

UC Irvine

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health

Title

Emergency Medicine Radiology Education: A National Needs Assessment

Permalink

<https://escholarship.org/uc/item/09s3n98n>

Journal

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 23(1.1)

ISSN

1936-900X

Authors

Villa, Stephen
Wheaton, Natasha
Lai, Steven
[et al.](#)

Publication Date

2022

Copyright Information

Copyright 2022 by the author(s). This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

creating a new curriculum. Clerkships significantly diversified their asynchronous educational content and utilized several instructional models to substitute the loss of clinical experience. 71% of CDs did not feel comfortable writing a standardized letter of evaluation for students during the VR, with the majority citing inability to evaluate students' competencies in a clinical context. See Table 1 and Figure 1 for details.

Table 1. Clerkship Experience Adopting EM Virtual Rotation (N=31)

Time Available to Develop Virtual Rotation (VR)	% Respondents	n
Less than 1 week	32.26%	10
1-2 weeks	38.71%	12
2-4 weeks	22.58%	7
More than 4 weeks	3.23%	1
Time Spent Developing VR		
Less than 12 hours	12.90%	4
12-24 hours	38.71%	12
24-72 hours	32.26%	10
72 hours or more	12.90%	4
Clinical Load during VR Development		
Reduced clinical load	12.90%	4
Usual clinical load	67.74%	21
Increased clinical load	16.13%	5
Grading Scheme Utilized		
Ordinal (i.e. A, B, C, D)	12.90%	4
Pass/Fail	74.19%	23
Faculty Interaction with Students Outside Clinical Shifts		
Increased	41.94%	13
No change	6.45%	2
Decreased	38.71%	12
I am able to get to know the student as an individual better in a VR		
Strongly Disagree	41.94%	13
Somewhat Disagree	22.58%	7
Neither Agree or Disagree	6.45%	2
Somewhat Agree	16.13%	5
Strongly Agree	0.00%	0
I am able to evaluate the student's clinical competencies better as specified by the Standardized Letter of Evaluation (SLOE) in a VR		
Strongly Disagree	58.06%	18
Somewhat Disagree	19.35%	6
Neither Agree or Disagree	3.23%	1

Conclusion: A crisis, such as COVID-19 necessitates change in all facets of medical education. While EM educators demonstrated the ability to create emergency remote learning with limited time, this was not equivalent to formal development of pre-planned virtual rotation experiences. Future faculty development and curriculum innovation are required to fully transition an in-person immersive experience to a non-inferior virtual experience.

27 Emergency Medicine Radiology Education: A National Needs Assessment

Stephen Villa; Natasha Wheaton, MD; Steven Lai, MD; Jaime Jordan, MD, MAEd

Learning Objectives: Our objective was to explore the current state of radiology education in Emergency Medicine (EM) residency programs.

Background: Radiology training is an important component of medical education, but its delivery has been variable. Program directors have reported a lack of radiology skills in incoming interns. A needs assessment is a crucial first step to improving radiology education.

Methods: This was a cross sectional survey study of all ACGME-accredited EM programs in the U.S. Program leadership completed an online survey consisting of 16 items: 7 Likert, 8 Multiple choice, 1 free response item. Descriptive statistics were calculated and reported.

Results: 142/252 (56%) of eligible EM programs completed the survey. Program Demographics are shown in Table 1.

88/142 (62%) of EM programs did not have formal instruction in radiology. Of the instruction that is provided, 127/142 (89.44%) provide instruction via didactics/lectures and 115/142 (81%) rely on instruction during clinical shifts. Only 51/142 (36%) provide asynchronous opportunities and 23/142 (16%) have a dedicated radiology rotation.

134/142 (95%) of leadership felt that it was extremely or very important for ED providers to be able to independently interpret their x-ray results. 129/142 (91%) either sometimes or always relied on their independent x-ray interpretations

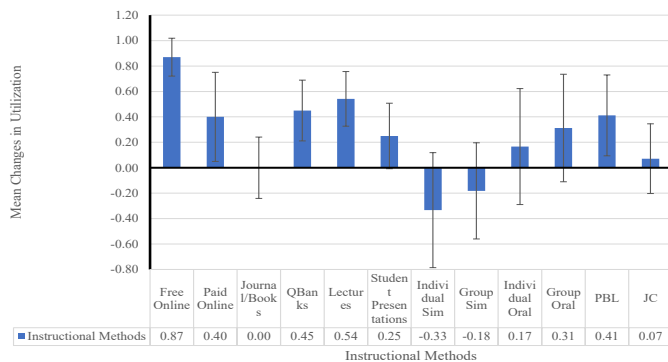


Figure 1. Mean Changes in Utilization of Instructional methods from In-Person Rotation to Virtual Rotation on a 3-point scale (-1 = decreased, 0 = did not change, +1 = increased). Brackets represent margin of error based on a 95% confidence interval. Qbank = question banks; PBL = problem-based learning; JC = journal clubs.

Table 1. Program demographics.

Program Format	N* (% of total)
PGY 1-3	105 (74.47%)
PGY 1-4	36 (25.53%)
Primary Clinical Site	
County	21 (14.89%)
University	58 (41.13%)
Community	54 (38.30%)
Other	8 (5.67%)
Program Region	
Western Region (AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY)	23 (16.31%)
North Central Region (IA, IL, IN, MI, MN, ND, NE, OH, SD, WI)	29 (20.57%)
South Central Region (AR, KS, LA, MO, OK, TX)	14 (9.93%)
South East Region (AL, FL, GA, KY, MS, NC, PR, SC, TN, VA, VI, WV)	28 (19.86%)
North East Region (CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT)	47 (33.33%)

*1 respondent opted out of the demographic portion of the survey leaving a total of 141 responses available for analysis

to make clinical decisions. The most important radiology studies to be able to independently interpret were x-rays obtained for lines/tubes, chest x-rays and x-rays obtained for musculoskeletal related complaints.

Conclusions: A minority of EM residency programs have formal training in radiology despite the majority of program leadership believing that these are important skills. The most important curricular areas were identified. These results may inform the development of formal radiology curricula.

Table 2. Residents should be able to independently interpret the following radiologic studies at graduation (1=strongly disagree, 5=strongly agree).

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Weighted Average
X-ray for central line or ET tube, NG/G tube placement	1.41%	0.00%	0.00%	3.52%	95.07%	4.91
Chest x-ray	1.42%	0.00%	0.71%	3.55%	94.33%	4.89
MSK x-ray (i.e. shoulder, elbow, wrist, hand, knee, ankle, foot, etc.)	1.41%	0.00%	2.11%	16.20%	80.28%	4.74
Pelvis x-ray	1.43%	0.00%	4.29%	14.29%	80.00%	4.71
Soft tissue neck x-ray (i.e. pediatric stridor)	1.41%	1.41%	11.27%	29.58%	56.34%	4.38
CT brain (non-contrast)	0.70%	3.52%	7.04%	38.03%	50.70%	4.35
Abdominal x-ray	1.42%	0.71%	15.60%	33.33%	48.94%	4.28
CT cervical spine	1.42%	12.06%	30.50%	36.88%	19.15%	3.6
CT abdomen/pelvis	2.11%	13.38%	29.58%	43.66%	11.27%	3.49
CT angiography chest (i.e. PE)	3.52%	16.20%	33.80%	36.62%	9.86%	3.33
CT chest	4.93%	14.79%	39.44%	35.21%	5.63%	3.22
CT extremity	10.56%	31.69%	38.73%	14.08%	4.93%	2.71
CT/CT angiography (i.e. stroke protocol)	10.56%	31.69%	36.62%	19.01%	2.11%	2.7
MRI brain	28.17%	34.51%	25.35%	11.27%	0.70%	2.22
MRI spine	30.28%	35.21%	23.24%	10.56%	0.70%	2.16

28 Emergency Medicine Resident Perceptions of the Didactic Experience During the Covid-19 Pandemic

Therese Mead; Ian Keck, DO; Vina Tran, MD; Kaitlin Rose, BS

Learning Objectives: The learning objective of this study was to evaluate the impact of the Covid-19 pandemic on the didactic experience of EM residents in the United States.

Background: Due to the onset of Covid-19, many residency programs shifted from in-person education to online learning utilizing web-based platforms. Limited data exist on resident physicians’ perceptions of the educational environment during this time.

Objective: The objective of this study was to evaluate how the Covid-19 pandemic affected the didactic experience of EM residents in the United States. We hypothesized that resident physicians preferred a hybrid model of online and in-person learning.

Methods: This observational study (completed in November 2020) assessed EM resident perceptions of the didactic learning environment during the Covid-19 pandemic utilizing an online survey. Participants were invited through the CORD listserv. Subjects included were EM residents and fellows in the US. There were 14 survey questions including demographics and perceptions of aspects of the didactic environment in 2020. Quantitative

statistical analysis of question responses was performed.

Results: 78 participants from 12 states completed the survey. 98.7% of subjects reported that some or all their in-person meetings were temporarily stopped during the Covid-19 pandemic. 98.7% of residents reported that their residencies utilized web-based meeting platforms. 77% of respondents indicated that their didactics were still being held virtually. 46% of subjects reported that live lectures provided a better learning experience than online. 15% of respondents kept their webcam on during the entire online learning experience. When envisioning July 2021, 71% of respondents answered that they would like to see their programs utilize a hybrid model of in-person and online learning.

Conclusions: Most programs temporarily stopped all or some of their in-person meetings and utilized a web-based meeting platform. Many residents preferred a hybrid model of learning. Limitations included sample size. This study provided valuable data on trends in EM education during the pandemic.

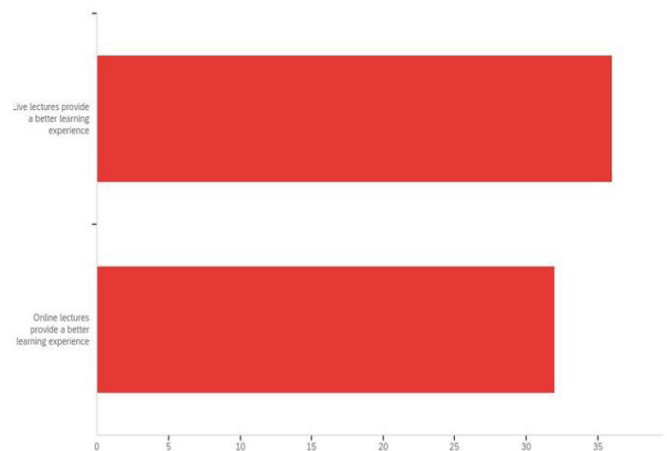


Figure 1. Comparison of online lectures and live, in-person lectures.

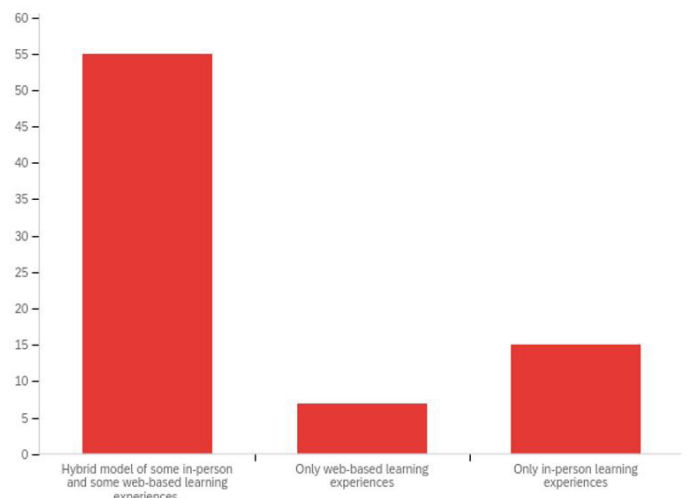


Figure 2. Resident preferences for future didactic learning experience.