Impact of Health IT on Quality Assessment: Innovations in Measurement and Reporting

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AHRQ **National Resource Center**
for Health Information Technology

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Standardization and Automatic Extraction of Quality Measures in an Ambulatory Electronic Medical Record (EMR)

Denni McColm, MBA

Citizens Memorial Healthcare

- 76 acute care beds
  - Medical/Surgical
  - ICU
  - The BirthPlace
  - Geriatric Wellness

- Emergency Services
  - Level III trauma center
  - Ambulance Services
  - Air Ambulance onsite

- Home Health, Hospice, Home Medical Equipment, Health Transit Services

- Long Term Care Facilities (5)
- Residential Care Facility (1)

- Physician Clinics (25 clinics, 60 providers)

- Outpatient Services
  - Rehab
  - Sleep Lab
  - Cardiac Cath Lab
  - Visiting Specialists
- Ambulatory Surgery Center
- Carrie J. Babb Cancer Center

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EMR that crosses continuum – CPOE – Closed Medication Loop - No paper charts

Physician Clinic/Ambulatory Quality Measurement

- Physician Group Practice Demonstration (PGP)
- Physician Voluntary Reporting Program (PVRP)
- Physician Quality Reporting Initiative (PQRI)

U.S. Department of **Health & Human Services**

CMS Centers for **Medicare** & **Medicaid** Services

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CMS Home > Medicare > Physician Quality Reporting Initiative > O

Physician Quality Reporting Initiative

> Overview
» CMS Sponsored Calls
» Statute/Regulations/Program Instructions
» Eligible Professionals

Overview

New Reporting Options

CMS has recently announced new options making it easie
It is not too late to begin participation for those who hav
"2008 PQRI" below.

Background

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PQRI
Physician Quality Reporting Initiative

- First period, July 1, 2007 – December 31, 2007
- Renewed for 2008, January 1 – December 31
- Renewed again for 2009, 2 reporting periods (Jan-Jun, Jul-Dec)

- 2% bonus for Medicare fee schedule services for reporting at least 80% of the time on 3 or more measures during the period
- PLUS, 2% bonus for ePrescribing

- Reporting on claims using special codes, through a registry, pilot with electronic reporting from EHR

- 47 measures proposed initially
- 74 measures actually used in 2007
- 119 measures in use for 2008
- 153 measures in use for 2009

The Challenge

False impression that implementing an EHR will cause quality measurement and reporting to happen by osmosis

Why not?

- Documentation occurs in many places within the electronic health record – complicating search algorithms and confusing results
  - Example: A1c lab test result may be in one place if completed in the clinic, another if completed by an interfaced reference lab and another if received from a non-interfaced lab

- Clinical documentation is often unstructured and uses non-standardized nomenclature (i.e. it is narrative)

Department of Health and Human Services

Participating Organizations
Agency for Healthcare Research and Quality (AHRQ) (http://www.ahrq.gov)

Components of Participating Organizations
Center for Quality Improvement and Patient Safety
Center for Primary Care, Prevention, and Clinical Partnerships

Title: Ambulatory Safety and Quality Program: Enabling Quality Measurement through Health IT

Expected Impacts

- Establish standardization to facilitate documentation and extraction of quality measures

- Demonstrate the efficiency and accuracy of using a data partner to automate quality measurement

THE MEASURES (62)

Clinical Information

Step 1 Is patient eligible for this measure?

	Yes	No
Patient is aged 18 years and older.	☐	☐
Patient has a diagnosis of coronary artery disease.	☐	☐
There is a CPT E/M Service Code for this visit.	☐	☐

If **No** is checked for any of the above, STOP. Do not report a CPT category II code.

Step 2 Does patient meet or have an acceptable reason for not meeting the measure?

Oral Antiplatelet Therapy

	Yes	No
Prescribed	☐	☐
Not prescribed for one of the following reasons:		
• Medical (eg, not indicated, contraindicated, other medical reason)	☐	☐
• Patient (eg, patient declined, economic, social, religious, other patient reason)	☐	☐
• System (eg, resources to perform the services not available, other reason attributable to healthcare delivery system)	☐	☐

Eligibility

Measure

Exclusions

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Eligibility Information

Patient Age	Number of Measures
18+	30
65+	9
18-75	6
50+	4
2+	3
21+	2
5-40	2
18-64	1
2-18	1
2mo-12	1
3mo-18	1
40-69	1
50-80	1

Gender	Number of Measures
Female	5
Male	0
Both	57

Demographics & Billing Information

ICD-9 Diagnosis Codes
(45 measures)
CPT Codes
(all measures)

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"Extra" Qualifying Conditions

- Antibiotic prescribed
- COPD symptoms
- Fall risk/Future fall risk (2)
- First use of medication
- LVEF<40% (2)
- Meets criteria
- New episode
- Persistent asthma
- Patient smokes

Measures

- Assess
  - Assess (16)
  - Assess & Result (3)
  - Assess, Result & Plan (5)
- Document
  - Medication List Verification
  - Communication
- Immunize (2)

- Medication
  - Yes (14)
  - No (3)
- Plan (4)
- Test
  - Test only (9)
  - Test or medication (2)
  - Test result (4)

Important Attributes

- Reporting Frequency
  - Once per period (42)
  - Each occurrence (11)
  - Each visit (8)
  - Initial and/or each visit (1)

- "Usual" time in course of visit
  - Intake
  - Health maintenance
  - Review of systems
  - Exam
  - Plan/Orders

Exclusions

Exclusion Reasons	# measures
Medical Reason	28
Patient Reason	13
System Reason	9
Other "Documented" Reason	12

#Exclusion Reasons	
None	21
1 reason	29
2 reasons	3
3 reasons	9

Antiplatelet NOT given because

- Not indicated ☐
- Contraindicated ☐
- Other medical reason ☐
- Patient declined ☐
- Economic ☐
- Social ☐
- Religious ☐
- Other patient reason ☐
- No resources available ☐
- Failure healthcare system ☐

Ok & Next   Cancel ✗   Ok ✓

Data Mapping

- Patient is eligible
- One of many antibiotics is, or is not, prescribed within 3 days
- and, then . . .

Measure name	#	Drugs, tests or combinations (drug or test name listed means given/done)	Query name	Query response (Is null means the query is blank or there is no query data at all)	CPT
Acute Bronchitis All Cases	116	ANTIBIOTIC AND CL.AB.ABX is NULL	CL.AB.ABX	IS NULL	4120F
Acute Bronchitis All Cases	116	ANTIBIOTIC AND CL.AB.ABX is not NULL	CL.AB.ABX	IS NOT NULL	4120F-1P
Acute Bronchitis All Cases	116	NO ANTIBIOTIC			4124F

Sample monthly report

Sample Report Detail

Diabetes Dx Code	Code description	HemoglobinA1C	LDL	Cholesterol rx	Systolic BP	Diastolic BP
250.02	DMII WO CMP UNCNTRLD	9.8			BP_SYS (BP_SYS): 136	BP_DIAS (BP_DIAS): 88
250.00	DMII WO CMP NT ST UNCNTR	9.5	141		BP_SYS (BP_SYS): 164	BP_DIAS (BP_DIAS): 98
250.00	DMII WO CMP NT ST UNCNTR	9.0		LIPITOR TABLETS	BP_SYS (BP_SYS): 158	BP_DIAS (BP_DIAS): 88
250.92	DMII UNSPF UNCNTRLD	8.8	71		BP_SYS (BP_SYS): 118	BP_DIAS (BP_DIAS): 70
250.00	DMII WO CMP NT ST UNCNTR	8.5	142		BP_SYS (BP_SYS): 116	BP_DIAS (BP_DIAS): 70
250.00	DMII WO CMP NT ST UNCNTR	8.5	121		BP_SYS (BP_SYS): 142	BP_DIAS (BP_DIAS): 82
250.00	DMII WO CMP NT ST UNCNTR	8.4	89		BP_SYS (BP_SYS): 138	BP_DIAS (BP_DIAS): 80
250.00	DMII WO CMP NT ST UNCNTR	8.3	87		BP_SYS (BP_SYS): 142	BP_DIAS (BP_DIAS): 62
250.00	DMII WO CMP NT ST UNCNTR	8.3	79		BP_SYS (BP_SYS): 140	BP_DIAS (BP_DIAS): 70
250.02	DMII WO CMP UNCNTRLD	7.9	248		BP_SYS (BP_SYS): 170	BP_DIAS (BP_DIAS): 96
250.00	DMII WO CMP NT ST UNCNTR	7.9	101		BP_SYS (BP_SYS): 132	BP_DIAS (BP_DIAS): 86
250.60	DMII NEURO NT ST UNCNTRL	7.8	156		BP_SYS (BP_SYS): 130	BP_DIAS (BP_DIAS): 70
250.00	DMII WO CMP NT ST UNCNTR	7.8	132		BP_SYS (BP_SYS): 120	BP_DIAS (BP_DIAS): 60
250.00	DMII WO CMP NT ST UNCNTR	7.8			BP_SYS (BP_SYS): 130	BP_DIAS (BP_DIAS): 80
250.62	DMII NEURO UNCNTRLD	7.5			BP_SYS (BP_SYS): 122	BP_DIAS (BP_DIAS): 72
250.00	DMII WO CMP NT ST UNCNTR	7.4	126		BP_SYS (BP_SYS): 134	BP_DIAS (BP_DIAS): 86
250.00	DMII WO CMP NT ST UNCNTR	7.3	114		BP_SYS (BP_SYS): 150	BP_DIAS (BP_DIAS): 80
250.00	DMII WO CMP NT ST UNCNTR	7.2	119		BP_SYS (BP_SYS): 130	BP_DIAS (BP_DIAS): 78
250.02	DMII WO CMP UNCNTRLD	7.2			BP_SYS (BP_SYS): 138	BP_DIAS (BP_DIAS): 94
250.60	DMII NEURO NT ST UNCNTRL	7.1			BP_SYS (BP_SYS): 134	BP_DIAS (BP_DIAS): 76
250.00	DMII WO CMP NT ST UNCNTR	7.0			BP_SYS (BP_SYS): 168	BP_DIAS (BP_DIAS): 98
250.02	DMII WO CMP UNCNTRLD	7.0			BP_SYS (BP_SYS): 130	BP_DIAS (BP_DIAS): 86

January | Diabetes-PQRI | Diabetes All Cases A1C LDL BP | Excel Control Chart

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The Approach

- Exception

COMMUNITY ACQUIR BAC PNEUMONIA		
Mental Status Assessed?	○ Yes	○ No
Oxygen Sat.NOT done because	○ Not indicated ○ Contraindicated ○ Other medical reason ○ Patient declined	○ Economic ○ Social ○ Religious
Empiric Abx NOT given because	○ Not indicated ○ Contraindicated ○ Other medical reason ○ Patient declined	○ Economic ○ Social ○ Religious

FEMALE 40-69		
Mammo NOT done because	○ Bilateral mastectomy	○ Two unilateral mastectomy

OSTEOARTHRITIS

- Checklist

Unhealthy alcohol use screen	Recorded	Comment:
Yes	○	
Not done-medical reason	○	
Not done-reason not given	○	

- Future (Combination)

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Balancing the use of the template and the quality of the note with the need to capture quality data in standard fields (the exception model)

THE NOTE

Mccolm, Denni Gay

DOB: 12/14/62 46 F
CA0000114687 / CL00028987 / HubLive0008118
Humansville Family Medical Cen REG PRA

ℹ Allergy/AdvReac: Sulfa (Sulfonamides)

Document: General Soap Note - History of Present Illness

| NUR INTAKE | HISTORY | HPI | ROS | GEN EXAM | PLAN |

+	**ABDOMINAL PAIN**
+	**ARTHRITIS/JOINT PAIN**
−	**ASTHMA**

Pattern of symptoms	Continual	Nocturnal	Seasonal
	Diurnal	Perennial	Other
	Episodic		
Symptom triggers	Allergen exposure	Food	Stress
	Bronchitis	Occupational exposure	Temperature/humidity
	Drugs	Pets	URI
	Dust mite risks	Reflux	Other
	Exercise	Smoke exposure	
Frequency	○ Intermittent	○ Persistent	○ Other
Nocturnal symptoms	○ < 2 times per month	○ 6-10 times per month	○ Other
	○ 2-5 times per month	○ > 10 times per month	
Absences	None	School	Other
	Work		
Using inhaler how often			
Comments			

+	**BACK PAIN**
+	**CHEST PAIN**
+	**CONSTIPATION**
+	**DIABETES**
+	**DEPO PROVERA VISIT**
+	**DEPRESSION**
+	**DIARRHEA**
+	**DIZZINESS**
+	**EAR ACHE**
+	**EDEMA**
+	**EYE COMPLAINT**
+	**FATIGUE**
+	**HOSPITAL FOLLOW UP**

Comment:

Normals | Add Section | Remove Section | View Protocol | Preview | Code Visit | Repeat | Save as In Process | Cancel ✗ | Save ✓

Desktop
Other Chart
Open All Visits
New Note
Summary
Practice Notes
Med List
Problem List
Health History
Vitals
Health Maintenance
Special Panels
Laboratory
Microbiology
Pathology
Imaging
Other Reports
Administrative
Orders
Document
Sign

Mccolm, Denni Gay

DOB: 12/14/62 46 F
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Humansville Family Medical Cen REG PRA

🛈 Allergy/AdvReac: Sulfa (Sulfonamides)

Document: General Soap Note - Diagnosis/Plan Plain

(NUR INTAKE)(HISTORY)(HPI)(ROS)(GEN EXAM)(PLAN)

+ ASSESSMENT/PLAN			
+ ACUTE BRONCHITIS ADULT			
+ ACUTE OTITIS EXTERNA			
– ASTHMA			
Assessment documented	○ Yes	○ No	
Asthma described as	○ Intermittent ○ Persistant mild	○ Persistant moderate ○ Persistant severe	○ Other
Long term med NOT given becaus	○ Patient declined ○ Economic	○ Social ○ Religious	○ Other patient reason
+ CAD			
+ CHF			
+ COMMUNITY ACQUIR BAC PNEUMONIA			
+ COPD			
+ MAJOR DEPRESSIVE DISORDER			
+ DIABETES			
+ FEMALE >65 URINE INCONTINENCE			
+ FEMALE 40-69			
+ OSTEOARTHRITIS			
+ OSTEOPOROSIS			
+ OTITIS MEDIA w/ EFFUSION			
+ OVER AGE 18			
+ OVER AGE 50			
+ OVER AGE 65			
+ PHARYNGITIS			
+ RHEUMATIOD ARTHRITIS			
+ UPPER RESP INFECTION 3-18yrs			
+ VENOUS ULCERS			
– INSURANCE CARRIER			
-	📝 Bmi Healthplans-Cmh		

Comment: [   ]

Desktop
Other Chart
Open All Visits
New Note
Summary
Practice Notes
Med List
Problem List
Health History
Vitals
Health Maintenance
Special Panels
Laboratory
Microbiology
Pathology
Imaging
Other Reports
Administrative
Orders
Document
Sign

| Normals | Add Section | Remove Section | View Protocol | Preview | Code Visit | Repeat | Save as In Process | | Cancel ✗ | Save ✓ |

Quality of the note

- Keeping some narrative
  - Speech recognition
  - Type
  - Canned text
  - Even transcription

Results

- 62 quality measures were built into the documentation and workflow in the 15 clinics studied

- Automated coding was significantly more complete and accurate than manual coding for the quality measures examined

- Building quality measures for automated data extraction relied heavily on the use of custom documentation queries

- A toolkit including these custom queries was expanded, refined, and distributed to 53 organizations representing 2,720 health care providers for use in their EHR systems by the EHR vendor

Thank you!

Integrating Quality Measures into EHRs: Lessons Learned and Next Generation Measure Specifications

Karen Kmetik, PhD

Vice President, Performance Improvement

American Medical Association and Physician Consortium for Performance Improvement

Impact of Health IT on Quality Assessment: Innovations in Measurement and Reporting

June 23, 2010

The Physician Consortium for Performance Improvement® Convened by the American Medical Association

Outline

- Our model to help advance quality measure reporting from EHRs

- Reporting on quality measures from EHRS – Cardio-HIT Project

  - Data entry

  - Date validation

  - Exclusions (exceptions)

- "Next generation" measure specifications

Physician Consortium for Performance Improvement® (PCPI)

- Convened and staffed by AMA
- Celebrating 10 year anniversary in 2010
- Over 170 member organizations
  - Medical specialty societies
  - State medical societies
  - Medical board representatives
  - 13 health care professional organizations
  - Consumer/purchaser panel
  - AHRQ, CMS, The Joint Commission, NCQA liaisons
- Current measures portfolio
  - Measurement sets in 42 clinical areas and preventive care
  - 260+ individual measures
  - Provide means for tracking variations in care

www.physicianconsortium.org

PCPI Measures in Use

- CMS initiatives -

    - Proposed Rule, meaningful use criteria

    - PQRI - ~70% developed by PCPI

    - PQRI EHR reporting option for 2010

    - Physician Group Practice Demonstration

- Medical Boards MOC Programs

- CME Programs

- Private Health Plans

Quality Measures and EHRs

PCPI Model to Help Advance the Integration of Quality Measures into EHRs

- **1. Develop and Maintain Clinically-relevant Quality Measures**
  - Physician Consortium for Performance Improvement® (PCPI)
  - Leveraging clinical data for —next generation" measures

- **2. Develop and Maintain EHR Specifications for Measures**
  - Level I EHR specifications – all available code sets, algorithms, rules
  - Level II EHR specifications – in SDO-approved format (eMeasure)

- **3. Evaluate EHR Specifications with Vendors and Physician Users**
  - AMA/NCQA/HIMSS-EHRA Collaborative
  - Actionable at the point of care - physicians
  - Unambiguous specifications - vendors

- **4. Implement Real-world "Incubator Groups" to Test Feasibility and Validity**
  - **Cardio-HIT**
    - 2 national measurement sets, different specialties, different EHR products – AHRQ grant #R18 HS017160
  - **Alliance of Chicago Community Health Services**
    - 5 national measurement sets, 1,000 clinical users, single EHR product

Track Progress

Ex: Heart Failure

		PCPI Clinically Relevant Measure / NQF-endorsed® or in Process	Level I and II Specs Available	EHR Vendor/ Physician User Review	Incubator Group Testing	Queriable Fields and Data Coded
Data Elements	**Process**	√ / √	√	√	√	**Outstanding:** RxNorm, NDC automatic population of ejection fraction
	Intermediate Outcome					
	Outcome					
	Cost/ Utilization					
	Bundle/ Composite					
	Patient Experience					

Implement Real-World —Incubator Groups" to Test Feasibility and Validity

- Cardio-HIT: Different specialties, practice sizes and EHR products in use

Site Name		
Fox Prairie Medical Group Primary Care	St. Charles, IL	NextGen
Midwest Heart Specialists Cardiology	Lombard, IL	Hybrid EHRS
North Ohio Heart Center Cardiology/Primary Care	Lorain, OH	Allscripts Touchworks™
Northwestern Medical Faculty Foundation *(Phase I only)*	Chicago, IL	Epic
Physicians Health Alliance (PHA) Primary Care	Scranton, PA	GE Centricity
University of Pittsburgh Medical Center (UPMC) Primary Care	Pittsburgh, PA	Epic

Cardio-HIT (CAD and HF)

- Are data available in EHR?

- Are data in queriable fields?

- Is standardized clinical coding used?

- What is the agreement between automated reporting and manual review of EHRs? (numerator, denominator, exceptions)

- How can we best move toward more granularity in exception reporting?

Cardio-HIT (HF)

- Data availability

  1. Ejection fraction not entered in queriable field

  2. Discrepancies between NDC codes in measure specifications and NDC code updates in practice (RxNorm not widely used)

Cardio-HIT (CAD)

- Location of data

Beta-blocker Therapy for Prior MI Location of Exceptions

Allergy List 7.8%

Drug List 0.3%

Prob List 35.4%

Free Text/Dict 24.9%

Past Med Hx 11.0%

Other Structured 20.6%

Legend:
- Allergy List
- Drug List
- Free Text/Dict
- Oth Structured
- Past Med Hx
- Prob List
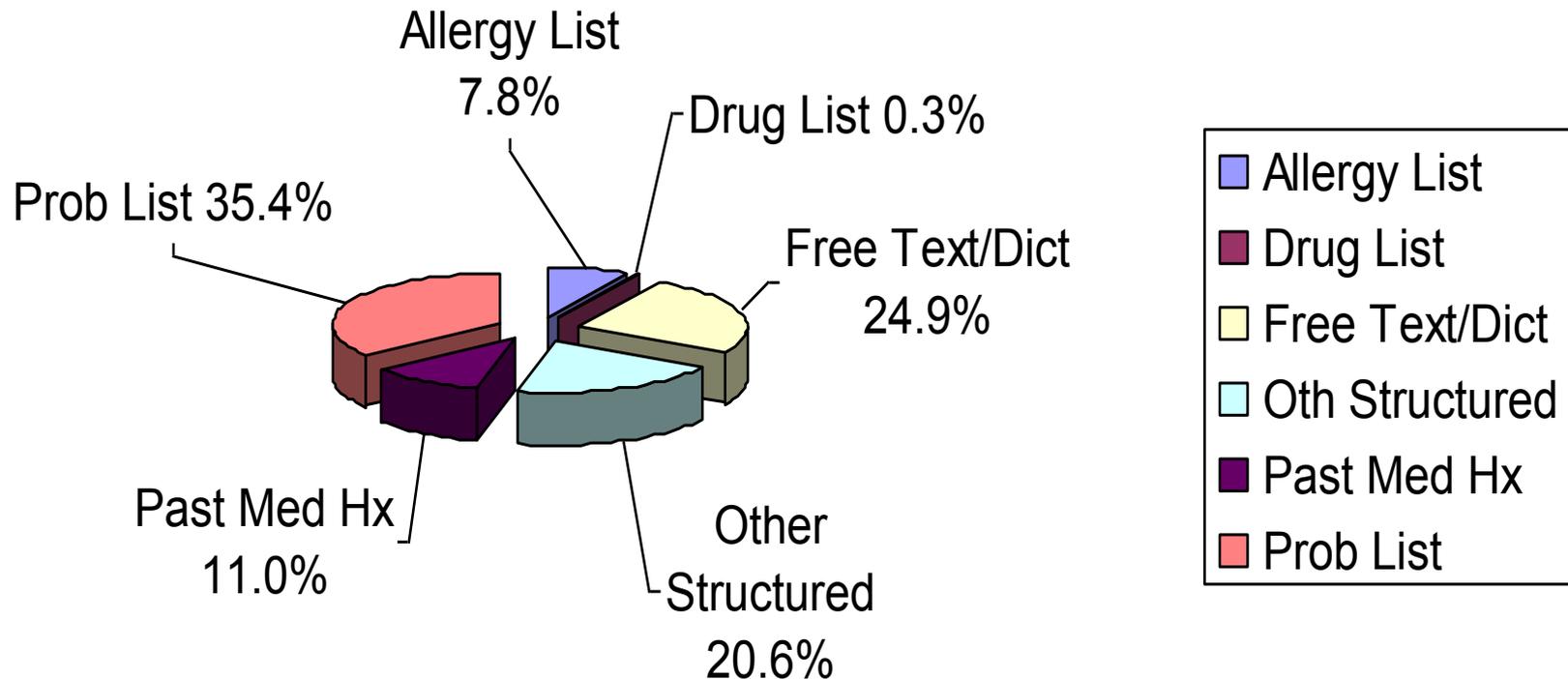
Preliminary data – please do not cite

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Cardio-HIT (HF)

- **Agreement Rates**

  - Applied Exception Reporting Agreement: 100%

  - Measure Met Agreement: 90.48%

  - Apparent Quality Failures Agreement: 19.53%

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Cardio-HIT

- Exceptions – Rx measures
- Medical Reason ⟶ Clinical Contraindication

  Drug Allergy

  Drug Interaction

  Drug Intolerance

PCPI Next Generation Measure Specifications

- Increased specificity of data elements

    - Context of data element

- Eliminate ambiguity from specifications

    - Testing projects, work of AMA/NCQA/EHRA Collaborative

Specifications for EHRs

- Level I EHR Specifications

  - For any user of the measure

  - Translation between clinical and technical

- Level II EHR Specifications (HQMF eMeasure)

  - For use by software vendors to integrate measure specifications in system for quality reporting

What are Level I EHR Specifications?

- Three components
    - Visual representation of measure logic (flow diagram) including context of data elements
    - Mathematical calculation of measure
    - Value sets including codelists

AMA-PCPI Level I EHR Specification

Measure Logic for Heart Failure Measure #7
ACE/ARB Prescribed for Left Ventricular Systolic Dysfunction
Measurement Period = 12 consecutive months

Identify Patients in Initial Patient Population (IPP)	Identify Patients in Denominator (D)	Identify Patients in Numerator (N)	Identify Patients in who have valid Denominator Exceptions (E)

Initial Patient Population (IPP)

- **Active Diagnosis** Heart Failure ValueSet 000001
- *And*
- **Patient Age** 18 years and older
- *And*
- **Encounter** *Ambulatory* Or *Inpatient* *Discharge* ValueSet 000002

Denominator (D)

- All Patients identified within the Initial Patient Population
- *And*
- **LVEF** *Current or Prior <40%* *Value Set* 000003 or 000004

Numerator (N)

- All Patients identified within the Denominator
- *And*
- **ACE Inhibitor or ARB** Prescribed ValueSet 000008

Exceptions (E)

- All Patients identified within the Denominator
- *And Not*
- All patients identified in the Numerator
- *And*
- **Medical Exception** ValueSet 000005
- *Or*
- **Patient Exception** ValueSet 000006
- *Or*
- **System Exception** ValueSet 000007

Parameter Specifications:

IPP- Active Diagnosis: During or prior the 12 month measurement period; Patient Age-18 years and older at beginning of measurement period; Encounter-2 or more instances during measurement period.

D- LVEF: Use any value < 40% if more than one result has been documented; do not limit search to measurement period.

E- Documented anytime during or before encounter date.

What are Level I EHR Specifications?

- Three components

  - Visual representation of measure logic (flow diagram) including context of data elements

  - Mathematical calculation of measure

  - Value sets including codelists

Mathematical Calculation of Measure

Steps for the Basic Measure Calculation

$$\frac{\textbf{Numerator (N)}}{\textbf{Denominator (D) – Denominator Exceptions (E)}} = \%$$

Steps for Exception Calculation

$$\frac{\textbf{Denominator Exceptions* (E1+E2+E3)}}{\textbf{Denominator (D)}} = \%$$

E1-Medical Exception
E2-Patient Exception
E3-System Exception

Mathematical Calculation, cont'd

- Definition of measure components
  - Initial patient population (IPP)
  - Denominator (D)
  - Numerator (N)
  - Denominator Exceptions (E)

EXAMPLE

Denominator (D)

Definition: The denominator defines the specific group of patients for inclusion in a specific performance measure based on specific criteria (e.g., patient's age, diagnosis, prior MI). In some cases, the denominator may be identical to the initial patient population.

Find the patients who qualify for the denominator (D): From the patients within the Patient Population criteria (IPP) select those people who meet Denominator selection criteria.

(In some cases the IPP and D are identical).

What are Level I EHR Specifications?

- Three components

  - Visual representation of measure logic (flow diagram) including context of data elements

  - Mathematical calculation of measure

  - Value sets including codelists
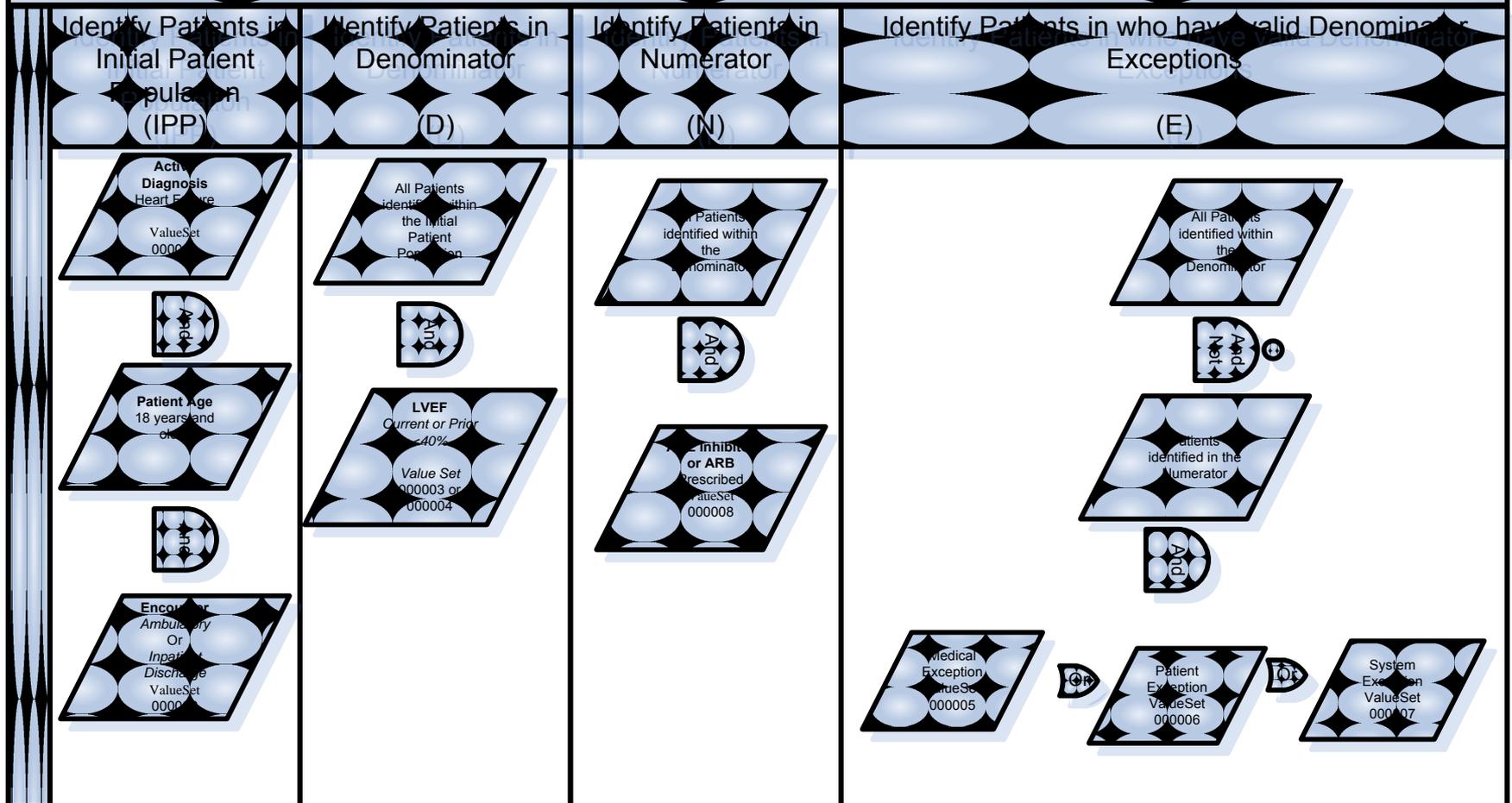
Value sets Including Codelists
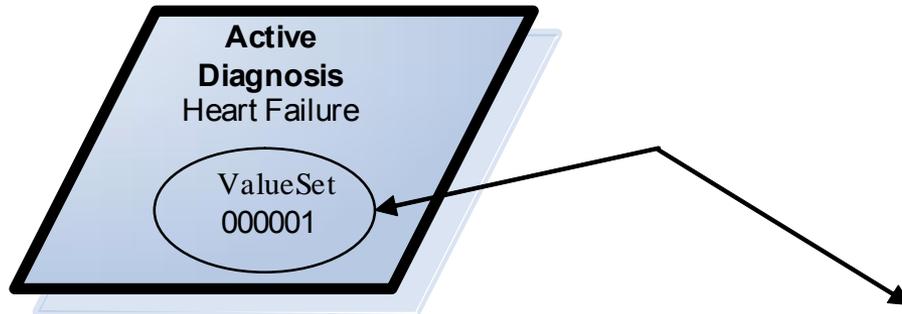
CLINICAL TOPIC	TOPIC INDICATOR	MEASURE COMPONENT	VALUE SET	CODING SYSTEM	CODE
HF	7	D	000001	I9	428.21
HF	7	D	000001	I9	428.22

Transition to Clinical Code Sets in EHRs

- ICD-9 CM and CPT® were designed for billing purposes

- Clinical code set adoption—varying timelines

- Level I EHR Specifications will include ALL available code sets for the specified data elements during transition period

Code Sets for Level I EHR Specifications

- Problems, diagnoses
  - SNOMED-CT, ICD-9 CM, ICD-10 CM
- Medications
  - NDC and RxNorm
- Laboratory Tests
  - LOINC, CPT
- Findings, observations, or procedures
  - SNOMED- CT
- Procedures
  - CPT

Plan to Transition all PCPI Measures into Level I EHR Specification Format

- Begin with measures currently in use in national programs (eg, PQRI, EHR demonstration projects, Meaningful Use Proposed Rule)

- Supporting NQF efforts to establish a Quality Data Set (QDS)

- Goal to proactively identify a comprehensive set of measures appropriate for EHR implementation within a condition and across conditions

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Level II EHR Specifications (HQMF, eMeasure)

- Health Quality Measures Format (HQMF) is a standard for representing a performance measure as an electronic document

- Provides a standard approach using the XML-based markup standard and the HL7 framework for representing a performance measure

- Standardization provides:

  - Structure, metadata, definition and logic consistency

  - Unambiguous interpretation

- HQMF was successfully balloted as an HL7 DSTU standard in the Fall of 2009

References

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Questions?

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Automated Diabetes Registry Tools to Enhance Self-Management and Provider Feedback

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Background

- Diabetes Patient Self-Management: Most studies show important clinical effects but involve multiple, time-intensive educational sessions

- Provider Performance Feedback: Generally fails to improve clinical outcomes; however, advances in HIT allow for targeted, automated, patient-level feedback

Objectives

- Study the impact of a self-management tool, the Patient Report Card (PRC)
  - Do regular mailings affect process outcomes?
  - Does point of care distribution impact clinical outcomes (A1c < 7, LDL < 100, BP < 130/80)?
- Assess the impact of patient-level provider performance feedback on clinical outcomes

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Diabetes HGBA1C Screening Indicator
by PCP at Westside Adult IM

Adult patients, with at least two Primary Care facility visits in the last 12 months and one Diabetes diagnosis in the last 18 months.

Most Recent HGBA1C
(Eligible Patients with at least 2 vst in 12m)

No HGBA1C	6.1%	
> 11.0	6.7%	
9.1 - 11.0	10.3%	
7.0 - 9.0	38.0%	
< 7.0	38.9%	
Total:	**100.0%**	

HGBA1C Over Time
Target is 35% of patients with HGBA1C < 7

- No HGBA1C
- > 11.0
- 9.1 - 11.0
- 7.0 - 9.0
- < 7.0

Summary by PCP
Target is 35% of patients with HGBA1C < 7

- No HGBA1C
- > 11.0
- 9.1 - 11.0
- 7.0 - 9.0
- < 7.0
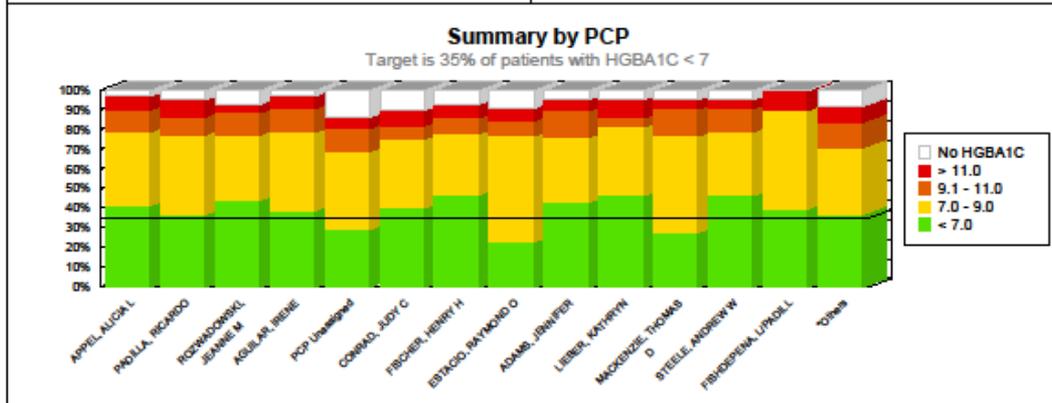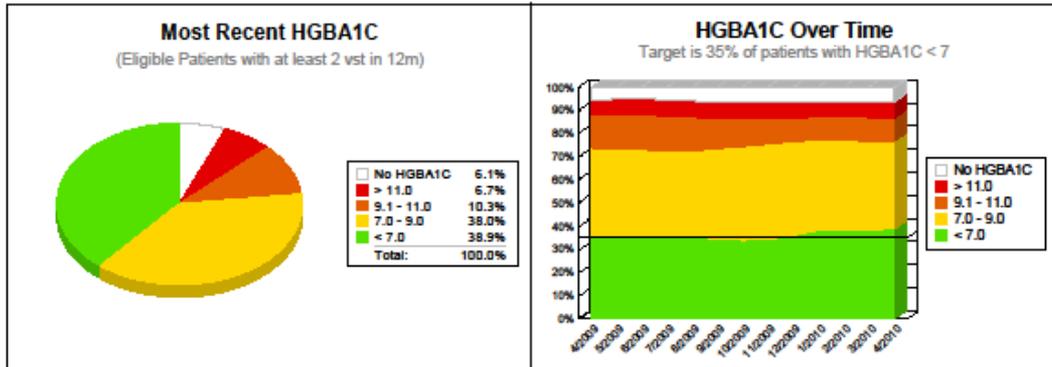
PCP Name	Patient Count (At least 2 vst 12m)	No HGBA1C (Count)	No HGBA1C (Pct)	Green	Yellow	Orange	Red
APPEL, ALICIA L	204	6	3%	42%	37%	11%	7%
PADILLA, RICARDO	187	9	5%	37%	41%	9%	9%
ROZWADOWSKI, JEANNE I	142	10	7%	44%	33%	11%	4%
AGUILAR, IRENE	141	4	3%	39%	40%	12%	6%
PCP Unassigned	109	15	14%	29%	39%	12%	6%
CONRAD, JUDY C	89	9	10%	40%	35%	7%	8%
FISCHER, HENRY H	87	6	7%	47%	31%	8%	7%
ESTACIO, RAYMOND O	78	7	9%	23%	54%	8%	6%
ADAMS, JENNIFER	67	3	4%	43%	33%	13%	6%
LIEBER, KATHRYN	43	2	5%	47%	35%	5%	9%
MACKENZIE, THOMAS D	43	2	5%	28%	49%	14%	5%
STEELE, ANDREW W	43	2	5%	47%	33%	12%	5%
FISHDEPENA, L/PADILL	10	0	0%	40%	50%	0%	10%
*Others	62	5	8%	37%	34%	13%	8%
Total	**1,305**	**80**	**6%**	**39%**	**38%**	**10%**	**7%**

*Others is a rollup of all PCP's with less than 10 patients.

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Your Diabetes Report Card

Do you know your **Diabetes ABC'S Report Card Numbers**?

A is for A1C. This test measures your average blood sugar (glucose) over the last 3 months.

B is for Blood Pressure. High blood pressure makes your heart work too hard and can damage it.

C is for Cholesterol. Bad cholesterol, or LDL, builds up and clogs the blood vessels to your heart.

S is for Self –Management Goal - What you are going to do to help improve your Diabetes control ?

Bad news: If your **ABC'S** are bad, you are at higher risk for heart attack, stroke, kidney disease, and blindness. With Diabetes, Heart disease is more likely to strike you at an earlier age than someone without diabetes.

Good news: You can fight back! Practicing good health behaviors will help you to take control of your Diabetic **ABC'S** and help you to live a longer and healthier life !

Here is your personal **Diabetes ABC'S Report Card:**

	Your Most Recent Result		Your Previous Result		Next Test Due On	
A = A1c Goal is less than 7	Excellent	5.9 09/20/07	Excellent	6 02/27/07	PAST DUE	☺ Excellent
B = Blood Pressure Goal is 130/80 or less	Fair	120/80 07/15/08	Fair	120/80 07/11/08	10/15/08	☺ Fair
C = Cholesterol - LDL Goal is less than 100	Fair	107 06/15/08	Excellent	67 02/08/08	09/15/08	☹ Poor ☹ Very Poo

S = Self-Management Goal: Your goal is XELF MANAGEMENTXXXXXXXX XXXXXXXXX XXXXXXX XXXXXXX XXXXXXX!.

Your risk for having a Heart Attack in the next 10 years based on your current ABC'S Report Card is:
18% / MODERATE RISK

Basic Diabetes Education Lessons: You have completed _4_ of the seven (7) recommended lessons:
1. Basic Pack _03/31/08_   2. Diabetes Video _03/04/08_   3. Diabetes Plan _____
4. Self-Management Goal Set _07/01/08_   5. Basic Nutrition with Nurse _____
6. Nutrition Video _____   7. Learning Assessment _04/09/08_

My Action Plan:

If you are not at your goal for one or more of your ABC'S above or do not have a Self-Management Goal, consider choosing one of the self-management goals listed below to help you reach your healthy goals.

☐ Making and keeping more regular appointments – Ask your provider how many visits you need.

☐ Taking my medications exactly as prescribed. What one specific thing will you do to be sure you take your medications as prescribed? _____

☐ Improving my eating habits. What one specific thing will you change? _____

☐ Increasing my Physical Activity:
I will _____ _____ times per week for _____ minutes each time.
(activity)

Bring this form with you to your next visit to discuss your plans and your goals with your provider.

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Study Population

- Inclusion Criteria: Age > 17 and in our diabetes registry
  - One or more primary care visits in past 18 months
  - ICD-9 code of 250.xx in past 18 months
- Exclusion Criteria
  - Age > 75
  - No working address
  - Neither English nor Spanish as primary language
- 5457 patients randomized to this 1 year study
  - 62% Latino, 16% African-American, 17% Caucasian
  - Most of our diabetics are uninsured (42%) on medicare (26%) or medicaid (18%)

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Intervention Arms

- One-half patients randomized to receive quarterly mailings

- 4 of 8 clinics (2 "large" and 2 "small") randomized to point of care PRC distribution

- 4 of 8 clinics (2 "large" and 2 "small") randomized to distribute quarterly patient-level provider performance feedback
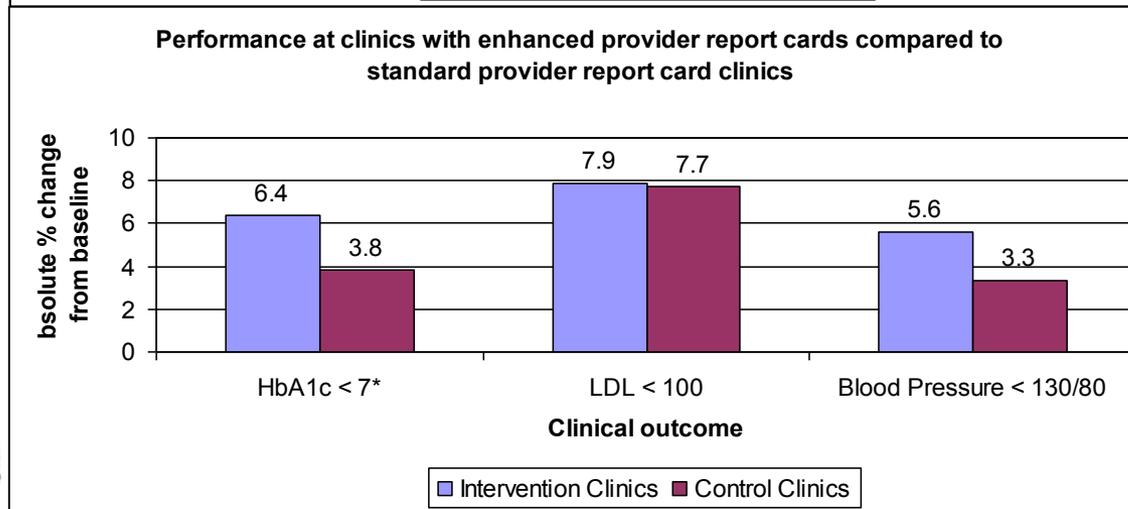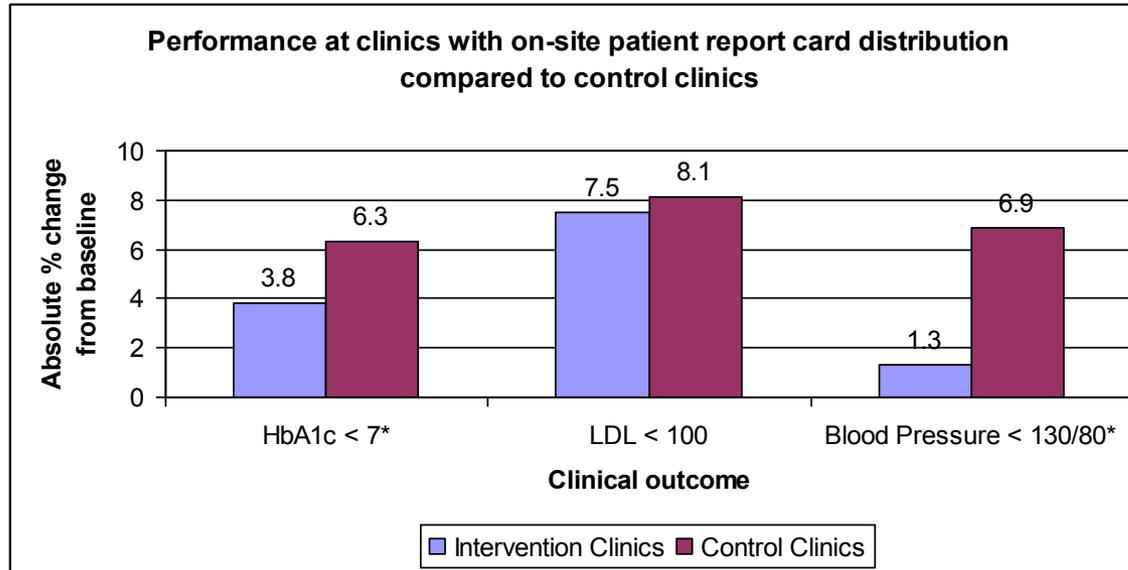
Qualitative Analyses

- Most patients and providers embraced the Patient Report Card

- Providers express frustration with feedback in their performance in the context of our traditional approach to chronic disease management
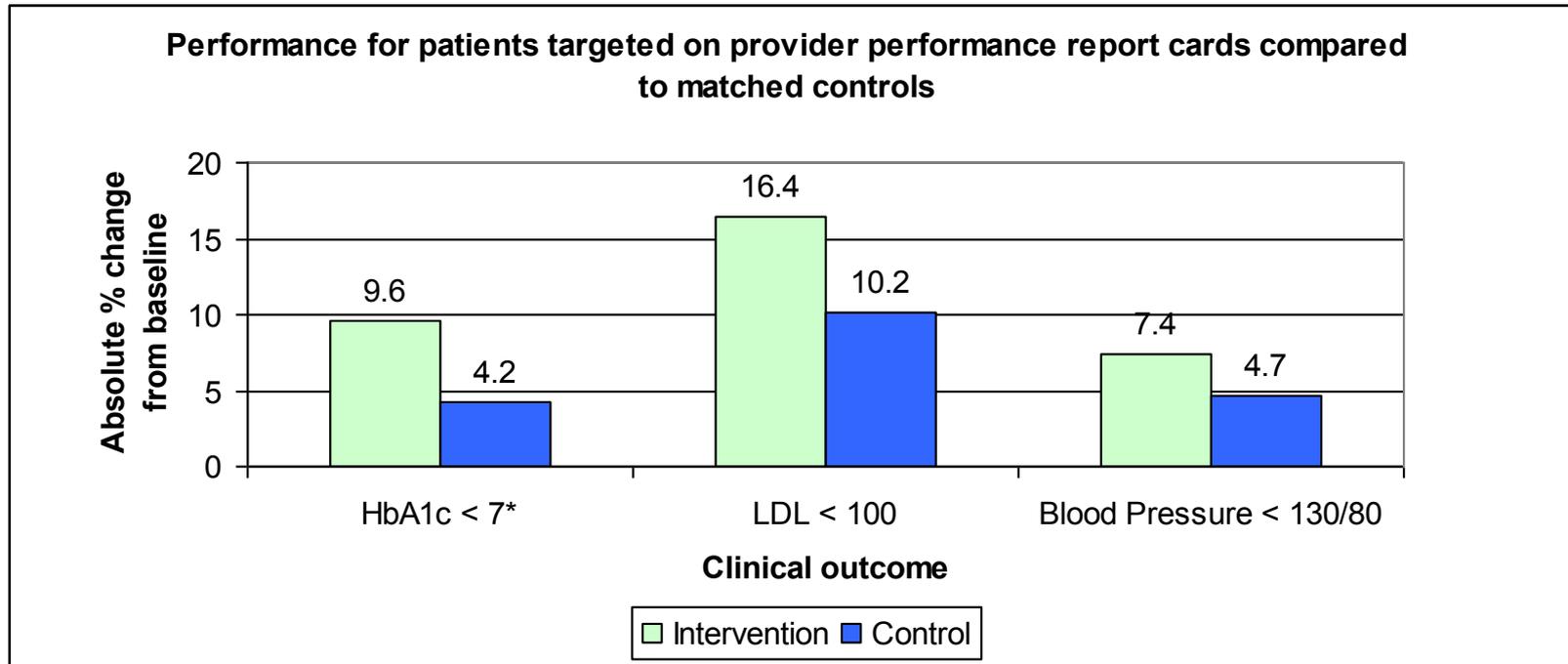
Results for Patient Mailings

- No impact on process outcomes
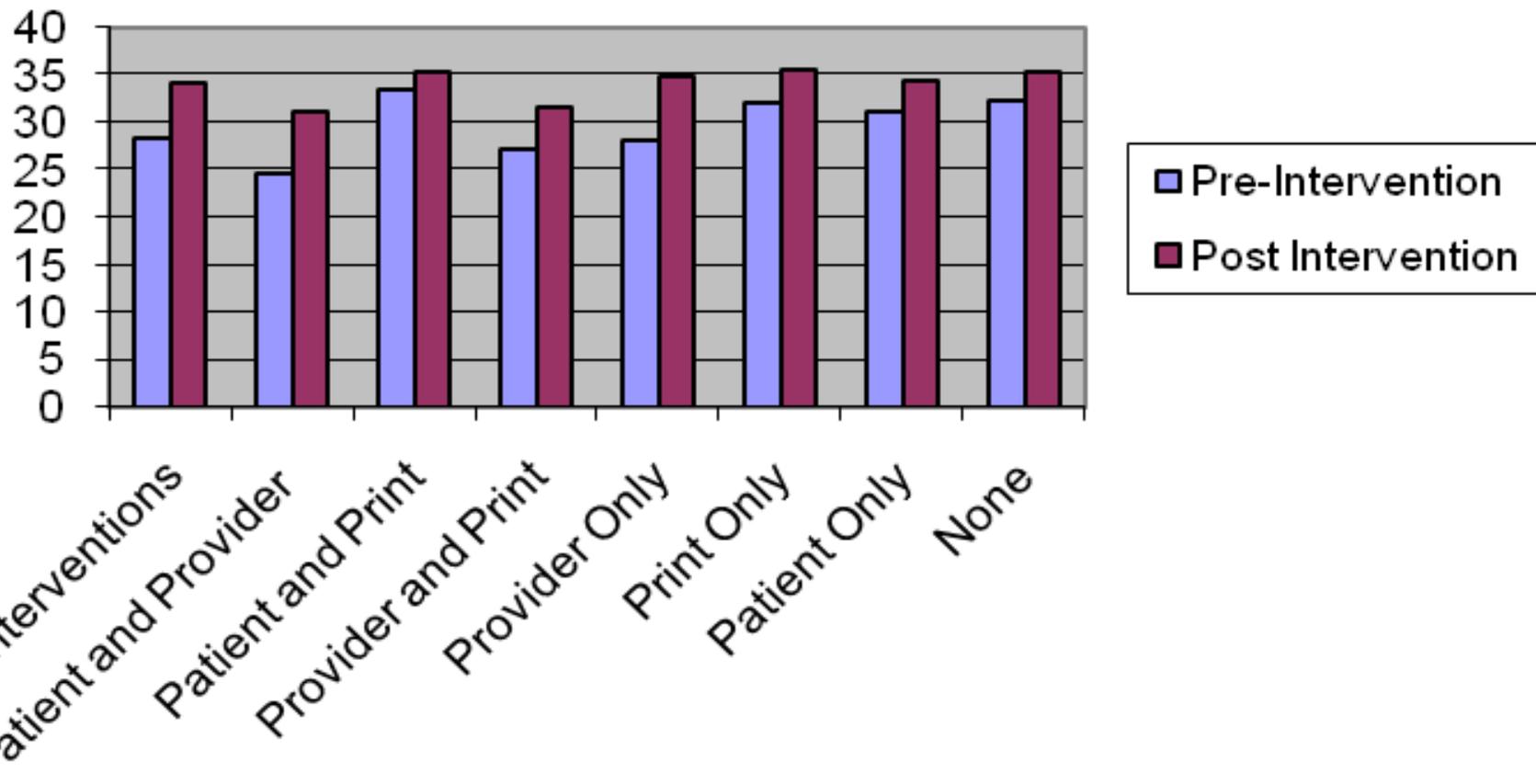- Sub-analysis based on patient performance also showed no effect on process outcomes

Results at Clinic Level

Performance at clinics with on-site patient report card distribution compared to control clinics

Results Using Matched Controls

Performance for patients targeted on provider performance report cards compared to matched controls

Absolute % change from baseline

Clinical outcome	Intervention	Control
HbA1c < 7*	9.6	4.2
LDL < 100	16.4	10.2
Blood Pressure < 130/80	7.4	4.7

□ Intervention ■ Control

Percent of patients with HbA1c less than 7

Legend: Pre-Intervention, Post Intervention

Categories: All 3 interventions, Patient and Provider, Patient and Print, Provider and Print, Provider Only, Print Only, Patient Only, None

"Patient": Patients received mailed patient report cards
"Provider": Patients were identified on the enhanced provider report card
"Print": Patients attended clinics where patient report cards were distributed at each visit

Discussion Points

- Limitations to implementing an RCT chronic disease management intervention in a large, diverse health care system
  - Innate differences exist among patient populations and clinics, even within the same safety-net health care system
  - Difficult to account for concomitant QI initiatives
  - Challenges of power analysis in clinic level randomization
- How do we improve process outcomes?
- How do we improve intermediate clinical outcomes?
- Providers interviews highlight frustration with performance feedback in setting of traditional chronic disease management model

Conclusions

- We can successfully automate individualized feedback to over 60 providers and thousands of patients, by mail and at the point of care

- Not clear that frequent, brief self-management facilitation improves outcomes

- Diabetes patient report cards were generally well-received by patients and providers

- Targeted, patient-level provider feedback was associated with better glycemic control

- Provider frustration highlights the need for novel, team-based approaches to chronic disease management

Acknowledgements

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- Team members: Josh Durfee, Sheri Eisert, Susan Moore, Andy Steele, Kevin McCullen, Katherine Anderson, Lara Penny, Thomas Mackenzie

Thank you!

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Questions & Answers

Our Panel:

Denni McColm, M.B.A., Chief Information Officer at Citizens Memorial Healthcare

Karen Kmetik, Ph.D., Vice President of Performance Improvement at the American Medical Association (AMA)

Henry Fischer, M.D., Assistant Professor at the University of Colorado Health Sciences Center and a practicing internist at Denver Health Medical Center (DH)

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