Empowering Health: Are Teenagers Taking Part in the Electronic Healthcare Revolution?

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Purpose:

The patient portal (portal) is a secure online website providing patients 24 hour access to the Electronic Health Record, designed to facilitate patient engagement, promote self-management, improve patient and health provider communication outside of face to-face visits, and result in better clinical outcomes (Griffin, Skinner, Thornhill, & Weinberger, 2016; Mendu & Waikar, 2015; Nguyen, Bartlett, Rodriguez, & Tellier, 2016). Portals allow individuals to send secure messages to clinical staff, view their health records (e.g., diagnoses, laboratory results, and medications list), schedule appointments, request prescription refills, and manage bills (Kruse, Bolton, & Freriks, 2015).

Adolescents have been early adopters of technology; 95% of U.S. teens report they have a smartphone or access to one and 45% of teens now say they are online "nearly constantly" ("Teens, Social Media & Technology 2018 | Pew Research Center," 2018). Portal technology might help to engage adolescents in their health care by providing mobile health education, supporting transition of care, and permitting confidential messaging and communication. Three studies, using qualitative methods or sample sizes of fewer than 100, indicate adolescent would like to access appointments, medication logs, and test results (Bergman, Brown, & Wilson, 2008; Ramsey et al., 2018; Thompson et al., 2016). Limited pediatric portal implementation data show mainly positive but heterogeneous activation rates among parents, and activation rates were associated with socioeconomic factors (Bush et al., 2017; Ramsey, Lanzo, Huston-Paterson, Tomaszewski, & Trent, 2018; Thompson, Martinko, Budd, Mercado, & Schentrup, 2016). The purpose of this study was to evaluate adolescent portal utilization patterns and to determine whether they differed from parent proxy use for younger patients.

Methods: This retrospective, cross-sectional analysis of electronic audit records from 2011 – 2017 of patient portal access was conducted at a tertiary academic pediatric hospital and its affiliated network, which draws from three counties in Southern California and has a racial/ethnic composition of approximately 45% Hispanic/Latino, 35% White, and 10% Asian patients. The study focused on pediatric urology division patients aged 18 and younger. The pediatric urology division is the primary referral provider for the geographic area and manages care for children with chronic disease, resulting in a heterogeneous, robust patient sample in which to examine portal use patterns.

The Epic EHR system (Verona, WI) has been fully operational at this location since 2010; the portal (MyChart) was first introduced in late 2010. Patients younger than 12 require a parent or legal guardian to activate an account. Pediatric patients age 12 or older, with parental permission, can activate their own accounts. This model allows for confidential communication about topics such as family planning, sexually transmitted infections, and pregnancy. All of the enrollment materials as well as MyChart were available in English and Spanish. Interpretation services were available for those needing assistance in other languages.

After obtaining Institutional Review Board approval with a waiver of consent, we extracted relevant demographic variables and audit records of portal use. Bivariate analyses were performed using IBM

SPSS Statistics for Windows, Version 24 (Armonk, NY: IBM Corp) with differences in categorical use calculated using *Chi*-squared analysis with a *p* < .05 accepted as significant.

Results:

During the study period, 4930 accounts had 837,087 transactions. In this clinic, roughly 45% of patient parents (0-11) who were offered an activation code, logged into the portal; adolescent activation was under 20%. The parents used the portal primarily for secure messaging 352,955 (42%); appointments (setting, canceling, reviewing) 150,926 (18%); and reviewing laboratory results 115,507 (14%). Adolescent patients accounted for 43,447 transactions (4%), which were primarily secure messaging 10,505 (31%) and reviewing labs results 8,250 (24%). Overall, adolescents had substantially different patterns of use (X^2 5121.2; *p*<.001) than parents of younger children. Female teens were far more likely to use the portal than their male counterparts (X^2 1329.6; *p*<.001 The adolescent patients were significantly more likely to look at their lab results and less likely to use secure messaging than parent users. Both groups used the portal very infrequently to refill prescriptions, look at immunizations, or inspect growth charts.

Conclusion:

Patient portals were designed to give patients secure access to health information and to permit secure methods for communication with healthcare providers. Given most teenagers' familiarity with daily electronic communication on mobile devices, it is reasonable to assume portal access provides an opportunity to engage adolescents with the healthcare system. The findings of this study contrast with Thompson et al., who reported summary level use, without race/ethnicity data, and found teen activations were higher than that of proxy parents and that teens used the portal at a high rate (Thompson et al., 2016). It is possible that the differences in adolescent use between the two studies may reflect a digital divide by race, ethnicity, and socioeconomic factors that persists within EHR portals (Bush et al., 2018; Goel et al., 2011).

This analysis of patient portal audit records demonstrates the majority of both proxies and patients use was for secure messaging, appointment setting functions, and reviewing laboratory results. Adolescents were significantly more likely to use the portal to review laboratory results than proxy users and less likely to use secure messaging. More research is needed to determine if adolescents view barriers to secure messaging and to see if patient-use is similar in a larger sample.

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Abstract Summary:
This analysis of pediatric patient portal use demonstrates parent proxies and adolescent patients' portal use was for secure messaging, making appointments, and reviewing laboratory results. While adolescents were significantly more likely to view laboratory results than parents, overall they are less likely to activate accounts, indicating barriers to use exist.

Content Outline:
Introduction:

1. The patient portal (portal) allow individuals to send secure messages to clinical staff, view their health records (e.g., diagnoses, laboratory results, and medications list), schedule appointments, request prescription refills, and manage bills.
2. Adolescents have been early adopters of technology.
3. Portal technology might help to engage adolescents in their health care by providing mobile health education, supporting transition of care, and permitting confidential messaging and communication

Body with main points:

1. The purpose of this study was to evaluate adolescent portal utilization patterns and whether they differed from parent proxy use for younger patients.
2. Retrospective, cross-sectional analysis of electronic audit records from 2011 – 2017 of patient portal access was conducted at a tertiary academic pediatric hospital and its affiliated network, which draws from three counties in Southern California.
3. During the study period, 4930 accounts had 837,087 transactions. In this clinic, roughly 45% of patient parents (0-11) who were offered an activation code, logged into the portal; adolescent activation was under 20%.
4. The parents use the portal primarily for secure messaging 352,955 (42%); appointments (setting, canceling, reviewing) 150,926 (18%); and reviewing laboratory results 115,507 (14%).
5. Adolescent patients accounted for 43,447 transactions (4%), which were primarily secure messaging 10,505 (31%) and reviewing labs results 8,250 (24%).

Conclusion:

1. Adolescents had substantially different patterns of use than parents of younger children
2. Adolescent patients were significantly more likely to look at their lab results and less likely to use secure messaging than parent users.
3. Both groups use the portal very infrequently to refill prescriptions, look at immunizations, or inspect growth charts.

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