

Use of Health Information Technology by Rhode Island Physicians and Advanced Practice Providers, 2019

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ABSTRACT

BACKGROUND: The Rhode Island Department of Health (RIDOH) has administered the Health Information Technology (HIT) Survey since 2009 to report clinician-level process measures relating to HIT adoption and use.

METHODS: RIDOH administers the Rhode Island HIT Survey to all licensed independent practitioners. Descriptive analyses examined HIT adoption and the clinician experience working with HIT.

RESULTS: Most physician and Advanced Practice Provider (APP) respondents report using an EHR (92.5% and 94.3%) and e-prescribing medications (84.1% and 81.6%). Less than half of physicians (40.9% or n=565) and APPs (35.4% or n=195) who prescribe controlled substances currently submit controlled substance prescriptions electronically. A higher percentage of physicians, compared to APPs, reported experiencing HIT-related stress (80.9% and 66.6%). The overall prevalence of physicians reporting symptoms of burnout was 29.7% (n=539) but varied between specialties.

DISCUSSION: As of 2019, the majority of Rhode Island physicians have adopted EHRs and e-prescribing. Adoption plateaued after 2012, and challenges persist in integrating existing technology into practice.

KEYWORDS: health information technology, e-prescribing, controlled substances burnout

INTRODUCTION

Most hospitals and physicians in the United States have adopted electronic health records (EHRs),¹ and recent focus has shifted from adoption and basic use to optimizing use, integrating systems with other forms of health information technology (HIT), and understanding the impact of these technologies on both patients and physicians.

While EHRs have been associated with improved documentation quality and administrative efficiency,² there have also been drawbacks. EHRs have been reported to reduce the quality of clinician-patient interactions and to increase the regulatory and administrative burden on clinicians.³⁻⁵ Specifically, many Rhode Island physicians report that, while

they agree that EHRs may improve the care their patients receive, EHRs impact their job satisfaction and increase their take-home workload.⁶

Recognizing the importance of HIT for both physicians and patients, the Rhode Island Department of Health (RIDOH) has administered the HIT Survey since 2009. The Rhode Island HIT Survey data provide a unique opportunity to examine longitudinal trends in EHR adoption as well as to report on emerging topics related to HIT.

METHODS

RIDOH's Healthcare Quality Reporting Program administers the Rhode Island HIT Survey to all licensed independent practitioners. This public reporting program is legislatively mandated, and HIT Survey data are used to report clinician-level process measures relating to HIT adoption and use. The survey was distributed to physicians annually from 2009 to 2015, and biennially since 2015. In 2013, RIDOH expanded the survey to advanced practice providers (APPs), including advanced practice registered nurses and physician assistants. The 2019 survey was administered to 4,266 physicians and 1,977 APPs.

To develop the 2019 survey, we collaborated with RI healthcare state agencies and other stakeholders to refine the survey tool for the 2019 survey. We piloted new questions with a small group of clinicians to obtain feedback about whether the questions were easily understood and relevant to clinical practice and then modified the questions based on their feedback.

We administer the survey electronically. We send a hard copy notification to all clinicians with a link to the electronic survey and an email notification to those with email addresses on file. Clinicians receive up to two email reminders. The 2019 survey was open between April 22, 2019 and May 10, 2019.

The HIT Survey data are used to calculate four summary measures of HIT implementation and use: (1) Licensed Independent Practitioners (LIPs) with EHRs, defined as the percent of LIPs with access to EHR components, including functions such as visit notes, lab orders or prescriptions⁷; (2) LIPs who are e-prescribing, defined as the percent of LIPs transmitting prescriptions electronically to a pharmacy⁷ (this measure included only those clinicians who

reported that they prescribe medications, and hospital-based physicians were asked to only consider prescriptions sent to community-based pharmacies, versus those sent to the hospital pharmacy); (3) **LIPs who are e-prescribing controlled substances**, defined as the percent of LIPs transmitting controlled substance prescriptions electronically to the pharmacy (this measure considered only those clinicians who reported that they prescribe controlled substances and hospital-based physicians were again asked to only consider prescriptions sent to community-based pharmacies); and (4) **LIPs who are experiencing HIT-related stress**, defined as the percent of respondents reporting stress in at least one of the three HIT-related stress questions, which included whether the EHR adds to the frustration of one's day, sufficiency of time for documentation, and how they describe the amount of time spent on the EHR at home. The three HIT-related stress measures were adopted from the Mini z, which is a validated instrument that measures job satisfaction, stress, burnout, and work control, among other domains, and which was developed from the Physician Work Life Study.⁸⁻¹²

In addition to the four summary measures, the HIT Survey captured information about clinician burnout. Burnout was measured on a 5-point scale using a validated single-item measure from the Mini z.⁸⁻¹² This measure is based on clinicians' self-assessment of their experience, rather than a clinical diagnosis. Respondents were asked to select one of the following: (1) "I enjoy my work. I have no symptoms of burnout;" (2) "I am under stress, and don't always have as much energy as I did, but I don't feel burned out;" (3) "I am definitely burning out and have one or more symptoms of burnout, e.g., emotional exhaustion;" (4) "The symptoms of burnout I am experiencing won't go away. I think about work frustrations a lot;" and (5) "I feel completely burned out. I am at the point where I may need to seek help." Respondents were considered to have "one or more symptoms of burnout" (≥ 3 on the 5-point scale) or "no symptoms of burnout" (≤ 2 on the 5-point scale).

RESULTS

The physician response rate was 43% (n=1,835), and the APP response rate was 32% (n=633). Most physician and APP respondents report using an EHR (92.5% and 94.3%, respectively). Among the physician respondents, 66% (n=1,216) were office-based and 34% (n=619) were hospital-based. There has been an upward trend in EHR use among physicians and APPs since the survey was first administered in 2009, but uptake has leveled off in recent years (Figures 1 and 2). Among physicians who use EHRs, about a quarter (26.6%, n=448) use two different systems or vendors and 15.9% use three or more systems or vendors (n=267). Epic Systems, the most frequently used EHR vendor in Rhode Island, is used by the majority of hospital-based physicians

Figure 1. Prevalence of electronic health records (EHRs) and e-prescribing among physician respondents, 2009–2019

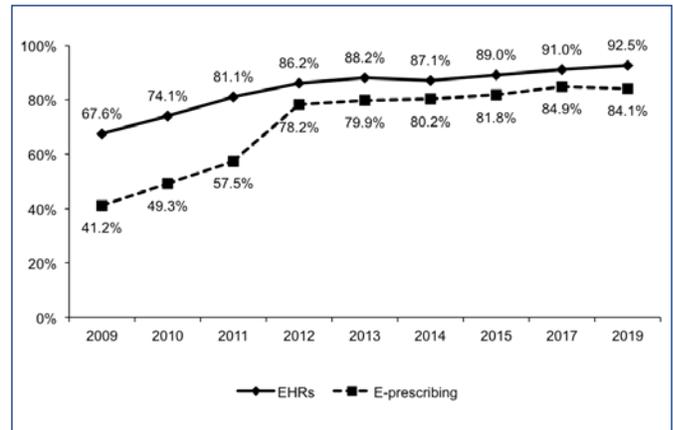
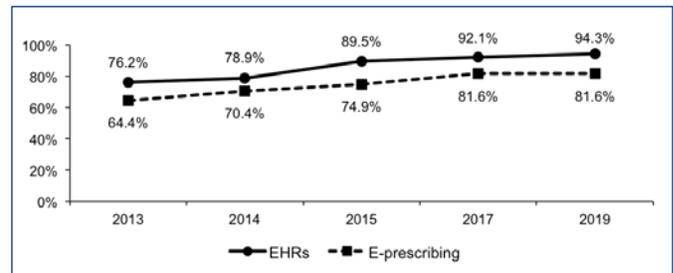


Figure 2. Prevalence of electronic health records (EHRs) and e-prescribing among advanced practice provider respondents, 2013–2019



(57.6%, n=344) and a quarter of office-based physicians (26.0%, n=289).

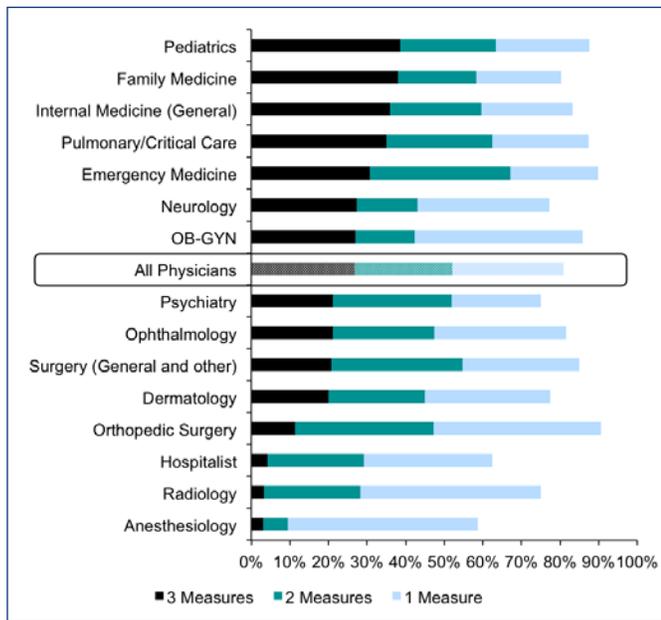
Similar to EHR use, the prevalence of e-prescribing increased among respondents over the past 10 years – from 41% in 2009 to 84% in 2019 – but uptake has leveled off since 2012 (Figures 1 and 2). The majority of office-based physicians who prescribe medications use e-prescribing (87.5% or n=1,023), with 59.2% (n=692) reporting that they "always" transmit prescriptions electronically to the pharmacy. Among office-based physicians who prescribe medications, one in ten reports that their system is unable to transmit prescriptions electronically (9.4% or n=110). Among hospital-based physicians who prescribe medications, just over three quarters (76.6% or n=321) use e-prescribing, with 28.4% (n=119) reporting they "always" transmit prescriptions electronically to a community pharmacy.

Less than half of physicians (40.9% or n=565) and APPs (35.4% or n=195) who prescribe controlled substances currently submit controlled substance prescriptions electronically. Among physicians who e-prescribe medications and prescribe controlled substances, over a third have systems that do not have the functionality to send controlled substance prescriptions electronically (37.2% of office-based and 34.7% of hospital-based physicians). About half of physicians (50.4%, n=912) were unaware of a 2017 Rhode Island

law that requires e-prescribing of all controlled substances by January 2020.

We asked physicians about their experience with HIT-related stress and burnout. A higher percentage of physicians, compared to APPs, reported experiencing HIT-related stress (80.9% and 66.6%, respectively). Nearly three-quarters of physicians (70.5% or n=1,164) “agreed” or “strongly agreed” that the EHR adds to their daily frustration. When asked about the amount of time spent on the EHR at home, 43.5% (n=718) of physicians reported that the time they spent on the EHR at home was “moderately high” or “excessive.” A similar proportion of physicians (46.0% or n=760) reported their sufficiency of time for documentation as “poor” or “marginal.” There is a high prevalence of HIT-related stress across the 15 most common specialties (Figure 3). In seven specialties, more than a quarter of physicians reported experiencing all three measures of HIT-related stress. The overall prevalence of physicians reporting symptoms of burnout was 29.7% (n=539), but varied between specialties. The highest prevalence of burnout was noted among emergency medicine physicians, with 46.1% (n=41) reporting symptoms of burnout. Orthopedic surgeons reported the lowest prevalence of burnout – 18.6% (n=11).

Figure 3. Percent of physician respondents with electronic health records (EHRs) who reported experiencing one or more measures of health information technology-related stress, by specialty, among the 15 most common specialties



DISCUSSION

Over the past ten years, Rhode Island’s HIT Survey has assessed changes in the proportion of clinicians using EHRs and e-prescribing. We observed that EHR use and e-prescribing rose steadily after the passage of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009, before plateauing around 2012. While most Rhode Island clinicians have adopted EHRs, e-prescribing has hovered at around 80% among physicians who prescribe medications. The prevalence of consistent e-prescribing controlled substances is even lower, with less than half of clinicians sending these prescriptions electronically.

Rhode Island passed a law in 2017 requiring the e-prescribing of all controlled substances starting on January 2, 2020.¹³ E-prescribing controlled substances has the potential to improve the safety of pain management by reducing prescription forgery, eliminating illegible handwriting, facilitating the identification of multiple prescribers before dispensing medication, and streamlining the prescription process.^{14,15} A recent study found that a New York mandate to e-prescribe controlled substances was associated with a significant decrease in the number of opioid prescriptions at a tertiary-care hospital.¹⁶ While this type of mandate has many potential positive impacts, many Rhode Island physicians are unprepared for the quickly approaching deadline. The majority of physicians who prescribe controlled substances in Rhode Island are not doing so electronically, with many citing limited system functionality as the reason. Additionally, half of physician respondents were unaware of the law altogether. Prescribers who feel that implementing the e-prescribing mandate would cause undue economic hardship may apply for a time-limited waiver. Going forward, Rhode Island should continue to publicize the new e-prescribing mandate and should consider steps to assist physician practices that are not prepared or facing undue economic hardship to incorporate this change into their workflow.

While it is important to harness HIT resources to address emerging health needs, we should also consider the role mandates for expanded HIT use play in physician stress levels. As observed in this study, the majority of Rhode Island physicians are experiencing at least one source of HIT-related stress. A previous study using the results of the 2017 HIT survey found that the presence of any one of the three HIT-related stress measures was associated with twice the odds of burnout among physicians.¹⁷ Previous research on physician burnout found that various workplace factors were related to experiencing burnout, including loss of autonomy at work, decreased control over their work environment, and the time required for administrative tasks.¹⁸ While previous HIT mandates have been successful in prompting the adoption and use of EHRs, it is important to consider how additional requirements will impact clinician workflows and HIT-associated stress.

There are various limitations to this data. First, all clinician data are self-reported. Second, recent survey years have had a lower response rate than previous survey years. Survey response rates between 2013 and 2015 were above 60%, whereas 2017 and 2019 rates hovered at 43%. We suspect this dip in response rate is tied to the transition to biennial survey administration in 2015. Third, the fact that RIDOH distributes the survey may influence how clinicians respond to more personal questions about HIT-related stress and burnout. Finally, distributing the survey electronically may bias the sample by not including clinicians without computer access.

These findings show that while Rhode Island has come a long way in HIT adoption, there are continued challenges in integrating existing technology into clinician workflows. Future surveys will help us to understand how HIT use is changing to meet emerging health demands and the impact it has on the clinician experience.

The results shared above represent a fraction of the findings from the 2019 HIT survey. The full report can be accessed at: <https://health.ri.gov/publications/annualreports/HealthInformationTechnologyPhysicianSurveySummary.pdf>

The HIT Survey data is also publicly available as a de-identified research data file. Please contact Emily Cooper, MPH at: ecooper@healthcentricadvisors.org for more information.

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