



Accreditation of Medi-Cal, Healthy Kids
and Healthy Families Program.

On Target With HIT: Adoption of Electronic Health Record Systems in a Large Urban County, and Uptake in Clinics Serving Indigent Patients in a Medicaid Health Plan, 2010 to 2013

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Presenter Disclosures

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The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

I am employed as a statistician at L.A. Care Health Plan – the Local Initiative Health Authority of Los Angeles County, California.

L.A. Care is a public entity competing with commercial insurers in the Medicaid and S-CHIP markets in L.A. County.

Notes:

CAHPS® is a registered trade name of the Agency for Healthcare Research and Quality (AHRQ).
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Outline

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I. Learning Objectives

1. Describe the degree of adoption of health information technologies within a large urban provider network.
2. Assess the pace and degree to which adopters attain meaningful use.
3. Differentiate the degree of HIT adoption between provider organizations that are centralized vs decentralized in structure.
4. Discuss how “where you live” in a large urban county affects the likelihood of receiving services in a clinic that has an EHR and has attained meaningful use.
5. Compare different demographic groups on access to clinics with EHR.
6. Assess whether adoption of HIT is associated with improvements in the quality of services that patients receive.



II. Role of Electronic Health Records in Delivering Quality

HIT seeks to improve the information available to clinicians at the time and place of service, to make more robust, data driven judgments about the care, tests, and treatments that a patient has received, and will receive going forward.



The objectives are to improve health outcomes, patient safety, and the efficient use of scarce resources (clinicians, staff, time, facilities, and money).

“Information is the lifeblood of modern medicine. Health information technology (HIT) is destined to be its circulatory system. Without that system, neither individual physicians nor health care institutions can perform at their best or deliver the highest-quality care, any more than an Olympian could excel with a failing heart.”

“By focusing on the effective use of EHRs with certain capabilities, the HITECH Act makes clear that the adoption of records is not a sufficient purpose: it is the use of EHRs to achieve health and efficiency goals that matters.”

David. Blumenthal, New England Journal of Medicine 02/04/2010, 362-385, DHHS ONC-HIT <http://www.nejm.org/doi/full/10.1056/NEJMp0912825>

Critics note that HIT places substantial new demands on those scarce resources that it is intended to use more appropriately. The process thus requires careful monitoring to determine if the benefit/cost balance remains positive.

Role of Electronic Health Records in Delivering Quality

Stages of development:

- Stage 1 emphasized collecting basic data elements and information sharing among providers serving a given patient, and reporting quality measures to agencies. Obstacles noted in this stage were
 - (a) infrastructure for secure data exchange;
 - (b) the resources to purchase, deploy, and maintain EHRs; and
 - (c) technical know-how to choose and use EHR systems.
- Stage 2 will focus on use of EHRs to improve the process of care.
- Stage 3 will focus on improving outcomes.
- Stages 2 and 3 will in pursue rewarding providers for using EHRs to improve processes of care and outcomes, respectively.



III. HITECH Act of 2009: Deployment in Los Angeles County

The American Recovery and Reinvestment Act (ARRA) provided means for ONC to fund 62 HITECH Regional Extension Centers (RECs) to help providers enroll in HITECH incentive programs, implement EHR systems, and attain meaningful use.



This paper reports statistics from one such REC, HITEC-LA in Los Angeles County, California. Impact on service quality was examined by linking providers to health plan members surveyed in the Patient Assessment Survey (PAS) of 2011 (a variant of the CAHPS Clinician and Group patient experience survey).

Los Angeles County is a diverse county: largely urban, with large suburban areas, and one semi-rural area in the high desert:

- The County's physician market is large, with 28,672 licensed in 2012-2013.
- Although some work in solo practices, many have more than one clinic site.

Provider enrollment statistics for HITEC-LA (which enrolled and served doctors in L.A. County irrespective of health plan or clinic affiliation):

n=6,558 entries (includes doctors, nurses, and other licensed clinical services).

n= 973 doctors with L.A. Care health plan patients surveyed in PAS 2011

survey for ratings of quality of services:

n=603 seeing Adult patients in the survey.

n=370 seeing pediatric patients in the survey.

IV. Methodology: Combining Diverse Data Sources

Hypothesis: EHR should be positively associated with patients ratings of the quality of health care, and the rating of the PCP or Specialist; and if EHR saves time, assessments of timely access might show modest effects.



Counter-hypothesis argued by critics of EHR: Patients should rate Provider Communication lower due to the distraction of the provider working with the computer during the office visit.

One feature of the design is that the independent variable (EHR participation) and the dependent variables (ratings of the quality of health care services by providers) come from data gathered from entirely independent sources for purposes unrelated to the hypothesis being tested in this paper:

- EHR participation data comes from regional extension center (REC) rolls.
- Ratings of the quality of services come from a survey of patients.

If the results show a relationship between EHR adoption and member ratings, the only plausible mechanism by which the two variables would be related, is that EHR is having an impact on the quality of care observed by members.

The patient survey provides a way to test HITEC-LA program goals in terms of Stage 3 effects.

Methodology: Combining Diverse Data Sources



Independent variable: Degree of Engagement in EHR Activities

Basic data on EHR adoption come from enrollment records in the HITEC-LA program. Enrollment is by provider license number. Although a provider may have more than one license in practice, duplication is not an issue in the data due to the nature of the incentive program.

The administrative data contain four elements of analytic interest:

- Whether or not the provider already had an EHR before enrolling.
- Date on which a new system's go-live status was documented to the program.
- Date on which a new systems' attainment of meaningful use was documented to the program.
- The act of being enrolled or not is testable to see if it differentiates among providers.

Design and Methodology (Cont.)

Dependent variables: Member assessments about the quality of services by providers.



In Fall 2011, L.A. Care surveyed Medicaid members as part of a pay-for-performance (P4P) incentive program for medical groups.

- That survey supplies the primary dependent measures for this study – data not available for some of the physicians in the EHR data source.
- L.A. Care Health Plan is one of two health plans licensed in Los Angeles County, California, to offer Medicaid coverage to low-income residents.

The survey:

- Patient Assessment Survey 2011 (related to the Clinician & Group CAHPS survey v2.0).
- Fielded 08/03/2011 through 11/01/2011 in English and Spanish, by mail and phone.
- Initial mail-out of 49,549, n=16,288 completed surveys.
- Response rates:
 - 32.9%: lowest for Adult Specialist survey in Spanish, 23.1%), and highest for Child PCP survey in Spanish, 41.6%).
- Adult and Child samples for 42 entities, sampled for PCPs and Specialists, separately:
 - Samples for 38 large provider groups; and samples for directly-contracted doctors for 2 Plan Partners; and a sample for members in county clinics.
 - A sample for otherwise survey-eligible members who were not continuously enrolled with any of the above groups.
 - *Caveat: The samples are representative of provider groups. For this analysis, results are raw (unweighted), to examine whether EHR adoption is associated with ratings of health care quality.*

V. Speed of Adoption for County At-Large vs Medicaid Providers

- Medicaid providers received the incentive, but only about 1-in-9 did so.
 - 20 day median for Go-Live at large, reflects providers with EHRs prior to HITEC-LA.
- Low n's in Medicaid provider columns reveal the limited network having EHRs.
 - PAS 2011 could not sample medical groups with small panels, so understates the Medicaid provider network – but the finding of limited EHR availability is correct.
- Medicaid providers exhibit much slower rates of implementation.
 - Among Medicaid providers, those serving the pediatric population were slowest in implementation.
 - Findings reflect Medicaid provider network in a state with comparatively low reimbursement rates.



	HITEC-LA Region	L.A. Care Medicaid Network		
		Combined:	Adult*	Child*
Duration from signup to Go-Live:**				
Mean	172.83 days	334.25 days	323.62 days	351.55 days
Median	20.00 days	322.00 days	323.00 days	321.00 days
	n=2,644	n=431	n=267	n=164
Duration from Go-Live to Meaningful Use:				
Mean	217.30 days	241.69 days	232.88 days	254.95 days
Median	152.00 days	203.00 days	194.50 days	216.00 days
	n=1,736	n=333	n=200	n=133
Total duration from signup to Meaningful Use:				
Mean	371.89 days	566.05 days	546.40 days	595.59 days
Median	332.50 days	556.00 days	545.50 days	560.00 days
	n=1,736	n=333	n=200	n=133

* Adult and Child columns include providers seeing patients from those cohorts. A provider who sees both age groups will be tallied in both statistics. Medicaid providers may see both adult and pediatric patients (often as mothers and children).

** All durations are based on dates when documentation was received by HITEC-LA of Go-Live and Meaningful Use.

Descriptive Findings

- Early adopters had less attrition at all stages, and more total success.



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Providers in HITEC-LA (includes nurses):

Had an EHR at time of signup (early adopters):	100.00% n=1,873
Never got a go-live date or meaningful use:	12.39% n= 232
Proceeded to a go-live date:	87.61% n=1,641
Never had meaningful use:	33.42% n= 626
Attained meaningful use:	54.19% n=1,015

No EHR at time of signup:	100.00% n=3,728
Never got a go-live date or meaningful use:	32.65% n=1,217
Proceeded to a go-live date:	67.36% n=2,511
Never had meaningful use:	25.03% n= 933
Attained meaningful use:	42.33% n=1,578

Early adopters (had EHR before HITEC-LA incentive program):

Total who never attained go-live or meaningful use:	45.81% n= 858
Total who went live and attained meaningful use:	54.19% n=1,015

Later adopters:

Total who never attained go-live or meaningful use:	57.67% n=2,150
Total who went live and attained meaningful use:	42.33% n=1,578

Other Descriptive Findings

Results reflect a highly-differentiated EHR software market locally as of 08/08/2014:



- The set of HITEC-LA registrants reported used 71 different primary EHR vendors.
 - 18.6% did not name a primary EHR vendor.
 - Local market share: The top 7 vendors had 22.8%, 13.9%, 9.3%, 4.7%, 5.1%, 3.9%, 2.0%, respectively.
 - Although qualifying EHR systems meet particular standards for functionality and connectivity, the standardized nature of the clinical data, and technical nature of the data communications, suggest a relatively immature software market.
 - Consensus may emerge as to optimal features, transportable skills, and ease-of-use, as new clinicians and office staff migrate within the market.
- Few registrants reported having homegrown systems (n=2), although some who named no vendor may have in-house solutions.
- Collectively, HITEC-LA registrants named 29 primary EHR software products.
 - 62.3% did not name a specific software system.
 - (Respondents may be considering the EHR software system as synonymous with the EHR vendor name.)

VI. ANALYSIS: Testing Association Between EHR Use and Quality of Health Care Services



EHR is the independent variable, measured in three ways:

- Provider had EHR system before enrolling in HITEC-LA incentive program.
- Provider had no EHR system, but reached go-live level.
 - Above or below median duration of time to reach go-live status.
- Provider attained go-live and attained meaningful use.
 - Above or below median duration of time to reach meaningful use after enrolling.

Quality of service ratings from CAHPS, are the dependent variables:

- Tier 1: EHR impact on processes most directly connected to patients.
 - Coordination of Care: Awareness of patient history, tests, visits, results, and care from specialists.
 - Provider Communication: Critics hypothesize EHR harms patient-doctor communications.
- Tier 2: EHR impact on less tangible measures of quality of service.
 - Access to Care.
 - Timely access in clinic: Critics hypothesize that EHR takes time and slows workflow.
- Tier 3: EHR impact on general measures of health plans' service quality.
 - Health Plan Rating, Rating of All Health Care, Rating of Personal Doctor, Would Recommend Doctor, Rating of Specialist
 - Clinic Staff: EHR means informed staff help patients? EHR means slower workflow.

ANALYSIS (Cont.)

This briefing presents analysis of the impact of EHR on two measures of the quality of health care services, from the perspective of members receiving those services on PAS 2011 (a variant of the CG CAHPS member experience survey).



- Coordination of Care measures: As rollout of an EHR system reaches maturity within a clinic, the benefits should eventually become apparent in the services that the patient receives. This is considered a long-term measure, with effects that will appear after the clinic attains meaningful use, and becomes fully proficient and habituated in using the EHR as part of care. *Seeing any effects in this measure was expected to be somewhat premature, but the analysis will serve as a baseline, as the adoption of EHRs continue in the clinics measured here.*
- Provider Communication measures: Critics believe that computers in the clinic will be seen by patients as a distraction that gets in the way of communicating with providers. Unlike Coordination of Care, the effects on provider communication might be more immediate, as the doctor, patient, and computer and/or output are juxtaposed in the examination process.

Tier 1 Hypotheses Relating EHR Use to Coordination of Care



- Expectation: Having an EHR should improve ratings on Coordination of Care measure.
- Members showed no early positive effect on Coordination of Care, and possibly some negative effects in clinics that explored EHRs.
- Interpretation: EHR adoption is expected to mature over time. Track this measure in subsequent surveys.

Independent variable #1: Doctor already had EHR in clinic before enrolling in HITEC-LA incentive program (0,1).

	Adult <u>p-value</u>	Child <u>p-value</u>
• How oft doctor knew patient's medical history:	0.2226	<u>0.4289</u>
• How oft doctor aware of care received from specialists:	0.4072	0.2789
• How oft staff followed up with test results:	0.0152*	0.2217
• How oft patient got test results as soon as needed:	0.0558	0.0149*
• How oft doctor asked patient for follow-up visit after ER:	<u>0.2556</u>	0.2031

Notes: All tests are Fisher's Exact Test.

Maintained hypothesis holds that EHR availability has a positive association with service quality.

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$ **** $p \leq 0.0001$

Green – association is positive, and right-sided test is reported above.

Red – association is negative or inverse, and left-sided test is reported above.

For a **Healthy Life**

Adoption of EHRs By Providers In a Large Urban Medicaid Health Plan, 2010 to 2013

Tier 1 Hypotheses Relating EHR Use to Coordination of Care

- Slight indication of EHR use.
- EHR might not help access test results if lab is external.
- Merely having Go-Live date isn't enough to have impact on members.



Independent variable #2:

Doctor had a go-live date by the time of PAS 2011 survey ratings.

	Adult <u>p-value</u>	Child <u>p-value</u>
• How oft doctor knew patient's medical history:	0.0321*	<u>0.0658</u>
• How oft doctor aware of care received from specialists:	0.1024	<u>0.0777</u>
• How oft staff followed up with test results:	0.0001***	0.2327
• How oft patient got test results as soon as needed:	0.0048**	0.0344*
• How oft doctor asked patient for follow-up visit after ER:	0.1329	0.4891

Notes: All tests are Fisher's Exact Test.

Maintained hypothesis holds that EHR availability has a positive association with service quality.

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$ **** $p \leq 0.0001$

Green – association is positive, and right-sided test is reported above.

Red – association is negative or inverse, and left-sided test is reported above.

Tier 1 Hypotheses Relating EHR Use to Coordination of Care

- Adult effect is still undiscernable, but moving in the expected direction.
- Would have expected stronger association if EHR is the direct cause.
- “Meaningful Use” is a waypoint, but might not yet reflect proficiency.
- Negative association for parents on some measures may reflect that same issue.



Independent variable #3:

Doctor attained Meaningful Use by time of PAS 2011 survey ratings.

	Adult <u>p-value</u>	Child <u>p-value</u>
• How oft doctor knew patient’s medical history:	<u>0.2964</u>	<u>0.1319</u>
• How oft doctor aware of care received from specialists:	<u>0.0891</u>	<u>0.4716</u>
• How oft staff followed up with test results:	<u>0.4495</u>	0.4304
• How oft patient got test results as soon as needed:	<u>0.4631</u>	0.0058**
• How oft doctor asked patient for follow-up visit after ER:	<u>0.1528</u>	0.0245*

Notes: All tests are Fisher’s Exact Test.

Maintained hypothesis holds that EHR availability has a positive association with service quality.

* p<=0.05 ** p<=0.01 *** p<=0.001 **** p<=0.0001

Green – association is positive, and right-sided test is reported above.

Red – association is negative or inverse, and left-sided test is reported above.

Tier 1: Hypotheses Relating EHR Use to Provider Communication

- Having an EHR should improve quality of information the provider gives to the member. (Downside risk: May serve as a source of distraction and distance from member.)



Independent variable #1:

Doctor already had EHR in clinic before enrolling in HITEC-LA incentive program.

	Adult <u>p-value</u>	Child <u>p-value</u>
• How oft doctor explained things understandably:	0.4442	0.4755
• How oft doctor listened carefully to patient:	0.0394*	0.2388
• How oft doctor gave understandable instructions:	0.5021	0.4848
• How oft doctor showed respect for what patient said:	0.1116	0.1258
• How oft doctor spent enough time with patient:	0.0858	0.2295
• How oft doctor encouraged questions:	0.1012	0.4955

Notes: All tests are Fisher's Exact Test.

Maintained hypothesis holds that EHR availability has a positive association with service quality.

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$ **** $p \leq 0.0001$

Green – association is positive, and right-sided test is reported above.

Red – association is negative or inverse, and left-sided test is reported above.

Tier 1: Hypotheses Relating EHR Use to Provider Communication

- Low income adult patients might see computer as a distraction or barrier?
- Low income parents might see computer as indicator of quality care.
- Effect size is small, and might be concentrated in higher-resource clinics.



Independent variable #2:

Doctor had a go-live date by the time of PAS 2011 survey ratings.

	Adult <u>p-value</u>	Child <u>p-value</u>
• How oft doctor explained things understandably:	0.0346*	<u>0.0835</u>
• How oft doctor listened carefully to patient:	0.0140*	<u>0.0889</u>
• How oft doctor gave understandable instructions:	0.0226*	<u>0.0453*</u>
• How oft doctor showed respect for what patient said:	0.0372*	<u>0.0037**</u>
• How oft doctor spent enough time with patient:	0.0155*	<u>0.0033**</u>
• How oft doctor encouraged questions:	0.0358*	<u>0.0014**</u>

Notes: All tests are Fisher's Exact Test.

Maintained hypothesis holds that EHR availability has a positive association with service quality.

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$ **** $p \leq 0.0001$

Green – association is positive, and right-sided test is reported above.

Red – association is negative or inverse, and left-sided test is reported above.

Tier 1: Hypotheses Relating EHR Use to Provider Communication

- Moderate positive effect, particularly with parents.
- Less diligent doctors are no longer in the analysis, not having attained meaningful use.



Independent variable #3:

Doctor showed Meaningful Use by time of PAS 2011 survey ratings.

	Adult p-value	Child p-value
• How oft doctor explained things understandably:	<u>0.3086</u>	<u>0.0683</u>
• How oft doctor listened carefully to patient:	<u>0.0867</u>	<u>0.0354*</u>
• How oft doctor gave understandable instructions:	<u>0.0056**</u>	<u>0.0342*</u>
• How oft doctor showed respect for what patient said:	<u>0.4508</u>	<u>0.0331*</u>
• How oft doctor spent enough time with patient:	<u>0.0700</u>	<u>0.1464</u>
• How oft doctor encouraged questions:	<u>0.2919</u>	<u>0.1999</u>

Notes: All tests are Fisher's Exact Test.

Maintained hypothesis holds that EHR availability has a positive association with service quality.

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$ **** $p \leq 0.0001$

Green – association is positive, and right-sided test is reported above.

Red – association is negative or inverse, and left-sided test is reported above.

VII. Discussion



- The mixed findings for adult patients versus parents, on Provider Communications, illustrate the challenge of adopting and using technology in very personal services such as health care.
 - As the broker of information at the point of service, the success of EHR in bringing value to the exam room, likely relies on the doctor assessing how the patient is responding to the use of the computer.
- CAHPS is a unique tool for examining the patient's side of EHR adoption.
 - The impact of EHR on doctor-patient communication to the patient can be directly assessed in the Provider Communication questions.
 - Use of EHR for coordination of care or for calendaring and reminders, uses the patient as an instrument to measure whether the EHR is being used for those functions.
- Although the design is vulnerable to self-selection among doctors, following this same cohort of doctors and their randomly-selected patients in CAHPS, will allow a stronger comparison: Testing if the incentive program showed a measurable benefit when comparing doctors in CG CAHPS 2011 vs CG CAHPS 2014. Such effects would be attributable to the incentive program, among doctors opting to join the program. Analysis can determine what factors ultimately predict successful adoption.

Discussion – Caveats: Showing Causal Mechanism



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Limitation: The analysis here is based on tests of statistical association. Association does not prove causation.

Among the possible criticisms:

- The requirements for a doctor to receive HITECH funding, are fairly *pro forma* checkbox items. While the steps of contracting, going live, and attaining meaningful use, are not trivial, a skeptic would argue that these are preparatory and aren't sufficient "treatment" to produce any clinical effect that a member would notice.
- A skeptic would argue that the intervention and treatment are only in Stage 1, and that effects on outcomes are not expected to occur until much later in the adoption cycle.
- Need to validate the findings by interviewing doctors and patients, specifically asking about how they interact with the EHR. (Experimenter and halo effects would be risks.)
- These criticisms suggest that the results are artifacts of other causes, such as self-selection: Doctors who adopt technology may (un-relatedly) be doctors who also happen to give good service.

Against that backdrop:

- Although answered somewhat by the existing design and findings – (the effects of the treatment (EHR) crystallized in the predicted direction, at each higher level of the treatment), the criticisms suggest the shape of next steps in the research.

VIII. Recap of Learning Objectives



- 1. Describe the degree of adoption of health information technologies within a large urban provider network.**

The duration from signup to go-live was much longer for Medicaid providers than for other providers in the county.

The duration from go-live to meaningful use was also somewhat slower for Medicaid providers.

Doctors who saw Medicaid children were somewhat slower to implement EHRs.
- 2. Assess the pace and degree to which adopters attain meaningful use.**

Early adopters had less attrition and better overall success with EHRs.

On average, Medicaid providers who joined HITEC-LA took 81 weeks to attain Meaningful Use, while the county average among all participants was 53 weeks.

For Medicaid providers, much of the time was elapsed between signup and go-live, suggesting that a different (or additional) preparatory process might be helpful..
- 3. Differentiate the degree of HIT adoption between provider organizations that are centralized vs decentralized in structure.**

Centralized structures have more control over timing and resources for deployment, and may have efficiencies of scope. (Additional work with the existing data will be necessary to fully incorporate structural data into the analysis.)

Recap of Learning Objectives (Cont.)

4. Discuss how “where you live” in a large urban county affects the likelihood of receiving services in a clinic that has an EHR and has attained meaningful use.

Safety Net providers provide access in parts of the county where commercial providers are often reluctant to open clinics.

Inner city clinics are generally not flush with resources. Many rely on Medicaid patients as their primary clientele. Medicaid reimbursements in California are substantially lower than reimbursements for Medicare.

Thus, the clinics available to Medicaid patients in the inner city are less likely to have the resources to license and maintain new technology.

One indirect result of HITEC-LA was that Medicaid providers could receive incentives and assistance in setting up and running EHRs.

5. Compare different demographic groups on access to clinics with EHR.

The primary analysis focused on access for adults versus children receiving services through Medicaid. Medicaid providers serving adults moved somewhat quicker to adopt EHRs than providers serving pediatric patients in the sample.



Recap of Learning Objectives (Cont.)

6. Assess whether adoption of HIT is associated with improvements in the quality of services that patients receive.

The study found that patients report receiving better quality communication from providers who have EHRs – but primarily after those providers attain Meaningful Use.

The effects were most pronounced for parents of Medicaid patients. The effects are less present for adult patients, and were negative for levels of EHR implementation below Meaningful Use. That latter finding supports expectations of critics who fear that EHR use can intrude between the doctor and the patient.

Consistent with programmatic expectations, no stable effect was observed yet for Coordination of Care measures on CAHPS. EHR practitioners note, for example, that impacts on outcomes are not expected until much later in the implementation process. The impact on Provider Communication measures was surprisingly rapid, given that CAHPS measures are particularly slow to move in large populations. However, use of electronic records at the point of service (in the exam room or in the form of after-visit summary notes) would be more immediately visible to patients.

The findings here are tentative, but encouraging: An indirect effect on member experience increases the potential value of EHRs toward improving measures on which health plans (and increasingly, provider groups and clinics) will be rated.



VIII. Avenues For Actionability: Expanding on Meaningful Use

The next steps for HITECH relate to interoperability and the pursuit of impact on patient outcomes through use of an integrated EHR to guide a patient's treatments in the long term.



The next steps for this research relate to practical uses of the findings.

- Inclusion of EHR adoption in P4P programs.
 - An EHR incentive was included in the health plan's P4P program during its startup years.
 - Patient experience ratings are part of how CMS and NCQA rate the health plan. CMS ratings impact revenues.
 - If the finding connecting EHR meaningful use to patient satisfaction is replicable and reliable, an EHR incentive can be revisited, with a particular emphasis on pediatric providers, where the effect is most favorable..
 - If EHR has a “two-fer” effect (improving CAHPS scores, and pulling in more HEDIS data), past resource decisions regarding EHR promotion and incentives, may have been missing that factor. Properly calculating the value of such interventions to the health plan is valuable.
 - If patient experience is linked to retention, clinics may have the same information gap in choosing whether or not to adopt an EHR.

Potential Next Steps in Research

The CAHPS survey from which patients' ratings are drawn, has been replicated for 2014. Taken together, data from the two surveys should permit within-doctor comparisons between 2011 and 2014 findings. The intervening 3 years allow for substantial familiarization and maturation in the process of incorporating EHRs into clinical practices and the workflow of the clinics. There may also be a maturation effect for patients in accepting EHRs as part of their care.



This present study examines three levels of “treatment”: licensing an EHR system; having a Go-Live date; and attaining Meaningful Use. The above design can add a 4th level of treatment: Duration of time after attaining Meaningful Use.

As noted earlier, the providers in the current study are self-selected into the EHR incentive program. Although the cohort of providers will remain self-selected, the pre/post within-subjects design above would provide the opportunity to explore maturation effects (whether the duration of having an operational EHR is associated with better performance on service quality measures).

The added time period would also allow for more robust analysis to profile factors that lead to successful EHR adoption and improved quality of service to patients.

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