opportunities to practice implementing medical knowledge, residents felt that MPS pushed them more out of their comfort zone in terms of pacing and mental preparation. The frequent interruptions of MPS felt more similar to practice in the ED. Communication with the patient in MPS was more challenging not knowing when they would be pulled onward. MPS also required them to communicate with their team and delegate more than a single patient simulation. Finally, MPS stressed interns to feel wider roles in their leadership than did single encounters.

Conclusions: Multiple patient simulation pushed residents much harder in multi-tasking and team and patient communication than single patient encounters.

Table 1. Multiple patient simulation topics, themes, and sub-themes.

MPS Topic	Theme	Sub-theme
Patient stabilization	Preparation	Pulled into rooms without being able to mentally prep
		Thinking had to be more dynamic
		Good opportunity to treat common emergencies not yet encountered
	Pace	Out of comfort zone
		A little out of control
Learner Role	Leadership needs	Captain
		Triage
		At risk of making wrong choice
		Medical leadership
		Didn't realize how much nursing is doing in real life
Multi-tasking	Focus	Constant interruptions
		Pushed by acuity to make dispositions quicker
	Keeping track of multiple patients	Keep checklists in the back of your mind
		Had to choose the right room to reassess
Communication	With patient	Easy to get distracted by all the orders
		Worked on using less jargon
	With team	Had to use specific closed loop communication
		Had to lay out a plan a few steps ahead as was pulled to other rooms

Table 2. Single patient simulation topics, themes, and sub-themes.

Single Sim Topic		
Patient Stabilization	Patient directed	Recognize unstable vitals
		Recognize worsening responses
		Could take step-wise approach
		Good practice for unfamiliar disease
	System directed	Use of system protocols
		Appropriate involvement of consultants
Learner Role	Physician	Leading team
		Communicating with patients
Multi-tasking	Balancing resuscitation with history taking	
Communication	With patient	Had to guide patient through very stressful time
	With team	Use of closed loop communication

62 Resident Physician Documentation Practice Changes as a Result of Focused Training on the 2023 Evaluation and Management Coding Guidelines

James Chan, Tamer Yahya, Jacob Walling, Danielle Doyle, David Toro, Emily Barbee, Edwin McMillan

Background: Emergency Medicine (EM) coding and billing levels have historically been tied to checking boxes to accumulate history, review of systems and physical exam elements. One of the overarching goals behind the 2023 Current Procedural Terminology (CPT®) guidelines is to reduce documentation burden of clinicians. This project predicted that if we train residents to understand the implications of the new changes, they could chart more efficiently and productively. The hypothesis is that the training cohort would write shorter notes compared to control.

Methods: This prospective observational study consists of 18 residents, of which half were randomized to receive specialized EM documentation training on the 2023 rules. The primary outcome is note length (number of words). Secondary outcome variables include patient age, gender, Emergency Severity Index (ESI) and PGY levels. 10 % of each resident's charts were sampled during three time periods: 3 months before rule change, first and second 3-month blocks after.

Results: Multivariate analyses, which accounted for the random effect of individual residents, showed that the median word length (interquartile range or IQR) was 1713 (1405, 2110) for training group versus 1553 (1240,1923) for control ($p = 0.02$). Median note length was 1887 (1566, 2344) for ESI 1 & 2, 1619 (1330, 1972) for ESI 3 and 1202 (1026, 1495) for ESI 4 & 5 visits ($p < 0.001$). In addition, female gender yielded a median length of 1680 (1343, 2088) versus 1563 (1238, 1939) for males ($p < 0.001$).

Conclusions: Based on prospective data from a single site, focused training of EM residents on 2023 coding changes had the unintended effect of increasing documentation length in the training group compared with control. Multivariate analysis confirmed the efficacy of the training session in increasing note length by 10.3 %. In short, contrary to the intentions of CPT® changes, note bloat actually worsened in our prospective cohort.

Table 1.

	Before		3 Months After		6 Months After	
	Control	Training	Control	Training	Control	Training
No. Charts	287	269	344	282	349	391
Female	152 (53.0)	156 (58.0)	188 (54.7)	152 (53.9)	196 (56.2)	201 (51.4)
Age < 18	40 (13.9)	40 (14.9)	38 (11.1)	25 (8.9)	46 (13.2)	62 (15.9)
Age 18-49	84 (29.3)	82 (30.5)	120 (34.9)	96 (34.0)	116 (33.2)	141 (36.2)
Age 50-65	58 (20.2)	61 (22.7)	71 (20.6)	72 (25.5)	71 (20.3)	72 (18.5)
Age >= 65	105 (36.6)	86 (32.0)	115 (33.4)	89 (31.6)	116 (33.2)	115 (29.5)
ESI 1	17 (5.9)	12 (5.5)	9 (2.6)	12 (4.3)	10 (2.9)	16 (4.1)
ESI 2	61 (21.3)	57 (21.2)	74 (21.5)	56 (19.9)	95 (27.2)	87 (22.3)
ESI 3	161 (56.1)	150 (55.8)	205 (59.6)	170 (60.3)	193 (55.3)	228 (58.3)
ESI 4 or 5	48 (16.7)	50 (18.6)	56 (16.3)	44 (15.6)	51 (14.6)	60 (15.4)

Data are presented as n (percentage of charts in the column).

Table 2.

	# charts	Median Total Words (IQR)	P-value for Main Fixed Effect Ignoring Effect of Resident	P-value for Main Fixed Effect Adjusting for the Random Effect of Resident (18 residents)
Intervention			<0.001	0.02
Training	673	1713 (1405, 2110)		
Control	693	1553 (1240, 1903)		
PGY Level			0.003	0.59
PGY 1	348	1577 (1239, 1975)		
PGY 2	459	1647 (1317, 2022)		
PGY 3	559	1643 (1299, 2049)		
ESI Category			<0.001	<0.001
ESI 1&2	359	1887 (1566, 2344)		
ESI 3	796	1619 (1330, 1972)		
ESI 4&5	211	1202 (1026, 1495)		
Gender			0.003	<0.001
Male	629	1563 (1238, 1939)		
Female	737	1680 (1343, 2088)		
Age (years)	1365	correlation r=0.52	<0.001	<0.001

63 Topical Oxygen Therapy in the Treatment of Non-Healing Chronic Wounds: A Systematic Review

Adam Pearl, Katherine O'Neil

Background: Chronic wounds are a significant economic and physical burden on both patients and the health care system. Although new therapies have shown efficacy, many have high costs, are not readily available, and are not feasible for most patients' lifestyles. A promising emerging therapy is topical oxygen, which delivers concentrated oxygen directly to the non-healing wound.

Methods: A systematic review was conducted via PubMed between 1979 and July 2022, yielding 215 articles. After a full-text review, articles discussing other therapies for chronic wounds were excluded. Fourteen papers were included.

Results: In the treatment of non-healing diabetic foot ulcers, topical oxygen therapy demonstrated rates of complete closure of 80% for Stage II and 50% for Stage III, compared to 0% for standard of care. Additionally, flora transitioned from anaerobes to a flora rich in aerobic species. In non-diabetic foot ulcers, topical oxygen demonstrated increased rates of closure and decreased rates of infection, particularly noted in MRSA infections.

Conclusion: This systematic review demonstrates that topical oxygen is efficacious at increasing chronic wound healing rates and time, decreasing hospital stay rates and duration, and decreasing amputation and recurrence rates. Topical oxygen is less expensive than many treatments, fits virtually all patient lifestyles, and has even shown bactericidal/bacteriostatic properties.

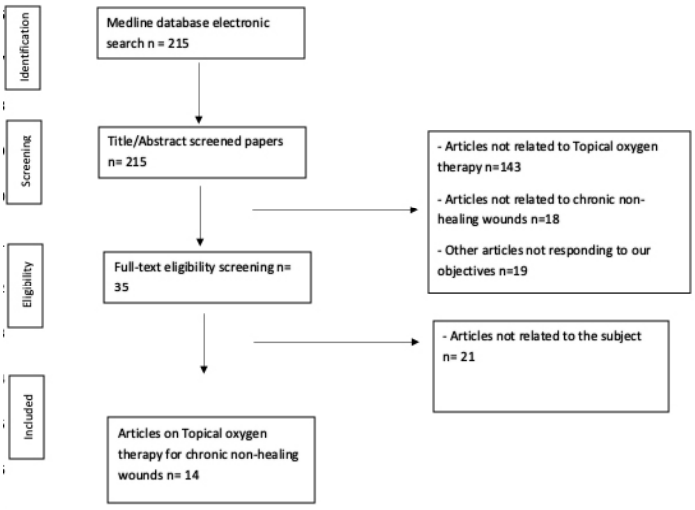

Figure 1. PRISMA flowchart for article selection process.

64 Enhancing Toxicology Teaching with Escape Rooms

Mason Jackson, Emily Grass, Sara Dimeo

Background: Gamification of medical education has proven to increase learned engagement and retention. Escape rooms, a gamification strategy, have been demonstrated to increase medical student clinical reasoning and information retention while increasing learner motivation. No published work exists regarding the application of gamification or its efficacy to toxicologic concepts.

Objective: To assess the efficacy of escape rooms in teaching basic toxicology concepts to medical students and residents. It is hypothesized that implementation of toxicology-based escape rooms will improve the learner's understanding of the concepts presented.

Methods: Over a one-year period, third- and fourth-year medical students and PGY 1-3 emergency medicine residents from various allopathic and osteopathic programs participated in toxicology-based escape rooms which were followed by a short debriefing lecture. In this IRB approved study, three iterations of the escape room were presented. Participants were given a survey to assess their knowledge of concepts presented both before and after the escape room using a 1-5 Likert scale where 1 corresponded to "very poor", 3 corresponded to "average" and 5 indicated "excellent".