assessments for non-checklist (NCL) SO and 697 for the CL cohort. Increasing numbers of SO patients correlated with increased SO duration (Pearson r = 0.74, P < 0.0001). CL did not impact the mean number of SO patients per minute (CL mean ± standard deviation [SD] = 0.86 ± 0.31, NCL mean ± SD = 0.86 ± 0.23). VAS assessment of SO improved to 8 (range 2.5 to 10; P < 0.0001) for CL compared to 7.5 (0.5 - 0.95) for NCL. Important aspects of SO improved with implementation of CL (see Table): tasks, disposition, and necessity of attending clarification. Overall, comparison of oncoming and departing attending physician global assessment SO scores manifested low interobserver agreement (intraclass correlation coefficient = 0.39;, 95% confidence interval,CI -0.26 to 0.70). Oncoming and departing attendings perceived significantly improved SO global VAS assessments for the CL cohort (CL mean ± SD = 8.3 ± 0.55;, NCL mean ± SD = 7.0 ± 1.2; P < 0.0001 and CL mean ± SD = 7.6 ± 1.1;, NCL mean ± SD = 7.0 ± 1.1; P = 0.05, respectively).

Conclusion: Although assessments demonstrated inconsistent interobserver agreement, CL utilization improved oncoming and departing attendings' perceptions of residents' SO quality compared to unstructured SO.

Table. Impact of checklist on sign-out (SO) quality.

	No-Checklist	Checklist	P value
Total N	548	697	
Total Attending Assessment of SO Quality VAS (10 cm range)	7.5 (0.5 - 9.5)	8.0 (2.5 - 10)	< 0.0001
Oncoming Attending Assessment of SO Quality VAS ± SD	7 ±1.2	8.3 ± 0.6	< 0.0001
Departing Attending Assessment of SO Quality VAS ± SD	7 ± 1.1	7.6 ± 1.1	= 0.05
+ Diagnosis	1 (714/727, 98.2%)	1 (522/527, 99.1%)	= 0.1
- Diagnosis	12/727, 1.7%	5/527, 0.9%	
+ "Task"	578/686, 84.3%	482/493, 97.8%	< 0.0001
- "Task"	60/686, 8.7%	8/493, 1.6%	
+ Disposition	683/703, 97.2%	518/521, 99.4%	< 0.004
- Disposition	14/703, 2%	3/521, .6%	
+ Admit Team	392/584, 67.1%	321/421, 76.2%	< 0.03
- Admit Team	83/584, 14.2%	35/421, 8.3%	
+ Code Status	45/505, 8.9%	52/357, 14.6%	= 0.13
- Code Status	295/505, 58.4%	187/357, 52.4%	
+ Attending Add	100/427, 23.4%	39/345, 11.3%	< 0.0001
- Attending Add	327/427, 76.6%	306/345, 88.7%	

VAS, visual analog scores; *SD*, standard deviation; *cm*, centimeters.

11 Retrospective Review of Third-Year Medical Students' Clinical Evaluations via Entrustable Professional Activities

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Background: Emergency medicine (EM) is not a required third-year (M3) clinical clerkship for medical schools per Liaison Committee on Medical Education accreditation standards. National Board of Medical Examiners (NBME) subject exams in other core clerkships suggest students' medical knowledge improves with increased clinical exposure. Consequently, no M3 EM-specific grading tool exists for this student cohort. At our institution, Entrustable Professional Activities (EPA) have been adopted for M3 clerkship evaluations, yet have not been longitudinally studied in relation to EM student performance.

Objectives: In absence of an M3 NBME exam to assess EM learners' development, this study reviewed M3 EPAs over one academic year. We hypothesized that EPA scores would improve temporally as students gained more clinical experience.

Methods: This was an observational, retrospective review of 123 students rotating in three EM clerkship blocks from July 2017–June 2018 at the University of Kentucky. Standardized EPA scoring on a scale of 1-4 (graded 65%, 75%, 85% ,and 95% respectively) for differential diagnosis, diagnostic plan, and oral presentation were reviewed for every patient encounter-based faculty evaluation. Faculty and students were instructed on grading criteria prior to clerkship.

Results: Of 2917 total EPA scores reviewed, 81 did not receive grades and were excluded from analysis. One EPA was excluded due to an absent faculty signature. We analyzed the remaining 2835 EPAs by rotation block. Statistically significant differences were found for all assessment categories and overall average scores. The mean differential diagnosis scores for rotations 1-3 were 3.11, 3.13 and 3.25, respectively.

Conclusion: Our results suggest that overall student clinical EPA evaluations increased over time during the M3 year as well as within the individual categories of differential diagnosis, diagnostic plan, and oral presentation. Further study is needed to identify comparability at other institutions as well as the influence of M3 clerkship experiences prior to the EM rotation.

12 Impact of Ambient Background Noise on Sign-Out in the Emergency Department

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Background: Elevated emergency department (ED) noise levels can impact physician communication during physician sign-out (SO).

Objectives: To assess the impact that time of day, background music, background discussion, and SO have on ambient noise in an emergency department's physician charting area.

Methods: This prospective observational study monitored ambient noise levels in an emergency physician charting area

at various times during the day (7 AM - 3 PM), evening (3 PM - 11 PM), and night (11 PM - 7 AM) shifts using a cellular phone sound-level monitor app (Decibal X application by Skypaw, Hanoi, Vietnam). A research assistant and two physicians collected a convenience sample of noise measurements in decibels (dB) of a physician charting area over a 36- day period. Monitoring of SO noise measurements occurred within one meter of SO physicians; non-SO noise measurements were made centrally in the charting area. SO data collected also included duration of SO and number of SO patients.

Results: The 358 ambient noise measurements demonstrated that day (66.6 dB ± 3.9, n = 104) and evening (65.3 dB ± 4.7, n= 175) shifts generated more noise than night shifts (57.8 dB ± 8, n = 79; P = 0.05). Background music (BM) in the charting area resulted in higher mean ambient noise levels during physician SO: BM 65.6 dB ± 7.4, n = 14 vs no BM 55.4 dB ± 7.8, n = 65; P < 0.001. Background discussion (BD) in the physicians' charting area resulted in higher mean ambient noise during physician SO: BD 67 dB ± 6.5, n = 23 vs 53.2 dB ± 5.8, n = 55; P < 0.001. Higher decibel volumes correlated with longer SO duration (rho = -0.41; p < 0.001) and higher numbers of SO patients (rho = -0.56; P < 0.001). SO impacted mean ambient noise: SO 60 dB ± 8.7, n = 97 v. non-SO 65.5 dB ± 4.4, n = 261; P < 0.0001.

Conclusion: Time of day, BM, BD, and physician SO impact ambient noise levels in a physician charting area. Higher ambient noise levels correlate with longer physician SO and increased numbers of SO patients.

13 Setting a Minimum Passing Standard for the Uncertainty Communication Checklist Through Patient and Physician Engagement

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Background: Mastery learning (ML), a form of competency-based medical education, has been successfully implemented to improve clinical skills in a variety of domains. A critical step in ML curriculum creation is establishing a defensible minimum passing standard (MPS) score, which has historically been done by medically-trained experts. As ML expands from procedure-based skills to patient-centered domains, such as communication, there is opportunity to incorporate patients as judges in MPS procedures.

Objectives: To compare physician- and patient-generated MPS scores for a checklist designed to assess physician competency when conducting an emergency department (ED) discharge conversation in the setting of diagnostic uncertainty.

Methods: Emergency medicine residency program directors (PD) were solicited via email, with a goal of recruiting a diverse sample based on both geography and residency program length (three years or four years). English-speaking adult (> 17 years) patients recently discharged from the ED at Northwestern University or Thomas Jefferson University with a non-pathologic discharge diagnosis also were recruited. PDs participated as judges in one of four teleconference calls; patients participated in one of four in-person focus groups. Physicians and patients participated in setting a MPS using the Mastery Angoff method. The MPS for the physician and the patient panels were independently calculated.

Results: Thirteen PDs and 25 patients completed MPS setting procedures. Participant characteristics are reported in Tables 1 and 2. The patient-generated MPS was 84.0% and the physician-generated MPS 88.2%.

Conclusion: With similar instruction, both patients and PDs completed the standard-setting task. The scores set by both groups suggested similar expectations of proficiency for the residents to achieve "mastery." Applying the calculated MPS to the checklist resulted in the patients accepting 18/21 items correct to pass as opposed to the physicians, who had higher expectations of 19/22 items correct. Inclusion of patient perspective is vital for assessing patient-centered care delivery, yet standardized approaches for including patient assessments are limited. Our work suggests a novel and feasible approach for including patients as assessors of resident competency in patient-centered tasks.

Table 1. Program director (PD) demographics.

	N = 13
Age, mean (range), SD	42.8 (36-52) 5.2
Race, N (%)	
White	11 (84.6)
Black	1 (7.7)
Asian	1 (7.7)
Ethnicity, N (%)	
Hispanic	1 (7.7)
Non-Hispanic	12 (92.3)
Sex, N (%)	
Male	5 (38.5)
Female	8 (61.5)
Training Program PD Attended, N (%)	
Three-Year	3 (23.0)
Four-Year	10 (77.0)
Specialty, N (%)*	
Emergency Medicine	13 (100.0)
Internal Medicine	1 (7.7)
Toxicology	1 (7.7)
Training Program PD Directs, N (%)	
Three-Year	4 (30.8)
Four-Year	9 (69.2)
# Years in Practice Since Residency, mean (range), SD	13.5 (7-23) 4.9
Hospital Setting	
Urban	11 (84.6)
Suburban	2 (15.4)
Hospital Geographic Location	
Northeast	6 (46.2)
Midwest	3 (23.1)
South	2 (15.4)
West	2 (15.4)

*PDs listed more than one specialty and board certification.