2017 Health Information Technology Survey

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About the Health Information Technology Survey

The Rhode Island Department of Health (RIDOH) has administered the Health Information Technology (HIT) Survey to all licensed physicians in Rhode Island since 2009. Starting in 2013, RIDOH expanded the HIT Survey to include all licensed advanced practice registered nurses (APRNs) and physician assistants (PAs).

The HIT Survey examines the distribution and use of health information technology, such as electronic health records (EHRs), in Rhode Island. Though EHRs are associated with beneficial outcomes,[1] they have also been reported to reduce the quality of the provider-patient interaction.[2]

Over the past eight years, the RIDOH HIT Survey has assessed and monitored changes in the proportion of providers with access to EHRs and who transmit prescriptions electronically, or e-prescribe. Additionally, the RIDOH HIT Survey explores the impact of technological advancements and federal legislation on HIT and provider workflow.

The 2017 HIT Survey includes several new measures, exploring associations between HIT and self-reported symptoms of burnout, documentation practices for vulnerable patients, and physician perceptions of online physician-selection tools. In the sections that follow, the 2017 HIT report will explore various dimensions of HIT use in Rhode Island.
Physician Summary Measures

The 2017 Physician Health Information Technology (HIT) Survey was administered to 4,197 physicians licensed in Rhode Island, in active practice, and located in Rhode Island, Connecticut, or Massachusetts. The survey received a total of 1,792 responses, for a response rate of 42.7%.

To describe the prevalence, use and impact of HIT among physicians in Rhode Island, we report five composite measures: 1) physicians with electronic health records (EHRs), 2) physicians who e-prescribe, 3) use of EHR functionality, 4) use of EHR for patient engagement, and 5) physicians experiencing HIT-related stress. Aggregate results for these measures are in Table 1 (page 4). Refer to the measures specifications document for a description of how the measures were calculated and practitioner level report for individual physician results.

Table 1. Publicly-reported measures for the 1,792 physician respondents

<table>
<thead>
<tr>
<th>Measure</th>
<th>Survey respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician with EHRs, n (%)^2</td>
<td>1,792, 1,630 (91.0%)</td>
</tr>
<tr>
<td>Physicians who e-prescribe, n (%)^3</td>
<td>1,682, 1,428 (84.9%)</td>
</tr>
<tr>
<td>Use of EHR functionality (0-100), median^4</td>
<td>1,630, 50.0</td>
</tr>
<tr>
<td>Use of EHR for patient engagement (0-100), median^5</td>
<td>1,630, 53.8</td>
</tr>
<tr>
<td>Physicians experiencing HIT-related stress^6</td>
<td>1,481, 1,137 (76.8%)</td>
</tr>
</tbody>
</table>

^http://www.health.ri.gov/publications/metadata/HealthInformationTechnologySurvey.pdf

**http://www.health.ri.gov/publications/annualreports/HealthInformationTechnologyPhysicianSurvey.pdf

Note: The practitioner-level report does not include an individual-level measure of HIT-related stress

September 2017
**Table 2 (page 5)** below stratifies the five publicly-reported EHR summary measures by practice setting (office versus hospital) and, among office-based physicians, by specialty (primary care physician [PCP] versus non-PCP).

**Figure 1 (page 6)** compares this year’s EHR and e-prescribing results to data from prior survey years. **Figure 2 (page 6)** shows the survey response rate from 2009 to 2017.

**Table 2. Physician publicly-reported measures, by practice setting and office-based specialty**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Setting</th>
<th>Office (N=1,180)</th>
<th>Hospital (N=612)</th>
<th>Office-based specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians with EHRs, n (%)¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,037 (87.9%)</td>
<td>593 (96.9%)</td>
<td>483 (92.5%)</td>
</tr>
<tr>
<td>Physicians who e-prescribe, n (%)²</td>
<td></td>
<td>983 (85.2%)</td>
<td>445 (84.3%)</td>
<td>472 (91.3%)</td>
</tr>
<tr>
<td>Use of EHR functionality (0–100), median³</td>
<td></td>
<td>53.0</td>
<td>43.6</td>
<td>59.9</td>
</tr>
<tr>
<td>Use of EHR for patient engagement (0–100), median⁴</td>
<td></td>
<td>56.7</td>
<td>37.4</td>
<td>63.8</td>
</tr>
<tr>
<td>Physicians experiencing HIT related-stress⁵</td>
<td></td>
<td>763 (81.4%)</td>
<td>374 (68.8%)</td>
<td>375 (86.7%)</td>
</tr>
</tbody>
</table>

¹ EHR: Integrated electronic clinical information system that tracks patient health data, and may include such functions as visit notes, prescriptions, lab orders, etc.

² Excludes physicians who responded that prescribing was not applicable to their practice.

³ EHR functionality: Functions could include activities related to results management, decision support, and interoperability. Scores range from 0-100, with 100 indicating greatest use.

⁴ Patient engagement: Physician use of EHR to communicate and interact with patients. Scores range from 0-100, with 100 indicating greatest use.

⁵ HIT-related stress: Physicians were asked about three measures of HIT-related stress—sufficiency of time for documentation, EHR-related frustration, and time spent on the EHR at home; they were categorized as experiencing HIT-related stress when at least one measure was identified as causing stress. This measure is not reported at the individual provider level.
The prevalence of EHRs has increased from 67% in 2009 to 91% in 2017, but uptake has leveled off in recent years. A similar pattern is seen for e-prescribing.

Compared to previous survey years, the 2017 HIT Survey had a substantially lower response rate. The reduced response rate may be due, in part, to not administering the survey in 2016 and fewer physicians accessing the email link to the survey.

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7 The HIT Survey was not conducted in 2016.
E-Prescribing Practices and Use of the Prescription Drug Monitoring Program

Electronic-prescribing, or e-prescribing, is a computerized framework that enables clinicians to send prescriptions to participating pharmacies electronically, instead of by fax, or mail or paper delivery.[3] E-prescriptions tend to be more accurate and more legible, possibly reducing errors.[4] The Centers for Medicare & Medicaid Services (CMS) state that e-prescribing “is an important element in improving the quality of patient care.”[3]

The Health Information Technology (HIT) Survey has measured use of e-prescribing among Rhode Island physicians. Figure 3 (page 8) shows how often office-based physicians transmit prescriptions electronically to a pharmacy. The percent of office-based physicians transmitting prescriptions electronically for more than half of their patients increased from 69.3% in 2015 to 74.5% in 2017. Figure 4 (page 8) shows how often hospital-based physicians transmit prescriptions electronically to their hospital pharmacy and to an outside or community-based pharmacy. Compared to 2015, the percent of hospital-based physicians e-prescribing to a hospital pharmacy for more than half of their patients increased by 4.2% to 62.3% in 2017. The percent of hospital-based physicians e-prescribing to a community pharmacy for more than half of their patients also increased, rising from 33.9% in 2015 to 42.1% in 2017.

In addition to measuring the prevalence of e-prescribing among Rhode Island physicians, the 2017 HIT Survey also assessed physician practices and electronic health record (EHR) functionality related to the e-prescription of controlled substances. Controlled substances are medications, such as opioids and benzodiazepines, categorized under the Controlled Substances Act (CSA) according to their respective risk for abuse potential and risk of dependence when abused.
Figure 3. Among office-based physician respondents who prescribe medications, the percent who transmit prescriptions electronically to the pharmacy (N=1,137)

- For more than half of their patients: 74.5%
- For half or fewer than half of their patients: 12.0%
- For none of their patients: 13.5%

Figure 4. Among hospital-based physician respondents who prescribe medications, the percent who electronically transmit prescriptions to their hospital pharmacy and the percent who e-prescribe to an outside or community pharmacy

- For more than half of their patients: 62.3%
- For half or fewer than half of their patients: 20.2% Hospital pharmacy (N=494) and 27.9% Outside or community pharmacy (N=456)
- For none of their patients: 30.0%

Figure 5 (page 9) shows, among the physicians who prescribe controlled substances, the percent that transmit the prescriptions electronically. About a third of office- and hospital-based physicians are able to e-prescribe controlled substances.
Figure 5. Among physician respondents who prescribe medications, the percent who prescribe controlled substances and can transmit the prescriptions electronically, by practice setting

![Bar chart showing the distribution of physicians who prescribe controlled substances and their ability to transmit prescriptions electronically by practice setting.]

Did you know that physicians started transmitting prescriptions electronically in the 1970s? [5]

Figure 6 (page 10) shows the barriers to e-prescribing controlled substances, among physicians who prescribe this type of medication. Among both hospital- and office-based physicians, the most frequently reported barrier to e-prescribing controlled substances was a lack of EHR capability.
Figure 6. Among physician respondents who prescribe controlled substances, but who are unable to transmit them electronically, the barriers to e-prescribing controlled substances, by practice setting (respondents were allowed to select more than one).

New to the 2017 HIT Survey, Figure 7 (page 11) shows the percent of office-based physicians who consult the Prescription Drug Monitoring Program (PDMP) in four different patient scenarios. Office-based physicians report consulting the PDMP most often for 1) a refill prescription for a new patient (64.9%) and 2) a new prescription for a new patient (64.2%). Last, Figure 8 (page 11) shows how often hospital-based physicians consult the PDMP when prescribing controlled substances.
Figure 7. Among office-based physician respondents who prescribe controlled substances, the percent who consult the Rhode Island PDMP before prescribing opioids or benzodiazepines in the following situations:

- A REFILL prescription for an ESTABLISHED patient (N = 822)
  - Use the PDMP in more than half of these situations: 45.5%
  - Use the PDMP in fewer than half of these situations: 34.7%
  - Do not use the PDMP in these situations: 19.8%

- A REFILL prescription for a NEW patient (N = 712)
  - Use the PDMP in more than half of these situations: 64.9%
  - Use the PDMP in fewer than half of these situations: 18.3%
  - Do not use the PDMP in these situations: 16.9%

- A NEW prescription for an ESTABLISHED patient (N = 838)
  - Use the PDMP in more than half of these situations: 54.7%
  - Use the PDMP in fewer than half of these situations: 25.7%
  - Do not use the PDMP in these situations: 19.7%

- A NEW prescription for a NEW patient (N = 763)
  - Use the PDMP in more than half of these situations: 64.2%
  - Use the PDMP in fewer than half of these situations: 17.4%
  - Do not use the PDMP in these situations: 18.3%

Figure 8. Among hospital-based physician respondents who prescribe controlled substances, the percent who consult the Rhode Island PDMP before prescribing opioids or benzodiazepines (N=328):

- For more than half of their patients: 38.1%
- For half or fewer than half of their patients: 42.7%
- For none of their patients: 19.2%

To learn more about the Rhode Island Department of Health’s Prescription Drug Monitoring Program, visit: [http://health.ri.gov/programs/detail.php?pgm_id=156/](http://health.ri.gov/programs/detail.php?pgm_id=156/)
Impact of Electronic Health Records

Survey respondents who indicated they have an electronic health record (EHR) were asked a series of questions about how they use their EHR and the impact the EHR has had on their practice. Respondents were also asked whether they use their EHR from other locations (such as from home or another worksite) and under what circumstances. More than three-quarters of office- and hospital-based physician respondents access their EHR from locations other than their main practice (Table 3, page 12).

Table 3. Percent of physician respondents who access their EHR from other locations (e.g., home or another work-site), by practice setting

<table>
<thead>
<tr>
<th>Response</th>
<th>Office-based (N=1,030)</th>
<th>Hospital-based (N=587)</th>
<th>Overall (N=1,617)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>87.0%</td>
<td>77.5%</td>
<td>83.5%</td>
</tr>
<tr>
<td>No – I have remote access to my EHR, but I do not need to use it</td>
<td>5.0%</td>
<td>8.9%</td>
<td>6.4%</td>
</tr>
<tr>
<td>No – I do not have remote access to my EHR</td>
<td>8.0%</td>
<td>13.6%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

More physician respondents accessed their EHR from other locations (e.g., home or another work-site) in 2017 (83.5%) than in 2015 (78.1%).

The most common circumstance under which physicians used their EHR from other locations was not being able to complete their work during regular hours (Table 4, page 13). Respondents were asked whether they agreed that using an EHR has improved certain work-related processes (Figure 9, page 13). A fairly high percentage of respondents agreed that EHRs improve many aspects of their work, including patient safety, communication among staff, and billing processes, but fewer than half agreed that it improved their job satisfaction.
### Table 4. Circumstances under which physician respondents access their EHR from other locations most often, by practice setting

<table>
<thead>
<tr>
<th>Response</th>
<th>Office-based (N=894)</th>
<th>Hospital-based (N=454)</th>
<th>Overall (N=1,348)</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I have the opportunity to work from home or another location (i.e., to adjust my work/life balance)</td>
<td>22.0%</td>
<td>22.9%</td>
<td>22.3%</td>
</tr>
<tr>
<td>When I am not able to complete my work during regular office or clinical hours</td>
<td>61.2%</td>
<td>57.3%</td>
<td>59.9%</td>
</tr>
<tr>
<td>Other</td>
<td>16.8%</td>
<td>19.8%</td>
<td>17.8%</td>
</tr>
</tbody>
</table>

### Figure 9. Percent of physician respondents who “agree” or “strongly agree” that using an EHR improves certain work-based processes, by practice setting

- **Improves billing processes**: Office-based 78.8%, Hospital-based 77.0%
- **Improves communication among the physicians and staff in my practice**: Office-based 71.1%, Hospital-based 67.3%
- **Improves patient safety**: Office-based 61.1%, Hospital-based 66.8%
- **Improves my ability to do quality improvement work**: Office-based 53.6%, Hospital-based 56.7%
- **Improves the care my patients receive**: Office-based 49.6%, Hospital-based 56.9%
- **Improves my clinical workflow**: Office-based 45.7%, Hospital-based 54.5%
- **Improves my job satisfaction**: Office-based 26.5%, Hospital-based 36.5%
Use of Health Information Technology for Patient Engagement

Physicians with and without electronic health records (EHRs) are using technology to engage with their patients. The use of an informational website—technology that does not require an EHR—is common among both office- and hospital-based physicians (Figure 10, page 14). Compared to 2015, a greater percent of office- and hospital-based physician respondents reported having an informational website for patients in 2017 (office: 63.1% vs 64.8%; hospital: 55.6% vs 64.3%).

Figure 10. Percent of physician respondents whose main practice has a website intended for patients (e.g., a website for informational or public relations purposes), by practice setting

<table>
<thead>
<tr>
<th></th>
<th>Office-based (N=1,130)</th>
<th>Hospital-based (N=588)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>64.8%</td>
<td>64.3%</td>
</tr>
<tr>
<td>No</td>
<td>25.0%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Don't know</td>
<td>10.3%</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

Figure 11 (page 15) shows how office- and hospital-based physician respondents communicate with patients outside of a face-to-face encounter. Last, Figure 12 (page 16) shows the percent of office- and hospital-based physician respondents who have and encourage their patients to use EHR-based patient interaction tools (e.g., patients accessing their own laboratory results).
Figure 11. Percent of physician respondents who personally (i.e., not their office staff) communicate with patients using each modality, outside of a face-to-face encounter, by practice setting.

Compared to 2015, messaging via a patient portal substantially increased in 2017: 24.4% to 35.2% for office-based respondents and 6.4% to 12.7% for hospital-based respondents.
Figure 12. Among physicians with EHRs, percent of respondents who have and encourage each of the following patient interaction tools, by practice setting$^1$

- After-visit summaries
  - Office-based (N=1,030): 57.7%
  - Hospital-based (N=582): 39.9%
- Patient portal
  - Office-based (N=1,030): 53.1%
  - Hospital-based (N=582): 26.3%
- Patient-specific educational resources
  - Office-based (N=1,030): 52.8%
  - Hospital-based (N=582): 39.3%
- Patient-initiated prescription refill requests
  - Office-based (N=1,030): 48.5%
  - Hospital-based (N=582): 48.5%
- Patient access to test results
  - Office-based (N=1,030): 47.6%
  - Hospital-based (N=582): 24.0%
- Patient access to medication list
  - Office-based (N=1,030): 46.1%
  - Hospital-based (N=582): 20.6%
- Secure messaging with patient using an EHR
  - Office-based (N=1,030): 42.6%
  - Hospital-based (N=582): 15.3%
- Patient access to problem list
  - Office-based (N=1,030): 39.9%
  - Hospital-based (N=582): 15.6%
- Patient-submitted forms and documentation
  - Office-based (N=1,030): 25.7%
  - Hospital-based (N=582): 25.8%
- Patient access to clinician notes
  - Office-based (N=1,030): 19.5%
  - Hospital-based (N=582): 11.2%
- Patient-submitted clinical data
  - Office-based (N=1,030): 17.2%
  - Hospital-based (N=582): 12.3%
- Patient self-scheduling appointments via EHR
  - Office-based (N=1,030): 13.4%
  - Hospital-based (N=582): 12.3%

Compared to 2015, use of many patient interaction tools increased in 2017. For example, among office-based physicians, 33% encouraged the use of a patient portal in 2015, compared to 53% in 2017.

$^1$Hospital-based physicians were not surveyed on their use of patient-initiated refill requests, patient-submitted clinical data and patient self-scheduling.
Health Information Exchange

CurrentCare, Rhode Island’s health information exchange (HIE), enables authorized physicians to securely access patients’ health information from multiple sources in one centralized electronic location.

Survey respondents were asked a series of questions about their use and knowledge of CurrentCare. Figures 13 and 14 (page 18) demonstrate the services with which respondents are familiar, stratified by physician setting and by primary care physicians (PCPs) vs. non-PCPs. Generally, office-based respondents, particularly those who provide primary care, are more familiar with these services than hospital-based respondents.

Respondents were also asked whether they, or any of their staff, use CurrentCare services with their patients (Figure 15 and 16, page 19). Use of these services are common among office-based PCP respondents: 41.9% reported they or their staff use them. However, they are used less commonly by office-based non-PCP respondents and by hospital-based respondents (about 15% in each group reported they or their staff use HIE services).

Rhode Island Quality Institute operates the statewide health information exchange, CurrentCare. To learn more, visit http://currentcareri.org/
Figure 13. HIE services with which respondents are familiar, stratified by setting

- CurrentCare Viewer: 41.4%
- CurrentCare in EHR (receiving a CurrentCare summary directly in your EHR): 30.2%
- CurrentCare Hospital Alerts: 22.1%
- CurrentCare for Me (patient portal): 21.1%
- Sending clinical summaries from your EHR to CurrentCare: 20.6%
- Care Management Alerts/Dashboards: 20.0%

Figure 14. HIE services with which respondents are familiar, stratified by office-based PCP versus office-based non-PCP

- CurrentCare Viewer: 59.4%
- CurrentCare in EHR (receiving a CurrentCare summary directly in your EHR): 44.4%
- CurrentCare Hospital Alerts: 31.6%
- Sending clinical summaries from your EHR to CurrentCare: 30.9%
- Care Management Alerts/Dashboards: 31.6%
- CurrentCare for Me (patient portal): 30.0%
Figure 15. The percent of respondents who use, or are aware that their staff use, the HIE services referenced in Figures 13 and 14, stratified by setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Don't know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office-based</td>
<td>27.2%</td>
<td>41.7%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Hospital-based</td>
<td>15.0%</td>
<td>41.0%</td>
<td>44.0%</td>
</tr>
</tbody>
</table>

Figure 16. The percent of respondents who use, or are aware that their staff use, the HIE services referenced in Figures 13 and 14, stratified by office-based PCP versus office-based non-PCP

<table>
<thead>
<tr>
<th>Setting</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Don't know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office-based PCP</td>
<td>41.9%</td>
<td>35.0%</td>
<td>23.1%</td>
</tr>
<tr>
<td>Office-based non-PCP</td>
<td>15.4%</td>
<td>47.1%</td>
<td>37.5%</td>
</tr>
</tbody>
</table>

Figures 17 and 18 (page 20) show the percent of respondents with an EHR who have access to CurrentCare from within their EHR (i.e., without a separate log-in). While a quarter of hospital-based respondents report they do have and use this capability, almost half did not know whether they had it. Among office-based PCP respondents, about 20% have and use HIE data from within their EHR.
Figure 17. The percent of respondents with an EHR who have access to data from the HIE (CurrentCare) from within their EHR (i.e., without a separate log-in), stratified by setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Have and use</th>
<th>Have but don't use</th>
<th>Don't have</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office-based (N=1,033)</td>
<td>17.2%</td>
<td>7.9%</td>
<td>49.8%</td>
<td>25.1%</td>
</tr>
<tr>
<td>Hospital-based (N=589)</td>
<td>24.8%</td>
<td>8.0%</td>
<td>23.8%</td>
<td>43.5%</td>
</tr>
</tbody>
</table>

Figure 18. The percent of respondents with an EHR who have access to data from the HIE (CurrentCare) from within their EHR (i.e., without a separate log-in), stratified by office-based PCP versus office-based non-PCP

<table>
<thead>
<tr>
<th>Setting</th>
<th>Have and use</th>
<th>Have but don't use</th>
<th>Don't have</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office-based PCP (N=482)</td>
<td>20.1%</td>
<td>8.9%</td>
<td>54.4%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Office-based non-PCP (N=549)</td>
<td>14.8%</td>
<td>6.9%</td>
<td>45.7%</td>
<td>32.6%</td>
</tr>
</tbody>
</table>
Incentive Programs and Alternative Payment Models

Many of the new incentive programs and alternative payment models rely on or evaluate use of an EHR for documentation or quality reporting. For many physicians, these new models and programs will require significant changes to their workflow, including how they use EHRs and other technology.

The 2017 Health Information Technology (HIT) Survey measured the percent of Rhode Island physicians whose main practice site is a Patient Centered Medical Home (PCMH). The PCMH model aims to provide comprehensive, coordinated, patient-centered, accessible, and quality care. In Rhode Island, 29.8% of office-based physicians reported that their main practice site is a PCMH (Figure 19, page 21).

To learn more about the PCMH model of care, visit: https://www.pcmh.ahrq.gov/page/defining-pcmh

Figure 19. Percent of office-based physician respondents whose main practice site is a Patient-Centered Medical Home (PCMH) (N=1,166)

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>29.8%</td>
</tr>
<tr>
<td>No</td>
<td>55.5%</td>
</tr>
<tr>
<td>Don't know</td>
<td>14.8%</td>
</tr>
</tbody>
</table>
In 2011 the Centers for Medicare & Medicaid Services (CMS) established an incentive payment program—called Meaningful Use—for physicians and hospitals to adopt, implement, and demonstrate meaningful use of certified EHRs. In short, the incentive payment program required physicians to achieve specific standards for use of EHRs and other HIT during clinical practice.

The 2017 HIT Survey measured several aspects of Rhode Island physicians’ participation in the Medicaid Meaningful Use program. Figure 20 (page 22) shows that 38.9% of office-based physicians have attested to Medicaid Meaningful Use, with an almost equal proportion reporting they “don’t know” if they have (36.2%). Among physicians who attested to Medicaid Meaningful Use, Figure 21 (page 23) shows that an administrative staff member most often completed their attestation. More than half of office-based physicians plan to attest, or have someone attest on their behalf, to Medicaid Meaningful Use in 2017 (Figure 22, page 23).

Figure 20. Percent of office-based physician respondents with EHRs who have attested or had someone attest on their behalf to Medicaid Meaningful Use (N=1,166)
Figure 21. Among office-based physician respondents with EHRs who have attested or had someone attest on their behalf to Medicaid Meaningful Use, the individual who completed their attestation (N=443)

- My practice’s office manager or other administrative person completes my attestation: 59.4%
- Don’t know: 20.3%
- I complete my attestation: 10.2%
- The EHR vendor for my practice completes my attestation: 3.4%
- Other: 2.7%
- Another clinician in my practice completes my attestation: 2.0%
- An outside consultant completes my attestation: 2.0%

Figure 22. Percent of office-based physician respondents with EHRs who have previously attested or had someone attest on their behalf to Meaningful Use who plan to attest to Medicaid Meaningful Use in 2017 (N=451)

- Yes: 56.5%
- No: 6.4%
- Don’t know: 37.0%
Launched on January 1, 2017, the Medicare Access and CHIP Reauthorization Act (MACRA) Quality Payment Program created two pathways for physician reimbursement: Alternative Payment Models (APMs) and the Merit-Based Incentive Payment System (MIPS).[6] The goal of the MACRA Quality Payment Program is to eventually replace Medicare’s fee-for-service reimbursement with value-based payments; EHRs will support much of the data reporting required.

**Figure 23 (page 24)** shows that few office-based physicians are familiar with the MACRA Quality Payment Program, with three-quarters reporting that they are either “not at all familiar” or “slightly familiar” with these payment models. Similar results are reflected in **Figure 24 (page 25)**, which shows that 35.2% of office-based Rhode Island physicians are prepared to meet the new payment model requirements, with more than half reporting that they are not prepared or “don’t know” if they are prepared.

**To learn more about the MACRA, visit:**

**Figure 23. The percent of office-based physician respondents with EHRs who are familiar with the MACRA Quality Payment Program (N=1,154)**

<table>
<thead>
<tr>
<th>Familiarity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all familiar</td>
<td>44.3%</td>
</tr>
<tr>
<td>Slightly familiar</td>
<td>31.6%</td>
</tr>
<tr>
<td>Somewhat familiar</td>
<td>19.9%</td>
</tr>
<tr>
<td>Very familiar</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

September 2017
Figure 24. The percent of office-based physician respondents with EHRs who feel they, or someone in their practice, are prepared to meet the requirements of the MACRA Quality Payment Program (N=1,162)

- Yes: 35.2%
- No: 10.3%
- Don’t know: 44.0%

I do not provide care for enough Medicare patients to participate: 10.5%
Electronic Health Record Vendors

Among the most frequently-used electronic health record (EHR) vendors (at least 20 respondents), physicians are most likely to recommend Amazing Charts, Athenahealth, and Epic Systems (Figure 25, page 26). About two-thirds of physicians overall would recommend their current EHR to a colleague (Figure 26, page 27). Few respondents (11% in each setting) reported planning to change to a different EHR vendor in the coming year (Figure 27, page 27).

Figure 25. Physicians’ likelihood to recommend their EHR vendor, for the vendors with at least 20 respondents
Figure 26. Likelihood physician respondents would recommend their current EHR vendor to a colleague, by practice setting

This is a slight increase from our previous survey (2015), when 59.9% of office-based physician respondents and 57.7% of hospital-based physician respondents answered that they would be likely or very likely to recommend their EHR.

Figure 27. Likelihood physician respondents’ practices will switch EHR vendors in the next year, by practice setting
Physician Attitudes about Physician-Selection Websites

Respondents were asked about online resources targeted to patients who are choosing a new physician. Questions included how accurately the websites depict the quality of care that physicians provide and the types of information they thought would be helpful for patients choosing a new physician.

Few respondents felt that any of the online resources give a “very accurate” picture of the quality of care that physicians provide (Figure 28, page 29). Despite their popularity among patients, commercial physician rating websites (e.g., Healthgrades or Vitals) were felt to provide a “not at all accurate” picture of physician quality. More than half of the respondents had not heard of non-profit physician quality websites (e.g., ProPublica’s Surgeon Scorecard) or Medicare public reporting websites (e.g., Physician Compare) (Figure 29, page 30).

The types of information that respondents most frequently indicated would be helpful for patients choosing a new physician include board certification, clinical interests and expertise, and hospital affiliation (Figure 30, page 31). Less than a third of respondents indicated that age, ratings from other patients, and use of EHRs would be helpful.
Figure 28. Physicians’ assessment of how accurately websites depict the quality of care that physicians provide

According to physician respondents, the Rhode Island Department of Health’s Find a Doctor tool and individual practice websites were considered to be the most accurate in depicting the quality of care physicians provide. Commercial physician websites (e.g., Healthgrades) were considered the least accurate compared to the other websites.
Though Rhode Island Department of Health’s Find a Doctor tool was considered to be one of the most accurate online tools in depicting the quality of care, only 55% of physician respondents know about this resource.
Figure 30. Percent of respondents who indicated that each type of information would be helpful to include in online resources for patients choosing a new physician (N=1,621)

A large majority of physician respondents reported that board certification, clinical interests and expertise, and hospital affiliation are important types of information for patients when selecting a new physician. Fewer than half of physician respondents reported that patient reviews and ratings are important when choosing a new physician.
Using Health Information Technology to Support Vulnerable Populations

The Rhode Island Department of Health is committed to promoting the health of vulnerable and underserved populations. The 2017 Physician Health Information Technology (HIT) Survey explored how physicians document information about vulnerable populations in the medical record.

These results provide insight into the readiness of HIT to support physicians caring for vulnerable populations in Rhode Island. Managing the health of specific populations requires a method of identifying relevant patients from a physician’s or practice’s patient panel. Electronic health records (EHRs) can only automate this process if the system is designed to capture specific identifying information and physicians enter that information in a designated field.

In an effort to address health disparities, the U.S. Department of Health and Human Services now requires that all certified EHR systems have the capacity to collect granular information about race, ethnicity, sexual orientation, gender identity, and certain social, psychological, and behavioral data.

Among the Healthy People 2020 goals is improving the health of lesbian, gay, bisexual, and transgender (LGBT+) individuals. According to a 2012 Gallup Poll, 4.5% of Rhode Island’s population identified as LGBT+ (or approximately 45,000 Rhode Islanders). Physicians may use EHRs to support outreach to improve health at the population level or to facilitate clinical discussions about a patient’s sexual health, orientation, and gender identity during an office visit.

Figure 31 (page 33) shows how Rhode Island physician respondents document selected information about their patients in the medical record. More than 80% of respondents ask and document information about substance use disorders and mental illness. Among those who do document this information, half of them use a designated field and...
half do not. Slightly more than 40% of respondents do not ask about sexual orientation or gender identity or do not feel that information is applicable to their practice. Last, Figure 32 (page 34) compares the percent of primary care physician (PCP) and non-PCP respondents who ask and document selected information about their patients in the medical record.

Figure 31. How physician respondents document the following information about their patients in the medical record (N=1,730)
Figure 32. Percent of PCP and non-PCP respondents who ask and document the following information about their patients in the medical record

- Mental health diagnosis (mild or no impairment)
  - PCP: 72.6%, Non-PCP: 97.1%
  - PCP: 97.1%, Non-PCP: 97.1%

- Severe and persistent mental illness
  - PCP: 71.6%, Non-PCP: 96.5%
  - PCP: 96.5%, Non-PCP: 96.5%

- Substance use/abuse
  - PCP: 77.5%, Non-PCP: 95.5%
  - PCP: 95.5%, Non-PCP: 95.5%

- Intimate partner violence/domestic violence
  - PCP: 79.8%, Non-PCP: 98.0%
  - PCP: 98.0%, Non-PCP: 98.0%

- Sexual orientation
  - PCP: 78.1%, Non-PCP: 92.5%
  - PCP: 92.5%, Non-PCP: 92.5%

- Gender identity
  - PCP: 74.0%, Non-PCP: 83.0%
  - PCP: 83.0%, Non-PCP: 83.0%

- Homelessness
  - PCP: 68.2%, Non-PCP: 99.0%
  - PCP: 99.0%, Non-PCP: 99.0%

- Firearms in home
  - PCP: 59.8%, Non-PCP: 82.0%
  - PCP: 82.0%, Non-PCP: 82.0%

- Recent incarceration
  - PCP: 52.1%, Non-PCP: 75.5%
  - PCP: 75.5%, Non-PCP: 75.5%

- Foreign born status
  - PCP: 50.5%, Non-PCP: 71.0%
  - PCP: 71.0%, Non-PCP: 71.0%

- Refugee status
  - PCP: 31.4%, Non-PCP: 53.5%
  - PCP: 53.5%, Non-PCP: 53.5%

- Undocumented immigrant status
  - PCP: 16.6%, Non-PCP: 37.2%
  - PCP: 37.2%, Non-PCP: 37.2%

Want to learn more about the health and care of vulnerable patient populations?

Rhode Island Department of Health Community Health Equity
http://www.health.ri.gov/programs/detail.php?pgm_id=1051

Healthy People 2020
https://www.healthypeople.gov/

HIT Certification
https://www.healthit.gov/policy-researchers-implementers/about-onc-health-it-certification-program
Health Information Technology Use Among Physicians Who Provide Treatment for Mental Health and Substance Use Disorders

Survey respondents were asked if they provided direct mental health treatment or substance use treatment as the main focus of their clinical practice at any of their practice sites. 258 survey respondents (14.6%) answered “yes.” Close to 100% of respondents providing mental health and substance use treatment have access to basic EHR functionality (e.g., patient demographics and writing progress notes) (Figure 33, page 35).

Respondents are more likely to receive or access mental health or substance use treatment information electronically from other clinicians within their health system than they are from clinicians outside their health system (Figures 34 and 35, page 36). This finding was true regardless of whether the respondents provided mental health or substance use treatment themselves.

Compared to all respondents, respondents who provide mental health and substance use treatment are more likely to receive treatment information about their patients from other clinicians (Figures 34 and 35, page 36).

Figure 33. Prevalence of physician-reported EHR functions in facilities or practices where respondents provide mental health or substance use treatment (N=225)

<table>
<thead>
<tr>
<th>Function</th>
<th>Percent of Physician Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing progress notes/visit notes</td>
<td>97.3%</td>
</tr>
<tr>
<td>Patient demographics</td>
<td>96.9%</td>
</tr>
<tr>
<td>Medical history (i.e., non-psychiatric conditions)</td>
<td>95.6%</td>
</tr>
<tr>
<td>Documenting the treatment plan</td>
<td>92.0%</td>
</tr>
<tr>
<td>Accessing others’ progress notes/visit notes</td>
<td>86.2%</td>
</tr>
<tr>
<td>Receiving laboratory results</td>
<td>77.3%</td>
</tr>
<tr>
<td>Ordering laboratory tests</td>
<td>76.0%</td>
</tr>
<tr>
<td>Remote access to chart</td>
<td>74.2%</td>
</tr>
</tbody>
</table>
Figure 34. Percent of respondents who receive or access mental health or substance use treatment information about their patients from other clinicians, among respondents who provide mental health or substance use treatment themselves

- Yes – non-electronically (e.g., fax, mail, telephone): 21.0% from within, 58.0% from outside
- Yes – electronically (e.g., EHR access, direct messaging): 8.6% from within, 59.7% from outside
- Not applicable to my practice: 10.5% from within, 9.4% from outside
- No, I do not routinely receive this information: 8.9% from within, 24.1% from outside

Figure 35. Percent of respondents who receive or access mental health or substance use treatment information about their patients from other clinicians, among all respondents

- Yes – non-electronically (e.g., fax, mail, telephone): 11.0% from within, 23.9% from outside
- Yes – electronically (e.g., EHR access, direct messaging): 4.0% from within, 23.2% from outside
- Not applicable to my practice: 42.6% from within, 41.1% from outside
- No, I do not routinely receive this information: 23.2% from within, 31.0% from outside
Health Information Technology in Nursing Homes

83 survey respondents (4.7%) reported providing direct patient care in a nursing home as part of their clinical responsibilities. The majority of those respondents provide care in 1-2 facilities; 20% of respondents reported working in 5 or more facilities (Table 5, page 37). 16.7% of respondents who work in a nursing home consider the nursing home to be their main practice site (Table 6, page 38). While the majority of respondents providing direct care in nursing homes have access to basic EHR functionality (e.g., patient demographics, writing progress or visit notes, documenting problem lists), fewer than half can order laboratory tests or receive laboratory results (Figure 36, page 38). About 15% of nursing home physicians can electronically prescribe medications given in the nursing home, compared to 83% of hospital-based physicians who can electronically transmit prescriptions to their hospital pharmacy.

Table 5. Among respondents who work in a nursing home, the number of facilities in which respondents provide direct patient care

<table>
<thead>
<tr>
<th>Number of facilities</th>
<th>Percent (N=82)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 facilities</td>
<td>52.4%</td>
</tr>
<tr>
<td>3-4 facilities</td>
<td>26.8%</td>
</tr>
<tr>
<td>5 or more facilities</td>
<td>20.7%</td>
</tr>
</tbody>
</table>
Table 6. Among respondents who work in a nursing home, the percent who consider a nursing home to be their main practice site

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent (N=83)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16.9%</td>
</tr>
<tr>
<td>No</td>
<td>83.1%</td>
</tr>
</tbody>
</table>

Figure 36. Prevalence of physician-reported EHR functions in nursing homes (N=65)

- Patient demographics: 89.2%
- Writing progress notes/visit notes: 78.5%
- Documenting problem lists: 61.5%
- Medication administration record: 60.0%
- Accessing others’ progress notes/visit notes: 58.5%
- Remote access to the chart from home or another location: 55.4%
- Ordering laboratory tests: 41.5%
- Receiving laboratory results: 35.4%
- E-prescribing for facility administration of medications: 15.4%
Physician Burnout and Health Information Technology-Related Stress

Burnout among healthcare workers is well-documented. Burnout results from persistent and chronic stress and is characterized by a combination of emotional exhaustion, depersonalization, and reduced perception of personal accomplishment.[9] Symptoms of burnout are not only associated with poor health outcomes for the individual, but have also been shown to negatively impact quality of patient care.[10]

465 survey respondents (26.2%) reported experiencing symptoms of burnout. Despite the comprehensive literature examining burnout among healthcare workers, less is known about the role of health information technology (HIT) and electronic health records (EHRs) in either contributing to or mitigating the development of clinician burnout. Therefore, we examined how three factors—sufficiency of time for documentation, EHR-related frustration, and time spent on the EHR at home—are related to symptoms of burnout among physicians who use EHRs in their clinical practice (Table 7, page 41).

Respondents who reported that the EHR adds to their daily frustration were 90% more likely to be burned out compared to those who did not feel the EHR added to their daily frustration, after adjusting for the other two HIT-stress measures. Respondents who reported insufficient time for documentation had 2.5 times the odds of being burned-out compared to those with sufficient time for documentation, after adjusting for the other HIT-related stress measures. Compared to respondents who spent minimal to no time on the EHR at home, those who spent a “moderately high” or “excessive” amount of time on the EHR at home had 1.8 times the odds of being burned-out.

Results from the logistic regression procedure indicated that when all three HIT-related stress measures are included together, they improved the prediction of global burnout, compared to including each independently. When the HIT-stress
measures were considered together the pseudo-$R^2$ was highest at 0.10, compared to when time spent on the EHR at home (pseudo-$R^2 = 0.04$), EHR adds to daily frustration (pseudo-$R^2 = 0.05$), and sufficiency of time for documentation (pseudo-$R^2 = 0.07$) were included independently (a higher pseudo-$R^2$ suggests a better fit).

Among the 15 most common specialties, the highest prevalence of burnout was noted among family medicine physicians, with 36% reporting symptoms of burnout, followed by dermatology, with 35% of dermatologists reporting symptoms of burnout. Anesthesiologists reported the lowest prevalence of burnout—about 14% (Figure 37, page 42). These estimates are substantially lower than those reported in recent literature, where more than 50% of all physicians reported burnout symptoms. The fact that the survey was not anonymous and was administered by the Department of Health, which also oversees physician licensing, may have affected response patterns to this question.

The prevalence of HIT-related stress is high across the 15 most common specialties (Figure 38, page 43). In four specialties—general internal medicine, family medicine, dermatology, and pediatrics—more than a third of physicians reported they were experiencing all three measures of HIT-related stress. Across the 15 most common specialties, the most commonly reported measure of HIT-related stress is that the EHR adds to the frustration of the physician’s day (Figure 39, page 44).

To learn more about pseudo-$R^2$, see: “FAQ: What are pseudo R squareds?” UCLA: Statistical Consulting Group. [https://stats.idre.ucla.edu/other/mult_pkg/faq/general/faq-what-are-pseudo-r-squareds/]
Table 7. Adjusted odds ratios of burnout among physicians in Rhode Island (N=1,482)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sufficiency of Time for Documentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sufficient</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Insufficient</td>
<td>2.5</td>
<td>1.9 - 3.3</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>EHR adds to Daily Frustration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Yes</td>
<td>1.9</td>
<td>1.4 - 2.6</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Time Spent on the EHR at Home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal/None</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Modest/Satisfactory</td>
<td>0.9</td>
<td>0.6 - 1.3</td>
<td>n.s.</td>
</tr>
<tr>
<td>Moderately High/Excessive</td>
<td>1.8</td>
<td>1.3 - 2.4</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Notes. The model includes sufficiency of time for documentation, EHR-related frustration, and time spent on the EHR at home.

HIT = health information technology; EHR = electronic health record; ref = reference group; n.s. = not statistically significant at p < 0.05

Pseudo R² = 0.10

A recent study revealed that 46% of U.S. physician respondents reported at least one symptom of burnout.[11]

Medical scribes, trained professionals who assist physicians with documentation, may mitigate HIT-related stress. In Rhode Island, 11% of physician respondents reported using a scribe (office-based = 9.8%; hospital-based = 13.4%).
Figure 37. Percent of survey respondents who reported experiencing any symptoms of burnout, by specialty, among the 15 most common specialties
Figure 38. Percent of survey respondents with EHRs who reported experiencing one or more measures of HIT-related stress, by specialty, among the 15 most common specialties.
Figure 39. Percent of survey respondents with EHRs who reported each measure of HIT-related stress, by specialty, among the 15 most common specialties (respondents were allowed to select more than one).
Physicians without Electronic Health Records

The figures below present responses from office-based physicians who do not have an electronic health record (EHR). These respondents were asked about their plans for implementing an EHR (Figure 40, page 46) and reasons why their main practice is not implementing an EHR (Figure 41, page 47). Close to two-thirds of office-based physicians without EHRs do not plan to implement one. The most common reasons physicians gave for not implementing health information technology (HIT), specifically an EHR, included concern that they would not see a return on their investment, being too close to retirement, and expensive software.

Respondents without EHRs were also asked questions about physician burnout and HIT-related stress. The overall prevalence of burnout was lower among physicians without EHRs than those with EHRs (13.1% versus 27.5%, respectively). Two-thirds of office-based physicians without EHRs indicated that they had “good” or “optimal” control over their workload, and only a small number responded that they had “poor” control over their workload (Figure 42, page 48).

Similarly, most office-based physicians without EHRs reported that their sufficiency of time for documentation was “optimal” or “good” (Figure 43, page 48). Compared to office-based physicians with EHRs, respondents without EHRs were much more likely to indicate that they have “good” or “optimal” time for documentation. A much higher proportion of respondents with EHRs indicated that they have “poor” or “marginal” time for documentation (13% for those without EHRs versus 56% for those with EHRs).

The next set of figures displays office-based physicians' responses regarding incentive programs and alternative payment models; response patterns also varied by EHR status. Very few respondents without EHRs (2%) are part of a practice that is a Patient-Centered Medical Home (PCMH), compared to a third of respondents with EHRs (Figure 44, page 49). More than 80% of respondents without EHRs indicated that they were “slightly” or “not at all familiar” with the MACRA Quality Payment Program and that they were not prepared to meet the requirements of MACRA or did not know if they were prepared (Figures 45, page
Respondents with EHRs expressed higher levels of familiarity with MACRA and preparedness for its requirements.

Figure 40. Among office-based physician respondents without EHRs, the percent whose main practice site plans to implement an EHR (N=141)

- No (n=91) 64.5%
- Yes, within 1 year (n=5) 14.2%
- Yes, after 1 year (n=20) 3.5%
- Don't know (n=25) 17.7%
Figure 41. Among office-based physician respondents without EHRs, the percent who identified each factor as a reason why they have not implemented an EHR (respondents could choose more than one) (N=91)

- I would not see a return on my investment (n=54) 59.3%
- I am too close to retirement (n=51) 56.0%
- Software is too expensive (n=49) 53.8%
- Hardware is too expensive (e.g., would have to buy new computers) (n=43) 47.3%
- EHR use does not fit in my practice's workflow (n=41) 45.1%
- Transferring paper records to electronic records is too expensive (n=40) 44.0%
- EHRs would not benefit my practice (n=40) 44.0%
- EHRs would not benefit my patients (n=37) 40.7%
- Available EHRs are not specific enough for my specialty or practice (n=23) 25.3%
- Other (n=16) 17.6%
- I do not like using computers (n=16) 17.6%
- Practice leadership has decided against it (n=5) 5.5%
Figure 42. Respondents’ assessment of their control over their workload, among office-based physicians without EHRs (N=140)

![Bar chart showing the percentage of respondents in different categories of control over workload: Optimal (27.9%), Good (39.3%), Satisfactory (24.3%), and Poor or Marginal (8.6%).]

Figure 43. Office-based physician respondents’ assessment of their sufficiency of time for documentation, by EHR status

![Bar chart showing the percentage of respondents in different categories of sufficiency of time for documentation: Optimal (22%), Good (30%), Satisfactory (28%), and Poor or Marginal (56%).]
Figure 44. Percent of office-based physician respondents whose main practice site is a Patient-Centered Medical Home, by EHR status

- **Yes**: 2% (Office-based without EHRs) 34% (Office-based with EHRs)
- **No**: 9% (Office-based without EHRs) 51% (Office-based with EHRs)
- **Don’t know**: 16% (Office-based without EHRs) 16% (Office-based with EHRs)

Figure 45. Office-based physician respondents’ familiarity with the MACRA Quality Payment Program, by EHR status

- **Very familiar**: 2% (Office-based without EHRs) 4% (Office-based with EHRs)
- **Somewhat familiar**: 2% (Office-based without EHRs) 16% (Office-based with EHRs)
- **Slightly familiar**: 2% (Office-based without EHRs) 28% (Office-based with EHRs)
- **Not at all familiar**: 2% (Office-based without EHRs) 43% (Office-based with EHRs)
Advanced Practice Provider Summary Measures

The 2017 Health Information Technology (HIT) Survey was administered to 1,686 advanced practice providers, including advanced practice registered nurses (APRNs) and physician assistants (PAs), licensed in Rhode Island, in active practice, and located in Rhode Island, Connecticut, or Massachusetts. The survey received a total of 518 responses, for a response rate of 30.7%.

The Table 8 (page 50) presents electronic health record (EHR) and e-prescribing results for the 518 APRN and PA respondents. The Figure 46 (page 51) on the following page compares this year’s prevalence of EHRs and use of e-prescribing to data from prior survey years.

Table 8. Publicly-reported measures for the 518 APRN and PA respondents

<table>
<thead>
<tr>
<th>Measure</th>
<th>Survey respondents</th>
<th>Sample Size</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>APRNs and PAs with EHRs, n (%)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>477 (92.1%)</td>
<td>518</td>
<td>477</td>
</tr>
<tr>
<td>APRNs and PAs who e-prescribe, n (%)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>382 (81.6%)</td>
<td>468</td>
<td>468</td>
</tr>
<tr>
<td>Use of EHR functionality (0-100), median&lt;sup&gt;3&lt;/sup&gt;</td>
<td>45.5</td>
<td>477</td>
<td>477</td>
</tr>
<tr>
<td>Use of EHR for patient engagement (0-100), median&lt;sup&gt;4&lt;/sup&gt;</td>
<td>46.2</td>
<td>477</td>
<td>477</td>
</tr>
<tr>
<td>APRNs and PAs experiencing HIT-related stress&lt;sup&gt;5&lt;/sup&gt;</td>
<td>251 (59.8%)</td>
<td>420</td>
<td>420</td>
</tr>
</tbody>
</table>

<sup>1</sup> EHR: Integrated electronic clinical information system that tracks patient health data, and may include such functions as visit notes, prescriptions, lab orders, etc.

<sup>2</sup> Excludes providers who responded that prescribing was not applicable to their practice.

<sup>3</sup> EHR functionality: Functions could include activities related to results management, decision support, and interoperability. Scores range from 0-100, with 100 indicating greatest use.

<sup>4</sup> Patient engagement: Provider use of EHR to communicate and interact with patients. Scores range from 0-100, with 100 indicating greatest use.

<sup>5</sup> HIT-related stress: Providers were asked about three measures of HIT-related stress—sufficiency of time for documentation, EHR-related frustration, and time spent on the EHR at home; they were categorized as experiencing HIT-related stress when at least one measure was identified as causing stress.
Figure 46. Prevalence of EHRs and e-prescribing among APRN and PA survey respondents, 2013 – 2017

The prevalence of EHRs among APRNs and PAs has slowly increased from 2013 to 2017 and has reached a level similar to that of physicians.

7 The HIT Survey was not conducted in 2016
Advanced Practice Provider Burnout and Health Information Technology-Related Stress

Burnout among healthcare workers is well-documented. Burnout results from persistent and chronic stress and is characterized by a combination of emotional exhaustion, depersonalization, and reduced perception of personal accomplishment.[11] Symptoms of burnout are not only associated with poor health outcomes for the individual, but are shown to negatively impact the quality of patient care.

Less is known about the role of health information technology (HIT) and electronic health records (EHRs) in either contributing to or mitigating the development of clinician burnout. Therefore, we examined how three factors—sufficiency of time for documentation, EHR-related frustration, and time spent on the EHR at home—are related to symptoms of burnout among advanced practice providers, including advanced practice registered nurses (APRNs) and physician assistants (PAs) who use EHRs in their clinical practice (Table 9, page 52).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sufficiency of Time for Documentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sufficient</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Insufficient</td>
<td>3.6</td>
<td>2.1 – 6.3</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>EHR Adds to Daily Frustration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Yes</td>
<td>1.4</td>
<td>0.8 – 2.4</td>
<td>n.s.</td>
</tr>
<tr>
<td>Time Spent on the EHR at Home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal/None</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Modest/Satisfactory</td>
<td>0.7</td>
<td>0.4 – 1.5</td>
<td>n.s.</td>
</tr>
<tr>
<td>Moderately High/Excessive</td>
<td>3.3</td>
<td>1.8 – 6.2</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Notes. The model includes sufficiency of time for documentation, EHR-related frustration, and time spent on the EHR at home.
HIT = health information technology; APRN = advanced practice registered nurse; PA = physician assistant; EHR = electronic health record; ref = reference group; n.s. = not statistically significant at p < 0.05
Peusdo $R^2 = 0.15$
Survey participants who reported insufficient time for documentation had **3.6 times the odds** of being burned-out compared to participants who reported sufficient time for documentation after adjustment.

Survey participants who reported that the EHR adds to their daily frustration were **40% more likely** to be burned out compared to participants who did not feel the EHR added to their daily frustration, although this finding was not statistically significant.

Participants who reported spending a moderately high or excessive amount of time on the EHR at home had **3.3 times the odds** of being burned out compared to participants who spent minimal to no time on the EHR at home. Spending a modest or satisfactory amount of time on the EHR at home was not associated with increased burnout, after adjustment.

Results from the logistic regression procedure indicated that when all three HIT-related stress measures are included together, they improved the prediction of global burnout, compared to including each independently. When the HIT-stress measures were considered together, the pseudo-$R^2$ was 0.15 compared to when time spent on the EHR at home ($pseudo-R^2 = 0.08$), EHR adds to daily frustration ($pseudo-R^2 = 0.03$), and sufficiency of time for documentation ($pseudo-R^2 = 0.10$) were included independently (a higher pseudo-$R^2$ suggests a better fit).

To learn more about pseudo-$R^2$, see: “FAQ: What are pseudo $R$ squareds?” UCLA: Statistical Consulting Group. [https://stats.idre.ucla.edu/other/mult_pkg/faq/general/faq-what-are-pseudo-r-squareds/](https://stats.idre.ucla.edu/other/mult_pkg/faq/general/faq-what-are-pseudo-r-squareds/)
References


