

## **UC Irvine**

### **Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health**

#### **Title**

EKG Fundamentals: An Open Access Flipped Classroom Critical EKG Curriculum

#### **Permalink**

<https://escholarship.org/uc/item/1686w5mq>

#### **Journal**

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 18(5.1)

#### **ISSN**

1936-900X

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#### **Publication Date**

2017

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order to meet both the undergraduate and graduate medical education components of the overall education mission. Given the unique demands of medical educators, education faculty and departmental leaders require a transparent system which promotes accountability in order to ensure all education activities are met.

**Educational Objectives:**

1. Enable leaders of both undergraduate and graduate medical education to identify saturation and/or gaps in the departmental education mission.
2. Provide a transparent system which promotes accountability within education faculty.

**Curricular Design:** Quarterly, each core education faculty member receives a faculty scorecard which illustrates their involvement in departmental education requirements. The scorecards provide individual faculty with an assessment of their involvement in departmental education endeavors, while highlighting areas where they are deficient. The forms also allow departmental leaders to re-allocate resources based on participation. Education faculty scorecards include all of the ACGME and departmental requirements of educators. The forms are short enough so as not to be overwhelming, but informative enough to provide an accurate assessment of the faculty. The form itself includes small group facilitation and module creation for flipped classroom conference, end of shift evaluation compliance, professor rounds, UGME departmental involvement, conference attendance, remediation time, and various meeting attendance. The data itself can be found on many different interfaces such as Google sheets or excel spreadsheets.

**Impact/Effectiveness:** These forms allow both educators and GME and UGME leadership to assess where gaps or saturation in teaching and education opportunities lie. The compiled data has clearly shown where gaps lie within core faculty involvement, and have allowed leadership to make proper changes to core faculty involvement and the programs that they lead, such as weekly conference involvement. The education scorecards have provided a transparent method for ensuring accountability among educators within our department.

## 25 EKG Fundamentals: An Open Access Flipped Classroom Critical EKG Curriculum

*Burns W, Lank P, Grabow Moore K/Northwestern University, Chicago, IL; Emory University, Atlanta, GA*

**Background:** Rapid and accurate electrocardiogram (EKG) interpretation is critical to the practice of Emergency Medicine (EM). Using a validated tool to evaluate critical EKG interpretation Hartman et al found only 54% of PGY3/4s had a passing score. Despite this need for improved education, many EM residencies lack a formal EKG curriculum. Free Open Access Medical Education (FOAMed) resources are expanding and many studies have demonstrated high learner satisfaction with the incorporation of asynchronous multimedia content, however, the value of guided consumption and coordinated didactic instruction should not be overlooked.

**Educational Objectives:** We seek to demonstrate the value of a flipped classroom critical EKG curriculum that leverages curated FOAMed content while retaining the advantages of didactic instruction. Additionally, we aim to (1) provide an interpretation framework to help residents develop mastery and rely on when confronted with complex EKGs and (2) ensure open-access to the curriculum for all interested residencies.

**Curricular Design:** EKG Fundamentals is organized around 5 concise reviews of core EKG principles and 20 challenge EKG cases (Table 1). Topics are based on the 15 critical EKG diagnoses reported by Hartman et al and 5 author selected topics. Cases include a brief history, EKG(s), standard interpretation stem(s), and FOAMed links. Using a flipped classroom approach, learners are assigned EKGs weekly for independent review. Then, during a 10-minute didactic session, faculty or senior resident facilitators guide a review of core concepts and interpretation of the weekly EKG.

**Impact/Effectiveness:** The curriculum was piloted from July 2015 to June 2016 with the 36 PGY1 residents of Northwestern (NU) and Emory (EU) Universities. In May 2016, these residents were surveyed by collecting anonymous responses to two 5 point Likert scale questions and a free-response section. 20 of 21 (EU) and 10 of 15 (NU) residents completed the survey (83%). Results (Table 2) showed high levels of satisfaction with the curriculum's relevance and impact on clinical performance. The most common feedback focused on concise teaching points and a standardized interpretation strategy leading to a revised curriculum and expanded enrollment (90 PGY1 residents at 7 institutions) this academic year. Satisfaction surveys and an assessment of learner knowledge will be completed in June 2017.

**Table 1.** Curriculum Overview.

EKG Fundamentals Curriculum Schedule		
Session	Challenge EKG #	EKG Core Content Review
1	Core 1	How to Read an EKG (NSR)
2	Core 2	Approach to Ischemia
3	EKG 1	Anterior STEMI
4	EKG 2	Posterior STEMI
5	EKG 3	Inferior STEMI, RV STEMI
6	EKG 4	LBBB/Pacer (Sgarbossa)
7	EKG 5	STEMI Mimics (HyperK, Pericarditis)
8	EKG 6	STEMI Mimics (Isolated aVR, Benign Early Repol)
9	Core 3	Approach to Syncope
10	EKG 7	WPW
11	EKG 8	Brugada
12	EKG 9	Long QT
13	EKG 10	PE/RV Strain/RVH
14	EKG 11	LVH/HOCM
15	Core 4	Approach to Bradyarrhythmias
16	EKG 12	2nd Degree Type II, 3rd Degree AV Block
17	Core 5	Approach to Tachyarrhythmia (Sinus Tach)
18	EKG 13	AFib/Flutter with RVR
19	EKG 14	SVT
20	EKG 15	VT/VF
21	EKG 16	RBBB/LBBB
22	EKG 17	TCA Overdose
23	EKG 18	Digoxin Toxicity
24	EKG 19	Pacemaker Malfunction
25	EKG 20	Cerebral T Waves

**EKG Fundamentals** is available as part of the **Emergency Medicine Foundations** curriculum. Open access to curriculum challenge and answer documents is available on the course website: [www.emergencymedicinfoundations.com](http://www.emergencymedicinfoundations.com)

Emergency Medicine Milestone Project,” a set of milestones used in evaluating and tracking resident competency. EM interns are expected to have achieved level one milestones before beginning their residency program. Unfortunately, research shows that a significant number of interns struggle to meet these goals. Thus the residency program is tasked with bringing these interns to a level of basic competency prior to direct involvement with patient care. Our study identified each intern’s perceived competence and actual ability to perform the tasks as outlined in the Emergency Medicine Milestone Project, milestone 14, level one, including: perform venipuncture, place peripheral IV line, and perform arterial puncture.

**Educational Objectives:** We sought to identify incompetent skills and effectively remediate these skills as identified in the EM Milestones Project.

**Curricular Design:** After completing a self-assessment tool identifying perceived competency, interns completed skill-testing stations, establishing their actual skill levels. Regardless of their perceived or actual competency, interns then viewed a commercially available video training series (Elsevier’s Procedures Consult) and participated in nurse-educator led instructional stations using simulation models. After such instruction, interns then repeated the previous skill-testing stations. As a final step interns completed a post-instruction, self-evaluation tool to assess their perceived competence. Using these tools, we demonstrated that we could effectively assess skill level and instruct to competency over a short period of time. Our data revealed at least one incompetent skill in each of the interns, but after instruction each intern was competent and confident to perform each of the skills tested.

**Impact/Effectiveness:** We conclude that this method is efficient and effective in assessing procedural skills and quickly bringing EM interns to a minimum level of competency. By using commercially available training videos and bedside nursing instructors, we have identified a standardized and reproducible method of assessment and instruction. We hypothesize that this method could provide a framework for procedural skill assessment and instruction for EM residents or medical students.

**Table 2.** Pilot Survey Data.

Survey Item (1- Strongly Disagree, 3- Neutral, 5- Strongly Agree)	Agree or Strongly Agree	Mean
Weekly Challenge EKGs were relevant and helpful for learning fundamental knowledge within our specialty.	28/30	4.23
Weekly Challenge EKGs had a positive impact on my clinical performance.	23/30	3.90

## 26 Evaluation of Incoming Emergency Medicine Residents’ Ability to Perform Level One Milestone Tasks as Outlined in “The Emergency Medicine Milestone Project”

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**Background:** In 2012 the ACGME released “The

## 27 FOAM Resources in a Flipped Classroom Educational Series

*Fallon T/Maine Medical Center, Tufts University School of Medicine, Portland, ME*

**Background:** The ACGME has published guidelines for the implementation of asynchronous learning and the CORD Individualized Interactive Instruction (III) Taskforce has developed best practices to guide medical educators. As noted in the Taskforce report, many III strategies fail to meet requirements for Program Director monitoring, faculty oversight, evaluation, and efficacy assessment.

**Educational Objectives:** We sought to develop a structured