trends in procedural exposure.

Methods: Johns Hopkins Neurology clerkship students between November 2019 and June 2023 reported procedural exposures and level of participation during the clerkship (excluding orientation) in post-clerkship surveys. We investigated differences in exposure to LP and all procedures between years using the Chi-square test of independence.

Results: Between 2019-2023, the most common procedures observed by students included LP, electromyography (EMG), botulinum toxin injection, sterile technique, venipuncture, and intravenous line insertion. These procedures were consistent for each year. The percentage of students reporting no procedures observed increased from 2019-2020 (15.4%) to 2022-2023 (27.6%), although this difference was not statistically significant ($p>0.05$). The percentage of students reporting observation, assistance, or performance of LP significantly decreased from 2019-2020 (76.9%) to 2022-2023 (48.3%). The percentage of students performing LPs under supervision increased from 9.2% to 14.9%, although this difference was also not statistically significant. In free text responses, desire to observe or perform LP was the most common response.

Conclusions: Since 2019, students report decreased procedure exposure in the Neurology clerkship. Despite reverting the Neurology clerkship from 3 weeks (2020-2021) to 4 weeks (2021-2023), procedure exposure continued to decline. Furthermore, students reporting LP exposure on the clerkship has decreased significantly since 2019, suggesting the presence of factors, such as different numbers of students on different services, beyond COVID-19 and length of clerkship that resulted in a declining number of LPs with student involvement.

Virtual Poster 3: How a Physician is Made: Perspectives of Physical Exam Teaching Associates in the Neurology Core Clerkship

Authors: David Zhao; Rose Zaeske; Geofrfrey Miller; Ashley Paul; Rachel Salas; Doris Leung

Background: The Johns Hopkins University School of Medicine neurology clerkship has utilized physical exam teaching associates (PETAs) since the early 2000s to train and assess medical students in the neurology physical exam. PETAs offer a unique perspective on medical student training, but their views on the goals, effectiveness, and changes made to the PETA program have not been recorded.

Aim: To elicit the role, perspective, and feedback of PETAs in the neurology clerkship.

Methods: This qualitative study utilized semi-structured interviews with PETAs. Inclusion criteria were adults that have been a PETA for at least one neurology clerkship cycle. PETAs were identified by a simulation center coordinator and recruited via email to participate in a 30-minute interview. Oral informed consent was given to record the interview using the Zoom record and transcript generator function. Transcripts were manually edited for accuracy and comprehension, then thematically analyzed for perspectives about PETA training, teaching, assessment, and impact on personal healthcare experiences.

Results: Three current neurology PETAs were interviewed ranging in experience from 1 to 20 years working as a neurology PETA. PETA training sessions are led by a primary PETA instructor who is a PETA himself, but in the past has been led by the clerkship director. Participants report that all instructors have been effective, though time with physician faculty was limited. The way neurology PETAs are trained has shifted, from trial-and-error instruction to more binary right versus wrong assessment of maneuvers. The neurology exam taught has shortened, but the description of maneuvers has become more detailed and rigid. Specific areas of improvement offered by the participants include more opportunities for continuing PETA education, improved compensation, more practice time for medical students, direct feedback from medical students about the effectiveness of their training on the wards, and utilizing PETAs to their fullest potential as teachers. How being a PETA has affected participants' perspectives on their own healthcare

experiences include appreciation and understanding of how a physician is trained, and being more cognizant of a clinician's demeanor and exam.
Conclusion: PETAs are educators that offer valuable insight into physician training and feedback to the clerkship.

Virtual Poster 4: Utility and perception of short-form instructional videos as adjuncts to the Internal Medicine core clerkship

Authors: Robert M. Weinstein, BE1*, Emanuelle Rizk, BA1*, Bernard Landry-Wegener, MD2
*Co-First Authors

Background: Online videos are a widely used resource for independent learning, with 76.1% of medical students utilizing online video tools to supplement their learning.1 Despite their prevalence, not all online videos have equal effectiveness, with video length being an important factor. There is an inverse relationship between the length of the video and the percentage of learners that watch it in its entirety, with some studies showing viewership dropping off after as little as 6-minutes.2 Studies have also found that despite their length, shorter videos increase learner performance on summative exams as compared to longer videos.3 Currently, the Johns Hopkins University School of Medicine (JHU-SOM) has no short-form standardized educational video curriculum for use on the Internal Medicine (IM) core clerkship.
Hypothesis/Aim: The aim of this study is to determine the feasibility, acceptability, and effectiveness of a short-form standardized educational video curriculum entitled 'Medicine Minutes' for students on the IM clerkship at JHU-SOM.
Methods: This study was approved by the JHU IRB. The study design is a non-randomized single group pre- and post-test and four post-video satisfaction surveys. The study population included all students enrolled in the IM clerkship at JHU-SOM during the winter quarter of 2024. Our intervention consisted of four short-form educational videos on the topics of congestive heart failure, diabetes, barriers to discharge, and chronic kidney disease. Pre- and post-curriculum survey answers were statistically evaluated using a paired sample t-test, and the frequency of post-video satisfaction survey answers were plotted to evaluate student perception of the curriculum.
Results: At this time, 6 of 25 students (24% response rate) enrolled in the clerkship have completed the pre-intervention questionnaire, with a 79.2% rate of correct responses. Data collection is planned to be completed by February 2024.
Conclusion: This study will enable us to assess the feasibility and effectiveness of a standardized short-form video curriculum as an adjunctive learning tool for the IM clerkship.
Citations
1. Bin Abdulrahman KA, Khalaf AM, Bin Abbas FB, Alanazi OT. Study Habits of Highly Effective Medical Students. Adv Med Educ Pract. 2021; 12:627-633. doi: 10.2147/AMEP.S309535. PMID: 34135654; PMCID: PMC8197661.
2. Guo P, Kim J, Rubin R. How video production affects student engagement: An empirical study of MOOC videos. 2014; 41-50. doi: 10.1145/2556325.2566239.
3. Zhu J, Yuan H, Zhang Q, Huang PH, Wang Y, Duan S, Lei M, Lim EG, Song P. The impact of short videos on student performance in an online-flipped college engineering course. Humanit Soc Sci Commun. 2022;9(1):327. doi: 10.1057/s41599-022-01355-6. Epub 2022 Sep 22. PMID: 36187843; PMCID: PMC9510322.

Virtual Poster 5: Diversification of outpatient experiences preserves the quality of medical student education in an ambulatory neurology clerkship

Authors: Alexandra Simpson, MD;1 Kimystian Harrison, MD;1 Doris G. Leung, MD, PhD;1,2 Rachel M.E. Salas, MD, MEd;1 Ashley Paul, MD1
1Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD
2Department of Neurology, Kennedy Krieger Institute, Baltimore, MD

Background: Initial data from the "Neurology Outpatient Service," an ambulatory site offered to medical students during their Neurology Clerkship, indicates that nearly 90% of students value continuity with clinicians over a 4 week-rotation block.1 The site was expanded to include multiple subspecialities, led by selected neurology fellows participating in the "Osler Housestaff Preceptors (OHP)" medical education leadership program.
Hypotheses/Aim: Aim: to assess the impact of a fellow-driven clinical education experience on students' perceived educational quality.
Hypothesis: Expanding the OHP program with new outpatient subspecialty clinics in the medical student neurology clerkship will maintain or enhance their educational experiences compared to pilot data.
Methods: From August 2021 to December 2023, one to three medical students had the option to complete their neurology clerkship in an ambulatory setting. Initially, they rotated through clinics with a focus on movement disorders or neuroimmunology. Subspecialty clinics expanded with neuro-oncology added in October 2022 and neuromuscular clinics in October 2023. Students provided feedback through a survey, rating their experiences on a 5-point Likert scale (4 or 5 indicating positive experiences). The data, anonymized, underwent descriptive statistics.
Results: A high percentage (95%) of medical students were satisfied with their educational experiences in an ambulatory neurology rotation, covering movement disorders and neuroimmunology clinics. The inclusion of neuro-oncology and neuromuscular subspecialty clinics also garnered positive feedback, with 97% reporting satisfaction. Overall, 66% of students rated the education quality at this site as 5 out of 5.
Conclusion: Before 2021, students only spent one week in outpatient clinics during a 4-week clerkship, resulting in a limited shadowing experience with attending physicians. Due to the neurology department's size, clerkship directors cannot effectively track faculty clinics and subspecialty conferences. The OHP program's expansion now includes additional subspecialty clinics, allowing students to return to the same providers over 4 weeks, enhancing their educational experience. Students report that this format fosters autonomy in patient interviews and examinations. Neurology fellows in the OHP program gain hands-on experience in administrative and curricular design, facilitating effective integration of medical students into specialized clinics. The service site's expansion promotes diversity in exposure to neurologic diseases, enriching medical students' educational experiences.
References:
1. Paul A, Reyes M, Roy S, et al. Precision Learning in Neurology Medical Education. *Johns Hopkins University Institute for Excellence in Education [Conference and Celebration)*. Published online March 2022.

Virtual Poster 6: Authorship Representation in Submitted Abstracts to ACEPS Meetings: 2018-2023

Authors: Rena Atayeva; Waldemar Rodriguez-Silva; Julie Park; Ashit Patel; Carisa Cooney; Amanda Gosman; Scott Lifchez

Background: The American Council of Educators in Plastic Surgery (ACEPS) is the leading organization invested in improving plastic surgery education/training. With the formation of ACEPS' Diversity, Equity, and Inclusion (DEI) Committee in 2021, the landscape of abstracts submitted to ACEPS meetings may be changing.
Hypotheses/Aim: We sought to characterize differences in abstracts submitted/accepted to the ACEPS meetings over a 6-year span in (1) authorship representation and (2) institutional affiliation.
Methods: We retrospectively reviewed abstracts submitted to the 2018-2023 ACEPS annual meetings. Data included: acceptance status, reviewer scores (1=lowest, 5=highest), author lists, and institutional affiliations. We cross-referenced last authors' affiliated institution with the top-40 National Institutes of Health(NIH)-funded institutions. We used Gender API to designate first and last author genders. Parametric tests were performed to analyze continuous variables. Significance was $p<0.05$.
Results: We analyzed 489 abstracts and found no difference in mean reviewer scores for submissions with women versus men first (3.06 vs. 3.02; 95%CI=(2.97-3.15) vs. (2.92-3.13); p=0.56) or last authors (3.13 vs. 3.02; 95%CI=(3.00-3.25 vs. 2.94-3.10); p=0.14). Overall, 50.4% of submissions had women first author and 21.3% as last. Women first author submissions increased from 42.1% (n=8) in 2018 to 53.9% (n=104) in

2023; last author increased from 15.8% (n=3) in 2018 to 23.3% (n=45) in 2023. The smallest proportion of women last author submissions (n=7, 9.2%) and podium acceptances (n=3, 11.5%) was observed in 2020; the largest was in 2021 (n=27, 31.0%; n=11, 42.3%) and remained visibly higher since its 2020 nadir. Across all 6 years, there was a similar proportion of submitted versus accepted last authors from a top-40 NIH-funded institution (61.11% vs. 65.04%).
Conclusion: Representation of women first authors in abstract submissions/acceptances remained >50% in 2022 and 2023, suggesting ACEPS DEI Committee's successful efforts. However, representation of women last authors has yet to reach parity, a finding that may reflect the persistent landscape of fewer women as senior faculty. Last-author affiliation with a top-40 NIH-funded institution was not associated with greater acceptance rates. Achieving gender parity in senior authorship may take time as more women first authors enter academia, achieve senior faculty ranks, and become principal investigators.

Virtual Poster 7: Assessment of Point-of-Care Ultrasound Attitudes, Needs, and Training for Medical Students and Teaching Faculty

Authors: Matthew Guo BA, Kevin Ye BA, Amanda Bertram, Ashwini Niranjan-Azadi

Background: Bedside point-of-care ultrasound (POCUS) has grown in relevance to clinical practice within the field of medicine. There is much interest in POCUS curriculum development at the undergraduate medical (UME) level nationally. However, the Johns Hopkins University School of Medicine (JHUSOM) currently lacks a core UME POCUS curriculum. The intersection of medical student (MS) needs and teaching faculty (TF) expertise with regards to POCUS education is not well understood.
Hypotheses/Aim: This study aims to explore both MS and TF perspectives about the current state of POCUS education at JHUSOM and to identify specific clinical applications of POCUS that stakeholders consider necessary core competencies for graduating MS. We hypothesize that MS and TF will have different views about what they consider areas of core competency in a POCUS curriculum. We aim to use the results of the needs assessment to develop a centralized longitudinal UME curriculum at this institution.
Methods: Needs assessment surveys exploring perceptions towards POCUS and proposed UME curriculum, based on international UME consensus guidelines, were distributed to second-, third-, and fourth-year MS and UME TF at the JHUSOM. Descriptive statistics will be used to calculate the mean Likert-scale scores related to need for a core POCUS curriculum and the perceived utility of POCUS in various clinical settings. Descriptive statistics will also be used to calculate the percentage of respondents who agree that specific concerns listed in the survey are barriers towards implementing a POCUS curriculum. Mann-Whitney U analyses will be used to compare scores by various demographic groupings.
Results: Survey response collection is currently ongoing and will conclude in early-February 2024. Statistical analyses will be conducted in February. Results will be compiled by early March.
Conclusion: This study is a needs assessment for the creation of a core POCUS curriculum at JHUSOM that surveys the perspectives of MS and TF. While survey responses are currently ongoing, we anticipate that this study will identify a high-need by various stakeholders for a core POCUS curriculum and elucidate specific clinical indications of POCUS that are considered high-yield for education.

Virtual Poster 8: Assessing Interest in a Medical School Healthcare Innovation Curriculum Track at Johns Hopkins

Authors: Lily Zhu, B.S.1*; Oren Wei, B.S.1*; Jeffrey Khong, B.S.1*; Antony Fuleihan, B.S.2,4, M.S.; Arjun K. Menta, B.S.A., B.B.A.1; Youseph Yazdi, Ph.D., M.B.A.3,4
1Johns Hopkins University School of Medicine
2Thomas Jefferson Sidney Kimmel Medical College
3Johns Hopkins University - Department of Biomedical Engineering
4Johns Hopkins University - Center for Bioengineering Innovation and Design
*These authors contributed equally

Background: The demand for physician-innovators is increasing, yet fewer than 20% of medical schools in the United States offer innovation-based programs. The existing literature lacks a comprehensive characterization of medical student interest in such programs and innovation-related careers.
Hypothesis/Aim: To evaluate medical student interest in healthcare innovation (HCI) and propose a healthcare innovation curriculum track.
Methods: An online cross-sectional survey was delivered to all 560 medical students at Johns Hopkins University via email during the 2023-2024 academic year. Questions assessed demographics, experience with and interest in HCI, and willingness to participate in a medical school HCI track.
Results: Ninety students provided complete responses (63% female, mean age 25.1). The most common undergraduate majors were life sciences (59%), humanities (12%), engineering (11%), and physical sciences (10%). Thirty-five reported prior healthcare innovation-related experience, including projects (22%), coursework (13%), or self-education (27%). Most participants (97%) considered a physician's knowledge and experience with HCI to be at least somewhat important, and 63% were likely to incorporate innovation into their future practice. Sixty-four percent anticipated allocating 0-25% of their future time to innovation. Thirty-nine students (43%) reported the availability of HCI opportunities as a positive factor in their medical school decision. Twenty-nine students (32%) were likely to sign up and spend on average 7 hours weekly towards an HCI track. There was no significant correlation between undergraduate majors and perceived importance of innovation, likelihood of participating in the innovation track, or projected hours per week they were willing to spend on a track. Those who had prior design project experience ($p=0.001$) or engaged in self-education ($p=0.01$) were more interested in participating in the track.
Conclusion:
Students' interest in HCI is pervasive and their appreciation of the importance of innovation for physicians is nearly universal. We propose a track that aims to cultivate physician-innovators through hands-on experience and mentorship and complements the existing curriculum (Table 1). This model maintains a 3-hour weekly commitment divided among lectures, workshops, and innovation project development. Yearly requirements include presenting projects to HCI experts. Future studies after curriculum implementation may evaluate student outcomes.