National perceptions of EHR adoption: Barriers, impacts, and federal policies

National Center for Health Statistics
- Eric Jamoom, PhD, MPH, MS, Senior Service Fellow

In collaboration with the Office of the National Coordinator for HIT
- Vaishali Patel, MPH, PhD
- Jennifer King, PhD
- Michael Furukawa, PhD

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Objectives

- To describe differences between adopters and nonadopters regarding barriers, beliefs about benefits of EHR use, and familiarity with policies available to facilitate EHR adoption.

- To identify what physician and practice characteristics are associated with different policies to support EHR adoption.
Background

- EHR barriers and physician experiences of EHR use
  - DesRoches et al., 2008
- HITECH Act
- The Physician Workflow Survey – 2011
  - Expert panel
  - Barriers associated with EHR adoption
  - Impacts associated with using EHRs
  - Policies influencing EHR adoption
2011 Workflow Study Flow Chart

Total NAMCS EHR Mail Sample (N=10,301)

→ Out of scope (n~3100)

→ Unknown (n~ 1,900)

→ IN SCOPE EHR Mail Survey Sample (n=5,266)

→ Refusals (n=709)

Respondents the EHR mail survey (n=4,557)

→ If in scope and answered EHR use

Complete Workflow Respondent

<table>
<thead>
<tr>
<th>Adopters</th>
<th>Non Adopters</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=1793</td>
<td>N=1387</td>
</tr>
</tbody>
</table>
**Workflow Respondent Characteristics**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Overall</th>
<th>Non-adopter</th>
<th>EHRAdopter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: ≥50 years</td>
<td>63%</td>
<td>70%*</td>
<td>57%*</td>
</tr>
<tr>
<td>Gender: Male</td>
<td>74%</td>
<td>74%</td>
<td>73%</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>77%</td>
<td>78%</td>
<td>77%</td>
</tr>
<tr>
<td>Asian</td>
<td>10%</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>Black</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>5%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>In an MSA:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>88%</td>
<td>88%</td>
<td>87%</td>
</tr>
<tr>
<td>Size:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 (small)</td>
<td>34%</td>
<td>46%*</td>
<td>24%*</td>
</tr>
<tr>
<td>3-10 (medium)</td>
<td>40%</td>
<td>34%*</td>
<td>45%*</td>
</tr>
<tr>
<td>≥11 (large)</td>
<td>13%</td>
<td>4%*</td>
<td>21%*</td>
</tr>
<tr>
<td>Ownership^:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MD owned</td>
<td>56%</td>
<td>62%*</td>
<td>50%*</td>
</tr>
</tbody>
</table>

* Differences between adopters and nonadopters presented were significant (p<0.01)

^ ~13% of practice size and ownership data are missing due to refusal to EMR mail survey.

Source: Physician Workflow Survey, 2011
RESULTS:
Barriers to EHR adoption
<table>
<thead>
<tr>
<th>Major Barriers to EHR Adoption</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of purchasing a system</td>
<td>58%</td>
</tr>
<tr>
<td>Loss of Productivity</td>
<td>46%</td>
</tr>
<tr>
<td>Finding an EHR that meets Practice needs</td>
<td>34%</td>
</tr>
<tr>
<td>Annual Maintenance cost</td>
<td>33%</td>
</tr>
<tr>
<td>Adequacy of training</td>
<td>33%</td>
</tr>
<tr>
<td>Effort needed to select a system</td>
<td>31%</td>
</tr>
<tr>
<td>Adequacy of technical support</td>
<td>30%</td>
</tr>
<tr>
<td>Resistance of practice to change work habits</td>
<td>30%</td>
</tr>
<tr>
<td>Reliability of the system</td>
<td>25%</td>
</tr>
<tr>
<td>Ability to secure financing</td>
<td>20%</td>
</tr>
<tr>
<td>Reaching consensus within the practice</td>
<td>13%</td>
</tr>
<tr>
<td>Access to High Speed Internet</td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: NCHS/Physician Workflow Survey
Top 5 Major barriers

• Nonadopters:
  1. Purchase cost (74%)
  2. Productivity loss (59%)
  3. Maintenance cost (49%)
  4. Finding an EHR (45%)
  5. Adequate training (41%)

• Adopter:
  1. Purchase Cost (51%)
  2. Productivity loss (37%)
  3. Effort to select EHR (27%)
  4. Adequate training (26%)
  5. Finding an EHR (26%)

*Major barrier differences were significantly different between adopters and nonadopters (p<0.01)

Source: NCHS/Physician Workflow Survey
Quotes (qualitative)

• Cost to Purchase:
  “I have become an employed physician, [cost of purchasing an EHR system] is a large reason for this.”
  "We are on our 2nd EHR. The first one not certified for MU. We installed new EHR 2011."

• Productivity Loss:
  – “I tried to use an EMR and due to sense of slowing of the workflow caused by the EMR, I have abandoned it for now.”

Quotes are not representative.
Source: NCHS/Physician Workflow Survey
More quotes

• Resistance to change:
  – "I'll be closing my practice, along with a lot of my colleagues, when EHR becomes necessary to continue practice"
  – “…after 50 years in solo practice, do you actually think I would change?"

Quotes are not representative.
Source: NCHS/Physician Workflow Survey
Not all negative...

• Accessibility to the EHR record
  "I really like our EHR. I can access information at any time/any place. I can field phone calls at home at night..."

• More organized information
  "EHR has eliminated paper charts making results more organized and allow for more easy work from home."

Quotes are not representative.
Source: NCHS/Physician Workflow Survey
Mixed quotes

“EHR is exceptionally valuable for clarity, ease of access, communication, [and] prescribing. It does not save me money. It does not save time. It may or may not improve outcomes. I enjoy having an EHR, but it slows us down and costs us more money.”

Quotes are not representative.
Source: NCHS/Physician Workflow Survey
RESULTS:
Impacts of EHR use
## Positive EHR Impacts on Efficiency/Operations

<table>
<thead>
<tr>
<th>Category</th>
<th>Nonadopters</th>
<th>Adopter Not MU ready</th>
<th>Adopter MU ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sending Rx electronically saves time</td>
<td>71</td>
<td>67</td>
<td>82*</td>
</tr>
<tr>
<td>Saves on managing &amp; storing paper costs</td>
<td>71</td>
<td>72</td>
<td>75</td>
</tr>
<tr>
<td>Overall, their practice functions more efficiently</td>
<td>63</td>
<td>76**</td>
<td>79*</td>
</tr>
<tr>
<td>An asset when recruiting physicians</td>
<td>62</td>
<td>58</td>
<td>68</td>
</tr>
</tbody>
</table>

*Significant differences between Adopters MU ready and Nonadopters (p<0.05)  
**Significant differences between Adopters not MU ready and Nonadopters (p<0.05)  
Source: NCHS/Physician Workflow Survey
Positive EHR impacts on efficiency/operations (Cont.)

- Nonadopters
- Adopter Not MU ready
- Adopter MU ready

<table>
<thead>
<tr>
<th>Impact</th>
<th>Nonadopters</th>
<th>Adopter Not MU ready</th>
<th>Adopter MU ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive lab results faster</td>
<td></td>
<td></td>
<td>75*</td>
</tr>
<tr>
<td>Produce financial benefits for the practice</td>
<td>49</td>
<td>56</td>
<td>67*</td>
</tr>
<tr>
<td>Enhance data confidentiality</td>
<td>48</td>
<td>60**</td>
<td>70*</td>
</tr>
<tr>
<td>Number of office visits increased</td>
<td>19</td>
<td>22</td>
<td>27*</td>
</tr>
</tbody>
</table>

*Significant differences between Adopters MU ready and Nonadopters (p<0.05)

**Significant differences between Adopters not MU ready and Nonadopters (p<0.05)

Source: NCHS/Physician Workflow Survey
Positive EHR impacts on clinical care

- Makes records readily available at point of care
  - Nonadopters: 83%
  - Adopters not MU ready: 91**%
  - Adopters MU ready: 94*%

- Produces clinical benefits for practice
  - Nonadopters: 67%
  - Adopters not MU ready: 79**%
  - Adopters MU ready: 88*%

- Allows the physician to deliver better patient care
  - Nonadopters: 52%
  - Adopters not MU ready: 70**%
  - Adopters MU ready: 75*%

*Significant differences between Adopters MU ready and Nonadopters (p<0.01)
** Significant differences between Adopters not MU ready and Nonadopters (p<0.01)

Source: NCHS/Physician Workflow Survey
Negative EHR impacts on efficiency/operations

Amount of time to plan review order and document care has increased
- Nonadopters: 77
- Adopters not MU ready: 78
- Adopters MU ready: 77

Amount of time to respond to pharmacy calls increased
- Nonadopters: 32
- Adopters not MU ready: 34
- Adopters MU ready: 28

Billing for services is less complete
- Nonadopters: 21
- Adopters not MU ready: 18
- Adopters MU ready: 22

Source: NCHS/Physician Workflow Survey
EHR Negative impacts on clinical care

- Nonadopters
- Adopters not MU ready
- Adopters MU ready

EHR disrupts the way physicians interact with their patients

- 64
- 61**
- 50*

*Significant differences between Adopters MU ready and Nonadopters (p<0.01)
**Significant differences between MU ready and not MU ready Adopters (p<0.01)

Source: NCHS/Physician Workflow Survey
RESULTS:

Policies and the influence of policies on EHR adoption
### Familiarity with ONC Programs

<table>
<thead>
<tr>
<th>EHR Adopters</th>
<th>Medicare MU incentives</th>
<th>Medicaid MU incentives</th>
<th>Regional extension centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not familiar</td>
<td>19*</td>
<td>29</td>
<td>63</td>
</tr>
<tr>
<td>Do not participate</td>
<td>14*</td>
<td>30*</td>
<td>18</td>
</tr>
<tr>
<td>Plan to or already participate</td>
<td>67*</td>
<td>42*</td>
<td>19*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EHR Nonadopters</th>
<th>Medicare MU incentives</th>
<th>Medicaid MU incentives</th>
<th>Regional extension centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not familiar</td>
<td>24*</td>
<td>34</td>
<td>67</td>
</tr>
<tr>
<td>Do not participate</td>
<td>36*</td>
<td>42*</td>
<td>20</td>
</tr>
<tr>
<td>Plan to or already participate</td>
<td>40*</td>
<td>24*</td>
<td>13*</td>
</tr>
</tbody>
</table>

* Significant (difference between adopters and nonadopters (p<0.01)

Source: NCHS/Physician Workflow Survey
Major influence to adopt EHR*

*All differences are significant between adopters and nonadopters (p<0.01)

Source: NCHS/Physician Workflow Survey
Results

• Factors associated w/ policies reported as having a major influence on decision to adopt an EHR:
  – Available certified products, EHR use by trusted colleagues, & technical assistance:
    • Adoption status
  – Incentive payments, financial penalties, capability for HIE w/in network, req. board certification:
    • Adoption status, size
  – EHR selection assistance
    • Adoption status, specialty, ownership
Results (cont.)

- Factors associated with major barriers
  - **Productivity loss, maintenance cost, finding an EHR that meets needs,**
    - Adoption status, size, ownership
  - **Reaching consensus, reliability of system**
    - Adoption status, size
  - **Purchase cost, effort to select a system, secure financing, adequate training**
    - Adoption status, ownership
  - **Resistance to change work habits**
    - Adoption status, size, and region
  - **Tech support** – adoption status only
  - **High speed internet** – no significant associations
Satisfaction & Productivity

• Purchase EHR system again:
  ▪ Yes: 71%
  ▪ No: 29%

• EHR Satisfaction:
  ▪ Very satisfied: 38%
  ▪ Somewhat satisfied: 47%
  ▪ Somewhat dissatisfied: 10%
  ▪ Very dissatisfied: 5%

• EHR adversely affect productivity
  ▪ Yes: 63%  No: 37%

• If yes, did you recover?
  ▪ Recovered 74%
    ▪ <3 months 34%
    ▪ 3-6 months 16%
    ▪ > 6 months 24%
  ▪ Not recovered 22%
  ▪ MISSING 4%

Source: NCHS/Physician Workflow Survey
Discussion

• **Major Barriers: Cost and Productivity loss**

• **EHR Workflow impact:**
  – MU ready adopters experienced:
    • financial benefits, faster lab results, & e-Rx saves time
  – Both adopter groups experienced:
    • Overall more efficient practice, clinical benefits, better patient care, enhanced data confidentiality, & availability of records at POC.
  – All groups disagreed EHR use leads to:
    • Increased office visits, less complete billing, & increased time responding to Rx calls.
Discussion (cont.)

– All groups agree:
  • Increase in time spent planning, reviewing, ordering, and documenting care

• EHR policy facilitators-
  – Not familiar with RECs
  – Nonadopters sensitive to most policies as major influence on EHR adoption
    • Financial penalties
The Physician Workflow Study

Q&A:

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- Office of the National Coordinator for Health Information Technology (ONC)
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- Respondents from the Physician Workflow Study

For more information please contact Eric Jamoom at the National Center for Health Statistics

3311 Toledo Road, Room 3304, Hyattsville, MD 27082
Telephone: (301) 458-4798
E-mail: Ejamoom@cdc.gov Web: http://www.cdc.gov/nchs/

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the Office of the National Coordinator for Health Information Technology.