

Making General Procedures Entrustable in the Early Clinical Years

Introduction

Until recently, general procedures of a physician were primarily learned and practiced in the third and fourth-year clerkships using the “see one, do one, teach one” approach. Since the birth of simulation, many medical schools have initiated the use of task trainers to allow students to learn and practice procedural skills just prior to their clinical years. It is generally accepted that “practice makes perfect” and it is best to have multiple experiences at a skill to develop automaticity and confidence. Very few medical schools, however, have incorporated experiential and distributive learning of skills into the early didactic years.

Objective

The key objective of this project is to share methods by which to teach and assess general procedural skills of a physician in the early didactic years to begin to initiate entrustability in these areas.

Discussion

Despite the evolution of the use of simulation in medicine, clerkships still remain the primary setting by which most medical students acquire, practice, and master general procedural skills. However, this model is somewhat flawed since these experiences lack standardization, can be sparse, and may be passive learning opportunities. As a result, these limited exposures to performing basic procedures may result in lack of confidence, poor mastery of the skill, and cause student anxiety about potentially harming a patient.¹

Educational theories state that students learn most effectively when the “FAIR principle” is implemented: provide feedback to the student, allow active learning opportunities, stipulate individualized the learning, and make the content relevant.³ Allowing students to acquire and practice basic clinical procedures in the early pre-clinical years, provides the students with the opportunity to learn relevant skills in active, standardized, low-risk experiences. Additionally, in this setting, focused feedback and individualization can occur. The earlier the skills are taught, the more the student will have the opportunity to practice and gain confidence.

The path from pre-entrustable to entrustable procedural skills (**Figure 1**) requires the student to perform procedures on multiple occasions and in different settings to acquire mastery.



Figure 3:
CUSOM student performing intubation procedure in a Simulation

Methods

Figure 1: EPA 12 from AACOM Core EPAs for Entering Residency

Pre-Entrustable	Entrustable
Mechanical task performed	Understanding of task performed
Lacks understanding of context	Understanding of context
Uses medical jargon to explain procedure	Avoids medical jargon to explain procedure
Lacks awareness of potential complications	Knows and recognized potential complications
Lacks confidence in knowledge	Confidence in knowledge and skill
Overestimates individual skill	Knows when to get help when skill is beyond ability
Mechanical skill is inconsistent	Mechanical skill is consistent
Lack of ability to attend to emotional response of patient	Ability to pay attention to the procedure and emotional response of patient
Documentation incomplete or absent	Documentation is complete and timely

Figure 2. Sample Procedure Checklist (Peripheral IV Skill)

Peripheral IV Placement	Omitted	Performed
PROFESSIONAL		
Identify Self		
• Introduces Self (Student Doctor, Last name)		
• Identifies title (Medical student, Campbell University)		
Identify patient by two sources		
• Name		
• Date of Birth		
Inform patient of procedure		
• Discusses Indication		
• Discusses Contraindication		
• Discusses Risks		
• Discusses Benefits		
• Discusses Alternatives		
• Asks patient if they have any questions		
• Obtains verbal consent		
SKILL		
Gather Equipment		
• Couple different sized IV Catheters (Angiocath)		
• Saline Lock		
• Saline Flush		
• Tape		
• Verbalizes transparent polyurethane dressing (OpSite)		
• Tourniquet		
• 4X4 or 2x2		
• Gloves		
• Alcohol Prep		
Prepare Equipment		
• Prime the saline lock		
• Tear tape		
Procedure		
• Washes hands/or sanitizer		
• Puts gloves on		
• Immobilizes the extremity and locate vein		
• Applies tourniquet proximal vein region 3-5 inches above projected insertion point		
• Palpates Vein		
• Cleans area with Alcohol Prep		
• Grasps and pulls skin taut to stabilize the vein using non-dominant hand		
• Cannulates vein with IV needle with bevel up		
• Verbalizes seeing flash		
• Advances catheter over the needle		
• Applies pressure to distal portion of the catheter and safely removes needle		
• Removes tourniquet		
• Attaches primed saline lock to the IV catheter		
• Attaches saline syringe to saline lock		
• Aspirates for blood		
• Flushes catheter with saline		
• Verbalizes meeting no resistance		
• Verbalizes patient having no pain with flush		
• Verbalizes no evidence of infiltration of vessel		
• Secures saline lock with dressing		

At CUSOM, we teach multiple general procedures beginning in the second year of medical training. By the completion of pre-clinical training, the students are able to demonstrate at least pre-entrustability and some entrustability in procedures including IV and phlebotomy, intubation, Foley catheter insertion, and nasogastric tube placement. To learn a procedure, students are provided with an instructional video and a skill checklist (**Figure 2**) to preview prior to lab time. During the lab session, the students actively practice the skills on task trainers with faculty facilitators available to provide feedback and individualized training. Once per week, the students are allowed to participate in a formative faculty and peer-to-peer “open lab” session, during which they are allowed to practice any and all procedural skills that have been taught. Ultimately, the students are asked to explain the procedure, provide informed consent, and perform the skill in front of a faculty member as a summative assessment.

The aforementioned protocol describes the method by which we teach and allow multiple practice sessions to attain proficiency and pre-entrustability in the mechanical task at hand. In order to make the procedure relevant and ultimately move toward entrustable, the skill would need to be demonstrated in a clinical context. In this vein, the students are then asked to perform clinical procedures in the context of a high-fidelity simulation encounter. It is at this point in the curriculum when the needle moves closer to the entrustability mark. In the simulated clinical simulation, the students will need to understand the task and its context, explain the procedure and its risks and benefits without jargon, pay attention to the emotional response of the patient, and ask for help if the skill is beyond their ability. (**Figure 1**) These skills are formally evaluated in the simulation experience.

Conclusion

Determining entrustability is a challenge faced by medical schools. Discussions include when and how to teach, and when and how to assess. Ideally, students should be trained early, be given multiple opportunities to practice, be provided with experiential context, and be assessed on multiple occasions both formatively and summatively. Allowing the students to demonstrate procedures in multiple settings reinforces skills and gives them relevance to create entrustability.

References

1. Mileder, Lukas et al. Teaching first-year medical students in basic clinical and procedural skills – a novel concept at a medical school in Austria. *GMS Zeitschrift Fur Medizinische Ausbildung* (2004) 31 (1).
2. Mughal, Z et al. Increasing Medical Students' Confidence in Procedural Skills Using a Junior Doctor-Delivered Bedside Supervision Program. *Teach Learn Med.* (2015) 27(4): 417-21.
3. Harden, R.M et al. Be FAIR to students: Four principles that lead to more effective learning. *Medical Teacher.* (2013) 35:1, 27-31.



For more information about Campbell University
Jerry M. Wallace School of Osteopathic Medicine
<http://www.campbell.edu/cusom/>

Follow CUSOM on Twitter and Facebook