

## UC Irvine

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### Title

Defining And Measuring Variance in Clinical Productivity Metrics By Training Level

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**Impact:** Residents completed an anonymous post-conference survey which used a 5-point Likert scale. 100% reported the event was educational, appropriately timed, and covered EM-relevant topics. Residents reported enjoyment in the stations between 4.3- 4.75/ 5 on the Likert scale highlighting a Kirkpatrick level 1 impact. Learners report increased confidence in skills in airway procedures, fast track procedures, leadership, communication, and handoff demonstrating Kirkpatrick level 2 impact. We hope this project will continue annually and demonstrate higher levels of impact for the learners.

## 53 Creating a Leadership Skills Assessment Tool for Use in Medical Simulation: A Quality Improvement Project

*Bridget Matsas, Erin Barry, Scott Szymanski, Dedra Tolson*

**Introduction:** Emergency physicians frequently lead complex resuscitations. Residency programs are increasingly recognizing the importance of leadership training, yet there are limited methods of evaluating leadership performance. As part of a quality improvement project, we developed a leadership skills assessment tool for use during emergency medicine (EM) simulation exercises.

**Educational Objectives:** We sought to develop an assessment tool that improves how educators evaluate and provide focused feedback on residents’ leadership skills during simulated resuscitations.

**Curricular Design:** This project was approved as quality improvement by our institution’s Human Research Protections Office. We identified a leadership assessment tool published in 2021 for use in medical schools. With permission from the primary author to recreate aspects of the original tool, we used the modified Delphi method with key stakeholders to develop a consensus on the most important skills for resuscitation leadership. We finalized and incorporated the tool (Image 1) into our program’s monthly simulation training. As EM residents rotated through simulated resuscitations, EM faculty evaluated the assigned team leader using the tool. The simulation team subsequently gave the completed assessment to the learner after the exercise ended.

**Impact:** There is a dearth of methods to assess and develop resident leadership skills, and this tool provides a way to evaluate leadership skills during simulated resuscitations. We evaluated the tool’s effectiveness using a 7-point Likert scale survey. The tool has been received positively by learners thus far, as shown in Table 1. The tool was implemented into our existing curriculum with minimal barriers, and both learners (n=10) and faculty (n=4) on average reported the tool did not impede learning. This tool has been an effective

method of evaluating resident leadership skills during simulated resuscitations, and we continue to implement it.

**2023 Leadership Skills Assessment Tool**

Learner: \_\_\_\_\_  
 Evaluator: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Simulation: \_\_\_\_\_

	N/A	Growth			Solid		Exceeds	
		1	2	3	4	5	6	7
The learner effectively uses closed-loop verbal communication at the interpersonal and team level.	N/A	1	2	3	4	5	6	7
The learner appropriately prioritizes tasks.	N/A	1	2	3	4	5	6	7
The learner effectively communicates a common goal/vision to team members.	N/A	1	2	3	4	5	6	7
The learner uses available information to make decisions.	N/A	1	2	3	4	5	6	7
The learner demonstrates situational awareness.	N/A	1	2	3	4	5	6	7
The learner effectively listens to others and integrates feedback from team members.	N/A	1	2	3	4	5	6	7
The learner remains effective in stressful situations.	N/A	1	2	3	4	5	6	7
The learner demonstrates adaptability.	N/A	1	2	3	4	5	6	7
The learner leads by example.	N/A	1	2	3	4	5	6	7
The learner effectively resolves conflict.	N/A	1	2	3	4	5	6	7
The learner demonstrates cultural humility.	N/A	1	2	3	4	5	6	7

Include any additional feedback for the learner below:

**Figure 1.** The leadership skills assessment tool used during simulated resuscitations.

\*Adapted from the leader development tool created by Erin Barry, John McManigle, and John E. McManigle, entitled “A Self-Assessment and Peer Feedback Tool for Leader Development” and published in 2021 in the *Journal of Leadership, Accountability, and Ethics*.

**Table 1.** Mean resident responses on rating effectiveness of the leadership skills assessment tool using a 7-point Likert Scale.

Question	Mean <sup>a</sup> (N=10)	Standard Deviation
The leadership skills assessment tool was an effective way to deliver feedback on my leadership skills	6	0.94
The leadership skills assessment tool improved my understanding of my own leadership skills	5.9	0.74
The leadership skills assessment tool was easy to understand and interpret	6.6	0.70
The leadership skills assessment tool did not impede other parts of my simulation learning	6.6	0.52
It is important to me to receive feedback on my leadership performance during medical and trauma resuscitations	6.7	0.67
The leadership skills assessment tool includes leadership skills I feel are important to leading medical and trauma resuscitations	6.3	0.95
I would like faculty to use the leadership skills assessment tool in future simulation exercises	6.2	0.79

<sup>a</sup>Rated on a 7-point Likert Scale (1 – Strongly Disagree, 7 – Strongly Agree)

## 54 Defining And Measuring Variance in Clinical Productivity Metrics By Training Level

*Eric Shappell, Sangeeta Sakaria, Derek Monette, David Peak, Daniel Egan*

**Introduction:** Previous studies have characterized

resident clinical productivity in the form of new patients assigned per hour, however they do not assess variability in productivity by year nor do they account for patients assumed in passoff. We also lack data regarding resident clinical productivity distributions for contextualization of resident performance compared to peers.

**Objectives:** (1) Report variability in resident clinical productivity as measured by standard deviations (SD) from class mean in new patients per hour and patients assumed in passoff per hour (2) Compare differences in variability across training levels to determine if an intervention should be considered to prevent the exaggeration of productivity differences across class years (eg improve low performers if differences are greater at higher levels).

**Methods:** We obtained all residents assigned and notes written for all patients at an urban academic emergency department from 7/2022 - 6/2023. Credit for a new patient required both assignment to the patient and writing a full note. Credit for assuming a patient in passoff required assignment as a subsequent resident for  $\geq 30$  minutes. Resident schedules were merged to derive per-hour values. We calculated descriptive statistics, compared variances using Levene’s test, and plotted deviations from mean performance by class.

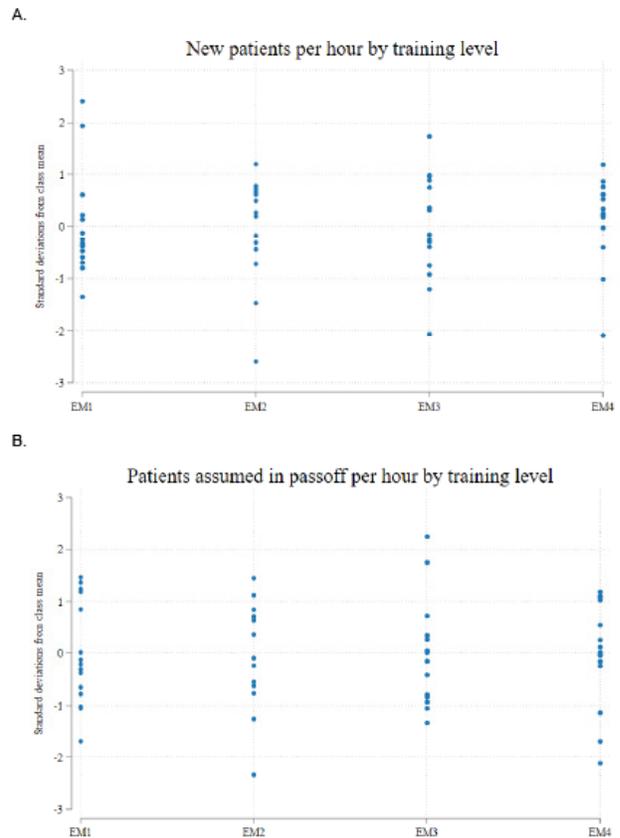
**Results:** 139,731 encounters were analyzed. SD in new patients per hour and patients assumed in passoff per hour did not increase with training level (Table 1). Class differences in variance of new patients per hour was statistically significant and highest for 2nd year residents. Most residents are within 1 SD of class means and outlier residents ( $>2$  SD from mean) were uncommon  $\sim 1$  per class (Figure 1A-B).

**Conclusions:** Most residents’ metrics are close to class means and deviation was not greater at higher training levels. Future work may focus on other factors such as patient complexity and addressing low outlier performers.

**Table 1.** Standard deviations in new patients per hour and patients assumed in passoff per hour by level of training.

	EM 1	EM 2	EM 3	EM 4	P*
New patients per hour (SD)	0.06	0.12	0.05	0.06	.03
Patients from passoff per hour (SD)	0.04	0.08	0.06	0.08	.26

\* P value from Levene’s test for equality of variances  
EM = Emergency medicine training year  
SD = standard deviation



**Figure 1A-B.** New patients per hour and patients assumed in passoff per hour by training level as standard deviations from class means.

## 55 Innovative Teaching Format: Chemical, Biological, Radiological, Nuclear, Explosive Emergencies

Jeremiah Ojha, Chrissy Van Dillen, Josef Thundiyil, Linda Papa

**Introduction/Background:** Given the increasing frequency of mass casualty incidents and the persistent threat of terrorist attacks, our curriculum committee developed a teaching module for Emergency Medicine (EM) residents to better prepare for chemical, biological, radiation, nuclear, explosive (CBRNE) events. Studies and experience demonstrate that clinician preparedness is a critical piece in an effective response to CBRNE events. We sought to evaluate whether an interactive CBRNE education module would improve knowledge among learners about how to respond to these emergencies. Educational