

Physician Adoption of Electronic Health Record Systems: United States, 2011

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Key findings

Data from the 2011 Physician Workflow study

- In 2011, 54% of physicians had adopted an electronic health record (EHR) system.
- About three-quarters of physicians who have adopted an EHR system reported that their system meets federal “meaningful use” criteria.
- Eighty-five percent of physicians who have adopted an EHR system reported being somewhat (47%) or very (38%) satisfied with their system.
- About three-quarters of adopters reported that using their EHR system resulted in enhanced patient care.
- Nearly one-half of physicians currently without an EHR system plan to purchase or use one already purchased within the next year.

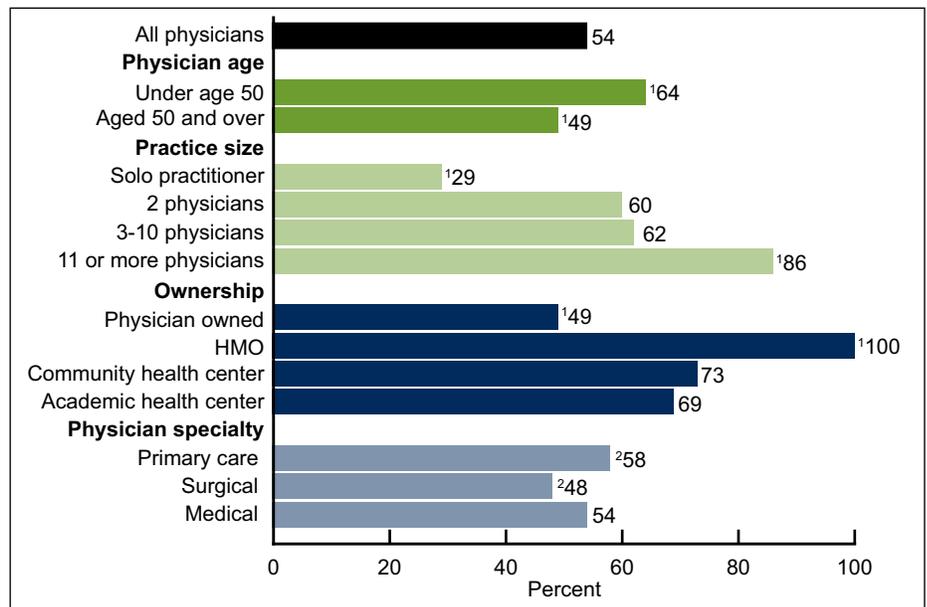
One goal of the federal 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act is to advance the use of health information technology by providing Medicare and Medicaid incentives to physicians and hospitals that adopt and demonstrate “meaningful use” (MU) of electronic health record (EHR) systems (1,2). This report presents a nationally representative profile of physician use of EHR systems.

Keywords: electronic health records • health information technology • National Ambulatory Medical Care Survey • physician workflow

Who adopts EHR systems?

- Fifty-four percent of physicians were adopters of EHR systems (see “Definitions”). Among physicians under age 50, 64% were adopters.

Figure 1. Percentage of electronic health record system adoption, by physician age and specialty and practice size and ownership, 2011



¹Differences in adoption between this category and all others are statistically significant ($p < 0.01$).

²Significant difference between primary care and surgical specialists ($p < 0.01$).

NOTES: Adoption consists of physicians who use a health record system that is all or partially electronic (excluding systems solely for billing). The sample includes nonfederal, office-based physicians and excludes radiologists, anesthesiologists, and pathologists. HMO is health maintenance organization.

SOURCE: CDC/NCHS, Physician Workflow study, 2011.



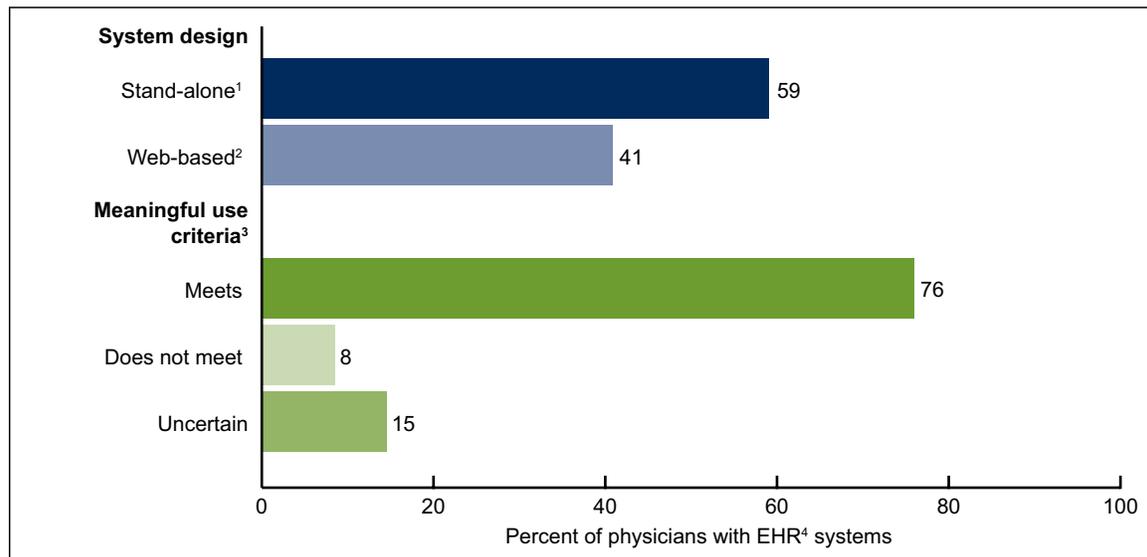
About one-half of physicians aged 50 and over were adopters (Figure 1).

- Among solo practitioners, 29% were adopters of EHR systems. The proportion of physicians who were adopters increased as the size of the practice increased, with 60% of physicians in 2-physician practices, 62% of physicians in 3-to-10-physician practices, and 86% of physicians in practices with 11 or more physicians having adopted EHR systems (Figure 1).
- Only 49% of physicians in physician-owned practices were adopters, whereas virtually all physicians in health maintenance organizations, about three-quarters of physicians in community health centers (73%), and 7 out of 10 physicians (69%) in academic health centers had adopted EHR systems (Figure 1).
- Primary care (58%) and medical care specialists (54%) did not significantly differ from each other in EHR adoption, yet a greater proportion of primary care specialists had adopted EHR systems compared with surgical specialists (48%) (Figure 1).
- No differences were observed in EHR adoption status by physician gender, race or ethnicity, or practice location in metropolitan statistical area (data not shown).

What kinds of systems do EHR adopters use?

- About three-quarters of adopters (76%) have a system that currently meets the Centers for Medicare & Medicaid Services (CMS) MU criteria (see “Definitions”), whereas 8% have a system that does not meet the CMS MU criteria. About 15% of respondents are uncertain whether their system meets MU criteria (Figure 2).

Figure 2. Physicians’ electronic health record systems, by type and ability to meet meaningful use criteria, 2011



¹Data and application functionality delivered on-site.

²System hosted and data stored off-site.

³Defined by Centers for Medicare & Medicaid Services.

⁴Electronic health record.

NOTES: Data represent physicians who reported having adopted EHR systems (55% of sample). The sample includes nonfederal, office-based physicians and excludes radiologists, anesthesiologists, and pathologists. Missing values are excluded. Percentages may not sum to 100 because of rounding.

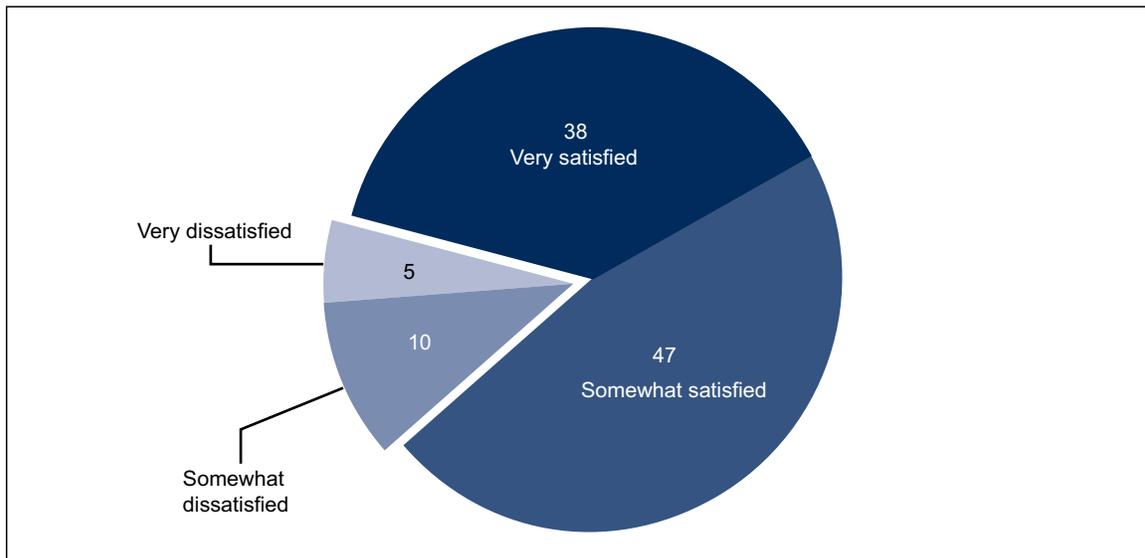
SOURCE: CDC/NCHS, Physician Workflow study, 2011.

- More adopters have a stand-alone, self-contained, system (59%) rather than a Web-based design system (41%) (see “Definitions”) (Figure 2).
- Although 10% of adopters were in the process of implementing their EHR system, the vast majority of adopters (90%) reported actively using their EHR system (data not shown).

How satisfied are EHR users with their systems?

- The majority of physicians who have adopted an EHR system (85%) were either very satisfied (38%) or somewhat satisfied (47%) with their system. About 15% of providers were either very dissatisfied (5%) or somewhat dissatisfied (10%) with their EHR system (Figure 3).
- Over two-thirds of adopters (71%) would purchase their EHR system again (data not shown).

Figure 3. Percent distribution of electronic health record satisfaction among office-based physicians: United States, 2011

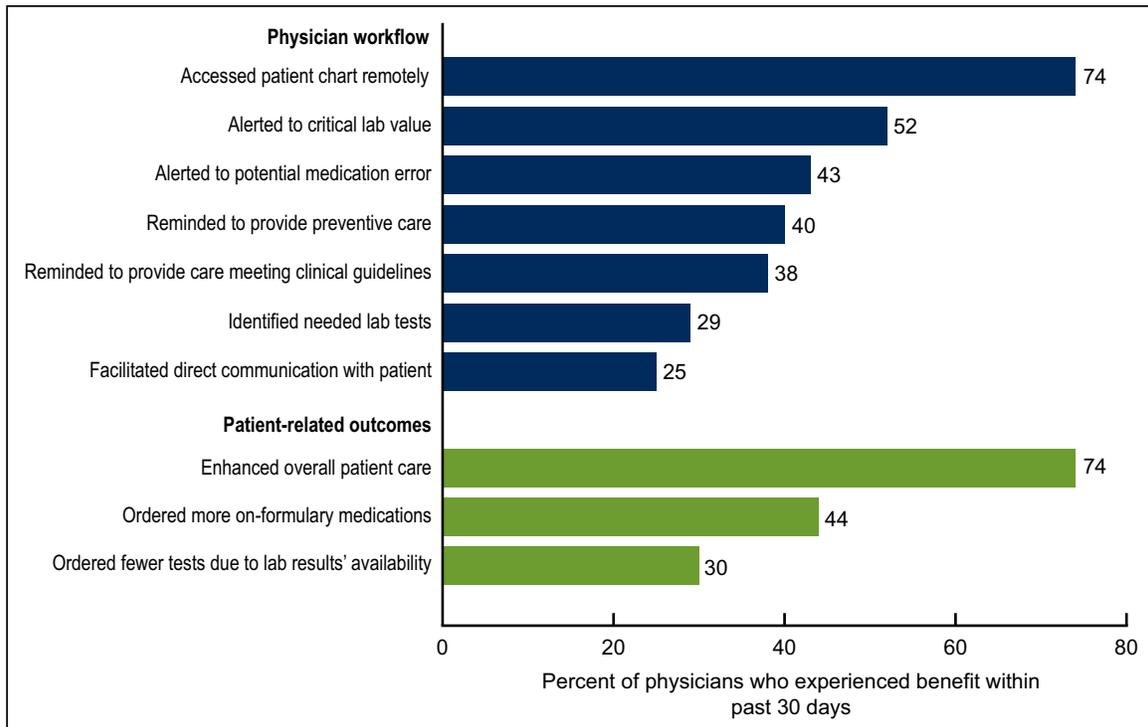


NOTES: Data represent office-based physicians who reported having adopted electronic health record systems (55% of sample). The sample includes nonfederal, office-based physicians and excludes radiologists, anesthesiologists, and pathologists. Missing values are excluded.
 SOURCE: CDC/NCHS, Physician Workflow study, 2011.

What are the benefits of having an EHR system?

- A majority of adopters reported having accessed a patient’s chart remotely (74%) and having been alerted to critical lab values (52%) by using their EHR system within the past 30 days. A majority also reported that using their EHR system had resulted in enhanced overall patient care (74%) (Figure 4).

Figure 4. Percentage of physicians whose electronic health records provided selected benefits: United States, 2011

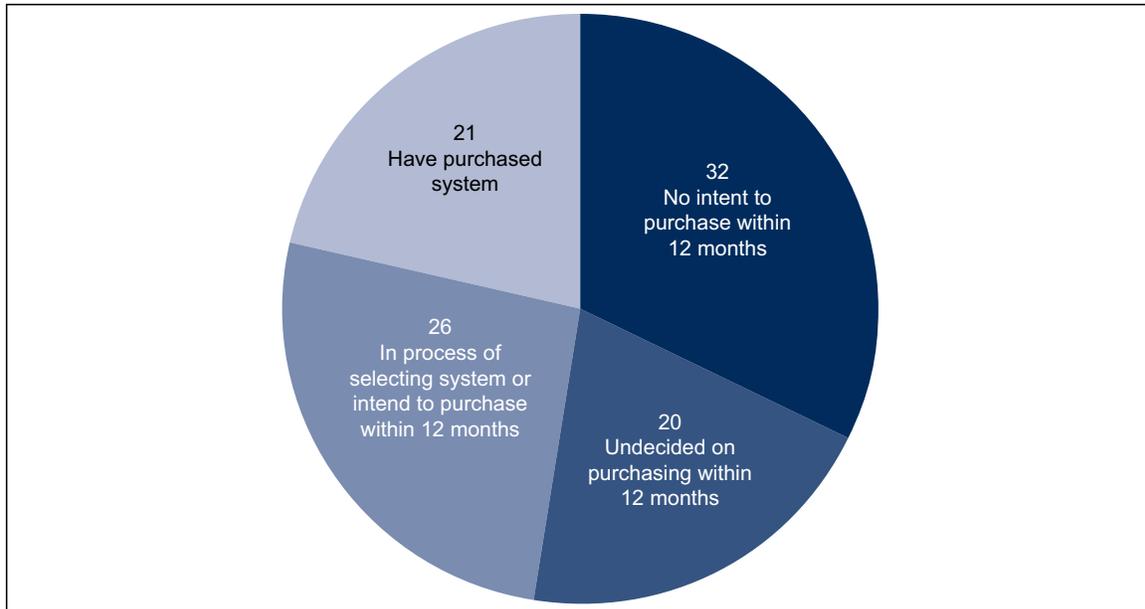


NOTES: Physicians with electronic health record (EHR) systems whose systems or scope of work did not include a specified capability responded not applicable. These responses are included in the denominator for percentages. Data represent office-based physicians who reported having adopted EHR systems (55% of sample). The sample includes nonfederal, office-based physicians and excludes radiologists, anesthesiologists, and pathologists. SOURCE: CDC/NCHS, Physician Workflow study, 2011.

Do physicians without an EHR system intend to purchase a system?

- Among nonadopters, about one-third reported having no intention to purchase an EHR system within 12 months (32%), and one-fifth reported being undecided whether to purchase an EHR system in the next 12 months (20%). In addition, about one-half of nonadopters reported either intending to purchase an EHR system within 12 months (26%) or having already purchased one (21%) (Figure 5).

Figure 5. Percent distribution of intent to purchase electronic health record system among physicians lacking a system: United States, 2011



NOTES: Data represent office-based physicians who reported not having adopted an electronic health record system (45% of sample). The sample includes nonfederal, office-based physicians and excludes radiologists, anesthesiologists, and pathologists. Percentages may not sum to 100 because of rounding.
SOURCE: CDC/NCHS, Physician Workflow study, 2011.

Summary

Overall, in 2011, 54% of physicians in office-based practices had adopted EHRs and 46% had not. Differences were observed between physicians who were EHR adopters and nonadopters by age, physician specialty, practice size, and ownership. Generally, physicians under age 50 were more likely to adopt EHR systems than physicians aged 50 and over. The proportion of physicians who were adopters increased as the size of the practice increased. Compared with solo practitioners where fewer than one-third of physicians adopted EHR systems, those in 2-physician or 3-to-10-physician practices were twice as likely, and those in practices with 11 or more physicians were nearly three times as likely, to have adopted EHR systems. Only one-half of those in physician-owned practices were adopters, whereas physicians employed by community health centers, academic health centers, and HMOs were more likely to have adopted an EHR system.

The majority of EHR adopters' systems met CMS MU criteria, which would allow the practice to receive incentive payments authorized by the HITECH Act. A majority of EHR adopters had stand-alone systems rather than Web-based systems. Stand-alone systems offer faster response times than Web-based systems, and although stand-alone systems have higher initial cost, their maintenance costs are lower. Web-based systems have the advantage of being easy to access wherever the Internet is available, whereas stand-alone systems may have limited off-site access.

The vast majority of physicians who use EHR systems (85%) reported being somewhat satisfied (47%) or very satisfied (38%) with their system. A majority would purchase their EHR system again (71%), suggesting that EHR adopters are generally positive about their current systems. Among EHR adopters, 74% believe that using their system enhanced overall patient care.

Among nonadopters, about one-half reported either already having purchased a system or planning to adopt a system within 12 months. This finding suggests an increase in EHR adoption is likely to take place in 2012 among 2011's nonadopters, potentially amplifying the impact of federal policy incentives.

Definitions

Physician office: A place where physicians not federally employed provide direct patient care in the 50 states and the District of Columbia; excludes radiologists, anesthesiologists, and pathologists.

Demonstrating meaningful use (MU): To qualify for CMS incentive payments for MU, an eligible provider must use a certified EHR system demonstrating all 15 of the core set objectives and 5 of 10 menu set objectives through associated measures or by attestation in 2011 (2). Comparisons of several core objectives are available from the NAMCS supplemental EHR mail survey (3).

Adopters and nonadopters of EHRs: Status is derived from office-based physicians who answered the EMR supplement question, "Does this practice use electronic medical records or electronic health records (not including billing records)?" Adopters are those who answered either "yes, all electronic" or "yes, part paper and part electronic"; nonadopters answered "no" to using electronic medical records (EMRs) or EHRs.

Stand-alone and Web-based design EHR systems: A stand-alone, or client, server represents an EHR system that is self-contained, in which data and application functionality are delivered on-site. Web-based EHR systems include application service providers and browser-based systems, also called a “cloud system.” Web-based design EHR systems use a service provider to host the system and store data for the practice off-site, and the physician accesses the EHR system and data through the Internet (4).

Data source and methods

The data for this report are from the National Ambulatory Medical Care Survey (NAMCS) Physician Workflow mail survey. The Physician Workflow study, funded by the Office of the National Coordinator for Health Information Technology, is conducted by the National Center for Health Statistics (NCHS) as a NAMCS supplement. It represents a 3-year initiative to survey office-based physicians about their experiences in and perceptions of adopting and using EHR systems. Respondents will be followed annually over a 3-year period, beginning in 2011 and continuing through 2013.

The sample for the 2011 Physician Workflow mail survey consisted of those physicians confirmed eligible (i.e., who treat ambulatory patients in a physician’s office; see “Definitions”) in the earlier 2011 NAMCS EMR mail survey. The 2011 EMR mail sample was a stratified sample of physicians with strata defined by state. Eligible physicians for whom EHR adoption status was not confirmed in the EMR survey were contacted to determine that status. Only those NAMCS eligible respondents were mailed Physician Workflow questionnaires within a 2-month period of determining whether they used an EHR system. Adopters received a different questionnaire than nonadopters (4,5).

Eligibility status was determined for 8,164 of the 10,301 office-based physicians in the EMR mail survey sample, for an unweighted eligibility status rate of 79.3% (77.7% weighted). Of these 8,164 physicians, 5,232 were deemed eligible and mailed the Physician Workflow questionnaire, to which a total of 3,180 physicians responded for an unweighted response rate of 60.8% (59.0% weighted). The combined, overall unweighted response rate is based on multiplying the eligibility status rate by the workflow mail response rate among those deemed eligible. Therefore, the combined overall unweighted response rate is 48.2% (45.8% weighted). In order to be nationally representative and correct for nonresponse bias, survey weights were designed to use characteristics of late respondents (data obtained by phone) as a proxy for nonresponse. Those refusing to participate in the EMR survey were contacted to determine eligibility and included in the workflow survey if eligible. About 11% of workflow survey respondents had refused to participate in the EMR survey, with more of these respondents being nonadopters than adopters. For estimates from the EMR questionnaire (e.g., practice size or ownership), missing estimates include unit nonresponse among respondents who refused to take the EMR questionnaire. Among workflow survey respondents, the proportion that completed the EMR questionnaire was greater for EHR adopters than nonadopters.

All reported comparisons are statistically significant unless otherwise indicated. Comparisons not mentioned may or may not be statistically significant. Data analyses were performed using the statistical packages SAS version 9.2 (SAS Institute, Cary, N.C.) and SUDAAN version 10.0 (RTI International, Research Triangle Park, N.C.).

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References

1. Blumenthal D, Tavenner M. The “meaningful use” regulation for electronic health records. *N Engl J Med* 363(6):501–4. 2010.
2. Centers for Medicare & Medicaid Services. The official Web site for the Medicare and Medicaid electronic health records (EHR) incentive programs. Available from: <https://www.cms.gov/ehrincentiveprograms/> [Accessed April 9, 2012].
3. Hsiao CJ, Hing E, Socey TC, Cai B. Electronic health record systems and intent to apply for meaningful use incentives among office-based physician practices: United States, 2001–2011. NCHS data brief, no 79. Hyattsville, MD: National Center for Health Statistics. 2011. Available from: <http://www.cdc.gov/nchs/data/databriefs/db79.pdf> [Accessed April 9, 2012].
4. Physician workflow supplement 2011 [EHR adopters], National Ambulatory Medical Care Survey. Hyattsville, MD: National Center for Health Statistics. 2011. Available from: http://www.cdc.gov/nchs/data/ahcd/2011_Physician_Workflow_Supplement_for_EHR_Adopters.pdf [Accessed April 9, 2012].
5. Physician workflow supplement 2011 [EHR nonadopters], National Ambulatory Medical Care Survey. Hyattsville, MD: National Center for Health Statistics. 2011. Available from: http://www.cdc.gov/nchs/data/ahcd/2011_Physician_Workflow_Supplement_for_EHR_Non-Adopters.pdf [Accessed April 9, 2012].

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