## LO56

**Measuring cognitive load on shift: Application of cognitive load theory during clinical work in the emergency department**

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**Introduction**: By virtue of the nature of their work, emergency medicine physicians and residents experience high cognitive load and stress, which are known to affect physician performance and patient outcomes. However, the contribution of cognitive load has not previously been measured during the clinical work of emergency physicians. The objectives of this study were to measure cognitive load and stress in emergency physicians and residents during clinical work, evaluate the relative contribution of multiple factors on cognitive load, and to determine the effect of experience on these results. **Methods**: This observational study was conducted at an academic Canadian Urgent Care Centre from July to August 2018. Emergency medicine residents and staff physicians completed a survey while on shift to evaluate measures of cognitive load and acute stress. Patient acuity and the number of active patients for each physician, hours worked and patients in the waiting room were recorded. Correlational analyses and multivariable linear regression were performed to evaluate the effect of each predictor on measures of overall cognitive load. **Results**: A total of 131 questionnaires were completed by 42 physicians (87 questionnaires from 26 staff physicians and 44 questionnaires from 16 residents). Results showed that staff physicians carried a significantly higher patient load compared to residents (p < 0.001). There were no differences in mean overall cognitive load (p = 0.25), acute stress (p = 0.17) or measured subcomponents of cognitive load between the two groups. Perceived case difficulty and acute stress were strong predictors of overall cognitive load, while level of distraction did not correlate with the other outcomes. The number of patients in the waiting room predicted acute stress in staff physicians, while the number of higher acuity patients was a significant predictor in residents. **Conclusion**: Measures of overall cognitive load and acute stress were strongly correlated in the clinical setting. Different factors affect cognitive load and acute stress in staff physicians compared to residents. Appreciating these differences may help medical educators understand the cognitive challenges faced by learners in a clinical context, and aid in the design of cognitive and educational strategies to help mitigate these challenges and reduce stress.
**Keywords:** acute stress, cognitive load, emergency medicine

## LO57

**Twitter as an educational tool for medical students in their emergency medicine rotation: a prospective cohort study**

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**Introduction**: Different tools have been developed to complement medical training, and improve student learning. Although social media has been described as an innovative educational strategy, evidence for its use is scarce in emergency medicine (EM). The primary outcome of this study was to evaluate whether brief teaching points (tweets) sent to medical students (MS) via a Twitter feed, would yield better exam score at the end of an emergency medicine (EM) rotation. **Methods**: Participants included in this prospective cohort study were MS completing an EM rotation at our tertiary care academic center. The control group was recruited from December 2016 to November 2017 and the experimental group from November 2017 to November 2018. The MS in the experimental group were invited to follow a Twitter feed. A total of 32 EM-related tweets based on learning objectives were sent out throughout the 4 week rotation. At the end of the rotation, MS of both cohorts took an exam and completed a survey of assiduity and appreciation. Exam scores were compared using t-tests. **Results**: A total of 80 MS were recruited for the study, 38 in the experimental cohort. Average exam scores were similar in both cohorts (control = 63 ± 9% vs experimental = 64 ± 8% for a mean difference of -2% [95%CI -6 to 2], p = 0.37). Of the experimental group, only 7 (18%) of the participants reported viewing more than 50% of the tweets. There was no difference between mean exam scores of this sub-group and that of the control cohort (66 ± 10% for a mean difference of 4% [95%CI -4 to 11], p = 0.33). The majority (n = 20, 53%) of the MS in the experimental cohort did not read any tweets. When compared to the rest of the experimental cohort MS who reported viewing ≥50% of the tweets found the Twitter feed to be a useful educational tool. Indeed, on a 3 item Likert scale used to evaluate different aspects of appreciation, they found the Twitter feed to be beneficial to their rotation (86% vs 13%, p < 0.001) as well as helpful in patient management (71% vs 16%, p = 0.001). These same MS would have liked more tweets (100% vs 19%, p < 0.001) and would like to use Twitter in other rotations (100% vs 32%, p = 0.005). **Conclusion**: In this study, there was no difference in the exam scores between MS having access to regular EM-focused educational tweets in comparison to those who did not. Results also found a lower than expected assiduity of MS to the educational Twitter feed, although those who used it significantly found it useful.
**Keywords:** medical students, social media, Twitter

## LO58

**An education needs assessment: how can we optimize the education provided to off-service residents completing an emergency medicine rotation**

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**Introduction**: Over 150 Off Service Residents from 18 different programs rotate through our ED every academic year. We aim to determine the educational needs of these residents to we better design a curriculum for their ED rotation. **Methods**: We conducted a cross-sectional convenience sample survey of 133 Off-Service PGY-2 residents who had rotated through the ED of The Ottawa Hospital in their PGY-1 year. (from July 2016 to June 2017). The survey was emailed to residents from March to May 2018 and consisted of 19 questions. Questions were qualitative, selection from list and rank order. They focused on 3 main areas: EM rotation impact and areas for improvement, desired content, desired method of learning. Data was collected using Survey Monkey. **Results**: We received 70 responses (53%) from 13 different residency programs. 36 (51.4%) of respondents were from the Family Medicine program. Qualitative themes included that the ED provides great opportunity to develop the ability to workup undifferentiated patients and allows for teaching around cases. Allowing more involvement in acute care cases and having more SIM sessions could improve the rotation. The most useful topic was chest pain/cardiovascular conditions (73.3% of residents) with 16 additional ED topics listed as important for their practice. The most useful skill was suturing (51.6% of residents) with 16 other ED procedures listed as important for their practice. The preferred teaching method was SIM (48.3%) followed by small group