Health information technology (HIT) has the potential to improve healthcare quality by increasing compliance with recommended standards, reducing medical errors and otherwise improving care coordination. As a result, local and national payors are increasingly providing incentives for physicians' adoption and “meaningful use” of electronic medical records (EMRs). Recognizing that policies to accelerate EMR uptake make it increasingly important to accurately measure and track HIT adoption, the Rhode Island Department of Health selected physician HIT adoption as a focus area for the state's legislatively-mandated healthcare quality reporting program.

Since 2008, the Department of Health has surveyed physicians annually to collect information about their adoption and use of EMRs and e-prescribing. Survey results for individual physicians and the state, as a whole, are published on the Department of Health's website each March. This report summarizes the statewide results from the 2011 survey and presents longitudinal trends between 2009 and 2011.

### Methods

The Physician HIT Survey was piloted in 2008, and the revised survey has been administered annually since 2009. The instrument was developed in collaboration with local stakeholders in order to consolidate data requests for physicians and synchronize measurement efforts locally. The instrument draws upon similar efforts in Massachusetts and at the national level. It includes physician demographics and data for five measures of EMR and e-prescribing adoption (Table 1). Detailed measure specifications have been described previously and are also available through the Department of Health’s public reporting program. The EMR functionality measures are tailored, as needed, to reflect hospital- or office-based clinical practice.

The Department of Health administered the 2011 Physician HIT Survey electronically in January and February 2011 to 3,388 physicians licensed in Rhode Island, in active practice, and located in Rhode Island, Connecticut or Massachusetts. All 3,388 physicians received a hard copy notice mailed to the primary address on file with their license. A subset of 2,953 physicians also received email notifications and up to two reminders, if they...

### Table 1: Rhode Island Physician HIT Survey Measures

<table>
<thead>
<tr>
<th>Measure (Scoring)</th>
<th>Definition</th>
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<tbody>
<tr>
<td>1: Physicians with EMRs (%)</td>
<td>Defined as “integrated electronic clinical information systems that track patient health data, and may include such functions as visit notes, prescriptions, lab orders, etc.” May be in their main practice or another location.</td>
</tr>
<tr>
<td>2: Physicians with ‘qualified’ EMRs (%)</td>
<td>EMRs with specific clinical documentation, reporting, results management, decision support, and e-prescribing functions, as well as Office of the National Coordinator for HIT certification.</td>
</tr>
<tr>
<td>3: Basic EMR functionality use (0-100 scale)</td>
<td>Among physicians with EMRs, scores ranging from 0-100 based on the frequency of use of various clinical documentation and results management functionalities.</td>
</tr>
<tr>
<td>4: Advanced EMR functionality use (0-100 scale)</td>
<td>Among physicians with EMRs, scores ranging from 0-100 based on the frequency of use of various decision support, external communication, order management, and reporting functionalities.</td>
</tr>
<tr>
<td>5: Physicians who are e-prescribing (%)</td>
<td>Transmission of prescriptions or medication orders electronically to the pharmacy.</td>
</tr>
</tbody>
</table>
provided the Department of Health with email addresses during licensure and had not previously opted out of receiving email from SurveyMonkey. The response rate was 62.9% (n=2,132).

**RESULTS**

Survey results are publicly reported by the Department of Health on the Healthcare Quality Reporting Program's website. The majority of the 2,132 respondents (n=1,729, 81.1%) report having EMRs, although only approximately one in four (n=576, 27.0%) have EMRs that meet the criteria for ‘qualified’ systems (Table 2). The 1,729 respondents with EMRs report higher levels of basic functionalities than advanced functionalities, as expected, although both scores average greater than 50 on a 100-point scale (basic functionality use: 73.2 points; advanced functionality use: 51.9 points). Nearly six out of every 10 respondents report e-prescribing (n=1,228, 57.6%).

Physicians who do not respond to the survey are informed that participation in the survey is required, so non-response will be equated with lack of HIT adoption and reported as “failing” each measure. When the 1,256 non-respondents are included in the measure denominators, estimates decrease: approximately half of all 3,388 physicians have EMRs (51.1% vs. 81.1% among respondents), less than one in five have ‘qualified’ EMRs (17.0% vs. 27.0%), and approximately one in three e-prescribe (36.2% vs. 57.6%). (Because non-respondents are reported as not having EMRs, they do not have scores for the EMR functionality measures.)

All five publicly-reported measures increased steadily between 2009 and 2011 (Figure 1), with the greatest increases in e-prescribing (16.3%), ‘qualified’ EMRs (14.5%) and EMRs (13.5%).

**DISCUSSION**

The vast majority of the 2,132 physicians responding to the Rhode Island Department of Health’s 2011 Physician HIT Survey—81.1%—report having EMRs in one or more of their practice locations, an increase of 13.5% over three years. Although estimates of EMR adoption fall to 27.0% when applying strict criteria for ‘qualified’ EMRs, longitudinal data reflect consistent increases in EMR penetration since 2009 and also demonstrate that the state’s EMR adoption is keeping pace with national estimates. Recent national surveys estimate EMR adoption to be 12% for hospitals (in 2009) and 48% for office-based physicians (2009 and preliminary 2010). Despite high EMR penetration, the use of specific EMR functionalities and e-prescribing is less widespread and represents an opportunity for improvement.

Unique local policies and incentives may contribute to increasing EMR adoption rates. First, Rhode Island is the only state to systematically collect and publicly report HIT adoption data.

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**Table 2: Rhode Island Physician HIT Survey Measure Scores, 2011 (N=2,132)**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Physicians with EMRs, % (n=2,132)</td>
<td>1,729 (81.1%)</td>
</tr>
<tr>
<td>2: Physicians with ‘qualified’ EMRs, % (n=2,132)</td>
<td>576 (27.0%)</td>
</tr>
<tr>
<td>3: Basic EMR functionality use, mean (n=1,729)</td>
<td>73.2</td>
</tr>
<tr>
<td>4: Advanced EMR functionality use, mean (n=1,729)</td>
<td>51.9</td>
</tr>
<tr>
<td>5: Physicians who are e-prescribing, % (n=2,132)</td>
<td>1,228 (57.6%)</td>
</tr>
</tbody>
</table>

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**Figure 1:** HIT Adoption Trends among Physician HIT Survey Respondents, 2009-2011

![Figure 1](image_url)
for 100% of licensed physicians. Second, local commercial health plans provide fee increases or incentive payments to primary care physicians (PCPs) who implement EMRs. These payments are based, in part, on physicians’ responses to the Department of Health’s Physician HIT Survey and may increase the likelihood that PCPs will respond. Third, the state has multiple physician office redesign projects encouraging EMR adoption and use, including two patient-centered medical home projects.

Physicians with EMRs may be more likely to respond to the survey, in part due to the commercial health plans’ payments, and also for logistical reasons related to completing an electronic survey. Physicians with EMRs may be more likely to have computers and have access to the Internet. On the other hand, because physicians are informed that non-response will be reported as lack of HIT adoption, some physicians without HIT may elect not to respond because failing the measures is, in fact, a correct reflection of their EMR and e-prescribing use.

This survey has enabled Rhode Island to establish reliable baseline data and metrics upon which to measure changes in HIT adoption over time, increasing local transparency and setting an important precedent for other states. We expect to see continued increases in local HIT adoption, due, in part, to these public reporting efforts (market forces), the local commercial health plans’ ongoing PCP incentive payments and Medicare and Medicaid initiatives slated to begin in 2011. These new initiatives will reimburse hospitals and outpatient physicians for “meaningful use,” with the goal of increasing physicians’ adoption of HIT functionalities that optimize patient safety. We will continue to track improvement over time using the publicly-reported metrics, and hope to see increases in both HIT penetration and the EMR functionality metrics.

REFERENCES

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Disclosure of Financial Interests
The authors and their spouses/significant others have no financial interests to disclose.

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