Since the adoption of the Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009, policy makers and payors have put forth an increased effort to support hospitals and physicians in the adoption and effective use of health information technology (HIT). One of the key components of the HITECH Act is the use of electronic health records (EHRs).

The HITECH Act authorizes both Medicare and Medicaid to offer incentive payments to physicians and hospitals that use EHRs. This incentive program, often referred to as Meaningful Use, requires providers to achieve specific standards for use of EHRs and other HIT during clinical practice; standards are set by the Federal government. To date, Medicare and Medicaid have provided total payments of $4 billion and $2.4 billion, respectively, to eligible professionals. Since the implementation of these incentive payments, HIT adoption and use has increased markedly. Beginning in 2015, providers who fail to meet Meaningful Use benchmarks will be subject to payment adjustments by Medicare.

The rising number of providers using HIT and qualifying for incentive payments has led to an increased interest in the effect of HIT use on the quality of care patients receive and its impact on physician satisfaction. Although data show that physicians believe that EHR use improves patients’ care, the impact on physician satisfaction seems to be negative.

The Rhode Island Department of Health (HEALTH) has been surveying physicians about their use of HIT annually since 2008. In 2013, HEALTH expanded this survey to include advanced practice registered nurses (APRNs) and physician assistants (PAs). The Rhode Island HIT Survey data provide an opportunity to examine longitudinal trends in EHR adoption and to evaluate physicians’ perceptions of the impact on patient care and job satisfaction.

HEALTH administers the survey electronically, sending hard copy notifications to all LIPs and an email notification and up to two reminders to those LIPs with email addresses on file. In 2014, the survey became a requirement of the biennial physician license renewal process, meaning that physicians could not complete their license renewal without attesting to their completion of the HIT Survey.

The HIT Survey data are used to calculate five measures of HIT implementation and use: (1) LIPs with EHRs (percent of LIPs with access to EHR components, including functions such as visit notes, lab orders or prescriptions), (2) LIPs with ‘qualified’ EHRs (percent of LIPs with EHRs that have specific functionality and are certified by the Office of the National Coordinator for HIT), (3) Basic EHR functionality use (among LIPs with EHRs, a scale of 0-100 based on EHR functionality and clinical use relating to documentation and results management), (4) Advanced EHR functionality use (among LIPs with EHRs, a scale of 0-100 based on EHR functionality and clinical use relating to decision support, external communication, order management, and reporting), and (5) LIPs who are e-prescribing (percent of LIPs transmitting prescriptions or medication orders electronically to a pharmacy). Providers who do not complete the survey are reported as not using HIT.

RESULTS
In 2014, the survey period was April 30, 2014 through June 30, 2014. The physician response rate was 68.3% (n=2,567) and the APRN and PA response rate was 43.9% (n=662).

Table 1.

<table>
<thead>
<tr>
<th>Measure</th>
<th>HIT Adoption Measures – 2014</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Physician</td>
</tr>
<tr>
<td></td>
<td>N=2,567</td>
</tr>
<tr>
<td>1. EHR, n (%)</td>
<td>2,236 (87.1)</td>
</tr>
<tr>
<td>2. Qualified EHR, n (%)</td>
<td>1,261 (49.1)</td>
</tr>
<tr>
<td>3. Basic EHR Use, mean (N)*</td>
<td>77.0 (2,236)</td>
</tr>
<tr>
<td>4. Advanced EHR Use, mean (N)*</td>
<td>62.6 (2,236)</td>
</tr>
<tr>
<td>5. e-Prescribing, n (%)</td>
<td>1,884 (80.2)</td>
</tr>
</tbody>
</table>

*Based on the number of respondents reporting that they have an EHR (measure 1).
We calculated the five measures for all three provider groups (Table 1). Physicians score highest on all five measures, compared to APRNs and PAs: they have the highest percentage of EHR use (87.1%), the highest prevalence of qualified EHR use (49.1%), the highest mean basic EHR use (77.0 out of 100) and the highest prevalence of e-prescribing (80.2%) among the three provider types. APRNs show the highest mean advanced EHR use among the provider types. These measures show an upward trend since the survey was first administered to physicians in 2009 (Figure 1). During this six-year period, e-prescribing has increased by 94.7%, from 41.2% to 80.2%, and the use of ‘qualified’ EHRs has increased by 292.8%, from 12.5% to 49.1%.

Hospital-based physicians outperform office-based physicians for four of the five measures. A higher percentage reported having an EHR (94.7% compared to 82.1%), using a qualified EHR (54.2% compared to 45.8%), and using e-prescribing (82.8% compared to 78.7%). Mean advanced EHR functionality was also higher among hospital-based physicians compared to office-based physicians (72.4 compared to 55.1 out of 100 points).

We asked physicians about their perception of the effect of EHR use on various aspects of their job performance and satisfaction (Figure 2). Nearly two-thirds of respondents agreed or strongly agreed that EHRs improve the care their patients receive (62.0% or n=1,344) and their ability to do quality improvement work (65.6% or n=1,411); however, only 41.2% (n=891) agreed or strongly agreed that EHRs improve their job satisfaction. A similar proportion of physicians, 40.5% (n=855), reported EHR use increased their take-home workload.

**DISCUSSION**

EHR adoption has accelerated nationwide and in Rhode Island over the past six years as the incentives continue to increase and the penalties begin to loom. The most recent data show that HIT adoption among Rhode Island physicians is slightly higher than the nation (87% compared to 78%\(^2\)). Even with these high numbers, pressure on physicians to adopt EHRs and further incorporate them into their current workflow is only growing.\(^4\) With this rising demand on physicians to use EHRs it is important to track not only the impact on patients, but also the impact on physicians.

Although most Rhode Island physicians believe that using an EHR improves their ability to care for their patients and perform quality improvement work, few agree that it improves their job satisfaction. These findings are consistent with national data; King et al. found that 78% of physicians felt that EHR use improved patient care.\(^5\) Similarly, Friedberg et al. found that while 61% reported that EHR use improved patient care, only 35% reported that it improved job satisfaction.\(^5\) This may be due to the increase in take-home work many survey respondents reported experiencing as a result of using an EHR. Other potential reasons for low physician satisfaction include the impact EHRs have on workflow and face-to-face patient interactions.\(^5\)

With the high rates of HIT adoption, both in Rhode Island and nationally, the focus of HIT tracking has begun to shift from adoption to use.

In recent years, the HIT Survey’s authors have revised the instrument to further align with guidelines for use set forth by the payors and expanded the survey to include APRNs and PAs. This expansion is allowing us to begin to track longitudinal trends among in HIT adoption among APRNs and PAs.

We note a few limitations to these data. First, all provider data are self-reported. Second, communication of the survey requirement to physicians changed this year, when it was incorporated into the licensure process, and that change may have affected response rates. The survey notification was embedded within the licensure renewal request. Third,
there is an inherent bias in having people respond to a survey about computer use using a computer-based survey. Finally, because we make the assumption that non-respondents are not using any HIT, the prevalence of HIT use among Rhode Island LIPs may be higher than reported.

Despite these limitations, these results show that Rhode Island physicians and other providers continue to incorporate EHRs into their workflows. Future surveys will help us to delineate the pace and extent of EHR adoption and the impact it has on patient care and provider satisfaction. Revisions to the survey will also allow us to look at whether Rhode Island providers are meeting the Meaningful Use benchmarks, as defined by Medicare and Medicaid.

References

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