Which physicians and practices are using electronic medical records?

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July 19, 2006 The HIT Symposium
Topics

- Background
  - Published results
- Survey methods
- Recent results
  - 2005 estimates
  - Practice vs. physician estimates
  - EMR-enabled care among PCPs
- Conclusions
Background

Starting in 2001, National Ambulatory Medical Care Survey (NAMCS) asked

“Does your practice use electronic medical records?”
Published results

- Annual NAMCS summary reports 2001 and 2002

- Burt, Hing “Use of computerized clinical support systems in medical settings: United States 2001-03” *Advance Data from Vital and Health Statistics*; no 353

- Burt, Sisk “Which Physicians and practices are using electronic medical records?” *Health Affairs*; September/October 2005

- All specialties: 17.6%
- Orthopedic surgery: 24.4%
- Cardiovascular disease: 23.6%
- Otolaryngology: 21.2%
- Other: 19.7%
- Internal medicine: 19.4%
- Neurology: 18.6%
- General and family practice: 17.0%
- OBGYN: 16.9%
- Urology: 16.6%
- General surgery: 15.8%
- Ophthalmology: 15.3%
- Pediatrics: 13.4%
- Dermatology: 10.7%
- Psychiatry: 9.2%

Source: CDC/NCHS: NAMCS found in Burt, Sisk Health Affairs, 2005
Fitted Probability of Using Electronic Medical Records (EMR) by Practice Size and Ownership

Results from logistic regression to predict EMR use adjusted for practice size, scope of services, ownership, managed care contracts, and physician's age (See Exhibit 5- Burt, Sisk. Health Affairs; 2005).
Probability of Using Electronic Medical Records (EMRs) by Practice Size and Ownership

- Results from logistic regression to predict the use of electronic medical records adjusted for practice size, scope of services, ownership, managed care contracts, and physician's age.
NAMCS

- Annual probability survey of office-based physicians (n~3,000)
- Includes nonfederal, office-based physicians who see patients in an office setting.
- Excludes radiologists, anesthesiologists, and pathologists
- Multi-stage sampling design
  - 112 geographic areas
  - Physicians stratified by specialty
  - Sample of office visits from 1 week
- Sample frame - Masterfiles of the AMA and AOA
Induction interview

- Face-to-face interview by US Census Bureau interviewers ~ 20 minutes
- Content
  - Practice size
  - Scope of practice
  - Ownership
  - Managed care involvement
  - Use and components of EMRs
Office visits

Abstracts from ~ 30 office encounters

Content

- Patient demographics
- Continuity of care
- Reasons for visit and diagnoses
- Diagnostic and therapeutic services
- Medications
- Disposition and duration
Quality of data

- Data are centrally processed <1% error
- Response rate ~ 62-70%
- Sample weights include adjustment for nonresponse
- Sampling error - 6-20% of published estimates
- Nonsampling error - Studies indicate negligible nonresponse bias
2005 estimates of EMR penetration

Starting in 2005 – finer EMR detail
- General question: Full or partial use of EMR
- Specific questions:
  - Patient demographics
  - CPOE
  - Orders for tests
  - Lab results
  - Physician notes
  - Clinical reminders
  - Public health reporting
Diffusion of electronic medical records among office-based physicians: United States 2001-2005

Source: National Ambulatory Medical Care Survey, 2001-2005
Percent of physicians using electronic medical records by practice size, for general and specific responses

Chi-square test of independence = 71.0, df=10, p<.01
Note: General response is answer to single question about EMR use whereas specific response is a positive response to all four minimally required features. SOURCE: 2005 NAMCS.
<table>
<thead>
<tr>
<th>EMR system feature</th>
<th>All Physicians</th>
<th>Fully electronic</th>
<th>Partially electronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient demographics</td>
<td>21.4 (1.6)</td>
<td>91.5 (2.7)</td>
<td>82.3 (3.8)</td>
</tr>
<tr>
<td>Physician clinical notes</td>
<td>17.7 (1.6)</td>
<td>82.2 (5.8)</td>
<td>65.4 (4.9)</td>
</tr>
<tr>
<td>Lab results</td>
<td>17.2 (1.6)</td>
<td>80.9 (5.5)</td>
<td>63.4 (5.0)</td>
</tr>
<tr>
<td>Nurse clinical notes</td>
<td>14.0 (1.5)</td>
<td>72.6 (6.1)</td>
<td>46.0 (5.7)</td>
</tr>
<tr>
<td>CPOE</td>
<td>13.4 (1.3)</td>
<td>73.5 (5.1)</td>
<td>40.4 (4.5)</td>
</tr>
<tr>
<td>Test orders</td>
<td>12.7 (1.3)</td>
<td>67.6 (5.2)</td>
<td>40.2 (5.6)</td>
</tr>
<tr>
<td>Clinical reminders</td>
<td>10.7 (1.1)</td>
<td>57.9 (5.5)</td>
<td>33.3 (4.3)</td>
</tr>
<tr>
<td>Public health reporting</td>
<td>5.4 (0.9)</td>
<td>34.2 (5.1)</td>
<td>12.1 (2.8)</td>
</tr>
</tbody>
</table>
## Geographic location

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent distribution of physicians</th>
<th>Percent of physicians using EMRs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>20.9</td>
<td>14.4</td>
</tr>
<tr>
<td>Midwest</td>
<td>21.4</td>
<td>26.9</td>
</tr>
<tr>
<td>South</td>
<td>34.9</td>
<td>21.7</td>
</tr>
<tr>
<td>West</td>
<td>22.7</td>
<td>33.4</td>
</tr>
<tr>
<td>Metro</td>
<td>89.4</td>
<td>24.8</td>
</tr>
<tr>
<td>Non-metro</td>
<td>10.6</td>
<td>16.9</td>
</tr>
</tbody>
</table>

SOURCE: 2005 NAMCS
# Geographic location

<table>
<thead>
<tr>
<th>Location (county population information from ARF)</th>
<th>Percent distribution of physicians</th>
<th>Percent of physicians using EMRs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income (&lt;$25k)</td>
<td>11.6</td>
<td>20.3</td>
</tr>
<tr>
<td>Medium</td>
<td>77.2</td>
<td>24.0</td>
</tr>
<tr>
<td>High income (&gt;=$45k)</td>
<td>11.3</td>
<td>27.2</td>
</tr>
<tr>
<td>High % non-Hispanic white (&gt;75%)</td>
<td>40.5</td>
<td>24.8</td>
</tr>
<tr>
<td>Medium</td>
<td>34.1</td>
<td>21.6</td>
</tr>
<tr>
<td>Low % non-Hispanic white (&lt;50%)</td>
<td>25.4</td>
<td>25.8</td>
</tr>
<tr>
<td>EMR practice penetration of geographic area</td>
<td>Percent distribution of physicians</td>
<td>Percent of physicians using EMRs</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>----------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Under 10%</td>
<td>41.9</td>
<td>9.9</td>
</tr>
<tr>
<td>10-19%</td>
<td>14.6</td>
<td>20.5</td>
</tr>
<tr>
<td>20-29%</td>
<td>13.8</td>
<td>31.1</td>
</tr>
<tr>
<td>30-39%</td>
<td>7.8</td>
<td>41.6</td>
</tr>
<tr>
<td>40% or more</td>
<td>12.8</td>
<td>55.0</td>
</tr>
<tr>
<td>Unknown HRR</td>
<td>9.2</td>
<td>24.5</td>
</tr>
</tbody>
</table>
Scatterplot of EMR diffusion among group and solo/partner physicians in 47 HRRs

\[ Y = 13.62 + 0.19X \]
Percent distributions of physicians and practices by practice size

Practice size (% EMR use)

Solo (16.0) 38.5 69.0
Partner (20.2) 11.3 10.1
3-5 (25.3) 25.4 12.6
6-10 (33.8) 12.9 3.3
11 or more (46.1) 9.7 1.1
Unknown size (12.0) 2.2 3.9

SOURCE: 2005 NAMCS
EMR-enabled care

Visit data from the 2003-4 NAMCS indicate that estimates of EMR use among physicians who are the PCP for patients does not vary by:

- Age, sex, race, ethnicity, region, urbanicity, source of payment, income, education, language ability, etc

About 16.6% of patients who saw their PCP in 2003 or 2004 were covered under EMRs. (95% CI: 12.6-21.5)
EMR use is gradually increasing.

Group practices are leading the way.

Location of practice is related to EMR penetration

Core EMR capability lags behind physician perception of EMR use.

Solo physicians are least likely to use EMRs – while they represent 38.5% of physicians, they represent 69.0% of practices.

Good news is that there appears to be no disparity with regard to EMR-enabled care among patients visiting their PCP.
Information available on the Internet

More information found on our website is [www.cdc.gov/nchs/NAMCS.htm](http://www.cdc.gov/nchs/NAMCS.htm)

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