Text4Peds: Feasibility of an Educational Text-Messaging Program for Pediatrics Residents

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Abstract

Background There is an ongoing effort to maximize educational material provided to residents who are in a time-constrained work environment. Mobile technology, principally smartphone applications and online modules, has shown educational promise.

Intervention We developed a text-messaging program, Text4Peds, to assist residents with preparation for their pediatric board examinations. Goals were to assess (1) the feasibility of texting educational messages to residents, and (2) resident satisfaction and perceived usefulness of a texting program.

Methods We conducted a prospective study of pediatrics and combined internal medicine-pediatrics residents. Messages derived from the most missed pediatric in-training examination questions were sent daily to residents. After 3 months, residents completed surveys that gauged their perception on the educational value of the text messages and the effect on their pediatric board preparation. Feasibility of the system was assessed as a total percentage of messages successfully received by residents.

Results Of 55 residents, 35 (64%) participated in the program. Of 2534 messages sent out to participants, 2437 (96.2%) were delivered successfully. Positive comments cited the texting of board facts as a quick, helpful, daily study tool. Residents liked that messages were sent at 2:00 PM, and most felt that 1 to 5 messages per week was appropriate. Drawbacks included character restrictions of messages, content limitations, and the lack of a question-answer format.

Conclusions An educational text message–based program was successfully implemented in our residency program. Messages were delivered with a high success rate, and residents found educational value in the messages.

Editor's Note: The online version of this article contains the surveys used in the program.

Introduction

The duty hour restrictions implemented in 2011 by the Accreditation Council for Graduate Medical Education (ACGME) have raised concerns regarding the duration and quality of education for residents.[1–3] As residency programs look for viable alternative methods to educate residents, a potential avenue of maximizing educational yield is to take advantage of residents' preferred methods of communication, particularly the mobile phone. Most residents use a smartphone,[4] and educators have recognized that using smartphone applications as a teaching tool[5] can increase efficiency in an environment limited by time constraints.[6,7] The high prevalence of text messaging by residents has created an opportunity for a new approach to resident education.[8]

Some programs have reported on using text messages to successfully communicate with their residents, including a surgical residency program that implemented a system for residents to report their duty hours, and they found this approach effective, as residents were comfortable using text messages to communicate with program leadership.[9] Another program evaluated whether text messages could be used for resident education, with the results suggesting that mobile texts may be more effective than printed materials.[9]

We hypothesized that a text message–based program would be a feasible and effective new tool for delivering high-yield educational information to residents. To test that hypothesis, the Pediatric Residency Program at Saint Louis University School of Medicine (SLUSOM) incorporated a

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text message–based program, Text4Peds. Our study aimed to assess the feasibility and perceived educational value of the new program.

What was known

Residency programs look for alternative methods to educate residents, taking advantage of new technology.

What is new

A text-messaging program that assists residents with preparation for their pediatric board examinations.

Limitations

Small prospective pilot, single site, and small sample limit generalizability.

Bottom line

The text-messaging program was highly feasible and perceived as educationally valuable by residents.

Methods

Program Description

Our pilot, prospective study was performed beginning April 2013. The text-messaging program was created independently by the authors and was offered to all (N = 55) pediatrics and combined internal medicine-pediatrics residents. Text messages were primarily derived from topics and themes found in the most missed questions in the pediatric in-training examination for SLUSOM pediatrics residents in 2012. Messages were developed, refined, and configured for the messaging system by the authors over a period of 10 weeks. Message creation was split among the authors, and final scripting and content was done collaboratively by all authors for consensus. To recruit participants, all residents received a link to the enrollment form via e-mail 3 times for 1 month before the start of the study. Residents needed to own a mobile phone with texting capability.

Messages were sent to enrolled residents using TeleVox Housecalls text messaging services. Message delivery costs (including administrative support) were 15 cents per message. There were no costs incurred by residents beyond what they would normally pay for their personal text-messaging plans. The program was funded by the Department of Pediatrics at SLUSOM (total cost for 3 months, 35 residents = $315).

For 3 months, messages were sent Monday through Friday to enrolled residents at 2:00 PM, and included brief statements of 136 characters or less (eg, ''*Campylobacter jejuni* infections are common antecedents for Guillian-Barre Syndrome''). Timing of messages was determined so as not to interrupt morning rounds and scheduled educational didactics.

Study approval was obtained through the Saint Louis University Institutional Review Board.

Analysis

Residents who enrolled in the study were sent an anonymous preprogram survey as part of the initial program evaluation (provided as online supplemental material). After completing the program, residents were sent a second anonymous survey as part of the program evaluation (provided as online supplemental material). The presurvey and postsurvey were optional and were not required for participation in the program. Written comments from the postsurvey were used to assess the program and were classified jointly by the authors as either positive (areas of benefit) or negative (suggestions for changes). Descriptive statistics were used, using SPSS Statistics 20 software (IBM Corp) for data analysis.

Results

Of 55 residents (42 pediatrics, 13 combined medicine-pediatrics), 35 (64%) participated in the program. Of the participants, 26 (74%) completed the presurvey. The average age was 28.4 years (range 26–34 years), 69% were women, and the distribution was 42% postgraduate year (PGY)–1, 31% PGY-2, 19% PGY-3, and 8% PGY-4 residents. The overwhelming majority owned a smartphone (96%, 25 of 26) and had unlimited text-messaging plans (88%, 23 of 26). The majority (73%, 19 of 26) sent and received between 0 to 25 messages daily. At least once a day, most used their mobile phone to access medical knowledge that was both related (61%, 16 of 26) and unrelated (54%, 14 of 26) to patient care.

Of the 2534 messages sent out to participants, 2437 (96.2%) were delivered successfully. Of the 97 (3.8%) messages that were not delivered, a few (5 of 97, 5%) were due to an ''opt-in error'' from TeleVox, and the remaining 92 undelivered messages (95%) were due to ''carrier error'' (1 large mobile phone carrier had difficulty receiving messages via the TeleVox HouseCalls system). None of the residents had cellular or texting service discontinued during the pilot program.

All enrolled residents completed the full 3 months of the Text4Peds program, with 18 of 35 (51%) completing the postprogram survey. The majority (94%, 17 of 18) liked that the messages were sent around 2:00 PM and would not change the time. Most (67%, 12 of 18) felt that receiving 1 to 5 messages per week was an appropriate amount, while 33% (6 of 18) were interested in receiving more. Only 28% (5 of 18) of residents were interested in receiving messages on the weekend.

TABLE 1 **Comments on Benefits of Text4Peds Program**

Comments
Information is easier to retain when learned in small pieces rather than focusing on a wealth of information.
I enjoyed another avenue of learning.
Good, easy board review tool.
It can't hurt to have extra study tips.
Very useful and relevant.
Helpful information quickly and daily.
Painless studying.
Enjoyed receiving and found that the facts were easy to remember.
Good to have new teaching points.
It was a quick daily studying tool.
Helpful, yet quick board review.
I liked getting the little facts, either to memorize on their own or to stimulate me to look something else up.
Helps reinforce daily learning.
Quick daily review of topics.
Messages sent to me so I don't have to sign in somewhere or have another "to do" on my list.
Short, daily board prep with high-yield material.
Makes me feel like I'm learning something new or refreshing a memory every day, no matter how busy I am otherwise.

TABLE 2 **Comments to Improve Text4Peds Program**

Comments
I don't know if it has actually made an impact on my knowledge—the format of the text does not lend itself well to remembering information—I started to just ignore them by the end.
I did not care to get texts postcall.
Part of the benefit was positive learning; however, this can also be a disadvantage. Texts could include a brief board-style question with answer options and then a text of the correct answer and brief explanation, say 30 minutes later to create some level of interaction although still remaining somewhat passive.
Some texts don't seem high yield.
Question/answer format!
Character limit makes some texts a little awkward.
I like the idea of text messages prompting me to learn, read, remember conditions, but it ended up getting too specific, too narrow, or too annoying.
Messages sometimes cut off.
Some of the messages were too condensed and took a bit to figure out exactly what they were meant to be getting at.
Sometimes explanation didn't seem complete.

All (100%, 18 of 18) responding residents either agreed or strongly agreed that the Text4Peds messages were relevant to their education, and a large majority (89%, 16 of 18) enjoyed receiving the messages. The majority (67%, 12 of 18) also believed that the Text4Peds messages were useful for board preparation.

Resident Feedback

The majority of residents indicated that the texting program's strength was in its ability to deliver quick, board-related facts directly to them, no matter what they were doing (TABLE 1). Residents noted that they enjoyed "messages sent to me so I don't have to sign in somewhere or have another 'to do' on my list." Residents actively search for the feasible approaches to study and may consider perusing a text message to that end if the text's information is considered relevant.

Residents indicated some frustration with the compact nature of knowledge-based text messages and had concerns that the explanations for certain messages were difficult to interpret ("character limit makes some texts a little awkward"; TABLE 2). Residents also indicated that an interactive, question-answer based platform may better engage them as learners, and provide for better feedback on their knowledge. Despite those concerns, 94% (17 of 18) of the participants indicated that they would enroll in the program again, and 100% (18 of 18) indicated that they would recommend the program to another resident.

Discussion

To our knowledge, this is the longest study (3 months), to date, evaluating the feasibility and value of using an educational text-messaging program with residents. The most significant finding was the feasibility of the program. Of the 20 messages sent to each resident every month, less than 1 per month had an error. The ability to send educational material at relatively low cost ($3 per resident per month) was a benefit. The ease, asynchronous nature, and fast-paced style of text messaging may be appealing to millennial trainees.[10,11] The text messages, although limited in length to 136 characters, contained enough information to have perceived educational value. We suspect that

concise, high-yield facts that can be read quickly and accessed at any time appeal to residents when contrasted with lengthier e-journals or traditional Microsoft PowerPoint presentations.

Our study of the Text4Peds program was limited by its nature as a small, prospective, pilot evaluation, targeting only the feasibility and perceived usefulness of the program. Only 35 (64%) residents participated in the program, which introduces the potential for participant bias. The 2 surveys were anonymous, and the data could not be paired for individual learners. The next step in the assessment of text messaging for resident education will entail determining whether educational text messages have a measurable effect on examination scores. This will require a larger cohort and use of a comparison group. In addition, a question-answer program may provide better real-time evaluation of resident knowledge and could also provide immediate feedback (both to the learner and the educator) based on performance.

Conclusion

An educational text message–based program was successfully implemented for pediatrics and internal medicine-pediatrics residents at a single institution. Assessment of the system showed messages were delivered with a high success rate, and residents found them to be educationally valuable.

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