ADOPTION OF
ELECTRONIC HEALTH RECORD CAPABILITIES IN MASSACHUSETTS PHYSICIAN PRACTICES

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Sponsored by Blue Cross Blue Shield of Massachusetts

The 2008 national study classified the following as "basic" EHR capabilities:[4]

- Patient demographics
- Patient problem lists
- Patient medication list
- Clinical notes
- Orders for prescription
- View lab results
- View imaging results

The study identified the following as requirements for a "fully functional" EHR:

- Notes including medical history and follow up
- Orders for lab tests
- Orders for radiology tests
- Prescriptions sent electronically
- Orders sent electronically
- Electronic images returned
- Warnings of drug interactions or contraindications provided
- Out-of-range test levels highlighted
- Reminders regarding guideline-based interventions or screening

Introduction

Electronic Health Record (EHR) capabilities will be essential for physician practices to effectively collect, access and share all information for patient care, capture performance data and lay the foundation for transforming the way care is delivered. Some EHR capabilities, such as e-prescribing, are a requirement for national and state incentive programs.[1, 2] This paper looks at data on national EHR adoption and then examines the results of a recent Blue Cross Blue Shield of Massachusetts survey looking at physician use of EHR capabilities in Massachusetts.

Understanding National Adoption

EHR adoption in the United States is low. According to a national survey conducted in late 2007 and early 2008 and published in the *New England Journal of Medicine*, only 17 percent of ambulatory physicians have an EHR — 4 percent with a "fully functional" EHR system and 13 percent with a "basic" EHR system (see sidebar).[3]

Adoption varies based on practice size, specialty and location. The 2008 national study (that we will refer to as the *NEJM* study) found that physicians in groups of more than 50 were three times more likely than those in practices of one to three physicians to have a basic EHR system, and four times as likely to have a fully functional system. Twenty-one percent of primary care physicians (PCPs) reported having at least a basic EHR system, compared with 16 percent of non-PCPs. EHR adoption was highest among physicians from the West (22 percent had at least a basic EHR system), and lowest among physicians in the Northeast (15 percent had at least a basic EHR).

Blue Cross Blue Shield of Massachusetts Survey

To understand the adoption of basic and advanced EHR capabilities in Massachusetts, we conducted a survey of ambulatory physicians in the state. The study was funded by Blue Cross Blue Shield of Massachusetts.

In early June 2008, 18,282 Massachusetts physicians were contacted through the mail and directed to a Web-based survey. Respondents who indicated that they "regularly see patients in the ambulatory setting" were asked a series of questions about the availability and their use of clinical technology. Between June 9, 2008 and August 2, 2008, 519 individual responses were collected representing a 3 percent response rate.

Demographics

Overall, 83 percent of respondents regularly see patients in an ambulatory setting. Of this group, 50 percent identified themselves as PCPs (including "primary care — adult," "primary care — pediatric," "internal medicine" and "family medicine"). The remaining 50 percent, consisting of medical and surgical specialties (including OBGYN) were classified as "Non-PCPs." This ratio of primary care physicians closely mirrors a recent Massachusetts Medical Society workforce study of a random sample of physicians in the state.[5]

The Blue Cross Blue Shield of Massachusetts survey sample included a higher percentage of physicians from larger practices compared to the most recent national averages from the CDC.[6] Roughly one-third of Massachusetts respondents work in a practice of 10 or more physicians, compared with only 9 percent nationally. Overall, half of the Massachusetts respondents practice in a group of 5 or less physicians, with almost 20 percent identifying themselves as solo practioners.

Adoption of Basic EHR Capabilities in Massachusetts

Basic EHR functionality is defined as the ability for physicians to do the following electronically in an outpatient setting:

- Write encounter notes
- Maintain electronic problem list
- Maintain electronic allergy list
- Order prescriptions electronically
- Be notified of potential conflicts/contraindications to medications being prescribed
- Access electronic drug information

Basic EHR capabilities provide physicians with better access to information at the point of care, greatly improving the capability to support clinical decision making. As EHR functionality may come from a single vendor's suite of products or a combination of solutions from different vendors, adoption of basic EHR capabilities does not necessarily imply use of a single system.

Roughly 36 percent of responding Massachusetts physicians use all "basic" EHR capabilities for at least some of their patients. This is more than twice the rate found in the 2008 *NEJM* national study, which employed similar criteria for basic EHR functionality.[i] Overall, 45 percent of Massachusetts respondents reported they at least have access to all basic EHR capabilities.

Adoption and use of basic EHR functionality among Massachusetts physicians varied with practice size and specialty. Fifty percent of respondents from practices with 25 or more physicians use all basic functionality for at least some of their patients, compared with about a third (32 percent) of those from practices of less than 25 physicians. Forty-six percent of primary care physicians use all basic capabilities for at least some of their patients, a rate close to twice that of non-PCP respondents.

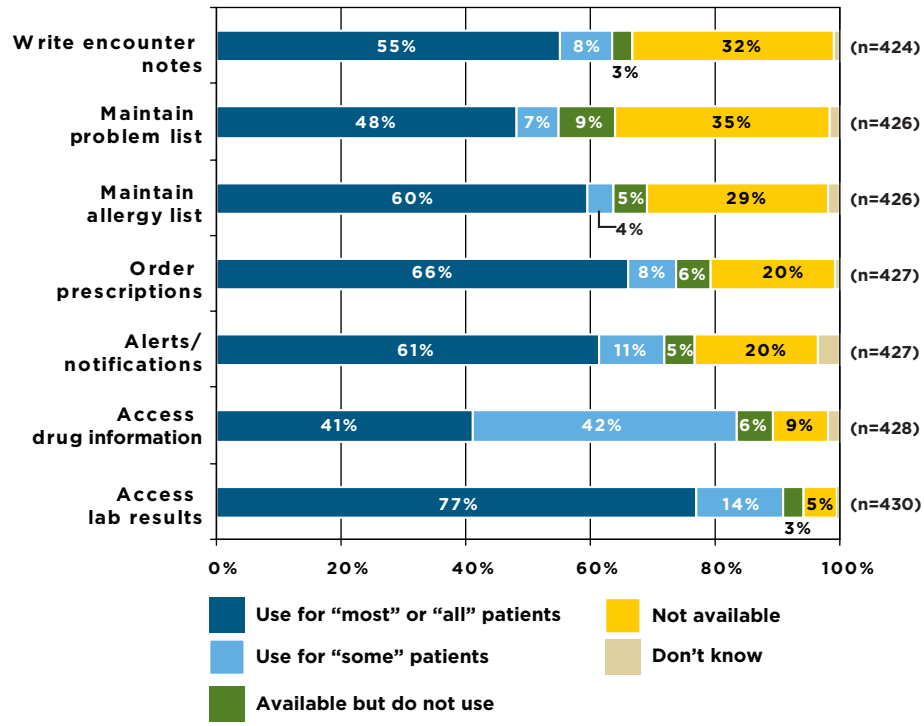
		Practice Size		Specialty	
Basic Functionality	Total (n = 430)	Among those in 25+ MD practices (n = 92)	Among those in <25 MD practices (n = 338)	Among all PCPs (n = 217)	Among all non-PCPs (n = 213)
All basic capabilities at least available	**45%**	59%	42%	51%	39%
All basic capabilities used for at least "some" patients	**36%**	50%	32%	46%	25%
All basic capabilities used for "most" or "all" patients	**15%**	22%	13%	21%	9%

[i] The most notable difference was the inclusion of clinical decision support in "basic" EHR functionality for the Blue Cross Blue Shield survey.

The most significant gaps in basic EHR functionality in Massachusetts are the ability to write encounter notes (not available to 32 percent of responding Massachusetts physicians), maintain problem lists (not available to 35 percent), and maintain allergy lists (not available to 25 percent). Physicians in large practices were far more likely to have access to these capabilities than those in practices of 25 or less.

Comprehensive decision support requires more than just checking for drug-drug interactions. According to a 2008 study from CITL, 3.7 percent of patients experience an adverse drug event (ADE) due to an ambulatory prescription, but only 7 percent of those are caused by a drug-drug interaction.[7]

Availability and Use of "Basic" EHR Functionality Among Massachusetts Physicians



E-prescribing is a multi-step process. The ability to electronically enter orders and receive notifications regarding potential contraindications is considered a basic EHR capability because of the direct impact on patient safety. Transmission of electronically ordered prescriptions to pharmacies (which are at varying degrees of readiness to accept electronic prescriptions) is defined as an advanced EHR capability. The majority of commercial stand-alone e-prescribing applications meet this definition of advanced capability and have the ability to connect through an intermediary such as SureScripts or RxHub to electronically transmit prescriptions via EDI (electronic data interchange). However, physicians who responded "electronic transmission to a pharmacy" in this survey could be using solutions as simple as a computer-generated fax.

Almost three-fourths (74 percent) of Massachusetts physicians that responded to the survey electronically order prescriptions for at least some of their patients, and almost as many (72 percent) receive notifications of potential conflicts/ contraindications to medications being prescribed. Primary care physicians were far more likely than non-PCPs to enter prescriptions orders electronically for at least some patients (86 percent vs. 60 percent), as were physicians in larger practices compared to respondents from smaller practices (86 percent vs. 71 percent).

While the overall number of prescriptions ordered electronically by Massachusetts respondents is unknown, the majority in our sample has access to and use the capability for at least some of their patients. This likely reflects Massachusetts payer initiatives such as the eRx Collaborative, a program sponsored by Blue Cross Blue Shield of Massachusetts, Tufts Health Plan and Neighborhood Health Plan that provided physicians in the state, particularly PCPs, with e-prescribing software. This software also meets the advanced EHR definition for sending prescriptions electronically to the pharmacy.

However, gaps still exist with clinical decision support capabilities. A high percentage of physicians who order medications electronically reported they receive notifications around contraindications, but the use of electronic allergy and problem lists is less widespread. It is likely that many of these respondents are using stand-alone e-prescribing solutions, which typically lack an electronic problem list. Allergy lists are more commonly available but as this research suggests, are not widely used and may vary among systems. As a result, decision support is focused more on alerts for duplicate orders and/or drug-drug interactions, with fewer capabilities to check for potential drug allergies or contraindications based on a patient's specific problems.

Advanced EHR capabilities consist of all basic capabilities as well as the ability to:

- Insert transcribed dictation into EHR
- Electronically transmit prescriptions to pharmacy
- Electronically view or be advised of compliance with quality and performance measures
- Electronically view or be advised of health maintenance status (interventions due)
- Electronically obtain lists of patients with overdue health maintenance services
- Electronically view or be advised of disease management status (interventions due)
- Electronically obtain lists of patients with overdue disease management services

Adoption of Advanced EHR Capabilities in Massachusetts

Advanced EHR capabilities build on basic functionality and also include components that allow physicians to ensure wellness and manage chronic disease. Adoption of advanced functionality may involve the use of multiple electronic systems. Disease management and health maintenance functionality is included in some EHR vendors' product suites, and are also available as stand alone applications.

In Massachusetts, only 5 percent of physicians use all advanced capabilities for at least some of their patients, in line with the national findings of the recent *NEJM* study.[8]

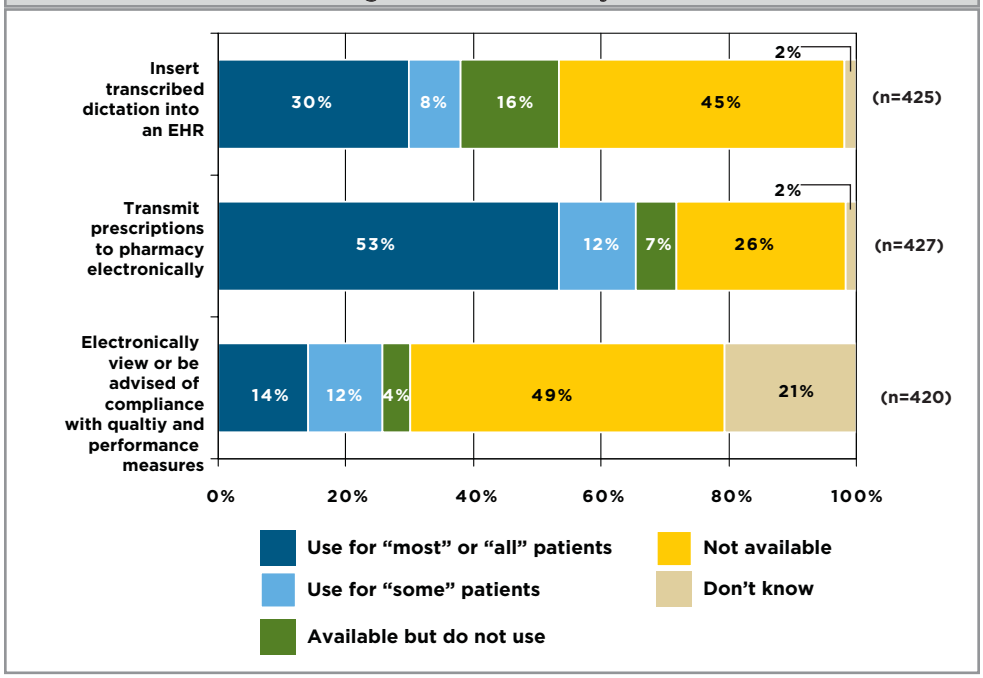
As with basic capabilities, adoption of advanced EHR functionality in Massachusetts is higher among primary care physicians and respondents from larger practices. Nine percent of physicians in large practices use all advanced capabilities for at least some of their patients, compared with only 4 percent of physicians in smaller practices. Similarly, primary care physicians are more than twice as likely to use all advanced capabilities for at least some of their patients than non-PCPs (7 percent vs. 3 percent).

Overall, the biggest gap in advanced functionality is the ability to electronically view or be advised of compliance with quality measures, available to less than one-third of respondents. Functionality to insert transcribed dictation into an EHR is available to just over half of Massachusetts physicians.

		Practice Size		Specialty	
Advanced Functionality	Total (n = 430)	Among those in 25+ MD practices (n = 92)	Among those in <25 MD practices (n = 338)	Among all PCPs (n = 217)	Among all non-PCPs (n = 213)
All advanced capabilities at least available	**13%**	18%	12%	16%	10%
All advanced capabilities used for at least "some" patients	**5%**	9%	4%	7%	3%
All advanced capabilities used for "most" or "all" patients	**1%**	1%	1%	2%	1%

Electronically transmitting a prescription to the pharmacy can improve practice efficiency, reducing incoming calls from the pharmacy, automating the refill process, and eliminating the time required to fax prescriptions. Recent data from SureScripts indicates that 25 percent of Massachusetts physicians electronically transmit medications via EDI (electronic data interchange).

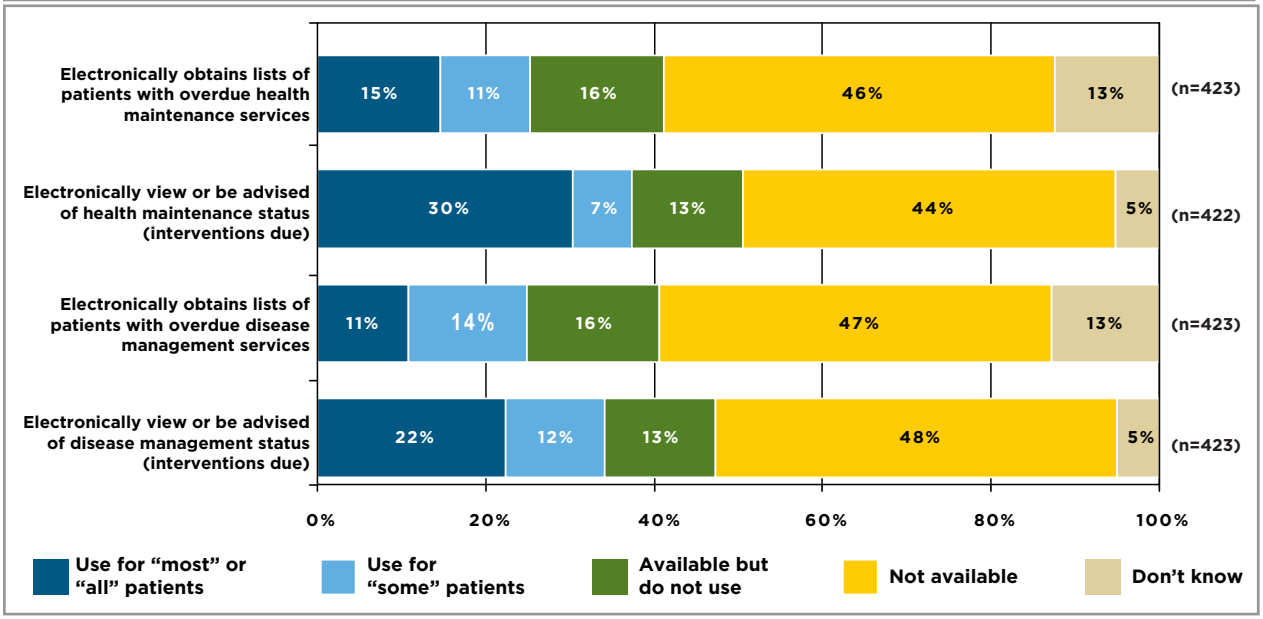
Availability and Use of "Advanced" EHR Functionality Among Massachusetts Physicians



However, 65 percent of survey respondents indicated they electronically transmit prescriptions to a pharmacy for at least some of their patients. This disparity may be explained by the fact that the survey counts respondents who transmit prescriptions via the SureScripts-RxHub network as well as those who send computer-generated faxes of prescriptions to the pharmacy.

While a higher percentage of primary care physicians (83 percent) reported electronically transmitting prescriptions to a pharmacy than non-PCPs (48 percent), there was virtually no difference in adoption between respondents in large and small practices.

Availability and Use of Disease Management and Health Maintenance EHR Functionality Among Massachusetts Physicians



Disease management and health maintenance are essential capabilities for ensuring wellness and managing chronic disease. Physicians are able to use the software to identify patients in need of special care, track follow-up care given to specific patients, and monitor overall compliance and progress with a specific program.

In Massachusetts, disease management and health maintenance capabilities are available to less than half of physicians, with a significant rate of non-use among those with access to the functionality. For each disease management and health maintenance capability, at least 13 percent of all physicians report that they have access to the functionality but do not use it for any patients. On average, Massachusetts primary care physicians are more than twice as likely to use disease management and health maintenance capabilities as non-PCPs.

Physicians in larger practices are more likely than those in smaller practices to have access to disease management and health maintenance capabilities, but are less likely to actually use them. For each disease management/health maintenance capability, roughly one-fourth of all responding physicians in practices of more than 25 doctors said that the functionality is available but that they do not use it.

Recent data indicates that adults in the United States receive only 55 percent of recommended care.[9] While availability of disease management and health maintenance capabilities in ambulatory practices in Massachusetts is low, more efficient and coordinated use of the information already captured by payers can help to close this gap. For example, payer information could be used to determine if a diabetic underwent an eye exam or if a woman over 50 had received a mammogram.

The Bottom Line

Adoption of basic EHR capabilities in Massachusetts is well above the national average. The focus of payers in the state to encourage adoption of e-prescribing functionality is evident, as 80 percent of physicians now at least have the basic ability to order prescriptions electronically. Gaps still exist around the ability to write encounter notes and the availability of functionality to maintain problem and allergy lists, limiting some basic clinical decision support functionality.

Adoption of advanced EHR capabilities among Massachusetts physicians is in line with the national average, but work still remains. Although 72 percent of respondents to the survey now have the ability to electronically transmit prescriptions to a pharmacy, access to essential disease management and health maintenance capabilities is limited. Even among PCPs, more than 40 percent of respondents report that functionality such as obtaining lists of patients with overdue services and viewing disease management or health maintenance status is unavailable.

Gaps in use of available EHR functionality also remain. Only one-third of Massachusetts physicians with access to all basic EHR capabilities use the functionality for most or all of their patients; less than 40 percent with access to all advanced EHR capabilities report using the functionality for even “some” of their patients. Improving EHR adoption in Massachusetts will require increasing physicians’ access to clinical technology, but the first step will be to fully understand the barriers limiting widespread use of the tools that are currently available.

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About Blue Cross Blue Shield of Massachusetts

Blue Cross Blue Shield of Massachusetts (www.bluecrossma.com) was founded 72 years ago by a group of community-minded business leaders. Today, headquartered in Boston, BCBSMA provides coverage to approximately 3 million members. BCBSMA believes in rewarding doctors and hospitals for delivering safe and effective care, and in empowering patients to take more responsibility, become educated health care consumers and become stronger partners with their doctors. Blue Cross Blue Shield of Massachusetts is an independent licensee of the Blue Cross Blue Shield Association.

References

1 Medicare Improvements for Patients and Providers Act of 2008.

2 Blue Cross Blue Shield of Massachusetts Press Release (October 28, 2008.)

3 DesRoches, CM et al. "Electronic Health Records in Ambulatory Care — A National Survey of Physicians," *NEJM* 359, no. 1 (2008): 50–60.

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9 CITL, The Value of Personal Health Records (November 2008.)

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