

Role of an Audience Response System in Didactic Attendance and Assessment

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Abstract

Background The Residency Review Committee for Emergency Medicine mandates conference participation, but tracking attendance is difficult and fraught with errors. Feedback on didactic sessions, if not collected in real time, is challenging to obtain.

Objective We assessed whether an audience response system (ARS) would (1) encourage residents to arrive on time for lectures, and (2) increase anonymous real-time audience feedback.

Methods The ARS (Poll Everywhere) provided date/time-stamped responses to polls from residents, including a question to verify attendance and questions to gather immediate, anonymous postconference evaluations. Fisher exact test was used to calculate proportions.

Results The proportion of residents who completed evaluations prior to the institution of the ARS was 8.75,

and it was 59.42 after ($P < .001$). The proportion of faculty who completed evaluations prior to using the ARS was 6.12, and it was 85.71 after ($P < .001$). The proportion of residents who reported they had attended the conference session was 55 for the 3 weeks prior to initiating the ARS, decreasing to 46.67 for the 3 weeks during which the ARS was used to take attendance ($P = .46$). The proportion of faculty who reported attending the conference was 5.56 for the 3 weeks prior to ARS initiation, decreasing to 4.44 for the 3 weeks while using the ARS ($P = .81$).

Conclusions Audience response systems are an effective way to verify attendance and tardiness, eliminating the subjective effect of attendance takers' leniency and increasing completion of evaluations for didactic sessions.

Introduction

The Residency Review Committee (RRC) for Emergency Medicine mandates residents attend 70% of their didactic conferences. Prior to our intervention, chief residents took attendance at our 7 AM conference by noting resident attendance on paper. Attendance takers appeared lenient about awarding full credit to residents and faculty who arrived 10 to 20 minutes late.

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The Accreditation Council for Graduate Medical Education and the RRC mandate that residency programs collect feedback from residents on the quality of didactics, but they do not dictate how. Previously, residents had received a weekly e-mail asking them to complete an evaluation via SurveyMonkey. Historically, completion rates for these evaluations had been very low. Evaluations are critical to improve the quality of conference didactics, and increasing responses may offer a more complete sense of whether sessions should be maintained, changed, or replaced, as well as facilitate general improvement in didactic offerings.

Audience response systems (ARS) are already used to increase interaction between speaker and audience, usually in the form of questions and responses.^{1,2} We implemented an ARS to identify whether (1) it would encourage residents to arrive on time for lectures, and (2) it would increase anonymous real-time feedback from the audience.

Methods

Emergency medicine residents from postgraduate years 1 to 3 and emergency medicine faculty who attend weekly conferences at the University of Arizona Medical Center's South Campus participated in this study. Residents have

didactic conferences most Wednesdays of the year from 7 AM until noon. The program encompasses 6 residents per class, and more than 50 faculty members. Didactics consist mostly of lectures given by faculty and residents as well as hands-on laboratory procedures that range from 30 minutes to 1 hour in duration.

We investigated several ARS systems and selected a web-based program (Poll Everywhere), largely for economic reasons and ease of use. This specific ARS system was available free of charge for up to 40 participants. It allows participants to text responses via mobile phone or respond online using a designated URL. Residents were required to bring cellular phones capable of texting, iPads, or laptop computers to the lecture.

Our study had 2 components:

1. We used the ARS to create *an objective method of confirming timely conference attendance*. The first PowerPoint slide of the 7 AM presentation was part of the ARS and asked, "What is your name?" Residents and faculty who arrived late would miss the sign-in and therefore not be given conference credit for that particular hour.
2. We used the ARS to increase *the number of submitted postconference evaluations*. Each presenter included, as his or her last slide(s) of the presentation, the same evaluation questions that were currently being used on online survey forms. The audience was asked to answer these feedback questions before leaving the session. Similar to prior studies,³ we hypothesized that conducting the feedback survey in this manner would increase compliance with evaluation completion.

Each question was presented individually on a main screen. The presenter advanced to the next question after 1 minute had elapsed. The responses were anonymous and not displayed on the screen. However, the presenter could view a tally of respondents, allowing him or her to keep track of the number of responses, thus knowing when to advance to the next question.

The study was approved by the University of Arizona Institutional Review Board. Participants were provided an e-mail statement describing the study, in lieu of formal consent.

Fisher exact test was used to calculate proportions.

Results

Data were collated 3 weeks prior to initiation of the ARS and then for 3 weeks using Poll Everywhere. The proportion of residents who completed evaluations prior to the institution of the ARS was 8.75, and it was 59.42 after ($P < .001$). The proportion of faculty who completed evaluations prior to the institution of the ARS was 6.12, and it was 85.71 after ($P < .001$).

The proportion of residents who attended the 7 AM conference session was 55 for the 3 weeks prior to ARS initiation and decreased to 46.67 for the 3 weeks while using the ARS ($P = .46$). The proportion of faculty who attended the 7 AM conference session was 5.56 for the 3 weeks prior to ARS initiation and decreased to 4.44 for the 3 weeks during which the ARS was used ($P = .81$).

Discussion

Our first aim was to design a more objective way of recording conference attendance and timeliness. Residents are evaluated on professionalism. Being on time for conferences is a key component of professionalism. Prior to incorporating an ARS, determining resident timeliness was subject to the broad interpretation of this requirement by the individuals taking attendance. The uneven application and unpredictable leniency in awarding attendance credit for latecomers also made it difficult to assess the true attendance rate.

Our second aim was to increase meaningful feedback on our weekly conferences by using evaluations completed in real time using the ARS. Initially, we allowed approximately 5 minutes for this at the end of each lecture. That short time period might not have allowed for "meaningful" feedback, although we received more free text responses on the last question of the evaluation form while using the ARS than we had previously. We now unlock the survey at the beginning of each lecture to allow participants to comment during the lecture, when they are not rushed for time. We did not measure the quality of the responses to session evaluations before and after implementation of the ARS and do not know whether the increase in responses translates to more substantive feedback. Future research is planned to critically evaluate the feedback to assess content.

Similar to prior studies,^{4,5} residents informally reported satisfaction in completing evaluations during the conference and not having to complete them later during free time or to receive multiple e-mail reminders requesting evaluation completion.

Limitations of our study include that it was a single-center unblinded study with a small number of emergency medicine residents and faculty as participants. We concentrated on the 7 AM lecture time because this session seems to be the least attended and most likely the one for which participants arrive too late. Our small sample size may have reduced our power to detect statistically significant differences. We do not believe that residents avoided conference sessions due to initiation of the ARS, and we believe the decrease in attendance we found is due

to residents and faculty not being awarded credit for late arrival because of missing the sign-in session.

The free version of Poll Everywhere has a 40-participant limitation, requiring an administrator to be present to download responses and clear results each hour. To accommodate more responses and obviate the need to manually clear responses, a paid subscription service would be needed or multiple polls would be necessary to run for the evaluation of each lecture hour.

Residents found ways of “gaming” the system. We encountered a few unpredicted instances in which residents responded to the attendance question with “almost there” or “on our way” knowing that the login number is the same for each session. Residents also signed in colleagues who were not there yet but were coming, to ensure these individuals received credit for the hour. This created a few inaccuracies in our objective attendance record. Nevertheless, these instances enabled us to address this important professionalism concern immediately and with concrete behavioral examples. Requiring a user-specific login,

instead of a short-text name response item, may eliminate this problem. Institutions or departments can obtain paid subscriptions, enabling them to register participants, identify specific devices with names, and block out responses by nonregistered devices.

Conclusion

An ARS is an effective way to document conference attendance objectively and increase the completion rate for lecture evaluations.

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