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# Does ECG and Arrhythmia Simulation Training in Adjunct to Didactics Improve Medical Students' Clinical Skills Compared to Didactics Alone?

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## INTRODUCTION

Medical Schools continue to face the challenge of bridging the gap between classroom education and its application in the clinical environment. Several studies have shown utility of incorporating simulation training into a variety of healthcare related topics. We hypothesize that incorporating ECG and arrhythmia simulation training in adjunction to ECG and arrhythmia didactics; it would improve Year-3 medical students' preparedness for managing arrhythmias in the clinical setting

## MATERIAL AND METHODS

In this retrospective cohort study, all Internal Medicine clerkship students from the class of 2017 and class of 2018 were enrolled. At our institution, Year-3 Internal Medicine clerkship students are trained in ECG interpretation and arrhythmia management. The class of 2017 cohort received 3 hours of didactics. The class of 2018 cohort received 90 minutes of didactics followed by 90 minutes of animated simulation. 4 weeks after ECG and arrhythmia training, we administered an ECG interpretation quiz to both cohorts. We also prospectively observed the simulation cohort with an online survey, utilizing a 5-point Likert scale that was completed both after didactics and then again after simulation training. The survey reported confidence in interpreting and managing arrhythmias and perceived training

effectiveness. Comparisons were analyzed with the Mann-Whitney U test.

## RESULTS

Of 251 participants, 160 were in didactics alone cohort and 91 in combined didactics/ simulation cohort. Compared to the didactics alone cohort, the didactics/ simulation cohort on average scored higher on the ECG interpretation quiz with mean of 87.8% versus 79.7% correct ( $p < 0.05$ ). Also, 57% of participants scored at or above 90% correct as opposed to only 19% respectively ( $p < 0.05$ ). Of the didactics/simulation cohort, 76 participants completed both post lecture and post simulation surveys. Survey showed that participants felt that "arrhythmia didactics followed by simulation is more effective than longer didactics alone" with 50% agreeing and 41% strongly agreeing. Also, after simulation training, compared to after didactics, participants felt more comfortable recognizing unstable arrhythmias ( $p < 0.05$ ), managing unstable bradycardia ( $p < 0.05$ ), managing supraventricular tachycardia ( $p < 0.05$ ) and managing atrial fibrillation ( $p < 0.05$ ).

## CONCLUSION

This study supports the value of integrating simulation training into ECG and arrhythmia education for Year-3 medical students. As evidenced by participant confidence, perspective and knowledge, simulation training to adjunct ECG and arrhythmia didactics is more effective than didactics alone.

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