

# A Gamified Approach to 15-Lead EKG Training for Assistive Personnel

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## Background

Timely 15-lead electrocardiogram (EKG) acquisition is critical for pediatric cardiac assessment. In our 423-bed pediatric hospital there was no standardized EKG training and unclear role expectations leading to reliance on others with competing responsibilities for EKG acquisition. Approximately 40% of EKGs were completed by respiratory therapists (RT) in 5-inpatient units with an average of 4.6 hours from order to completion resulting in a delay in care.

Opportunity for improvement through utilization of patient-facing in-unit workforce was identified. Some Certified Nursing Assistants (CNA) in Cardiac ICU perform EKG's. CNAs are uniquely positioned at the bedside to perform time sensitive skills. EKG acquisition is within CNA scope if properly trained

## Aim

Develop and implement a standardized, scope-appropriate 15-lead EKG training for CNAs that improves EKG acquisition timeliness, supports safe top-of-scope practice, and reduces reliance on ancillary workforce

## Methods

### COLLABORATIVE FOUNDATION

#### Partnership with key collaborators

- Clinical Nurse Specialist
  - Regulatory compliance
  - CNA scope boundaries
- Heart Center
  - Clinical expertise
  - Safety validation
  - Standardized expectations and checklist
- Operational leadership
  - Buy in for standardization
  - Scheduling & training availability

### EVIDENCE BASED DESIGN

- ✓ **Foundational knowledge** - critical in new skill development in safety dependent environments
- ✓ **Multiple Learning Modalities** - meet learners where they are
- ✓ **Skill Scaffolding** - build upon learnings, gradually decreasing support
- ✓ **Gamification** - adds game elements into non-game experiences to increase engagement
- ✓ **Optimal 1:4 facilitator ratio**

### PROGRAM STRUCTURE

#### Didactics (30 minutes)

Foundational how & why of EKGs, time for questions, shared experiences, and engagement with equipment as they were discussed



#### Hands-on (60 minutes)

**Part 1: Peer-to-peer practice** - first exposure to electrode placement

**Part 2: Escape Room** - allow for smaller challenges within an overarching goal

*"You are tasked with obtaining a 15-lead EKG but the electrodes are locked away. You must collect clues to decipher the code unlock the electrodes & place them"*

Groups of 3-4 rotated through timed stations simulating real-world EKG acquisition components:

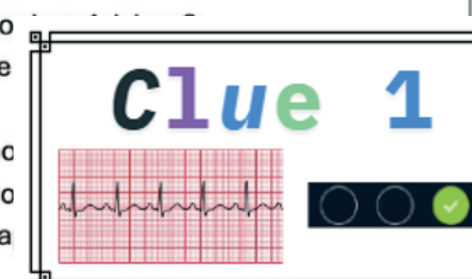
- Order verification & navigating the EKG machine
- Placing the EKG electrodes
- Baby considerations/ troubleshooting

Stations were guided by a facilitator and equipped with simulation equipment: e.g. EKG machine and leads, mannequins, electronic medical record, patient labels.

#### Using the EKG Machine

**Case Study**  
You are caring for 8-year-old patient on Surgical IR, Kiran SepalsOne, Medical Record # 1009704, CSN # is 1453276. He is ordered for an EKG.

- Does the patient have an EKG order? Find it in EPIC.
- Practice entering the patient information into the EKG machine
- What color indicates good lead quality on the Ho
- What button do you press to finish collecting the
- What button do you press to transmit the EKG?
- The machine is out of paper. Practice loading mc
- You are successful, and the EKG is complete! Co
- Practice cleaning the machine & wires with the a

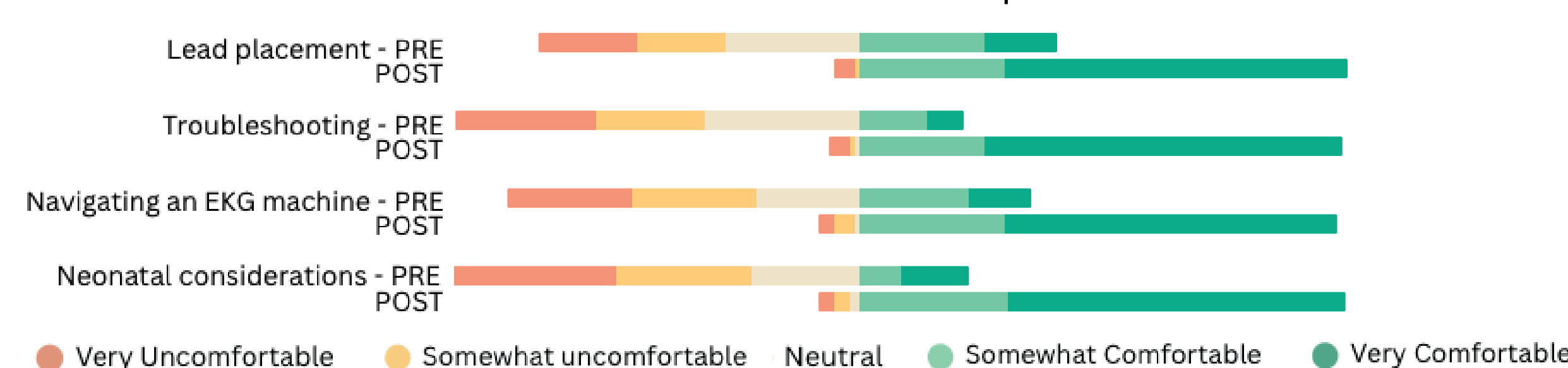


A clue was earned after each case study to answer questions on the lock box containing the leads. Each answer gave one number in lock code. At the end, the class was divided into teams to use the clues to identify the code, race to place the electrodes, and "win"

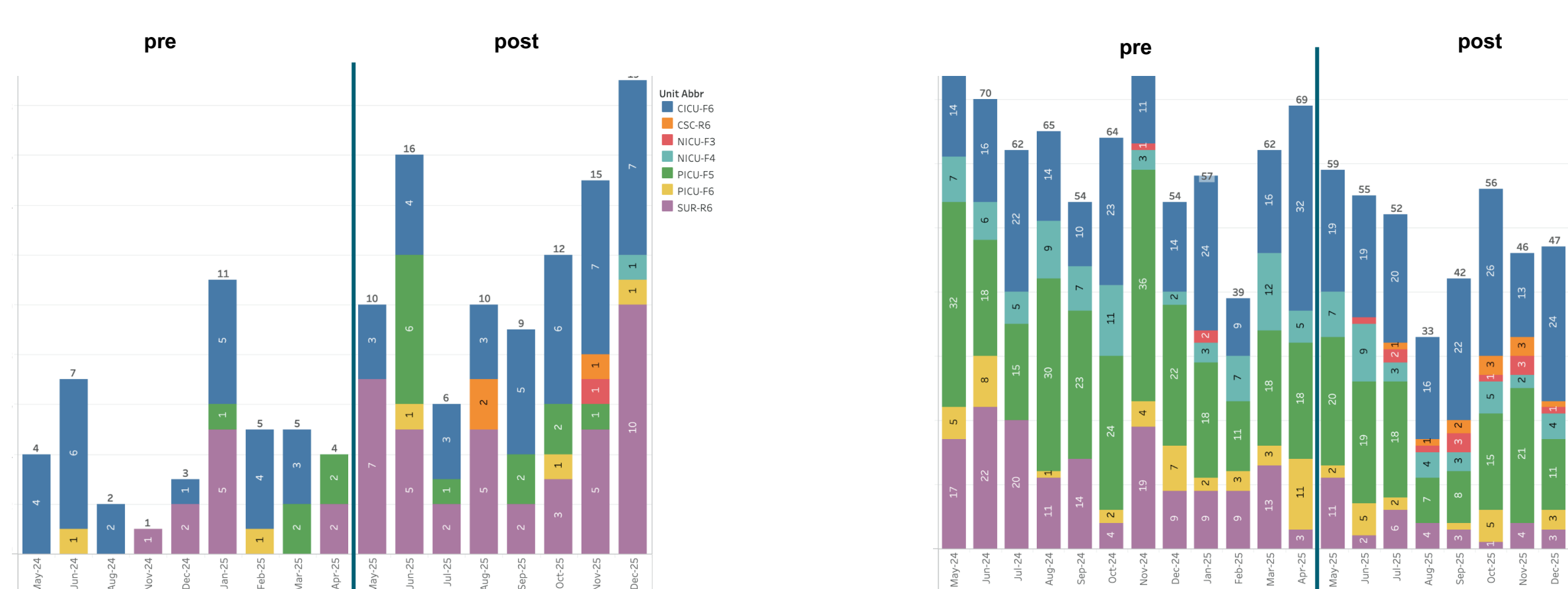


## Results

Comfort with each EKG skill component Pre & Post



**Figure 1.** Pre-post survey Likert scale comfort in lead placement, troubleshooting, navigating the EKG machine, and neonatal considerations. Statistically significant improvement  $p < 0.00001$ , rank-biserial  $r = 0.71-0.83$



**Figure 2.** Left. Volume of EKG acquired by CNAs across 5 units pre/post training implementation. Right. Volume of EKG acquired by RT over the same time period.

"I felt at ease after the training. The stations were so helpful to foster one-on-one moments with facilitators and allow for practice on an actual EKG machine and lead placement! I loved the game at the end"

"Hands on practice, supportive teachers, and ability to ask questions were so helpful. I felt at ease after all the training"

"The images & PowerPoint were very helpful!"

"It was so helpful having instructors guide and fix my mistakes on the mannequins"

## Discussion

Of 97 participants there were 79 survey responses. Responders reported significantly greater overall comfort with acquiring EKG's (Pre:  $M=3.96$ ,  $SD=2.10$ ; Post:  $M=6.56$ ,  $SD=0.69$ ;  $p < 0.00001$ , rank-biserial  $r=0.75$ ), as well as within each specific EKG skill component ( $p < 0.00001$ , rank-biserial  $r=0.71-0.83$ ), indicating a large effect of the intervention. Qualitative feedback parallels the evidence based framework and highlights the helpful hands-on approach to learning, ability to practice in a safe learning environment, and troubleshooting.

**100%** of responders would recommend this training to a colleague

Utilization of CNAs for EKG acquisition **increased by 200%**  
Reliance on RT for EKG acquisition **decreased by 32%**  
Time from order to completion **improved by 28%**

## Conclusion

Training has prepared CNAs to competently perform 15-lead EKGs in an engaging and effective learning environment. The initiative resulted in a streamlined, transferable curriculum that supports interdepartmental and interprofessional training that has decreased RT utilization, empowered CNAs to work at the top of their scope, and increased systems efficiency, reducing wait times by 28%.

**Reduced wait times means earlier interventions, increased patient safety, & improved patient satisfaction.**

## Future directions

### Expansion to other roles:

- The class has generated organizational interest, with requests for expansion to ambulatory clinics, regional locations, and urgent care settings, as well as inclusion of additional roles (RNs and MAs). The adaptable structure has enabled expansion to these additional roles and areas. The course will be offered every six weeks, broadly expanding to these areas and roles.

### Annual Competency Rollout:

- An interactive annual competency was developed to reinforce learning and support ongoing skill assessment during annual competency cycles and rolled out early 2026

### Continued analysis:

- Broad implementation of this model holds promise for sustained organizational impact, including improved EKG acquisition capacity, reduced wait times, increased patient satisfaction, and enhanced CNA job satisfaction.

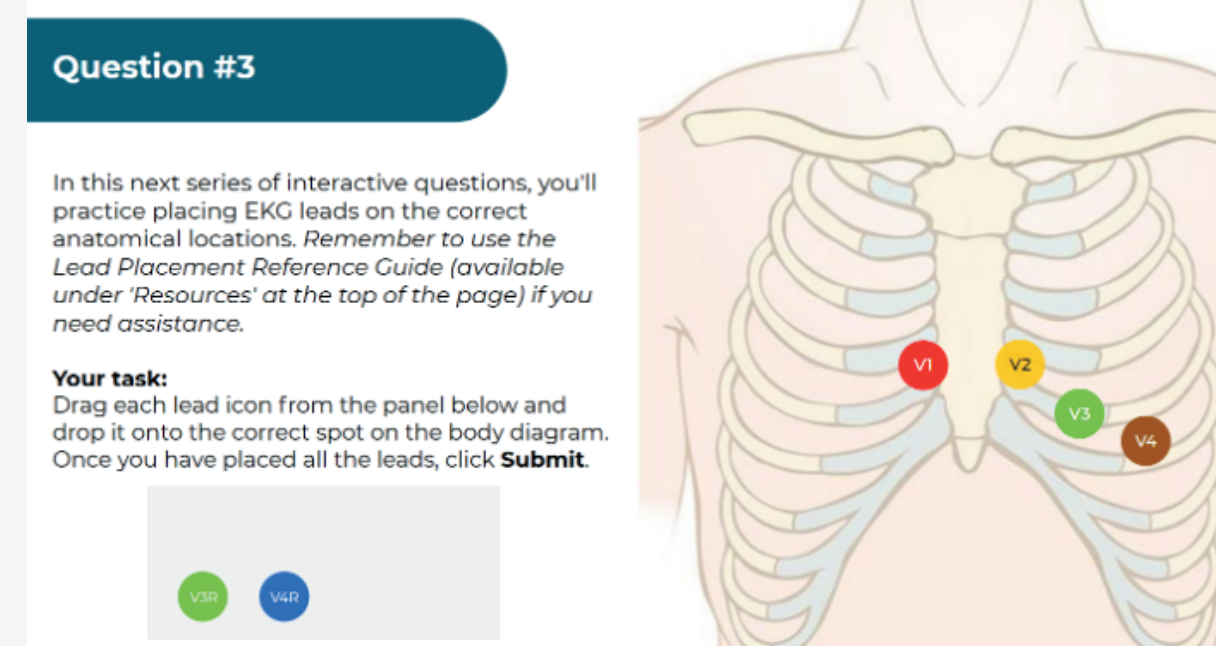


Image 1. Example of the interactive 15-lead EKG annual competency module.

## Contact & References



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