Health Information Technology (HIT) Adoption and Use by Rhode Island Advance Practice Registered Nurses and Physician Assistants, 2013

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INTRODUCTION

The adoption of electronic medical record (EMR) systems, also known as electronic health records (EHRs), has the potential to reduce the incidence of medical errors and to improve the care patients receive through better compliance with recommended standards, improved coordination of care and ready access to up-to-date health information.[1,2]

Recognizing the potential impact on patient safety and healthcare quality, the Rhode Island Department of Health determined that it was important to track health information technology (HIT) adoption and use as part of a legislatively-mandated public reporting program. In 2008, the Department's Healthcare Quality Reporting Program began surveying physicians annually about their EMR and e-prescribing adoption.[3] One year later, in 2009, the program began publishing individual-level measures of physician HIT adoption. To our knowledge, Rhode Island is the first state to publicly report structural and process measures of HIT adoption for every licensed physician providing direct patient care, regardless of practice site.[4]

In 2013, at the suggestion of stakeholders, the Department piloted the Rhode Island HIT Survey with Advance Practice Registered Nurses (APRNs) and Physician Assistants (PAs). The objectives were to broaden the focus from physicians to all licensed independent practitioners (LIPs), and to establish a baseline for HIT adoption among all LIPs in the state.

Methods

The Healthcare Quality Reporting Program is a legislatively-mandated[5] public reporting program that publishes clinical quality measures and patient satisfaction data for licensed healthcare facilities, including home health agencies, hospitals and nursing homes. In 2006, legislation expanded the program to include physicians.[5] The program is run by the Department and administered by its contractor, Health-centric Advisors. Public reports are available at www.health.ri.gov/programs/healthcarequalityreporting.

We developed the initial physician Rhode Island HIT Survey instrument in collaboration with local healthcare state agencies and other stakeholders, including commercial health plans.[4] In February 2013, we adapted the survey for APRNs and PAs. APRNs included certified registered nurse anesthetists, certified nurse-midwives, clinical nurse specialists, and certified nurse practitioners. We tested the revised survey instrument with a small group of APRNs and PAs to obtain feedback about whether the questions were easily understood by this audience and were relevant to their clinical practice. After incorporating revisions, we administered the survey electronically in March 2013 to 1,456 APRNs and PAs licensed in Rhode Island, in active practice, and located in Rhode Island, Connecticut, or Massachusetts. We mailed notifications with a link to the electronic survey to all APRNs and PAs and also sent email notifications and up to two email reminders to those who provided an email address with their licensure application. Because this was a pilot, data were collected and analyzed in aggregate, but were not published at the individual practitioner level.

Based on survey responses, we calculated five measures of HIT implementation and use: **(1) APRNs and PAs with EMRs** (who indicate that they have "EMR components" in their main practice OR another practice); **(2) APRNs and PAs with "Qualified" EMRs** (who indicate that they have an EMR that is certified[6] by the Office of the National Coordinator for Health Information Technology and includes specific functionality); **(3) Use of Basic EMR Functionality** (extent of use of six clinical documentation and results management functionalities); **(4) Use of Advanced EMR Functionality** (extent of use of 10 decision support, external communication, order management, and reporting functionalities); and **(5) APRNs and PAs Who are e-Prescribing**. The basic and advanced functionality scales (0-100) were each calculated by giving equal weight to self-reported use of various EMR functions, with points proportional to the frequency of use. The five measures are tailored to reflect inpatient or outpatient practice, where necessary.

Beginning in 2014, the HIT Survey will be administered to physicians, APRNs and PAs together. APRN and PA data will be included in same practitioner-level report that has been published annually for physicians since 2009.

RESULTS

Overall, there was a 46.2% response rate for APRNs and PAs, with 673 of the 1,456 APRNs and PAs responding. Nearly three-quarters of the respondents were APRNs (74.2%) and approximately one-quarter were APRNs (25.9%). In the 2013 HIT Survey for physicians the response rate was 62.3% (n=2,367).

More than three-quarters of the 673 APRN and PA respondents report having EMRs. The prevalence of EMRs is slightly

lower among APRNs at 71.9%, as compared to PAs at 88.5% (**Figure 1**). Among those with EMRs, fewer than half (44.2%) report having EMRs that met the standards for 'qualified' EMR systems. The prevalence of 'qualified' EMRs is higher among PAs at 43.1% vs. APRNs at 30.5%. EMR prevalence among physicians at 88.2% is similar to that among PAs; physicians have the highest prevalence of 'qualified' EMRs at 45.8% (**Figure 1**).

The 359 APRNs with EMRs report comparatively higher use, on average, of basic vs. advanced functionalities (basic functionalities: 75.4 points; advanced functionalities: 50.0 points), as did the 154 PAs with EMRs (basic functionalities: 81.0 points; advanced functionalities: 63.6 points). APRNs' reported use of both basic and advanced functionalities is lower than PAs' reported use. Physicians reported an average of 78.5 points for basic functionality and 57.8 points for advanced functionality.

Among 599 APRNs and PAs, 64.4% report e-prescribing. The prevalence of e-prescribing is higher among PAs (72.5%) as compared to APRNs (61.3%). The prevalence among all providers is highest in physicians (79.9%).

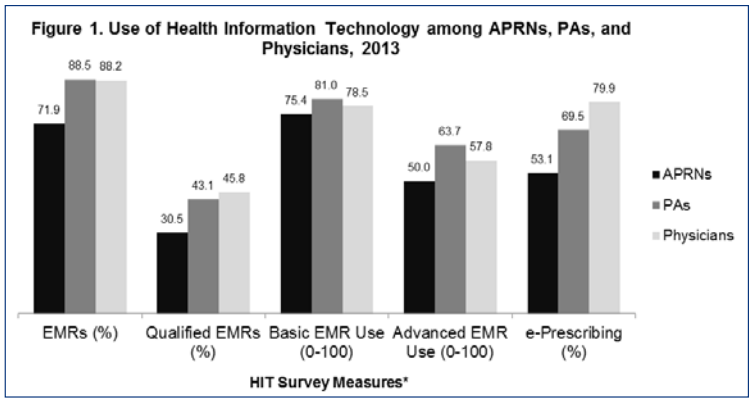
DISCUSSION

This pilot survey of HIT adoption by APRNs and PAs establishes a new baseline for Rhode Island. We found that 76.2% of APRN and PA respondents are using EMRs in their practices. Prevalence of HIT adoption, as captured in the reported measures, is similar between PAs and physicians, except for e-prescribing, where physicians have higher use of this technology. APRNs have the lowest reported use of HIT across all measures. As this is a pilot survey, we will need to reevaluate over time to determine trends among APRNs and PAs.

Our findings that PAs and physicians have similar rates of HIT adoption may be due to more similar work environments for those clinicians, compared to the diverse group of healthcare workers included in the APRN designation. PAs and physicians may also have more similar roles within a healthcare organization. In addition, unique local policies and incentives likely have influenced differing levels of implementation among the LIPs studied.

Our results have some limitations. We may have overestimated the rate of HIT adoption if ARPNs and PAs with EMRs were more likely to respond than those without EMRs. Providers with EMRs may be more likely to respond due to logistical reasons related to completing an electronic survey, including increased access to computers and the Internet. To address this, we calculated a lower bound estimate of the EMR adoption rate at 35.2% for APRNs and PAs combined, by assuming that all survey non-respondents lack EMRs.

With national incentives aimed at stimulating HIT adoption, it is critical to have reliable baseline data and metrics to measure change and evaluate outcomes. The expansion of this survey to include APRNs and PAs further enables Rhode Island providers and stakeholders to track HIT adoption over time, while also setting precedents for other states to follow.



APRN: Advance Practice Registered Nurse
PA: Physician Assistant
EMR: Electronic Medical Record
HIT: Health Information Technology
*See Methods section for description of measures

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