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Increasing Patient Portal Usage: Preliminary Outcomes from the MyChart Genius Project

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Abstract

Objectives—To determine the feasibility, acceptability, and preliminary effectiveness of dedicating staff ("MyChart Geniuses") to assist adolescents with patient portal sign-up; to examine patient satisfaction with MyChart Genius services; and to determine patient preferences for future communications related to health issues.

Methods—Adolescent patients (13–25 years old) in an urban, academic, primary care clinic were approached by MyChart Genius staff to assist with enrolling in MyChart and downloading the MyChart mobile App. Patients were also invited to partake in a brief, online survey assessing their technology use and access, as well as their preferences surrounding communication with their health care providers. Survey responses were analyzed using SPSS (SPSS Inc., Chicago, IL).

Results—Ninety-six patients were approached, 84 (87.5%) of whom enrolled in MyChart. Sixty-four adolescents agreed to answer survey questions. Respondents were primarily African-American patients (87%), with a mean age of 18.7 years. The majority (79%) of participants were either satisfied or very satisfied with the Genius program. The respondents reported high access to and use of basic technology, and a high perceived need for an EHR App. Preferences for future communications with health care providers revealed population subsets, indicating an area to further individualize interventions.

Conclusion—This is one of the first studies to examine patient portal uptake and usage among minority, urban adolescents (a group with demonstrated preferences on communications with health care providers). The presence of specially trained Genius staff is a feasible, effective, and patient-satisfactory method of engaging with this group of adolescents.

Keywords

Meaningful Use; Patient Portal; Electronic Health Record (EHR); Adolescents

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The Health Information Technology for Economic and Clinical Health (HITECH) Act, established in 2009, encourages the meaningful use of electronic health records (EHR) to further the quality of care received by patients.¹ In addition to clinical care documentation, problem list management, and integration of best practice reminders, EHR patient portals have emerged as a strategy for improved health management by enhancing patient self-management and communication with health providers outside of office visits. Patient portals are internet-based services that allow a patient to view their health records (e.g. diagnoses, laboratory results, and medications list), view appointments, and facilitate administrative tasks (e.g., appointment requests, medication refill requests). Many EHR systems also allow patients to self-book appointments online and initiate web-based contact with their health care provider.

Patient portals have the potential to enhance patient engagement in their health care, improve understanding of medical issues and illness, increase self-efficacy for self-management, and facilitate overall quality health improvement. Two recent systematic reviews in adults have demonstrated that patient portals are positively associated with improvements in medication adherence, increases in preventative medicine, improved disease management in chronic conditions, enhanced patient-provider communication, better use of office visit time, and greater satisfaction with care.^{2,3} Portal sign-up rates have been generally high in adult care settings, with two studies reporting over 60% enrollment in study populations.^{4,5} Another demonstrated a 100% increase in patient sign-ups between 2010 and 2012, with nearly all patients saying they would recommend the portal to family and friends.⁶ Zarcadoolas et al. found that patients generally felt very positive about the idea of a patient portal, finding the available functions valuable.⁷ Patients reported having access to their records online would empower them, allowing them to become more proactive about their healthcare.

There is limited data, however, in the understanding of adolescent portal use. This lack of data may be due in part to the variations between states regarding the autonomy and confidentiality status of adolescents in health care self-management.⁸ Bergman et al. reported that adolescents were enthusiastic about the idea of having direct access to their medical information, particularly the features for booking appointments and electronically communicating with their health care providers.⁹ A more recent study demonstrated a high rate of patient portal activation amongst adolescents, with the majority using the tool to view their appointments, immunization records, medications, and laboratory test results.¹⁰ Together, these results demonstrate that there is the potential for patient portals to become an important fixture in adolescent health care. Pediatric care facilities are expected to ensure that all patients, including adolescents, have access to the portal in accordance with the national meaningful use of technology expectations.

Although adolescents have been early adopters of technology,¹¹⁻¹³ and patient portals are an accessible and user-friendly medium for adolescents to engage in their health,¹³ large health care settings utilizing EHRs with patient portals have had difficulty getting adolescents to sign up for and become active users of the system. It is unclear if there is a lack of interest in the portal or in health care self-management, a lack of access to the Internet, concern regarding confidentiality, or if slow uptake is due to the process for portal sign-up, which is cumbersome for many patients. A 2012 study among detained youth in California suggests

that 90% of adolescents ages 13 to 18 expressed interest in accessing their personal health information (PHI) online, but access was restricted.¹⁴ Although our setting is not in a detention center, we ask a similar question about desirability for and access to an online portal among urban youth, many of whom are involved in high risk behaviors.¹⁴

The aims of this study were to determine the feasibility, acceptability, and preliminary effectiveness of having an adolescent-friendly trained technology expert (“MyChart Genius”) to assist adolescents and young adults with portal sign-up in an Adolescent Medicine primary care setting; to examine satisfaction with MyChart Genius services; and to identify patient preferences for communication relating to health issues as a next step in refining the opportunities for patient engagement using the patient portal.

Methods

Setting and Participants

This quality improvement (QI) project was performed in an academic Adolescent Medicine practice primarily serving low-income urban African American patients and families. This adolescent practice was an early adopter of the EHR and has been using institutionally available EHR systems for over 15 years. The institution recently converted to use of the EPIC EHR system, through which patients have access to the MyChart patient portal. Per institutional policy, patients 13 years and older are granted autonomous, confidential access to their MyChart portal. Youth may grant limited proxy access to their parents, which ends at age 18 years. Proxy access for parents of youth with complex medical issues (e.g. developmental disabilities) is also available. MyChart can be accessed via an online webpage and on a smart phone application (App).

Despite the promotion of MyChart within institutional clinics, rates of adolescent portal sign-up for MyChart remained low. Prior to the commencement of this study, only 478 adolescent patients had signed up for MyChart, with just over two thirds (331) of these adolescents having activated their account. Activation of an account requires that the patient log in after signing up and complete a function in the system (e.g., send a message to their health provider).

MyChart Genius Intervention

Given the success of customer service strategies in non-health care settings to assist the public with adoption of new technology, we created a volunteer staff of pre-medical and medical students (“MyChart Geniuses”). The MyChart Genius staff was trained to educate adolescent and young adult patients about the portal, to assist with MyChart enrollment, and to facilitate download of the MyChart App for smartphone users for easy access and adoption of the portal. Core to the MyChart Genius staff message was that using the portal would enable secure, private communication between the patient and their health care provider in the clinic. All MyChart Genius staff served as an extension of the clinical team, adhered to institutional Meaningful Use standards, and completed all required training including EPIC training for allied health professionals and human subjects training through the Johns Hopkins Medicine Institutional Review Board. Aside from student and faculty

leader time, the only cost for this project was the purchase of a WiFi-enabled computer tablet (~\$400) on which EPIC was installed to allow access to the MyChart sign-up website during the patient visit.

The MyChart staff approached consecutive patients during routine clinical visits in the Adolescent Medicine clinic between October 2014 and May 2015. All patients over the age of 13 who had not yet signed up for MyChart were eligible for participation. Patients with profound developmental delay who were not able to consent to their own use were referred to clinic administration for proxy MyChart sign up with their parent and/or guardian. The MyChart Geniuses met with patients in their private examination rooms, provided education about the portal, privacy, functionality, and assessed their satisfaction with the program. The MyChart Geniuses were also available to answer questions, assist with sign-up if the patient agreed, and troubleshoot problems in real time. While most information was verbal, the patient was provided with a pamphlet outlining how to download and use the MyChart App. All MyChart sign-up refusals were documented in a log. Since MyChart sign-up is a health quality measure, health providers were notified of the patient's decision about portal sign-up allowing for an additional conversation at the providers' discretion.

An optional brief online survey utilizing the SurveyMonkey™ interface was offered at the end of the MyChart Genius session to assess patient demographics, technology access and use, perspectives on the portal, and preferences for future communications with their health care providers/clinical practice. Electronically confirmed informed consent for the survey was obtained upon online entry and before survey items loaded. Participants were asked about interest in using an App allowing them access to their EHR/PHI, which types of messages they would prefer (email, text, or Skype), and about preferences for the content of those messages.

The Society for Adolescent Health and Medicine outlines the importance of privacy for optimal delivery of adolescent care and offers suggestions for effectively ensuring adolescents access to care without encountering unwanted information exchange with their guardians.¹⁵ To assess concerns about privacy, we queried participants about reasons for not signing up and willingness to allow parental proxy access.

The intervention required approximately 10 minutes of a patient visit and occurred while the patient was waiting to be seen by a provider. No remuneration was provided to youth for participation in the project. The Johns Hopkins Medicine Institutional Review Board approved this study.

Data Sources and Analysis

Three sources of information and analytic approaches were used to evaluate the MyChart project. MyChart activity logs tracked participants who were approached, refused, and signed-up during the visit as measures to assess contact and successful engagement of patients to determine the feasibility and acceptability of the project. Online survey data was assessed to determine if technology access and/or patient preferences served as barriers to adolescent portal use. SurveyMonkey™ allowed for direct download of data into SPSS version 22 (SPSS Inc., Chicago, IL) for analysis. EPIC data reports were also analyzed as a

secondary measure to determine the overall changes in MyChart sign-up in the Adolescent Medicine practice after initiation of the project as we hypothesized that the part-time presence of the MyChart genius staff would facilitate a cultural shift resulting in increased in portal sign-up by other clinic staff members not directly involved in the pilot.

Descriptive analyses were performed to describe technology use/access and preferences for communication with health providers and bivariate logistic regression analyses were used to evaluate the gender and age-based differences in message preferences. Given the wide age range and developmental levels for Adolescent Medicine practice patients (13–25 years), age was dichotomized into <18 years of age (adolescent) and 18 years and older (emerging adult).

Results

Feasibility, Acceptability, and Satisfaction with MyChart Genius Support

MyChart Genius staff approached 96 patients during clinic appointments in the QI study period. Of those approached, 84 agreed to sign up for MyChart (87.5% success rate). Reasons to not sign up for MyChart were primarily practical and included: 1) no need for MyChart (n=3); 2) desire to sign up at home (n=2); and 3) no reason given (n=2). Additionally, the following reasons were cited in unique cases (n=1, respectively) 4) wanting more information before consenting; 5) lack of computer access; 6) waiting for phone storage to download the App; 7) too unwell to sign up during clinic visit; 8) inappropriate patient not identified prior to approach (severe cognitive impairment limiting self-use of MyChart). Seventy nine percent of those surveyed were either satisfied or very satisfied with the MyChart Genius program, with no participant being dissatisfied with the services.

Online Survey Results

Sixty-four (76%) of those who agreed to sign up for MyChart also consented to completion of the online survey and 63 completed the entire survey. Patients declined participation in the survey for the following reasons: already participating in another survey (n=2); being in a rush (n=2); appropriate for sign up but not for surveying (n=2); poor internet connection in the clinic building (n=1); and no specific reason given (n=13) (Figure 1).

Selected demographics for survey participants are found in Table 1 (N=63). Most participants were low-income African Americans with a mean age of 18 and insured by Medicaid. Nearly all the adolescents had access to both a cell phone and e-mail, indicating that no significant ‘digital divide’ existed among this urban, minority population of adolescents (Table 2). There was no significant age- or gender-based difference in basic technological access. Ninety-five percent of respondents indicated that they would use an App allowing access to their EHR, demonstrating a perceived need for the patient portal (Table 3). There was no statistical significance determined between age or gender regarding want of a patient portal. However, males were significantly more likely than females to consider allowing parental proxy access (OR 7.077 (95% CI 2.147–23.329) p=0.001). There were no differences in allowing proxy access by age group.

Preferences for communication with health care providers are demonstrated in Figures 2 and 3. E-mail and text messaging were the most preferred methods of technological communication, and there were no significant differences based on age or gender. Figure 2 presents general data about technology use in these patients to underscore future strategies for patient engagement through an optimized portal. Older respondents were significantly more open to using Skype (OR 4.773 (95% CI 1.368–16.416) $p=0.010$). There were no gender-based differences. Barriers to utilizing Skype were unfamiliarity with the program, only wishing to use it to discuss serious health issues, and needing adequate time to use it properly.

Appointment reminders, laboratory results and general health messages were the most popular types of messages respondents would like to receive, with 92%, 75% and 64% of participants indicating a preference, respectively (Figure 3). With regards to sexual and reproductive health topics, participants were most interested in receiving their sexually transmitted disease (STD) results through a messaging system (approximately 60%). Nearly half of all participants also expressed interest in contraceptive and STD testing reminders (Figure 3). Females were more likely to want immunization messages (OR 2.95 (95% CI 1.027–8.496) $p=0.042$), contraception reminders (OR 3.56 (95% CI 1.206–10.527) $p=0.019$), and STD testing reminders (OR 3.30 (95% CI 1.143–9.528) $p=0.025$) than males. Age was a significant factor only regarding messages about form completion, with older participants being more interested than younger participants (OR 4.19 (95% CI 1.203–14.6) $p=0.019$).

Assessment of EPIC Data

Before commencement of the MyChart Genius project, 478 of 995 (48%) patients were signed up to MyChart, with 331 accounts having been activated. At the end of the study period, this increased to 814 of 1376 (59%) patients being signed up to MyChart with 626 activated accounts.

The MyChart Geniuses signed up a total of 84 patients, and of those signed-up by the MyChart Geniuses, 17 (28%) had activated their account by the end of the Genius period. As the rate of activation is not as high as the overall enrollment rate, portal usage following sign-up represents an area for future improvement to be explored by the MyChart Genius staff.

Discussion

Overall, our results indicate that the MyChart Genius project was feasible, acceptable, and effective for enhancing MyChart patient portal sign-up. The MyChart Genius staff successfully signed up 87.5% of approached patients for the portal, indicating a directly positive effect of having trained, youth-friendly support staff engaging patients about portal use during clinical sessions. Additionally, there may have been a cultural shift within the clinic setting as many MyChart sign-ups were not performed by the MyChart Genius staff. This could suggest that the presence and active service of Geniuses not only engages patient interest in portal enrollment, but also enhances provider involvement.

The survey data demonstrated that adolescents have an active interest in using patient portals. There was no apparent ‘digital divide’ existing amongst this urban, minority, low socioeconomic status population, demonstrating that they have both the desire to access the portal and the basic technology to do so. As evidence of this, just 1 (1%) of the 96 individuals approached for this study cited lack of technology access and another patient (1%) cited phone storage for an App wasn't sufficient (though this does not preclude sign up).

Surveyed adolescents were asked how they would like to use technology to manage their health in the future since use of the portal represented the first structured foray into electronic communication within this environment. Most participants expressed an interest in using either e-mail or text messaging as a means of communicating with their providers, signifying a desire to take an active role in their health care and that they are amenable to using familiar, easily accessible technology to do so.

Furthermore, participants were asked what types of messages they would like to receive from their providers, either through a patient portal or alternative messaging system. Overall, adolescents were more interested in receiving general health messages – with nearly all the participants wanting appointment reminders and three quarters wanting their laboratory results – than those related to sexual and reproductive health. However, a majority (59%) still had a positive interest in receiving messages about their STD results and nearly half wanted contraceptive and STD testing reminders. While positive results were more prominent for general messages, there is still obvious interest in sexual and reproductive health messages indicating that adolescents have an active interest in their sexual health or are seeking additional support and/or reminders for sexual health appointments.

These findings are consistent with our prior research with urban adolescents and technology.^{16,17} Johnson et al. reported high possession and use of basic technology amongst urban youth, determining that was no evidence of a ‘digital divide’.¹⁶ Participants were amenable to communicating via a web-camera based App (e.g., Skype) with their health care providers, as well as receiving appointment reminders and general health messages, which is similar to our findings. In a recent trial utilizing text messaging to communicate with female adolescents about the contraceptive Depo-Provera, results indicated that participants were satisfied with this method of communication and that it prompted them to take a more active role in managing their health by reminding them of their appointments for the injection.¹⁷ That data also demonstrated a positive correlation between text message clinic appointment reminders and attendance, indicating that this method of communication is beneficial to engagement with health care.

There were some gender-based differences observed in this population. Compared to males, female adolescents were significantly more likely to want messages about immunization, contraception and STD testing reminders. Heavily gendered approaches for the human papilloma virus vaccination may explain some of the awareness of a need for vaccination reminders amongst young women given the absence of gender-based differences in uptake of other adolescent vaccinations such as TDaP or the MMR vaccine in the general population.¹⁸ Understandably, messages about contraception reminders would primarily be

aimed at female patients as most current methods are intended for female use (e.g., reminders about Depo-Provera injection dates, reminders to refill oral contraceptive pills). Preferences for messages about STD testing could be partially related to the disproportionate rates of infection with common STDs such as *Chlamydia trachomatis* and *Neisseria gonorrhoeae* among sexually active adolescent and young adult women less than aged 25 years.¹⁹

There were also observable differences in technology engagement by age. Emerging adults 18 years were more interested in receiving notification that forms or letters were ready for collection. This may be due to their increasing responsibility for requesting and collecting forms from their health care providers for work and/or higher education, whereas younger adolescents are more likely to have parental support for management of forms and medical records.

Together, these results indicate that certain population subsets exist within the larger Adolescent Medicine clinical practice that have specific needs guiding future interactions with the patient portal. As MyChart usage continues to evolve in this setting, the potential to individualize the portal to specific subgroups may be necessary. Furthermore, these individualized interventions may also be the next step for personal health management using MyChart as a means of person-based communication.

Privacy breach was not a primary concern raised by youth in this sample. Though the participants understood that the portal did not allow parent access unless it was specifically granted, some youth may lack understanding for the nuances of data privacy.¹⁵ Further education about data privacy may be warranted, though our findings suggest desire for information access and exchange is the driving force for patient willingness to participate in the portal sign up regardless of perceived privacy issues. Furthermore, in our other work we have demonstrated that adolescents and young adults in our practice largely notify their parents of care issues related to sexual health, highlighting that while confidentiality is important, communication with parents is normative.^{17, 20, 21}

While the rate of portal sign-up increased and patient preferences for using a patient portal are clear, the actual usage rate of MyChart did not increase. These findings are similar to other studies that found that perceived need of a portal does not match actual usage,^{22, 23} and suggests that additional support to actively engage adolescent patients around portal is warranted. While it is likely that healthy adolescents and young adults have different communication patterns and needs than those addressed in adult patient-driven health care policy in large institutions, additional quality improvement research designed to understand the drivers of portal use may allow for enhanced uptake and activation in adolescents and young adults, which are required for optimal adherence to meaningful use standards.¹

Limitations

Our findings must be considered in light of several general limitations. The MyChart Genius program was a pilot study conducted using volunteer pre-medical and medical students with limited availability due to course schedules, accounting for the small number of participants

collected during the pilot study period. Despite this limitation, having a tech-savvy staff person walk patients through the portal sign-up is important for engaging adolescents in practice. Our participants were mainly low-income, urban African American late adolescents and young adults being cared for in an academic setting where proxy access is only granted to parents for patients <13 years of age. Our findings, therefore, may not be generalizable to other dissimilar populations, communities, and/or clinical care settings with more restrictive policies around adolescent control over health information or where the level of institutional technology support for management of the electronic health record is not readily available. There may also be other unmeasured factors (e.g., peer effects, clinic culture change) that contributed to portal uptake during the period of intervention. Finally, the MyChart intervention primarily focused on sign-up based on the quality measures presented by institutional leaders; however, after the initiation of QI procedure activation (i.e.: separate login to MyChart at least once after enrollment) became the institutional target. While our team shifted to include assistance with activation, additional QI work focused on evaluating the impact of the MyChart genius approach on this secondary process is warranted.

Implications and Contribution

This study tested a proactive strategy to increase adoption of patient portals among urban adolescents and young adults and to explore patient preferences for communication in the pediatric setting. Implementation of youth-friendly technology and savvy support staff results in enhanced portal sign-up and patients who are satisfied with these services

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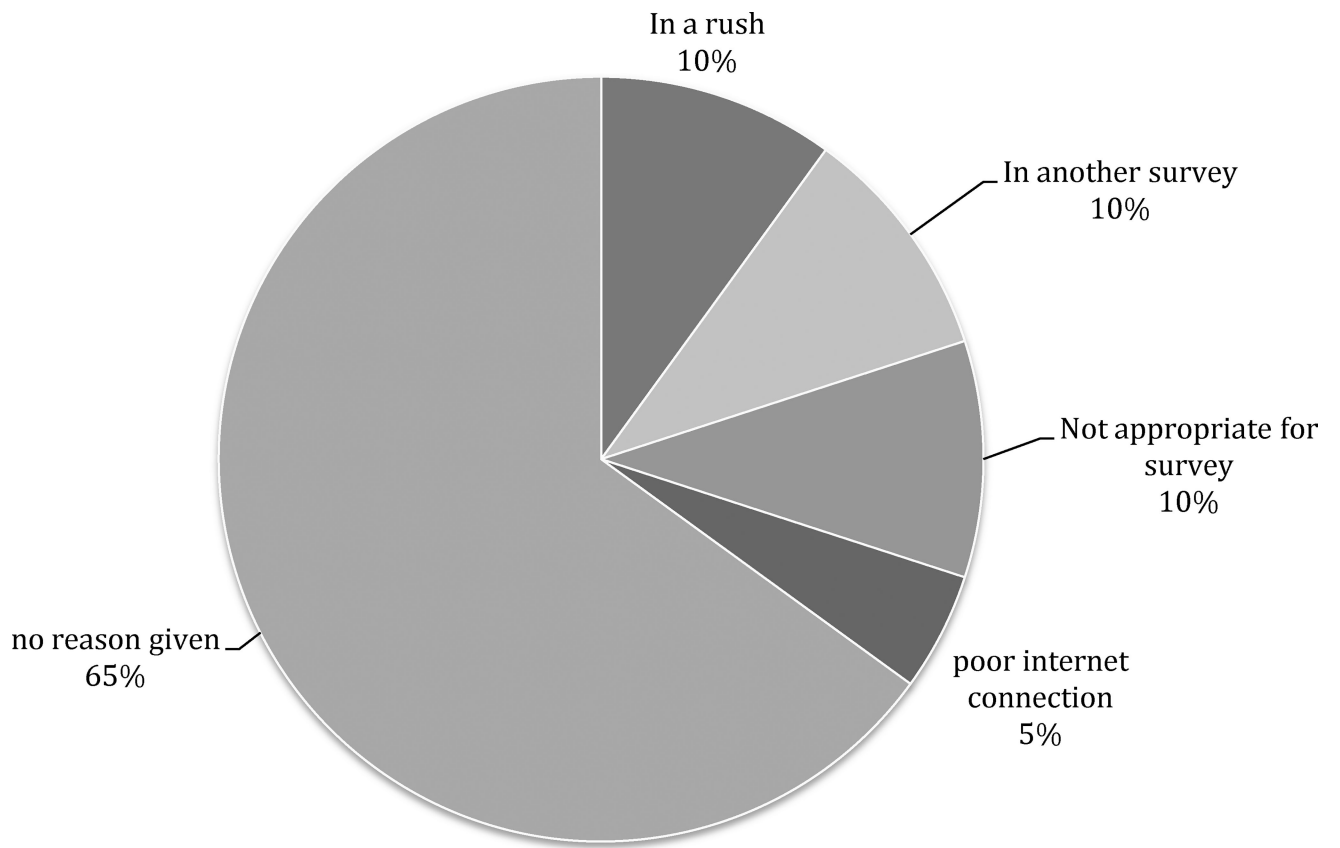


Figure 1.
Reasons for Non-survey completion after MyChart sign-up

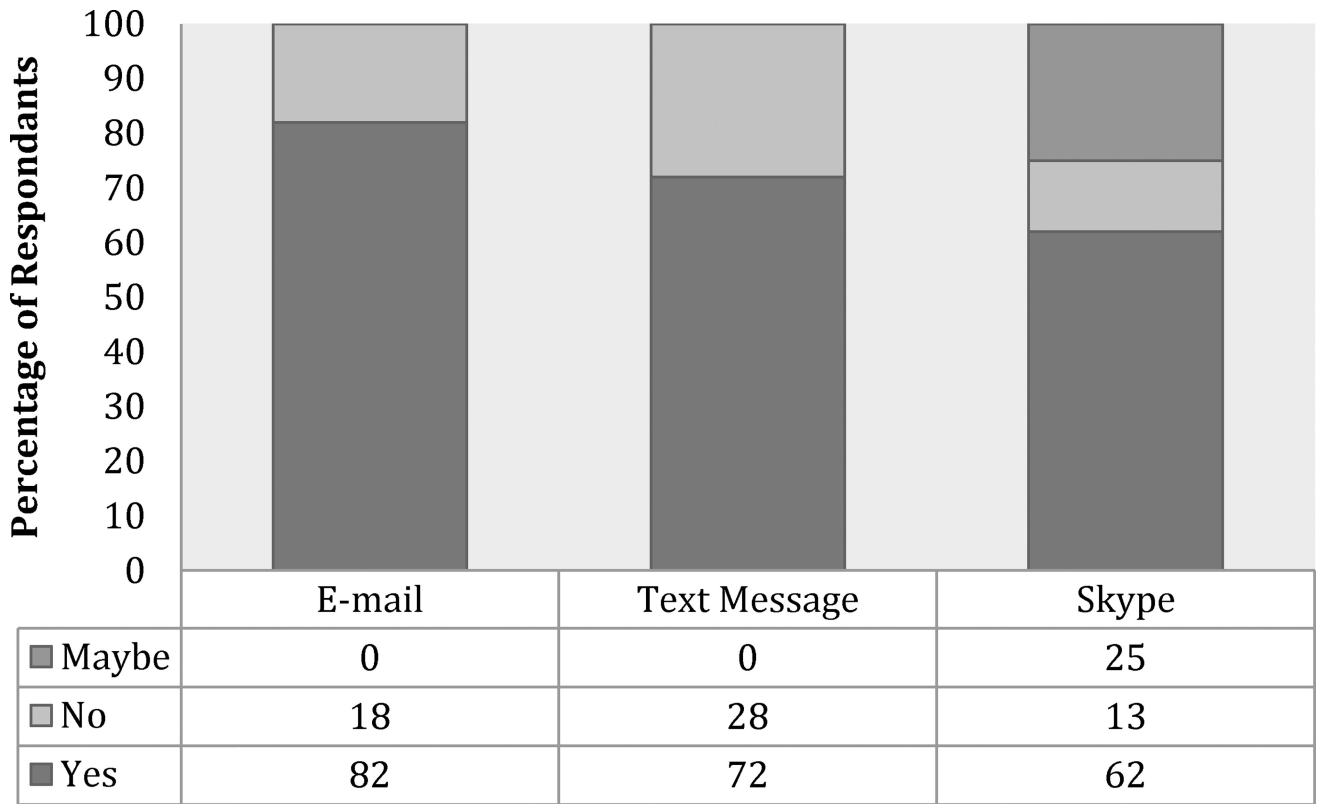


Figure 2.
Participant preferences for electronic communication.

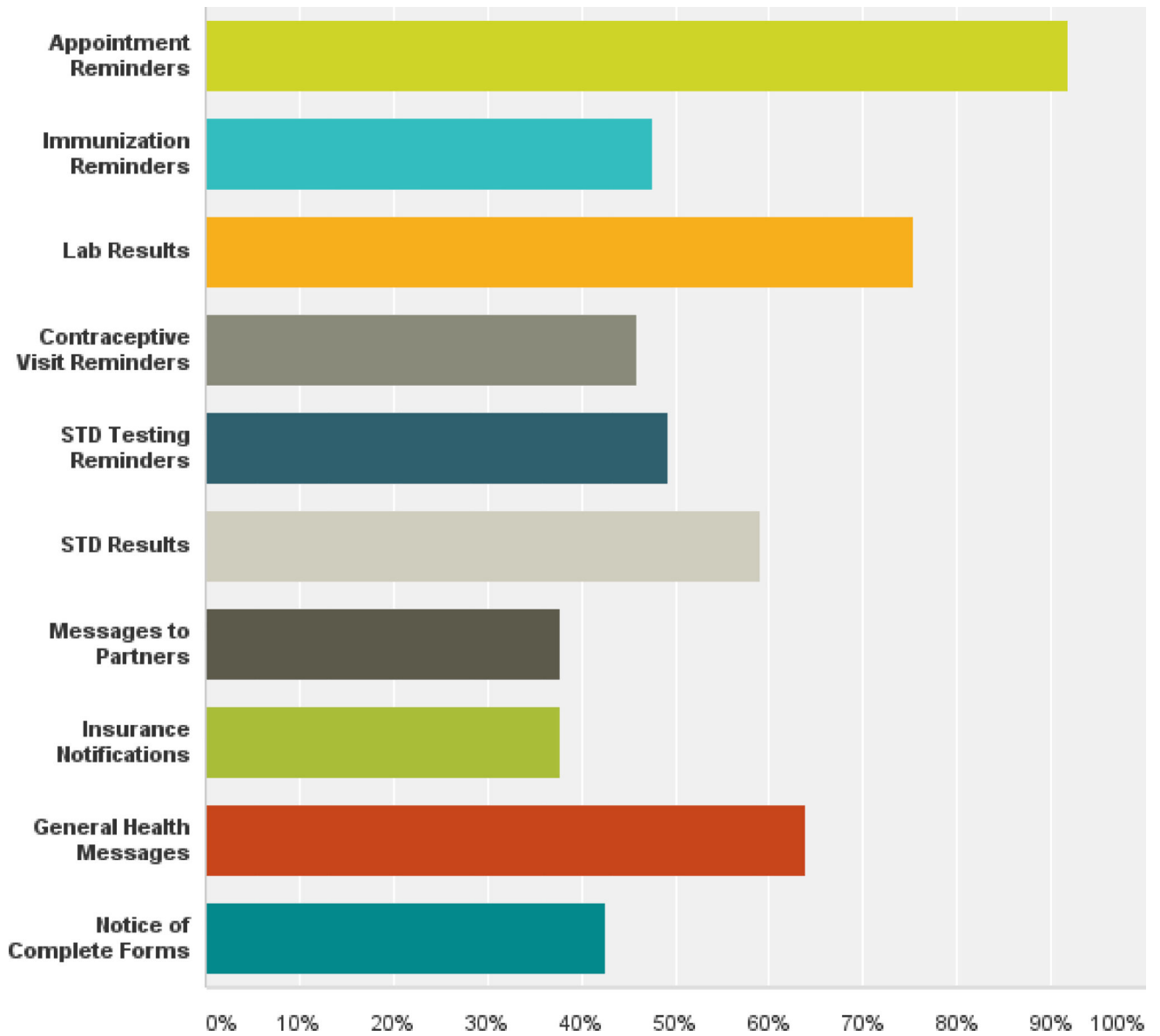


Figure 3.
Types of messages preferred by participants.

Table 1

Selected Demographics from participants who completed the online survey after MyChart Sign-up

Demographic	n (%)
Age (mean ± SD)	18.7 ± 2.3
Gender	
Male	26 (41)
Female	37 (59)
Ethnicity	
Hispanic	3 (5)
Non-Hispanic	60 (95)
Race	
Black/African American	55 (87)
White	0 (0)
Asian/Pacific Islander	0 (0)
Native American/Alaskan Native	0 (0)
Mixed Race	5 (8)
Other	3 (5)
Currently in School	
Yes	39 (62)
No	24 (38)
Health Insurance Provider	
Medicaid/Priority Partners	49 (78)
Private Insurance	11 (17)
None	3 (5)

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Table 2
Participant responses to the Online Technology Use Survey questions regarding current technology use.

	Less than 18 years old (n=20)		18 years and older (n=43)		Pearson Chisquare	Significance	Male (n=26)		Female (n=37)		X ²	p
	Yes n (%)	No n (%)	Yes n (%)	No n (%)			Yes n (%)	No n (%)	Yes n (%)	No n (%)		
Do you own a cell phone? (n = 63)	18 (90%)	2 (10%)	42 (98%)	1 (2%)	1.773	p=0.183	24 (92%)	2 (8%)	36 (97%)	1 (3%)	0.838	0.360
Do you use your cell phone for text messaging (n = 58 [*])	16 (80%)	2 (10%)	39 (91%)	1 (2%)	1.877	p=0.171	20 (77%)	3 (12%)	35 (95%)	0 (0%)	4.814	0.028
Do you have email? (n = 61 [*])	19 (95%)	1 (5%)	39 (91%)	2 (5%)	0	p=0.984	24 (92%)	1 (4%)	34 (92%)	2 (6%)	0.076	0.782
Do you check your e-mail at least weekly? (n = 58 [*])	13 (65%)	7 (35%)	33 (76%)	8 (19%)	1.739	p=0.187	18 (69%)	7 (27%)	28 (76%)	8 (24%)	0.266	0.606

* indicates blank responses removed from analysis

Table 3

Participant responses to queries about portal use, privacy, parental access.

	Less than 18 years old (n=20)		18 years and older (n=43)		X ²	Significance	Male (n=26)		Female (n=37)		X ²	p
	Yes n (%)	No n (%)	Yes n (%)	No n (%)			Yes n (%)	No n (%)	Yes n (%)	No n (%)		
Would you use an EHR/PHI App? (n = 61)	20 (100%)	0 (0%)	40 (93%)	1 (2%)	0.496	p=0.481	24 (92%)	1 (4%)	36 (97%)	0 (0%)	1.464	0.23
Are you aware that MyChart is confidential? (n = 61)	20 (100%)	0 (0%)	39 (91%)	2 (4%)	1.009	p=0.315	23 (88%)	2 (8%)	36 (97%)	0 (0%)	2.978	0.08
Would you consider allowing parental proxy access? (n = 61)	12 (60%)	8 (40%)	21 (49%)	20 (50%)	0.417	p=0.518	20 (77%)	5 (19%)	13 (35%)	23 (62%)	11.445	0.001