

Short Commentary*Open Access, Volume 2***An innovative way of teaching electrocardiograms; EKG of the week****Mohammad Al Akchar^{1*}; Mohsin Salih¹; Abdisamad M Ibrahim¹; Mohamed Labedi¹; Robert Robinson²**¹Division of Cardiology, Southern Illinois University, 701 North First Street, Springfield, IL 62781, USA.²Division of Internal Medicine, Southern Illinois University, 701 North First Street, Springfield, IL 62781, USA.***Corresponding Author: Mohammad Al-Akchar**Division of Cardiology, Southern Illinois University,
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Received: Nov 10, 2021

Accepted: Dec 16, 2021

Published: Dec 23, 2021

Archived: www.jcimcr.org

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DOI: www.doi.org/10.52768/2766-7820/1505

Introduction

Introduced more than 100 years ago by William Einthoven, Electrocardiograms (EKG) remain an essential tool for doctors in diagnosing a variety of conditions. An abnormal EKG remains part of the criteria for diagnosing and activating the response for ST-Elevation Myocardial Infarction (STEMI), one of the most important causes of mortality nationwide [1]. Interpretation of EKGs is an essential tool for any physician, especially in the field of internal medicine, often one of the first lines of defense for diagnosing EKG abnormalities. It is a skill that is learned during medical school and residency training [2]. Despite this, the diagnosis of life-threatening pathology on EKG remains suboptimal in trainees [3]. This poor performance may be attributed to a lack of a standard methodology of teaching EKGs across the

United States [3]. Also, with the introduction of computerized interpretation, this may have led to over-reliance on automated readings and less effort to interpret and teach EKGs [4].

Furthermore, internal medicine trainees have competing responsibilities [5] and work across different subspecialties, which may interfere with studying and attendance at academic conferences. A survey sent to our internal medicine residents at Southern Illinois University showed that over 50% of internal medicine residents do not feel comfortable interpreting EKGs. Low confidence in EKG interpretation was seen in residents from all academic years. In response to this, the internal medicine residency, in conjunction with the cardiology fellowship, developed an innovative way to teach EKGs through a group chat using the WhatsApp platform.

Historically, EKG interpretation had been taught bedside, during rounds, and through didactic lectures [6]. As mentioned earlier, the competing responsibilities, pressure for early discharge, and the increase in volume and acuity of patients has led to shorter rounding duration as well as less didactic time. In fact a study has shown that bedside teaching compromises less than 20% of the length of rounds [7]. As a result, residents tend to self-study EKGs and read books on their own time without direct feedback on their interpretation skills. A study evaluating the retention of ECG interpretation skills found that workshop based or lecture-based teaching was superior to self-directed learning with over a 10 percent difference in scores between these groups [6,8]. That being said, we found a strong case for teaching EKGs through peer teaching and fellow and faculty teaching.

With multiple communication apps being introduced in the 21st century, including Facebook, Telegram, Twitter, WhatsApp, and others have found their way in aiding medical education. One study reports that 99% of medical students use WhatsApp [9]. Another study estimated WhatsApp usage to be around 20% of all smartphone behavior [10]. Given this, we decided to utilize WhatsApp as a platform for discussion of EKGs.

The Internal Medicine residency, in conjunction with the Cardiology fellowship, created a WhatsApp group to aid in teaching EKGs. Membership in the WhatsApp group was voluntary and was open to all internal medicine residents, cardiology fellows, and faculty. A de-identified EKG was chosen by cardiology fellows, posted every Wednesday and later interpreted by an electrophysiologist. Residents were then encouraged to interpret the EKG with their peers. At the end of the day, the official EKG interpretation would be posted. This would be followed by questions from faculty members and residents and a final wrap up.

Over a period of 8 months, over 30 common and challenging EKGs were posted and discussed. The number of responses to an EKG of the week post ranged from 3 to 50, with an average of 16 responses per post. After four months, a survey was conducted to obtain feedback from the participants. The results of the survey suggested adding the clinical context and outcome of patient at the end of the discussion. It also suggested posting the EKG later in the day as opposed to morning, and posting the interpretation later to allow more residents to participate in the discussion.

The WhatsApp group is a very good platform to host the EKG of the Week, as it has instant messaging capability, end-to-end encryption, and the number of participants are unlimited [5]. This technology can further be shared with academic circles locally, regionally, or globally. If this is desired, it will expose learners to a broader audience and it will allow content experts to share their expertise with a large number of trainees.

Conclusion

To summarize, we describe an innovative way to help residents in interactively learning EKGs on the WhatsApp platform. In order to successfully implement an interactive way of teaching, EKGs have to be posted in off-peak hours of clinical work, reviewed with the assistance of faculty, and taught in a step-up approach in terms of EKG complexity. A detailed step by step explanation of the interpretation of the EKG and the use of direct open and closed-ended questions were used to maximize the educational value of the experience. With EKGs being posted only once a week, this allows residents to interact adequately without feeling overwhelmed.

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