Going It Alone?
The impact of stand-alone vs. EHR-integrated e-prescribing systems

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Background

- Most of the landmark studies done on e-prescribing were conducted in large academic medical centers.
- Very little empirical data on the value of e-prescribing in the ambulatory setting.
- Part of a larger study to assess the value of e-prescribing in the ambulatory setting.
- Overall study includes 1) shadowing clinicians, 2) focus groups with e-prescribers, 3) claims analysis, and 4) a survey of physicians enrolled with an e-prescribing vendor.
Methodology

- **Survey**: Self-administered questionnaire
- **Mode**: Sequential mixed-mode survey (email followed by multiple mailings and telephone follow-up)
- **Sample**: 2,000 physicians enrolled with the 15 largest e-prescribing vendors in the US
- **Strata**: regular use (n=1,540) and low use (n=460)
- **Field period**: April – September 2009
- **Response rate**: 51% regular use strata, 53% low use strata
Analysis

- Bivariate and multivariable analysis
- **Key independent variable:** type of e-prescribing system
  - “Is the electronic prescribing system at your main practice site integrated with an electronic health record system OR a “stand-alone” electronic prescribing system?”
- **Control variables:** gender, race, ethnicity, specialty, number of years in practice, practice size, clinical setting, location, and region
- **Dependent variables:** use of system, ease of prescribing, effect on practice, satisfaction, effect on prescribing safety.
System type by years in practice

- Integrated system
- Stand-alone system

<table>
<thead>
<tr>
<th>Years in Practice</th>
<th>Percent of Physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td>One to 9</td>
<td>26% 15%</td>
</tr>
<tr>
<td>10 to 19</td>
<td>38% 33%</td>
</tr>
<tr>
<td>20 to 29</td>
<td>25% 32%</td>
</tr>
<tr>
<td>30 or more</td>
<td>11% 19%</td>
</tr>
</tbody>
</table>
System type by specialty and clinical setting

- **Primary care**: Integrated system 57%, Stand-alone system 53%
- **Non-primary care**: Integrated system 43%, Stand-alone system 47%
- **Hospital or medical center**: Integrated system 32%, Stand-alone system 22%
- **Office setting**: Integrated system 67%, Stand-alone system 78%

Specialty

Practice setting
## Using an e-prescribing system

<table>
<thead>
<tr>
<th>Use e-prescribing system most or all of the time to</th>
<th>Integrated system</th>
<th>Stand-alone system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write the prescription</td>
<td>78%</td>
<td>58%*</td>
</tr>
<tr>
<td>Send the prescription to the pharmacy</td>
<td>80%</td>
<td>71%*</td>
</tr>
<tr>
<td>Check formulary information</td>
<td>39%</td>
<td>26%*</td>
</tr>
<tr>
<td>Check drug history</td>
<td>70%</td>
<td>35%*</td>
</tr>
</tbody>
</table>

*p < .01 after adjusting for specialty, years in practice, practice size, clinical setting, location and region

Source: Authors preliminary analysis of 2009 National Survey of E-prescribers.
Effect of e-prescribing system on ease of prescribing

![Graph showing ease of prescribing with integrated and stand alone systems.](image)

- Taking care of Rx refills yourself: 79% (Integrated) vs. 65% (Stand alone)
- Having staff take care of refill requests: 75% (Integrated) vs. 64% (Stand alone)
- Batch processing for refills: 62% (Integrated) vs. 56% (Stand alone)
- Writing an initial Rx for new patient: 71% (Integrated) vs. 44% (Stand alone)
- Prescribing within a patient’s formulary: 48% (Integrated) vs. 51% (Stand alone)

* P < .01 after adjusting for physician specialty, years in practice, practice size, clinical setting, location, and region of the US in which the physician practices.

Source: Authors preliminary analysis of 2009 National Survey of E-prescribers.
Effect of e-prescribing on phone calls the office receives

Source: Authors preliminary analysis of 2009 National Survey of E-prescribers.
Effect of e-prescribing on prescribing safety

- Somewhat or much easier to reconcile medication lists: 80% for integrated system vs. 50% for stand-alone system.
- Significantly or somewhat reduced phone calls from pharmacies about prescribing errors: 62% for integrated system vs. 51% for stand-alone system.

* P ≤ .01 after adjusting for physician specialty, years in practice, practice size, clinical setting, location, and region of the US in which the physician practices.

Source: Authors preliminary analysis of 2009 National Survey of E-prescribers.
Effect of e-prescribing on prescribing safety (con’t.)

- 61% of physicians avoided a drug allergy because of a prompt from the e-prescribing system.
- 58% of physicians avoided a dangerous interaction because of a prompt from e-prescribing system.

* P ≤ .01 after adjusting for physician specialty, years in practice, practice size, clinical setting, location, and region of the US in which the physician practices.

Source: Authors preliminary analysis of 2009 National Survey of E-prescribers.
Limitations

- Sample included only physicians who were signed up with an e-prescribing vendor.

- Possible that non-response bias exists.

- Cannot verify the accuracy of respondents’ reports of e-prescribing or reductions in errors.
Implications

- Use of e-prescribing by type of system differs in three important ways: extent of use, depth of use, and value-added use.
- Type of system was not associated with greater efficiencies.
- Type of system was associated with prescribing safety.
- Will these gains in safety offset the cost of moving to an integrated system?
Other factors to consider

- American Recovery and Reinvestment Act funding.
  - Even physicians with integrated systems may not be using them to the extent necessary to fulfill criteria.
  - Reinforces the need for changes in the clinical workflow.
- The changing model of physician organizations.