

# Communication preferences of clinical faculty at a large, tertiary care

## Abstract

**Purpose of the study:** The primary communication method between physicians has been the pager. Data on physician communication in the post-smartphone era have been limited to urgent information transfers. We aimed to evaluate communication preferences of a cohort of physicians for receiving non-health protected information (non-HPI) that is clinically relevant but not urgent.

**Methods:** A survey was distributed to staff physicians at a large, academic multispecialty center. Demographic information included age, gender, and specialty classification. The preferred method of communication of non-HPI, nonurgent, but clinically relevant information was elicited for multiple scenarios: 1) in the hospital, 2) on call, and 3) not on call. Response options included traditional page, text page, text message to a cellular phone, email, direct call, not applicable, and other.

**Results:** The survey was sent to 1,860 physicians and 1,030 (55%) responded who participated in clinical care; 727 (71%) were in a medical specialty, 676 (66%) were male, and ages were evenly distributed. The majority of respondents (72%) preferred a text page when in the hospital or on call (43%); email was preferred when not on call (28%). We saw no difference in preferred method of communication during clinical duties or on call when stratifying by specialty, gender, or age. Direct calls were preferred while not on call in surgical subspecialties, males, and aged 30-34, 45-49, and 60-74 years.

**Conclusion:** Although some hospital systems are moving toward smartphone-based communication, the preference for receiving nonurgent clinical information was text page, despite stratification by specialty, gender, and age.

**Keywords:** Data collection, Pager, Technology, Telephone

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**Abbreviations:** HPI, Health Protected Information

## Introduction

Since the pager was introduced to medicine in the twentieth century, it has been the primary means of communication between physicians and other medical personnel.<sup>1</sup> Early pagers were simple 1-way devices capable of receiving a numeric message or telephone number, which was then dialed from a landline telephone. The subsequent development of the alphanumeric pager allowed health care providers to triage messages for urgency and proper response. Currently available pagers are capable of 2-way communication (embedded keyboards), or users can send and receive messages via the Internet.<sup>2,3</sup> Technologic advances in the mobile device industry have been swift and widely dispersed since the first mobile telephone call was made on April 3, 1973.<sup>4</sup> As of October 2014, 90% of US adults own a cellular telephone and 64% own a smartphone.<sup>5</sup>

Physicians have continued to use pagers, despite the availability of cellular telephones, for various reasons: inadequate cellular reception, concerns regarding interference with medical equipment, necessity of rapid alerts during emergency situations, and, more recently, fears about digital security. Despite these concerns, some hospitals are starting to use smartphone-based technology for communication.<sup>6,7</sup>

The literature on physician communication preferences in this era of advanced technology has primarily focused on communication between patients and physicians or nonphysician staff. The data on physician-to-physician or physician-to-trainee communication in

the post-smartphone era are limited and mostly describe urgent or emergent information transfers.<sup>8-10</sup> Smartphone use for emails and text messaging has been shown to improve efficiency of internal medicine residents completing work-related tasks but also has highlighted challenges (e.g. discordant perceptions of urgency).<sup>11</sup> A survey of pediatric hospitalists showed that 91% of their responders used a smartphone, and more than half sent and received work-related text messages. However, the cohort was small (n=97), primarily female (73%), and in practice fewer than 10 years (67%).<sup>12</sup> Naeger et al.<sup>13</sup> presented a pilot study in which residents in radiology and neurology were provided hospital-based cellular telephones to communicate during their shifts.<sup>13</sup> They observed no significant increase in satisfaction with communication, and numerous residents continued to prefer the traditional pager device. Finally, Lo et al.<sup>14</sup> reported that internal medicine clinicians preferred text messaging and emails for nonurgent information and telephone-based pager communication for urgent situations.<sup>14</sup>

Our objective was to survey a multidisciplinary cohort of clinical physicians at a large, tertiary care facility to evaluate their communication preferences for non-health protected information (non-HPI) that is clinically relevant but not urgent.

## Methods

This study was approved by the Mayo Clinic Institutional Review Board. Staff physicians were identified by the Department of Human Resources, and we immediately excluded those with nonclinical faculty positions. An electronic survey was distributed via email to

all clinical staff physicians. The surveys were distributed and data were collected and analyzed using the Qualtrics software system. The survey consisted of 7 questions and took approximately 2 minutes to complete. Responses were voluntary, but 3 reminder emails were sent to nonresponders in 1- to 2-week increments.

The initial question on the survey asked, “Do you participate in clinical care as faculty/staff at Mayo Clinic?” If the response was “no,” the survey concluded and the participant was excluded from analysis. Demographic information was collected, including age, gender, and classification of the respondent’s practice as primarily a medical or surgical specialty. The remainder of the survey asked about preferred methods of communication of non-health protected, nonurgent, but clinically relevant information in various scenarios (Appendix) (Figure 1).

## Results

We analyzed responses from 1,030 physicians who completed the survey and participate in patient care. A flowchart summarizing the number of respondents included and excluded is shown in the Figure. Nearly 66% of the participants (n=676) identified themselves as male. Seventy-one percent (n=727) identified their practice as primarily a medical specialty. Ages were relatively evenly distributed (in 5-year increments) from 30 through 69 years old.

A majority of respondents (n=741 [72%]) preferred a message by alphanumeric text page when they were in the hospital or clinic performing clinical or on-call duties. A total of 102 physicians (10%) preferred to receive a text message to their cellular phone in this scenario. The survey elicited first- and second-choice preferences for providing on-call services while out of the hospital. The most common preferred methods were text page (n=444 [43%]) and text message to their cellular device (n=188 [18%]). The most common second choice was text message to their cellular phone (n=254 [25%]) and text page (n=204 [20%]). We also requested the 2 most preferred means of receiving information when not in the hospital or clinic and also not on call. Many preferred an email (n=290 [28%]), although a similar number preferred a direct telephone call (n=247 [24%]). The most common second choices were text message to a cellular device (n=227 [22%]) and a direct telephone call (n=226 [22.0%]).

We did not identify any differences in preferred method of communication during clinical duties or while on call when respondents were stratified by medical vs surgical specialty, gender, or age. However, when out of the hospital and not on call, those in surgical specialties, males, and those aged 30 to 34, 45 to 49, and 60 to 74 years preferred to be called directly.

## Discussion

Research in the area of communication among health care workers has focused on urgent or emergent information; near misses or medical errors; communication between trainees, nonphysician staff, and patients; and communication while in the hospital. Our survey elicited communication preferences for clinically relevant but nonurgent non-HPI from a multidisciplinary cohort of clinical physicians at a large, tertiary care facility.

Although smartphone technology use in health care is increasing and some hospital systems are moving toward a smartphone-based communication system, our study shows that text pages were still the preferred method for receiving clinically relevant but nonurgent or emergent information (in and out of the hospital or clinic, 72% and

43%, respectively). This preference persisted despite stratification by specialty, gender, and age.

Pager preference may be an artifact of tradition, but we nevertheless were somewhat surprised by these findings, as we had expected younger clinicians to prefer cellular phone-based communication. Faculty physicians in our survey preferred to receive communication via email (28%) when outside of the hospital and not on call; however, interestingly, the surgical subspecialties, males, and physicians aged 30 to 34, 45 to 49, and 60 to 74 years old preferred to be called directly in this situation. The authors do not have a reasonable explanation for this difference in preference between 2 very different methods.

Our study had numerous strengths. We had a large sample size, and more than 1,800 multidisciplinary faculty clinicians received the email-based survey. Although Flanigan et al.<sup>15</sup> reported that physicians often have a lower response rate to surveys than the general population, we had a 58% response rate (1,081 respondents). Our survey was developed with a goal of maximizing the response rate. Short surveys have a higher response rate; therefore, we generated a 7-question survey that took less than 2 minutes to complete.<sup>15</sup> Surveys with closed-ended questions have a 22% higher response rate than those with open-ended questions, so we used the closed format.<sup>16</sup> Furthermore, numerous benefits of web-based surveys vs postal mail-based surveys have been reported, including improvement in response rates, fewer incomplete answers, and shorter response times.<sup>15,17</sup> Additionally, 3 email reminders were sent to nonresponders, as recommended by Barclay et al.<sup>18</sup> Finally, the population surveyed was multidisciplinary in specialty and encompassed a large age range. Our study avoided sampling error because we used a single institution that provides an email address, wireless Internet access, access to email, and a single internal survey center.<sup>19</sup> A potential limitation of our study is nonresponse bias, the potential of nonresponders to somehow differ significantly from those who did respond to our survey and thus influence the results.<sup>20</sup> Our single institution-based survey diminishes this potential bias, however, because our subjects were in similar environments and had similar access for participation. Because participants were from a single institution, however, our findings may not be generalizable to other medical institutions.

## Conclusion

Results from this survey may represent the traditional culture of communication that has been prevalent at our institution. However, the options for communicating nonurgent, non-HPI information via numerous modalities is accepted and used by physicians at our facility. Future research may be warranted to optimize satisfaction with communication and could involve a randomized trial comparing different modes of communication of nonurgent, non-HPI information in various clinical situations.

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## Conflicts of interest

None.

## References

1. Bellis M. History of pagers or beepers: a pager is a personal radio device that allows the user to receive messages. 2015.
2. Nguyen C, McElroy LM, Abecassis MM, et al. The use of technology for urgent clinician to clinician communications: a systematic review of the literature. *Int J Med Inform.* 2015;84(2):101-110.

3. Eisenstadt SA, Wagner MM, Hogan WR, et al. Mobile workers in healthcare and their information needs: are 2-way pagers the answer? *Proc AMIA Symp.* 1998;135-139.
4. Seward ZM. The first mobile phone call was made 40 years ago today. The Atlantic. 2013.
5. Mobile technology fact sheet. Washington (DC): Pew Research Center; c2015.
6. Dolan B. Why doctors' pagers still trump smartphones. Chester Street Publishing; c2015. MobiHealthNews. 2007.
7. Samuelson T. Hanging up the hallmark of the trade, doctors swap pagers for smart phones. 2012.
8. EtcHELLS E, Adhikari NK, Cheung C, et al. Real-time clinical alerting: effect of an automated paging system on response time to critical laboratory values: a randomised controlled trial. *Qual Saf Health Care.* 2010;19(2):99-102.
9. Soto RG, Chu LF, Goldman JM, et al. Communication in critical care environments: mobile telephones improve patient care. *Anesth Analg.* 2006;102(2):535-541.
10. Poon EG, Kuperman GJ, Fiskio J, et al. Real-time notification of laboratory data requested by users through alphanumeric pagers. *J Am Med Inform Assoc.* 2002;9(3):217-222.
11. Wu R, Rossos P, Quan S, et al. An evaluation of the use of smartphones to communicate between clinicians: a mixed-methods study. *J Med Internet Res.* 2011;13(3):e59.
12. Kuhlmann S, Ahlers-Schmidt CR, Steinberger E. TXT@WORK: pediatric hospitalists and text messaging. *Telemed J E Health.* 2014;20(7):647-652.
13. Naeger DM, Jafri NF, Webb EM, et al. Can hospital-based cellular phones improve on-call communication? *J Am Coll Radiol.* 2014;11(11):1090-1092.
14. Lo V, Wu RC, Morra D, et al. The use of smartphones in general and internal medicine units: a boon or a bane to the promotion of interprofessional collaboration? *J Interprof Care.* 2012;26(4):276-282.
15. Flanigan TS, McFarlane E, Cook S. Conducting survey research among physicians and other medical professionals: a review of current literature. Proceedings of the Survey Research Methods Section, *American Statistical Association.* 2008;pp.4136-4141.
16. Griffith LE, Cook DJ, Guyatt GH, et al. Comparison of open and closed questionnaire formats in obtaining demographic information from Canadian general internists. *J Clin Epidemiol.* 1999;52(10):997-1005.
17. McMahon SR, Iwamoto M, Massoudi MS, et al. Comparison of e-mail, fax, and postal surveys of pediatricians. *Pediatrics.* 2003;111(4 Pt 1):e299-e303.
18. Barclay S, Todd C, Finlay I, et al. Not another questionnaire! Maximizing the response rate, predicting non-response and assessing non-response bias in postal questionnaire studies of GPs. *Fam Pract.* 2002;19(1):105-111.
19. Braithwaite D, Emery J, De Lusignan S, et al. Using the Internet to conduct surveys of health professionals: a valid alternative? *Fam Pract.* 2003;20(5):545-551.
20. McFarlane E, Olmsted MG, Murphy J, et al. Nonresponse bias in a mail survey of physicians. *Eval Health Prof.* 2007;30(2):170-185.