

SUTURING ON A BENCH MODEL AND A STANDARDIZED-PATIENT HYBRID ARE NOT EQUIVALENT TASKS

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Purpose: To determine whether mastery of a procedural skill (suturing) learned on a bench model is maintained when adding standardized-patient based communication and interpersonal challenges to the task.

BACKGROUND

Medical students at the University of Illinois at Chicago are expected to master basic procedures by the beginning of their fourth (M4) year. Third-year (M3) students learn and practice basic procedural skills on bench models before and at intervals during the M3 year; skills are tested during a comprehensive clinical skills exam administered in the summer of the M4 year.

Demonstrating mastery on a bench model does not necessarily mean that the student can safely perform the procedure on a live patient. The additional challenge of relating to a conscious, talkative person may overload the student's attentional resources, distract the student and increase the risk of error.

The hybrid simulation approach pioneered by Roger Kneebone, Debra Nestel and colleagues (1) combines Standardized Patients and bench models to assess both communication and procedural skills in a single encounter. In this study we utilized this hybrid approach to assess whether mastery on a bench model was maintained when performing the procedure on a model attached to a talkative, mildly anxious patient.

(1) Kneebone R; Bello F; Nestel D; Yadollahi F; Darzi A. (2007). **Training and assessment of procedural skills in context using an Integrated Procedural Performance Instrument (IPPI)**. Stud Health Technol Inform. 125:229-231.

RESULTS

A total of 192 M4 students participated in the CSE in 2008.

Performance on the suture checklist was significantly lower when suturing was done on a pad attached to an SP as compared to suturing on the bench model. (Paired t-test, $p < .001$)

Assessment	Skills Component	Mean (SD)
Procedural Skills Exam	Suture Checklist	98 % (7 %)
	Suture Checklist	86 % (12 %)
Standardized Patient Encounter	Pertinent History	50 % (24 %)
	Pertinent Physical Exam	21 % (23 %)
	Communication and Interpersonal Skills	89 % (10 %)

METHODS

M3 students were taught to perform an interrupted suture on bench models in small groups of 4-5 students at the start of the M3 clinical clerkships. Students gained additional experience suturing during the M3 surgical rotation and during open skills lab sessions at intervals during the year and just prior to the summative M4 Clinical Skills Exam (CSE).

The CSE consisted of two half-day sessions, one focusing on procedural skills and lab interpretation and one on focused standardized patient (SP) encounters. The procedural skills exam utilized bench models to assess the mastery of six basic procedures such as suturing, phlebotomy and inserting an IV. Assessment checklists and demonstration videos were available to the students online.

Students who missed more than one checklist item went to the skills lab for instruction and retesting before leaving the center. A score of 100% was required on retest.



DISCUSSION

Students demonstrated a high level of mastery when suturing on the bench model but were considerably less proficient when suturing on a pad attached to an SP.

It is likely that the need to interact with the patient diverted some of the available attention from the procedural task, which had not yet been automated.

Students also demonstrated substantial deficits in gathering history and physical exam data relevant to the suturing task. The high level of attention dedicated to the psychomotor aspects of suturing may have blinded students to the need for careful evaluation of the patient prior to performing the procedure.

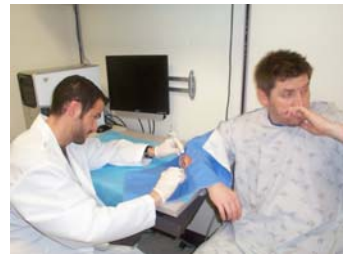
METHODS Continued

Two to four weeks after the procedural skills exam, students returned to the center for six SP encounters.

One of the encounters was of a man who had cut himself while sawing in his home workshop. The student was instructed to take a focused history, examine the lacerated arm, and suture the laceration on a pad attached to the SP.

An instructor observed the encounter and rated the procedure using the same checklist as previously. The SP completed a checklist of pertinent history and physical exam items, and rated the communication and interpersonal skills (CIS) of the student using our standard CIS form.

Analysis: A paired t-test compared scores on the suture checklist when the procedure was performed 1) on the bench models and 2) on a pad attached to an SP.



CONCLUSIONS

Demonstrating mastery of a procedure on a bench model does not necessarily imply mastery of the more holistic task of performing the procedure while interacting with a conscious and verbal patient.

Practice with hybrid SP models before transitioning to live patients might facilitate integration of the procedural and communication components of this complex task and decrease errors in real clinical settings.

Patient safety considerations suggest that students should have opportunities for practice with hybrid SP models or be closely supervised during the transition from simulation models to live patients.

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