

Teaching on Shift in Emergency Medicine

Background:

As medical schools and residency programs are opening up in new locations around the country, many Emergency Medicine physicians who previously didn't work with learners are now being put in situations where they not only have to supervise learners, but actually participate in their education. Emergency Medicine residency doesn't specifically provide adequate education for how to be a teacher, and so many physicians are left feeling unprepared for the task of teaching these new learners.

The Society for Academic Emergency Medicine's (SAEM) Education Committee was tasked with providing teaching resources to help out physicians who are newly in a position to teach learners in the clinical setting. In addition to providing high yield evidence-based resources for physicians to learn how to teach while on shift, we have put together a curriculum that can also provide the tools for achieving this intended goal. Whether you are a community physician, at a satellite site to an academic hospital or newly hired at an institution with learners (students, residents, APPs, support staff..etc), this resource list (see below) and this curriculum is for you!

Methods:

We utilized an educational framework modeled after Kern's 6-Steps for Curricular design in order to create this resource list and curriculum. We did a comprehensive needs assessment to look at what resources and education are currently available in order to identify the best way to address the question of teaching while on shift in Emergency Medicine. Based on this, we decided to create a faculty development curriculum that can be used by any program to provide education for physicians who teach learners at any level.

Target Audience:

Faculty working at clinical sites with rotating learners (medical students, residents, nursing students, advanced practice practitioners...etc) with expectations of providing on-shift teaching and no prior formalized background or training in medical education.

About this Curriculum:

This is a 5-module curriculum which can be provided synchronously to faculty members through lectures and activities, or can be performed asynchronously at home using videos, FOAM resources, including blog posts, podcasts, webpages, and worksheets. We discuss evidence-based strategies proven to help improve on-shift teaching skills. **Goal of this**

curriculum: That you can walk into your next clinical shift with a learner feeling confident that you know how to juggle the responsibilities of caring for a room full of sick patients while also providing a meaningful educational experience to a learner working with you at any level in their training..

Over four weeks, we will cover:

- Understanding the principles of adult learning theory and creating learning objectives utilizing Bloom's Taxonomy
- Determining the level of your learner and utilizing the RIME paradigm to describe the professional growth of your learner
- Employing a variety of on-shift teaching techniques including SPIT, Aunt Minnie, "Activated" Demonstrations, one-minute preceptor, effective questioning, SNAPPS, ED Stat, Teaching Scripts, and Post-it Pearls
- Assessing the pearls and pitfalls that may arise when trying to use these techniques for on-shift education.
- Describing the key components of demonstrating competency in a skill and utilizing various tools in clinical practice when teaching procedural skills

Getting Started (Directors of Faculty Development)

If you are a director in charge of faculty development for your program, you will need to set aside 5 sessions for your faculty to provide the complete curriculum. You need a minimum of 20 minutes for each session, however, preferably 45-60 minutes to provide a didactic and included activity. Either you or an assigned educator should review the materials provided for each module by watching the recorded video, reviewing the provided slide deck, and looking through the resource guide.

Getting Started (For Individuals)

If you are looking to learn more about on-shift teaching asynchronously on your own, you are able to do this as well! Each module has a recording by an experienced educator describing the five highest-yield topics that you need to know. Please watch the videos and read through the affiliated resource guide to help prepare you to teach on your next shift!

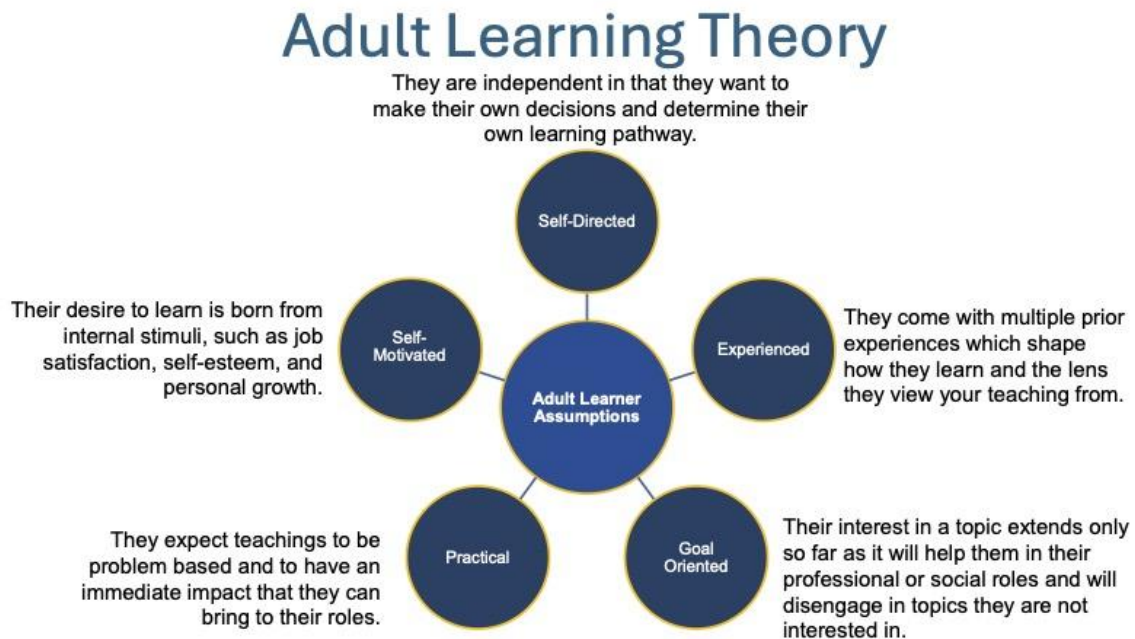
Final Word

If you are just looking for all the teaching resources in one succinct place, see below for more information. Hope you enjoy the curriculum!

General Principles

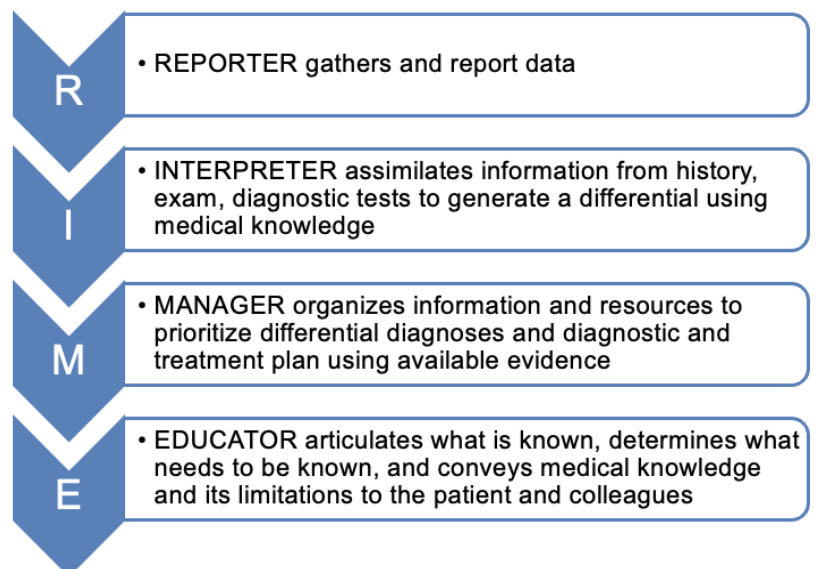
Adult Learning Theory

Malcolm Knowles believed that adult learning was different than childhood learning for several reasons. He made five key assumptions about these learners that can help us as teachers better shape our approach to bedside teaching.



RIME Framework

A big part of being a teacher is understanding where your learners are, so you can meet them where they are and help them improve. The RIME framework provides terminology for describing the professional growth of trainees.



Bloom's Taxonomy

Create

Produce new or original work

Design
Assemble
Construct
Conjecture, Develop
Formulate, Author

Evaluate

Justify a stand or decision



Appraise, Argue
Defend, Judge
Select, Support
Value, Critique
Weigh

Analyze

Draw connections among ideas



Differentiate
Organize, Relate
Compare, Contrast
Experiment
Test

Apply

Use information in new situations



Execute, Implement
Solve, Use
Demonstrate
Interpret, Operate
Schedule, Sketch

Understand

Explain ideas or concepts



Classify, Describe, Discuss
Explain, Identify, Locate
Recognize, Report
Select, Translate

Remember

Recall facts and basic concepts



Define, Duplicate
Memorize, List
Repeat, State

Bloom's Taxonomy

In 1956, Benjamin Bloom with collaborators Max Englehart, Edward Furst, Walter Hill and David Krathwohl published a framework for categorizing educational goals. Taxonomy of Educational Objectives! Familiarly known as Bloom's Taxonomy, this framework created a common language such that learning materials could be compared between institutions and provided a way to assess what a curriculum offered within the cognitive learning domain.

Novice Learner

The Novice learner is at the Reporter and Interpreter stage on the RIME pathway.

They should be able to:

- Ask the right questions to collect data from patients (most of the time)
- Develop a preliminary list of differential diagnoses based on the data collected
- Prioritize a list of most likely to least likely diagnoses with guidance

They are developing the ability to:

- Apply knowledge from the classroom and textbook
- Learn practical knowledge from experts in the field
- Build pattern recognition and inventory of experiences

Techniques for the Novice Learner

Technique	Description	Pearls	Pitfalls
Two-minute observation	Preceptor observes first two minutes of learner's H&P, then debriefs in a private setting later	Good for review of fundamentals of history taking Make sure to explain process to learner and patient Avoid interruptions	Avoid if you don't have time to debrief
Aunt Minnie	Learner sees patient, presents only the CC and their diagnosis, then preceptor sees patient alone, then they discuss the differential and plan.	Good for lower volume days. Helps learners build pattern recognition skills.	Avoid using in rare or complex presentations.
SPIT	Learner sees the patient, develops a differential list based on the acronym: Serious, Probable, Interesting, Treatable	Helps students expand on narrow differentials, build their ability to develop broader lists.	Avoid using if you don't have time to discuss the list
Activated Demonstrations	The educator introduces a skill to be observed. The learner observes the educator perform the skill then they discuss together.	Can be used for clinical skills (taking a history, performing exam) or procedures (central line, cardiac arrest). Useful when there isn't much time or you have a particularly junior learner.	Make sure you have time after observation for discussion.

Experienced Learner

The Experienced learner is at the Manager and Educator stage on the RIME pathway.

Here are three techniques that can be used on this type of learner:

One-Minute Preceptor Model

Commitment

"What is going on with this patient?"

Probe

"What in the exam supports this diagnosis?"

Teach Simple Rules

"These are common exam findings in CHF"

Reinforce positives

"You applied the PERC rule correctly to this case."

Correct mistakes

"You did not ask about worsening symptoms with exertion."

2) Effective Question

a) Up the ladder

- Move up learner level as questioning becomes too difficult for junior learners
- Allows the senior learner to assist with teaching

b) What ifs?

- Take a simple case, make it more complicated
 - Change setting, resources, patient demographics
- Allows for broader learning from single encounter

Source: Natesan S, et al. *Clinical Teaching: An Evidence-based Guide to Best Practices from the Council of Emergency Medicine Residency Directors*. West JEM. 2020 Jul 3;21(4):985-998.

3) SNAPPS

Steps for learner

Summarize H&P
Narrow to 2-3 differentials
Analyze most and least likely
Probe teacher about
 uncertainties/unknowns
Plan next steps together
Select self-directed learning topics

Source: Wolpaw T, Wolpaw D, Papp K. *SNAPPS: A learner-centered model for outpatient education*. *Academic Medicine*. 2003; 78(9): 893-898.

Teaching Techniques

Technique	Description	Pearls	Pitfalls
Bedside presentations	Learner presents in front of patient after team members are introduced and patient is oriented to goal of teaching rounds	Make sure to explain process to learner and patient Avoid interruptions	Avoid using medical jargon
ED STAT	E - set expectations for a rotation/shift D- diagnose the level of the learner by asking some questions S - set up a clinical scenario or question T - teach some key points which are generalizable A - assess the learner and give constructive feedback T - teach always - be a role model in your interactions	Designed for the ED setting Useful to establish expectations for a learner with whom you will have multiple interactions	Requires some education ahead of time in order to adapt
Post-It Pearls	The educator writes key learning points from a clinical shift onto a post-it note or white board displayed for all learners, then reviews the topic at the end of the shift	Have some teaching pearls prepared for high frequency cases Make sure to circle back at the end of shift to review	Avoid too much content on notes - should be quick teaching points
Teaching Scripts	Teaching Scripts are prepared mini-lectures targeting a specific concept that the instructor has previously memorized	Sample topics: red flags of back pain, treatment of hyperkalemia, treatment of DKA, imaging for abdominal pain	Avoid too much content in these mini-lectures and focus on 3-5 teaching points for each topic. Ideally occur during a lull in patient care Require a little preparation ahead of time

Procedural Skills

Checking Learner Preparation

Before attempting a procedure with a learner, you want to identify their preparedness in order to maximize success. Using checklists such as this can help review important aspects of a procedure ahead of time:

Indications	• Why is the procedure being done?
Contraindications	• Are there any contraindications
Materials	• What materials are needed?
Inform patient	• What does the patient need to know?
Technique	• How is the procedure done?
Complications	• What problems can develop?
Interpretation	• How do you assess the procedure?

Peyton's Four-Step Approach

A recent method for teaching procedural skills was presented by Walker and Peyton, called the Peyton's Four-Step Approach. Here we describe a stepwise process that consists of the following four steps:

Demonstrate	Have student watch a video or live performance of the procedure without comment
Deconstruct	Instructor discusses steps while watching video or reviewing other online resources
Formulate	Learner verbalizes steps prior to procedure
Perform	Learner performs procedure while verbalizing steps

Additional Procedural Teaching Resources for Learners

Format	Resource	Details
Video	NEJM Videos in Clinical Medicine	Need subscription or institutional access Sample link: Emergency Pericardiocentesis
	EM:Rap	Open Access Sample Link: Transvenous Pacemaker
	EMRA Video Procedure Database	A repository for multiple sources of videos Link to database
Textbook/ Written	StatPearls	Brief summary articles, can access through NCBI or register for free Sample link: Peripheral IV Placement
	Roberts and Hedges	Textbook with in-depth description of procedures, indications Reference: Roberts JR, Custalow CB, Thomsen TW, eds. Roberts and Hedges' Clinical Procedures in Emergency Medicine and Acute Care. Seventh edition. Elsevier; 2018
	Atlas of Emergency Medicine Procedures	Visual guide to procedures with step-by-step instructions Reference: Ganti L, ed. Atlas of Emergency Medicine Procedures. Second edition. Springer; 2022.
FOAMed	ALiEM	Web-based articles on procedures Sample link: Endotracheal Intubation
	Emergency Procedures App	Online or phone-based app with guides to procedures Article with links: LITFL article
	emDocs	Web-based articles with step-by-step guide Sample link: Central venous access