

## Electronic Medical Record/Electronic Health Record Use by Office-based Physicians: United States, 2008 and Preliminary 2009

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Policymakers' interest in the progress of health information technology adoption by health care providers has increased since 2004 when the federal government set the goal for most Americans to have electronic health records by 2014 (1). The 2009 American Recovery and Reinvestment Act may accelerate the pace of electronic medical record/electronic health record (EMR/EHR) adoption by providers, because it includes funding to promote adoption and use of electronic systems (2).

The National Ambulatory Medical Care Survey (NAMCS) conducted by the National Center for Health Statistics (NCHS) is an annual nationally representative survey of patient visits to office-based physicians that collects information on use of EMR/EHR. In 2008 and 2009, a supplementary mail survey on EMR/EHR use was conducted in addition to the core in-person NAMCS.

According to combined data from the 2008 surveys (mail and in-person surveys), 41.5 percent of physicians reported using all or partial EMR/EHR systems (not including systems solely for billing) in their office-based practices. This estimate was obtained from the question, "Does this practice use electronic medical records or electronic health records (not including billing records)?" (Yes, all electronic; Yes, part paper and part electronic; No; and Don't know). The comparable figure for the 2007 NAMCS was 34.8 percent (3).

Besides reporting on all or partial EMR/EHR systems, physicians reported the computerized functionalities in their practices. Systems defined as basic include the following functionalities: patient demographic information, patient problem lists, clinical notes, orders for prescriptions, and viewing laboratory and imaging results (4,5). Systems defined as fully functional include all functionalities of basic systems plus the following: medical history and follow-up, orders for tests, prescription and test orders sent electronically, warnings of drug interactions or contraindications, highlighting of out-of-range test levels, electronic images returned, and reminders for guideline-based interventions (4,5). In 2008, about 16.7 percent of physicians reported having systems that met the criteria of a basic system, and about 4.4 percent reported that of a fully functional system, a subset of a basic system. Comparable figures for basic and fully functional systems in the 2007 NAMCS were 11.8 percent and 3.8 percent, respectively (3).

According to preliminary estimates from the 2009 mail survey, 43.9 percent of the physicians reported using all or partial EMR/EHR systems (not including systems solely for billing) in their office-based practices. About 20.5 percent reported having systems that met the criteria of a basic system, and 6.3 percent reported that of a fully functional system, a subset of a basic system. The figure shows EMR/EHR use among office-based physicians from 2001 through the preliminary 2009 estimates. Because NAMCS did not collect data on some features of computerized systems prior to 2006, the trends for basic and fully functional systems start in 2006.



These data indicate that physicians have been increasingly adopting EMR/EHR systems. From 2007 to 2008, physicians' use of any EMR system increased by 18.7 percent. Within the same period, the percentage of physicians reporting having systems that met the criteria of a basic system increased by 41.5 percent. The 2009 preliminary estimates did not change significantly from 2008.

NAMCS is a national probability sample survey of nonfederal office-based physicians. The target universe of NAMCS includes physicians classified as providing direct patient care in office-based practices, including those in community health centers, according to the American Medical Association or the American Osteopathic Association. Radiologists, anesthesiologists, and pathologists are excluded. Samples of physicians stratified by specialty were selected from 112 geographic areas across the 50 states and the District of Columbia.

Samples of 3,200 and 2,000 physicians were selected for the core in-person NAMCS and the supplemental mail survey, respectively. NCHS conducted the 2008 core NAMCS from December 31, 2007 to December 28, 2008, and the 2008 mail survey from April 2008 through August 2008. Trained field representatives from the U.S. Census Bureau conducted in-person interviews to collect data for the core NAMCS. For the mail survey, each sampled physician received up to three mail surveys and one reminder or thank-you postcard. Two weeks after the third mailing, telephone calls were made to nonrespondents. The final estimates of 2008 EMR/EHR use combine the core NAMCS and the mail survey. The unweighted response rate of the 2008 combined surveys was 64 percent (65 percent when weighted by the inverse of the probability of selection).

From March 2009 through June 2009, NCHS conducted another EMR/EHR mail survey on a sample of 2,000 physicians with the same sampling design as in 2008. The preliminary 2009 estimates reported here were based on the 2009 mail survey. Because of additional efforts to locate nonrespondents via extensive website searches, the response rate (both unweighted and weighted) improved from 62 percent in 2008 to 74 percent in 2009. NCHS will combine the results from the 2009 mail survey and core NAMCS after the 2009 core NAMCS has completed data collection to produce a final estimate of EMR/EHR use for 2009.

The 2008 in-person and mail surveys used the term "EMR" while the 2009 mail survey used "EMR/EHR." The change of terminology in the survey reflects that EMR and EHR are often used interchangeably. A copy of the 2008 and 2009 surveys can be obtained from the NCHS website: [http://www.cdc.gov/nchs/ahcd/ahcd\\_survey\\_instruments.htm#namcs](http://www.cdc.gov/nchs/ahcd/ahcd_survey_instruments.htm#namcs). Starting in 2007, the skip pattern after the all or partial EMR/EHR systems question was removed, and physicians reported computerized functionalities regardless of their answers to the all or partial EMR/EHR systems question.

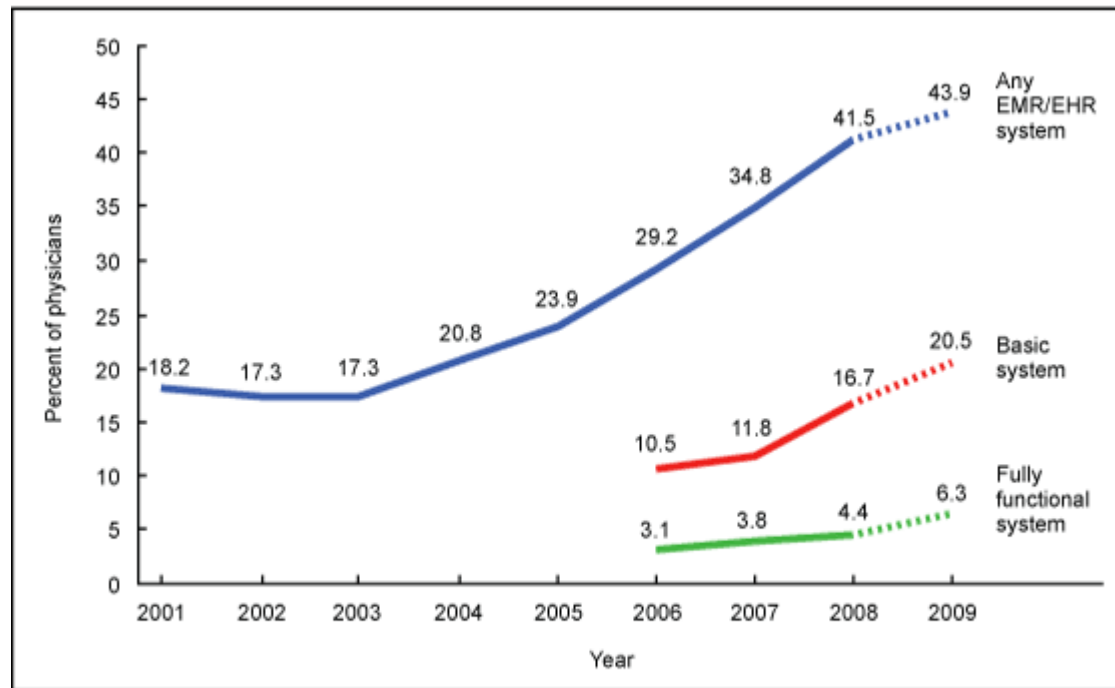
Statements of differences in estimates are based on statistical tests (e.g., chi-square tests of independence, Student's *t*-test, or weighted linear regression) with significance at the  $p < 0.05$  level. Terms relating to differences, such as increased or decreased, indicate that the differences are statistically significant. A lack of comment regarding the difference does not mean that the difference was tested and found to be not significant.

## References

1. White House. Executive Order: Incentives for the use of health information technology and establishing the position of the National Health Information Technology Coordinator. 2004. Available from: [http://nodis3.gsfc.nasa.gov/displayEO.cfm?id=EO\\_13335](http://nodis3.gsfc.nasa.gov/displayEO.cfm?id=EO_13335) .
2. Blumenthal D. Stimulating the adoption of health information technology. *N Engl J Med* 360(15):1477–9. 2009.
3. Hing E, Hsiao CJ. Electronic medical record use by office-based physicians and their practices: United States, 2007. National health statistics reports; forthcoming. Hyattsville, MD: National Center for Health Statistics.
4. DesRoches CM, Campbell EG, Rao SR, Donelan K, Ferris TG, Jha A, et al. Electronic health records in ambulatory care—A national survey of physicians. *N Eng J Med* 359(1):50–60. 2008.
5. Robert Wood Johnson Foundation. Health information technology in the United States: Where we stand, 2008. 2008. Available from: <http://www.rwjf.org/files/research/062508.hit.exsummary.pdf>.

# Figure

Percentage of office-based physicians with electronic medical records/electronic health records (EMRs/EHRs): United States, 2001–2008 and preliminary 2009



NOTES: Any EMR/EHR is a medical or health record system that is either all or partially electronic (excluding systems solely for billing). The 2009 data are preliminary estimates (as shown on dashed lines), based only on the mail survey. Estimates of basic and fully functional systems prior to 2006 could not be computed because some items were not collected in the survey. Fully functional systems are a subset of basic systems. Starting in 2007, the skip pattern after the all or partial EMR/EHR systems question was removed. Includes nonfederal, office-based physicians. Excludes radiologists, anesthesiologists, and pathologists.  
 SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey.