# EHR and Health IT Adoption Among Office-Based Physicians: Findings from the New Jersey Provider Health IT Evaluation

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AcademyHealth Research Meeting San Diego, CA June 8th, 2014

## INTRODUCTION

- The 2009 HITECH Act prompted the Centers for Medicare & Medicaid Services [CMS] to invest billions of dollars to promote and expand the adoption of health information technology [Health IT].
- Most of these dollars funded physician incentive payments to encourage the adoption and meaningful use of electronic health records [EHRs].
- Many national indications are that these investments are increasing adoption and meaningful use of EHRs especially among office-based physicians.
- However literature suggest that New Jersey performs significantly lower than average when it comes to physicians adopting a "Basic EHR System" in their practice.
- In New Jersey the higher prevalence of solo and two physician practice arrangements results in highly fragmented care which makes it more difficult for EHR system adoption and improved care coordination.

## OBJECTIVE

- To examine the rate of EHR adoption based on meaningful use requirements among New Jersey office-based physicians currently active in clinical practice.
- To identify what factors are associated with higher and lower adoption of EHRs.
- To examine adoption rates of several basic health IT functions , barriers to beginning or expanding HIT and to measure physicians' opinions on the impact of health IT functions on key components of healthcare delivery in their practice.

## METHODS

**Data Source: *New Jersey Provider Health Information Technology Evaluation***

- Physician mail survey conducted October 11, 2013 through December 1, 2013.
- Mailed to a random sample of 5,600 active, office-based physicians with a main office location in NJ which was drawn from the AMA Masterfile data of all active, office-based NJ physicians (N=18,621).
- Completed survey data were received from Abt SRBI for 958 physicians (response rate 17.3%), which was weighted to the population primary specialty data so as to be representative of all active, office-based physicians.

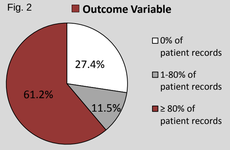
| | |
|---|---|
| **958** | Response sample |
| **-21** | Not active (direct patient care) |
| **-32** | Missing outcome response |
| n= **905** | Analytic sample (unweighted) |

***Analytic Plan***

Fig. 1

**Meaningful Use Attestation**


Fig. 2




*Stages 1 & 2 contain a number of mandatory meaningful use measures that require an electronic health record for a minimum of 80% of patients in order to attest to that measure*

- **Distributions:** Proportions of health IT function adoption, impact and barriers to beginning or expanding the use of health IT
- **Chi-square test:** Associations of EHR adoption by general physician and practice characteristics
- **Binary Logistic Regression:** Determine predictors of EHR adoption

## RESULTS

**General Physician and Practice Characteristics by EHR Adoption Level**

Fig. 3

| | Total | < 80% of patient records maintained on an EHR system | ≥ 80% of patient records maintained on an EHR system |
|---|---|---|---|
| | *(N=897, 100%)* | *(n=348, 38.8%)* | *(n=549, 61.2%)* |
| | % | % | % |
| **Age*** ** | | | |
| 26-39 | 9.7 | 30.1 | 69.9 |
| 40-49 | 23.5 | 28.0 | 72.0 |
| 50-59 | 34.0 | 36.0 | 64.1 |
| 60-69 | 25.5 | 47.3 | 52.7 |
| 70+ | 7.3 | 74.2 | 25.8 |
| **Gender** | | | |
| Male | 69.6 | 40.6 | 59.5 |
| Female | 30.4 | 35.1 | 64.9 |
| **Race/Ethnicity**** | | | |
| Asian / Pacific Islander | 17.5 | 28.1 | 71.9 |
| White / Caucasian | 72.2 | 40.3 | 59.7 |
| All Other | 10.2 | 45.3 | 54.7 |
| **Location of medical school** | | | |
| New Jersey | 19.6 | 37.5 | 62.6 |
| Other U.S. | 52.4 | 40.0 | 60.0 |
| Non-U.S. | 28.0 | 35.7 | 64.3 |
| **Retirement plans*** ** | | | |
| Next 5 Years | 19.9 | 56.3 | 43.7 |
| Next 10 Years | 22.2 | 36.8 | 63.2 |
| No plans to Retire | 57.9 | 33.5 | 66.5 |
| **Primary specialty** | | | |
| Primary Care | 42.2 | 36.2 | 63.8 |
| Specialist | 57.8 | 40.8 | 59.2 |
| **Accepting new patients with Medicare or Medicaid*** ** | | | |
| No | 59.4 | 44.8 | 55.2 |
| Yes | 40.6 | 30.3 | 69.7 |
| **Number of physicians at practice location*** ** | | | |
| 1 | 35.7 | 53.7 | 46.3 |
| 2 | 15.3 | 49.6 | 50.5 |
| 3-5 | 21.7 | 29.9 | 70.1 |
| 6-10 | 13.7 | 22.8 | 77.3 |
| 11-300 | 13.7 | 17.5 | 82.5 |
| **Number of years practice has been in operation*** ** | | | |
| 5 years or less | 7.9 | 22.4 | 77.6 |
| 6-10 years | 14.4 | 29.9 | 70.1 |
| 11-20 years | 25.5 | 36.1 | 63.9 |
| 22-30 years | 27.4 | 43.3 | 56.8 |
| 31-40 years | 16.6 | 49.3 | 50.7 |
| >40 | 8.2 | 40.5 | 59.5 |
| **Single vs. Multi-specialty practice*** ** | | | |
| Single Specialty | 84.8 | 41.3 | 58.7 |
| Multi-Specialty | 15.2 | 25.2 | 74.9 |

Note: N and percentages are weighted to total primary specialty population estimate
Statistical significance: *** 0.001, ** 0.01, *0.05

**Perceived Positive / Negative Impacts of Health IT Implementation**

Fig. 4

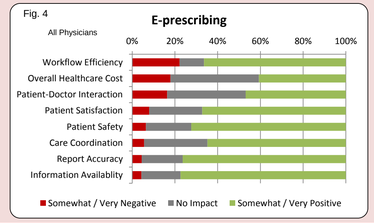
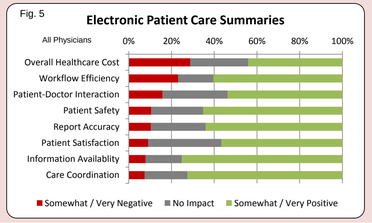



Fig. 5




**Perceived Barriers to Beginning or Expanding the Use of Health IT**

Fig. 6

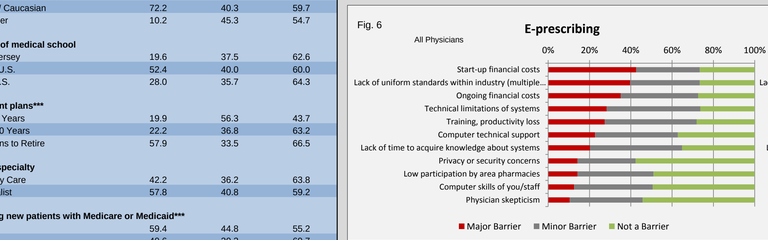
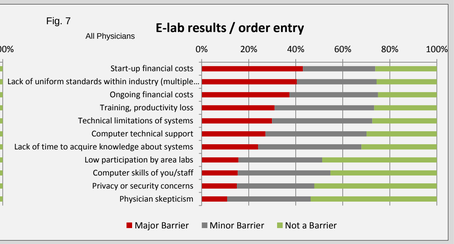
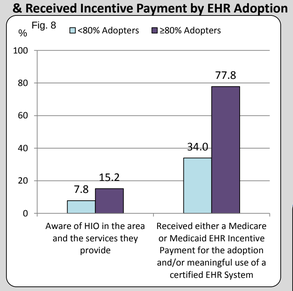



Fig. 7




**Regional Health Information Organization Awareness & Received Incentive Payment by EHR Adoption**

Fig. 8




**Health IT Function Adoption – % All Physicians**

Fig. 9

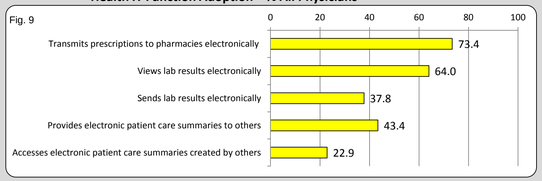
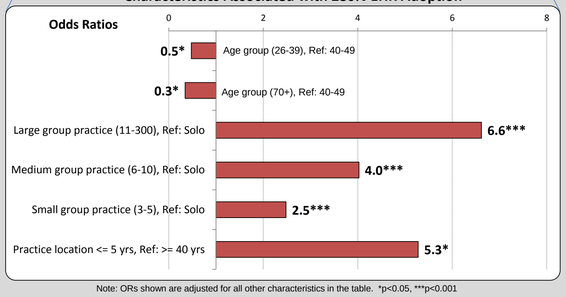



Fig. 10

**Nested Binary Logistic Regression**

| Model 1 | Model 2 |
|---|---|
| Physician Characteristics | Adds Practice Characteristics |
| • Age & Gender<br>• Location of Med School<br>• Specialty & Retirement plans<br>• Accepting new patients with Medicaid/Medicare | • Type of practice<br>• Practice size<br>• Years practice has been in operation |
| $R^2 = 0.10$ | $R^2 = 0.16$ |

**Characteristics Associated with ≥80% EHR Adoption**




Note: ORs shown are adjusted for all other characteristics in the table. *p<0.05, ***p<0.001

## FINDINGS

- Overall, 61.2% of active office-based physicians in New Jersey reported that they maintain at least 80% of their patient records in an EHR system. 27.4% said that they do not maintain any of their patient records in an EHR system.
- Bivariate results indicate that high EHR adopters tend to be younger with no current plans of retirement , accepting of new Medicaid and Medicare patients, part of a larger physician multi-specialty group and part of a recently established practice location.
- Asian / Pacific Islander physicians had a higher percentage of being high EHR adopters.
- Although most physicians perceived that health IT has a "very positive or somewhat positive impact" on their practice, overall healthcare cost , workflow efficiency and patient-doctor interaction were the top 3 concerns of health IT implementation.
- The top 3 barriers to beginning or expanding health IT in their practice included start-up financial cost, lack of uniform standards within the industry and ongoing financial cost.
- Logistic regression results indicate that controlling for physician and practice characteristics, physicians in larger group practices (11-300) have about 6.5 times the odds than solo practice physicians to be high adopters of EHRs. Other group practices between 3 and 10 physicians have higher odds of having higher EHR adoption rates than solo practices .
- Physicians in a practice that had been recently established (≥5 years) have about 5 times the odds of being higher adopters than practices that had been established over 40 years.
- The youngest physicians (ages 26-39) had half the odds of physicians ages 40-49 to be high EHR adopters as well as the oldest physicians (ages 70+) which had about a third of odds as the same reference group.
- About 78% of High EHR adopters reported receiving CMS EHR incentive payments and 15.2% were aware of a regional HIO and the services they provide.

## DISCUSSION

- These results suggest that there are several factors associated with high EHR adoption including larger practice size, age of the physician and age of the practice.
- Those currently at risk of not being able to attest to required meaningful use measures based on lower EHR adoption rates include solo practice physicians, older physicians and practices that have been established for a long time.
- Although three quarters of the sample reported receiving EHR incentive payments, start-up and ongoing financial cost continue to be a major barrier to beginning or expanding the use of EHRs, particularly for solo practice doctors which make up the majority of office-based physicians in the state.
- Fragmented practice arrangement can result in uncoordinated and inefficient use of resources. Also alarming is the low number of physicians that are aware of a regional HIO.
- Given the potential benefits, large federal investments and the strategic role health IT plays in health reform, it is important to continue to examine adoption rates and monitor trends as meaningful use criteria evolve.
- It is also important to measure the impact HIT has on the delivery of healthcare, particularly in smaller practices, as well as identifying and reducing the barriers to beginning or expanding adoption.
- Strategies to increase awareness and interactions with HIOs should be explored as well as additional mechanism to support the adoption and meaningful use of EHRs among solo physician practices.

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**Funding for the NJ HIT Evaluation was provided by the New Jersey Department of Health, New Jersey Health Information Technology Coordinator's Office which was funded through the Office of the National Coordinator for Health IT (ONC).**