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Clerkship Student Perceived Educational Effectiveness of Virtual Simulation

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educational activities to a virtual format. To our knowledge, little is known about how this format change impacts attendance.

**Objectives:** To examine changes in conference attendance across various methods of conference delivery: in-person, virtual conference, and virtual conference with a video-on requirement. We hypothesized that overall attendance would increase with the change to virtual format.

**Methods:** This is a retrospective, observational study of resident conference attendance from July 2019 to November 2020, abstracted from routinely collected records for all emergency medicine residents (n=30). Groups included residents attending in-person conference, virtual conference, and virtual conference with a camera-on requirement (Table 1). The primary outcome was conference attendance. An a priori subgroup analysis was performed to examine changes in attendance for the in-person format before onset of the pandemic versus during the pandemic. Chi-squared analyses were performed.

**Results:** Overall, there were 7800 hours of conference, with 5936 hours attended (76.1%). Attendance for in-person, virtual, and virtual with camera-on formats were 75.7%, 80.1%, and 69.5%, respectively (Table 2). A 3-way chi-squared analysis showed significant association between conference format and conference attendance ( $\chi^2 = 29.3, p < 0.005$ ), with each 2-way comparison also being significant. There was no difference in in-person attendance before versus during the pandemic (75.1% vs 76.9%,  $\chi^2 = 2.1, p = 0.14$ ).

**Conclusions:** Resident conference attendance significantly increased after transitioning from in-person to virtual format, but then decreased after adding a camera-on requirement. Limitations include crossing over academic years as well as smaller sample size of the virtual with camera-on format.

**Table 1.** Timeline of conference format changes.

Format	Time Periods
In-person	July 1, 2019 - March 4, 2020
Virtual	March 18, 2020 - June 30, 2020
In-person	July 1, 2020 - September 30, 2020
Virtual with camera on	October 1, 2020 - November 18, 2020

**Table 2.** Resident conference attendance among various conference formats.

Format	Attended (hours)	Not Attended	Possible Hours	% Attended
In-person	4271	1369	5640	75.7%
Virtual	1249	311	1560	80.1%
Virtual with camera on	417	183	600	69.5%

## 12 Characteristics of Traumatic Injury in Sexual Assault Patients

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**Learning Objectives:** To characterize types of injuries commonly associated with sexual assault and identify risk factors for these injuries.

**Background:** The ED remains at the forefront for the treatment of sexual assault (SA) patients. Many of these patients require treatment for traumatic injuries sustained during the assault, which can range from mild to severe. The risk factors for traumatic SA remain unclear.

**Methods:** Electronic ED records were reviewed retrospectively from a high volume level 1 Trauma center and nearby community hospital from July 2019 to July 2020 for patients age  $\geq 13$  years with a chief complaint of SA. Descriptive statistics, chi square and logistic regression were used to characterize demographics and identify factors associated with trauma.

**Results:** 157 patients met inclusion criteria. The mean age was 27.9 years old (range 13-79 years) and 92.4% were female. Adult patients (age  $>18$  years) comprised of 78% of assaults compared to adolescents (age 13-18 years) at 22%. The assailants of these sexual assaults were reported as 61.2% acquaintance, 22.9% stranger and 15.9% intimate partner (IP). In 8.9% of cases, the patient reported an attack by multiple assailants. 57 (36.3%) patients exhibited trauma on presentation. 30 (24.8%) cases involved alcohol use (P=0.95) and 22 (14%) reported a drug facilitated assault (P=0.64) but neither was statistically associated with trauma. Chi square analysis showed an association of trauma with adult age (P<0.05) and assault by IP (P<0.05). 45 (28.6%) patients had minor injury described as abrasions, lacerations or contusions. Major trauma occurred in 12 (7.6%) patients, which consisted of complex fractures and nonfatal strangulation. Logistic regression determined that assault by IP (OR=2.6, 95% CI 1.1-6.5) and being an adult patient (OR=3.0, 95% CI 1.1 - 7.7) increased the risk of trauma. Assault by IP also increased the risk of nonfatal strangulation (OR=4.0, 95% CI 1.1-15.4).

**Conclusion:** Traumatic injuries from SA were mostly minor. IP violence was found to be a key risk factor for trauma and findings of nonfatal strangulation.

## 13 Clerkship Student Perceived Educational Effectiveness of Virtual Simulation

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**Learning Objectives:** To determine the perceived

educational efficacy of VS.

**Background:** High fidelity simulation (HFS) has been described as an effective tool in medical training. COVID 19 has led to educational gathering restrictions for both medical students (MS) and Physician Assistant students (PAS). In response, we offered MS and PAS education through a virtual HFS (VS) experience. Objective: To determine the perceived educational efficacy of VS.

**Methods:** This IRB reviewed study was conducted by a PGY 1-4 EM residency. Given COVID restrictions, virtual clerkship educational experiences, including VS were created. VS was conducted via WebEXTM. Previous in person HFS cases were streamed by on site personnel, including faculty and chief residents. Student leaders were assisted by teammates via chat in teams of 3. Students had a minimum of 3 VS. After rotation completion, either full virtual (FV) or patient care with virtual education (PC), MS and PAS were asked to provide anonymous feedback. The electronic survey consisted of the host network’s standard Continuing Medical Education (CME) questions (Table 1). The Likert questions were analyzed descriptively with a value of 1 for Strongly Disagree (SD), 2 Disagree (D), 3 Undecided (U), 4 Agree (A), and 5 Strongly Agree (SA). Open ended questions were qualitatively analyzed.

**Results:** From 8/3/20-10/23/20, 79 students (58 FV, 19 PC) rotated. Due to scheduling conflicts, 14 were unable to participate leaving 65 VS participants (44 FV, 21 PC). A total of 46 replied (70.8% response rate). Table 1 demonstrates that VS was received overwhelmingly positively. Only 1 respondent replied that they would not recommend this activity to others.

**Table 1.** CME questions and analyzed responses.

Question	Analyzed Response
The objective(s) of this activity were met	4.71 (0 SD, 0 D, 0 N, 13 A, 33 SA)
The pacing of the activity was appropriate	4.59 (0 SD, 0 D, 1 N, 17 A, 28 SA)
The activity kept me engaged	4.76 (0 SD, 0 D, 0 N, 11 A, 35 SA)
I learned new knowledge from this activity	4.85 (0 SD, 0 D, 0 N, 7 A, 39 SA)
I will be able to apply what I have learned to my job	4.85 (0 SD, 0 D, 0 N, 11 A, 35 SA)
I would recommend this activity to others	4.82 (0 SD, 1 D, 0 N, 5 A, 40 SA)
This activity will improve my job performance and productivity	4.59 (0 SD, 1 D, 1 N, 14 A, 30 SA)
What about this activity was most useful to you?	Several students commented on the usefulness of acting as a leader and playing the role of a physician, as well as the feedback and review provided at conclusion of the cases. They also appreciated the realistic environment and scenarios that were created. In addition, students enjoyed being put in stressful situations and working as a team to put their knowledge into practice. Others commented on the extra experience and practice that is provided.
What about this activity was least useful to you?	Common responses included N/A, difficulties seeing the patient monitor and inherent difficulties with the virtual process (lack of actual patient touch/ inability to perform a physical exam, lagging of computer quality, etc.) and the procedure demonstrations.
How can we improve this activity to make it more relevant?	Many responses included N/A, having physician leads perform an example case, improve clarity of monitor/EKGs/imaging presented over the web cam. One student mentioned adding metrics for team members in addition to the team leader, more structured debriefing.
Please provide any additional comments you may have. (e.g., speakers, content, facilities, cases, etc.)	Common responses included thanking the team for putting together the activity, suggesting making the monitor more clearly visible.
What are you going to change in your practice as a result of this educational activity?	Major themes included students having a more 'structured' approach, including utilization of a safety net (IV, O2, Monitor, POCT glucose, urine HCG) and assessment of ABCs. Second, students expressed they would be more careful to maintain a broad differential rather than 'anchoring' on a single diagnosis. Additionally, students reported they would strive to share their thoughts with the rest of the team throughout a patient's course of treatment and they would remember to utilize family and EMS for history that may be useful to the patient's diagnosis and treatment.
State any barriers to implementing this change.	Most responses were N/A, but also limitations placed by computer/ virtual aspects and inability to see live patients in their current level of training.

Positives include perceived realism, experience and teamwork. Ability to view the monitor was a theme for improvement.

**Conclusions:** This single site cohort indicates that VS is an effective, well received education tool for students unable to access a sim center. Further research is needed to compare VS to an in-person simulation experience.

## 14 Comparing Resident Procedures in Urban vs. Rural Emergency Departments.

Nicholas Carey; Scott Findley, MD; Hannah Davis, MPH; Brian Dilcher, MD

**Learning Objectives:** Comparing procedures EM residents perform at urban vs. rural emergency departments can help identify strengths or weaknesses of utilizing rural sites for residency training.

**Background:** Rural rotations can be a valuable experience for EM residents. To date there has not been a retrospective cohort study to compare procedures performed at Urban vs. Rural EDs.

**Objectives:** The purpose of this study was to compare procedures performed by EM residents in urban vs. rural EDs, with the hypothesis that there will be no significant difference in procedures performed.

**Methods:** A retrospective cohort study was conducted comparing procedures performed by 2nd and 3rd year EM residents based on medical chart review. Procedures were counted at three locations including a rural critical access ED, a large rural (community) ED, and an Urban (Academic) ED. Procedure notes were collected from September 2018 to September 2019. Final analysis included nine months, as three months did not have residents at all locations. Eight procedures were standardized based on number of procedures performed per 100-hours worked by residents. Comparison of total procedures and complex vs. simple procedures was performed. A Kruskal-Wallis H test was preformed to compare resident hours for procedures between each of the three locations. To compare each of the hospitals to one another separately, Mann Whitney U tests were performed.

**Results:** The total resident hours worked included 1,800 at the small rural ED, 13,725.5 at the urban ED and 5,319 at the large rural ED. A p-value of 0.0311 for the Kruskal-Wallis H Test indicated a difference between at least two of the ED sites. A statistically significant difference exists (p-value 0.0135) between the urban ED (95% CI 0.15-0.62) and the large rural ED (95% CI 0.54 -1.53). There was no significant difference in complex vs. simple procedures among the three locations (p-value 0.4159).

**Conclusions:** When compared to the urban ED, residents performed more total procedures at the large rural ED, and similar total procedures at the small rural ED per hours worked.