



MEDIA ADVISORY

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MORE PHYSICIANS USING ELECTRONIC MEDICAL RECORDS

CDC's National Center for Health Statistics is issuing a new Health E-Stat today entitled "*Electronic Medical Record use by Office-based Physicians: United States, 2005.*"

The E-Stat is the latest look at the growing trend towards electronic record-keeping in the medical community. Some of the key findings in the report include:

- Nearly one in four (23.9 percent) of physicians reported using full or partial electronic medical records (EMRs) in their office-based practice in 2005 - a 31 percent increase from the 18.2 percent reported in 2001.
- Physicians in the Midwest (26.9 percent) and West (33.4 percent) were more likely to use EMRs than those in the Northeast (14.4 percent).
- Physicians in metropolitan statistical areas (nearly 24.8 percent) were more likely to use EMRs than were those in non-metropolitan areas (16.9).
- Only one in ten (9.3 percent) physicians, however, used EMRs with all four of the basic functions (computerized orders for prescriptions, computerized orders for tests, reporting of test results, and physician notes) considered necessary for a complete EMR system.

The entire E-Stat can be accessed at the CDC/NCHS web site at www.cdc.gov/nchs.

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Electronic Medical Record Use by Office-Based Physicians: United States, 2005

by Catharine W. Burt, Ed.D.; Esther Hing, M.P.H.; and David Woodwell, B.A., Division of Health Care Statistics

The latest data from the National Ambulatory Medical Care Survey (NAMCS) indicate that one-quarter of office-based physicians report using fully or partially electronic medical record systems (EMR) in 2005, a 31% increase from the 18.2 percent reported in the 2001 survey (1). To better understand physicians' use of EMRs, the 2005 NAMCS included questions about EMR system features that health information technology experts consider to be the minimal requirements of a complete EMR, such as computerized orders for prescriptions, computerized orders for tests, reporting of test results, and physician notes. Based on these requirements, only one in ten of the physicians surveyed is considered to be using EMRs. This report presents estimates of EMR use by physician, practice, and location characteristics of office-based physicians.

Methods

NAMCS is an annual probability survey of nonfederal, office-based physicians providing direct patient care who practice in the 50 states or the District of Columbia, excluding radiologists, anesthesiologists, and pathologists. The survey is conducted by CDC's National Center for Health Statistics. A sample of 3,000 office-based physicians who report that they are in direct patient care was taken from the masterfiles of the American Medical Association and the American Osteopathic Association. The sample design includes 112 geographic primary sampling units (PSUs). Within those PSUs, physicians are stratified by specialty, and a sample of physicians was selected. Physicians are randomly assigned to 1 of 52 reporting weeks throughout the year. Of the 3,000 sample physicians, 1,936 responded that they

were eligible to participate in the survey. Eligible physicians must see patients in an office setting. In 2005, responses were obtained from 1,281 eligible sample physicians who saw patients during their sample week and those who did not for an unweighted response rate of 66.2 percent (67.4 percent - weighted). For more information about NAMCS see www.cdc.gov/nchs/NAMCS.htm.

During the face-to-face induction interview for NAMCS, sample physicians were asked to respond to questions about the scope and size of their office-based practice, including whether or not they used full or partial (part paper, part electronic) EMRs. If they responded "yes" to either full or partial electronic records, they were then asked seven additional questions about the features of their EMR system. Estimates of EMR use were calculated in two ways: physicians were considered to use EMR if they reported "yes" to the general question on EMR use, or if they gave a "yes" response to all four features deemed minimally necessary for a complete EMR system. The four features required of an EMR system are: computerized orders for prescriptions, computerized orders for tests, test results, and physician notes (2).

Data on general use of EMRs were missing for less than 5 percent of physicians; for this analysis, cases missing data were considered as not having EMRs. Assuming missing cases were randomly distributed, this approach may estimate the incidence of EMR adoption.

To address that NAMCS is based on a multi-stage sample of physicians, compound sampling weights were applied to make sure national estimates of EMR use and corresponding estimates of sampling error that were also presented take into account the complex sample design (3). Statements of differences in estimates are based on statistical tests (e.g., chi-square tests of independence, students-t, or weighted linear regression) with significance at the 0.05 level. Additional information about the county in which each physician's practice was located was obtained from the Area Resource File (ARF) (4).

Results

- In 2005, approximately 23.9 percent of physicians (95% confidence interval: 21.1-27.0) reported using full (11.2 percent) or partial (12.7 percent) EMRs in their office-based practice. This represents a 32% increase since 2001 (Figure 1). EMR use did not vary by physician age, gender, or specialty type (Table 1).
- EMR use was related to several practice characteristics including number of physicians in the practice, scope of services as measured by single- or multi-specialty practices, ownership, number of managed care contracts, and percentage of practice revenue from Medicaid (Table 1). However, the only linear relation observed was for practice size (Figure 2).
- Physicians in the Midwest (26.9 percent) and West (33.4

percent) were more likely to use EMRs than were those in the Northeast (14.4 percent) ([Table 2](#)). Physicians in metropolitan statistical areas (24.8 percent) were more likely to use EMRs than were those in non-metropolitan statistical areas (16.9 percent).

- A practice's EMR use was not related to county characteristics such as the percentage of the county that is non-Hispanic white, or per capita income for the county in which the practice is located.
- The last column in [Tables 1](#) and [2](#) presents the percentage of physicians who had all four of the specific features deemed minimally necessary for a complete EMR system. Only 9.3 percent of physicians (95% CI: 7.4-11.7) reported having all four of those features in their EMR system. The relationships observed between this measure of EMR use and practice, physician, and county characteristics were the same as those found for full or partial use of EMRs.
- Table 3 presents responses to the seven items concerning the specific features of the EMR system used by the physician. Percentages are provided for all physicians reporting any use of EMRs, as well as physicians reporting that their medical record system is fully or partially electronic. Although 21.4 percent of physicians have electronic patient demographics, only 5.4 percent report having electronic public health reporting capabilities. Those claiming to have a fully-electronic system were more likely to report having computerized orders for both prescriptions and tests, electronic nurses' notes, clinical reminders, and public health reporting compared with those claiming to have partially-electronic systems ($p < .05$).

Comment

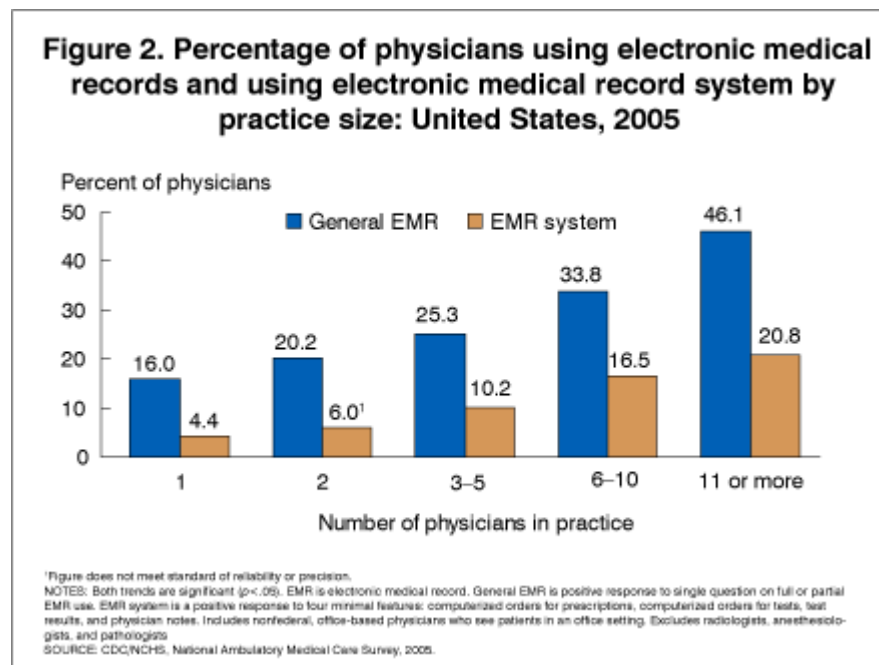
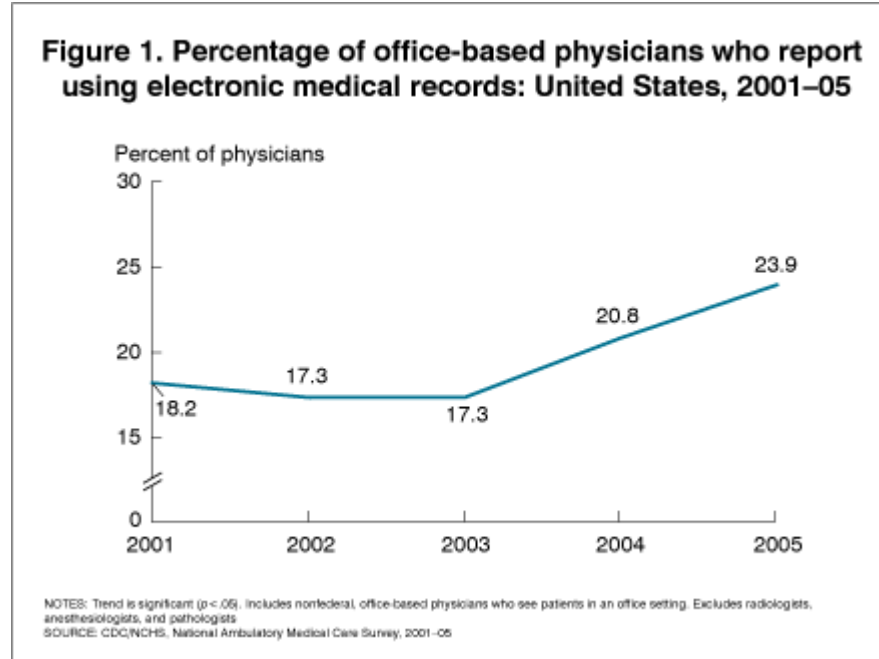
Although these estimates show that progress has been made toward the goal of universal electronic health records, there is still a long way to go. Solo practitioners are the least likely to use EMRs, whether measured generally or for an EMR system with four specific features. Although solo practitioners make up about one-third of physicians, they comprise about two-thirds of medical practices ([5](#)). Additionally, the features of EMRs vary widely; clinical reminders and public health reporting lag behind the other features of systems in current use.

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Table 1. Percent distribution of physicians reporting use of electronic medical records by office-based physician and practice characteristics: United States, 2005

Physician and practice characteristics	Percent distribution of all physicians /1	Percent of physicians reporting—	
		Full or partial use of EMRs /2,3 (standard error)	Minimum set of required features for EMRs /2,4 (standard error)
All physicians /5	100.0	23.9 (1.5)	9.3 (1.1)
Physician characteristic			
Age of physician:			
Under 35 years	3.9	44.0 (8.5)	*15.2 (8.1)
35-44 years	27.2	26.8 (3.0)	10.4 (2.0)
45-64 years	34.5	25.1 (2.5)	10.5 (1.8)
55-64 years	24.5	18.1 (2.4)	7.0 (1.6)
65 years and over	9.9	18.4 (4.2)	*5.7 (2.0)
Physician specialty type /6:			
Primary care	50.5	22.4 (2.3)	9.2 (1.6)
Surgical	21.7	22.3 (2.6)	8.5 (1.8)
Medical	27.8	28.1 (2.8)	10.3 (2.0)
Physician sex:			
Male	76.4	24.1 (1.8)	9.4 (1.2)
Female	23.6	23.5 (2.7)	9.2 (2.0)
Practice characteristic			
Practice size /7:			
Solo	38.5	16.0 (2.2)	4.4 (1.3)
Partner	11.3	20.2 (4.2)	*6.0 (2.6)
3-5	25.4	25.3 (2.9)	10.2 (1.8)
6-10	12.9	33.8 (4.7)	16.5 (3.2)
11 or more	9.7	46.1 (5.8)	20.8 (4.9)
Unknown	2.2	*12.0 (7.9)	*11.2 (7.8)
Scope of services /7:			
Solo and single-specialty	78.6	21.8 (1.5)	7.5 (1.0)
Multispecialty	20.0	34.2 (4.1)	17.1 (3.4)
Unknown	1.4	-	-
Practice ownership /7:			
Physician or physician group	83.3	20.3 (1.6)	7.3 (1.0)
Health maintenance organization	2.9	66.5 (10.1)	49.6 (11.5)
Other	13.9	37.1 (5.1)	13.2 (3.6)
Number of managed care contracts /7:			
None	9.7	15.4 (3.5)	*6.8 (2.6)
1-2	9.8	38.2 (5.4)	22.6 (4.4)
3-10	35.6	23.0 (2.2)	5.4 (1.2)
More than 10	39.3	23.7 (2.4)	9.8 (1.7)
Unknown	5.5	22.0 (6.0)	*11.8 (4.7)
Percentage of revenue from Medicaid /7:			
Under 5	30.9	21.9 (2.4)	11.1 (2.0)
5-19	32.1	25.6 (3.0)	10.1 (1.9)
20 or more	25.1	21.5 (2.8)	5.5 (1.6)
Unknown	11.8	30.2 (4.3)	10.8 (2.6)

* Figure does not meet standard of reliability or precision.

- Quantity zero.

/1 Based on weighted responses from 1,281 sample physicians.

/2 EMR is electronic medical record. Percentages may be underestimated because EMR use is unknown for 4.5 percent of physicians and are assumed to not use EMRs.

/3 Physicians reporting that their medical records are either fully or partially electronic.

/4 Required minimum features include computerized prescription ordering, computerized test ordering, electronic results, and electronic physician clinical notes.

/5 Includes nonfederal, office-based physicians who see patients in an office setting. Excludes radiologists, anesthesiologists, and pathologists.

/6 Specialty type based on categorization of physician subspecialties obtained from the American Medical Association

/7 Significant relationship between EMR use and physician or practice characteristic based on chi-square test ($p < .01$).

Table 2. Location characteristics of office-based physicians: United States, 2005

Location characteristic	Percent distribution of all physicians /1	Percent of physicians reporting—	
		Full or partial use of EMRs /2,3 (standard error)	Minimum set of required features for EMRs /2,4 (standard error)
All physicians /5	100.0	23.9 (1.5)	9.3 (1.1)
Geographic region /6			
Northeast	20.9	14.4 (2.3)	*3.4 (1.2)
Midwest	21.4	26.9 (3.6)	7.5 (1.5)
South	34.9	21.7 (2.7)	9.3 (2.2)
West	22.7	33.4 (3.5)	16.7 (2.8)
Metropolitan status /6			
Metropolitan statistical area	89.4	24.8 (1.6)	10.1 (1.1)
Non-metropolitan statistical area	10.6	16.9 (3.1)	*3.1 (1.7)
Per capita income for county /7			
Under \$25,000	11.6	20.3 (5.3)	*10.0 (3.2)
\$25,000 - \$45,000	77.2	24.0 (1.8)	8.8 (1.2)
Over \$45,000	11.3	27.2 (4.2)	12.3 (3.4)
Percent of county population that is non-Hispanic white /7			
Over 75	40.5	24.8 (2.4)	8.3 (1.6)
50-75	34.1	21.6 (2.6)	10.6 (1.9)
Under 50	25.4	25.8 (3.2)	9.3 (2.2)

* Figure does not meet standard of reliability or precision.

/1 Based on weighted responses from 1,281 sample physicians.

/2 EMR is electronic medical record. Percentages may be underestimated because EMR use is unknown for 4.5 percent of physicians and are assumed to not use EMRs.

/3 Physicians reporting that their medical records are either fully or partially electronic.

/4 Required minimum features include computerized prescription ordering, computerized test ordering, electronic results, and electronic physician clinical notes.

/5 Includes nonfederal, office-based physicians who see patients in an office setting. Excludes radiologists, anesthesiologists, and pathologists.

/6 Significant relationship between EMR use and location characteristic based on chi-square test ($p < .05$).

/7 Based on data from the Area Resource File.

Table 3. Percentage of office-based physicians reporting selected features of their system (with corresponding standard errors), by whether they report that their medical records are fully or partially electronic: United States, 2005

Selected system features	Percent of physicians reporting selected EMR features /1 (standard error)		
	All physicians /2	Fully electronic /3	Partially electronic /4
Patient demographics	21.4 (1.6)	91.5 (2.7)	82.3 (3.8)
Physician clinical notes	17.7 (1.6)	82.2 (5.8)	65.4 (4.9)
Laboratory results	17.2 (1.6)	80.9 (5.5)	63.4 (5.0)
Nurse clinical notes	14.0 (1.5)	72.6 (6.1)	46.0 (5.7)
Computerized orders for prescriptions	13.4 (1.3)	73.5 (5.1)	40.4 (4.5)
Computerized orders for tests	12.7 (1.3)	67.6 (5.2)	40.2 (5.6)
Clinical reminders	10.7 (1.1)	57.9 (5.5)	33.3 (4.3)
Public health reporting	5.4 (0.9)	34.2 (5.1)	12.1 (2.8)

/1 EMR is electronic medical record.

/2 Based on responses from 1,281 physicians. Includes nonfederal, office-based physicians who see patients in an office setting. Excludes radiologists, anesthesiologists, and pathologists.

/3 Based on 151 sample physicians reporting full use of EMRs (11.2 percent of physicians, weighted).

/4 Based on 171 sample physicians reporting partial use of EMRs (12.7 percent of physicians, weighted).

NOTE: Percentages may be underestimated because EMR use is unknown for 4.5 percent of physicians.