Drivers of Electronic Medical Record Adoption Among Physician Organizations

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Background
An Electronic Medical Record (EMR) is “electronically stored information about an individual’s lifetime health status and health care. It replaces the paper medical record as the primary record of care, meeting all clinical, legal, and administrative requirements. An (EMR) system provides reminders, alerts, linkages to knowledge sources for decision support, and data for outcome research and improved management of health delivery.”

Core Functions of an EMR

- Recording information
- Accessing information
- Order entry
- Decision support
- Sharing of information and interoperability
- Unique patient identification
- Security and authentication
- Auditing

Previous studies have shown that the use of electronic medical records in physician organizations can reduce medical errors and improve quality of care through physician’s increased use of evidence-based patient care processes.
T-SystemEV for Physicians is HERE!

Chart and Track patient status more easily than ever before
Clinical Decision Support Systems

- RCT demonstrated that CDSS prompting for Papanicolau smears resulted in 6% improvement;
- RCT demonstrated that prompting for influenza vaccines resulted in 18% improvement;
- A systematic review found the use of CDSS to improve physician performance with respect to drug dosing, preventive care, diagnosis, and patient outcomes in 43 of 65 studies (66%)

Computerized Physician Order Entry Systems

- A RCT of a CPOE system that provided reminders for corollary orders significantly reduced errors of omission and improved guideline compliance.
- A systematic review of studies of CPOE found these systems reduced errors, decreased cost, shortened length of stay, and improved compliance with several types of guidelines.

And yet, estimates from various studies indicate that only 20-25% of physician organizations have adopted EMRs.

Characteristics of Physician Organizations Adopting EMRs - What Do We Know?

- Organization’s perceived need to share patient data among different sites and among clinicians for improving quality of care;
- Availability of funding;
- Resistance/acceptance by physicians;
- Perceived disruption to patient-physician relationship;
- Presence of quality improvement programs/activities.

Sources: Brailer and Terasawa, California Healthcare Foundation, 2003. Miller and Health Affairs
• Few studies have focused on the structural or market-related characteristics that distinguish adopter from non-adopter physician organizations;

• Those in urban markets are more likely to adopt EMRs than smaller and rural organizations.

U.C. Berkeley Study: Drivers of the Adoption of Electronic Medical Records in Physician Organizations

Study Purpose
To identify the organizational structures and market characteristics of physician organizations that distinguish EMR adopter from non-adopter organizations.
Conceptual Framework

Based on existing research, we identified seven organizational and market-related characteristics that may impact adoption of EMRs in physician organizations:

- Type of physician organization (medical group or IPA)
- Organization size
- Number of clinic locations
- Type of ownership (hospital/HMO or physician owned)
- Extent of managed care penetration in local market
- Urban-rural nature of the community
- Presence of external incentives for improving quality
Study Design

- A quantitative nationwide survey of all physician organizations in the United States with 20 or more physicians;
- Data were collected on 1,104 physician organizations;
- Representing a 70% response rate.
Measurements
Organizations’ use of an electronic medical record (dependent variable);

- Type of physician organization;
- Size;
- Number of clinic locations;
- Type of ownership;
- HMO market penetration;
- Urban/rural location;
- Presence of external incentives to improve quality of care.
Logistic Regression Predicting Whether A Physician Organization Has Adopted an EMR: Odds Ratio (95% Confidence Interval)

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<th>Odds Ratio (95% Confidence Interval)</th>
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<tr>
<td>Medical group versus IPA (1=med group)</td>
<td>2.744**** (1.678, 4.489)</td>
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<tr>
<td>Size (number of physicians)</td>
<td>1.001**** (1.000, 1.001)</td>
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<tr>
<td>Number of clinic locations</td>
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<tr>
<td>Hospital or HMO owned (1=yes)</td>
<td>1.331 (0.977, 1.812)</td>
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<td>% county HMO penetration</td>
<td>1.000 (0.990, 1.009)</td>
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<td>Urban versus small city/rural (1=urban)</td>
<td>0.964 (0.672,1.382)</td>
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Levels of significance: ****<=.001; *** <=.01; **<=.05
Results

• *Being a medical group* was the strongest predictor of EMR adoption

• *Large organizations* *relatively fewer practice locations* and organizations with greater *external incentives* for quality were also more likely to adopt an EMR;

• We found no significant relationship between EMR adoption and hospital or HMO ownership, level of HMO penetration in the county, or urban versus rural setting.
Conclusion

- Findings consistent with previous research identifying financial resources and physician resistance as important barriers to EMR adoption;
- Leaders of physician organizations need to rally physician support for EMR;
- Develop a culture that supports patient safety and quality improvement activities;
- Support policies to provide external incentives, such as pay-for-performance programs.
In Summary

Research on the organizational and economic factors affecting the adoption and use of electronic medical records is on-going at U.C. Berkeley.

CITRIS and the Center for Health Research are collaborating to support this research field by offering seed grants to researchers interested in studying health information technology.