

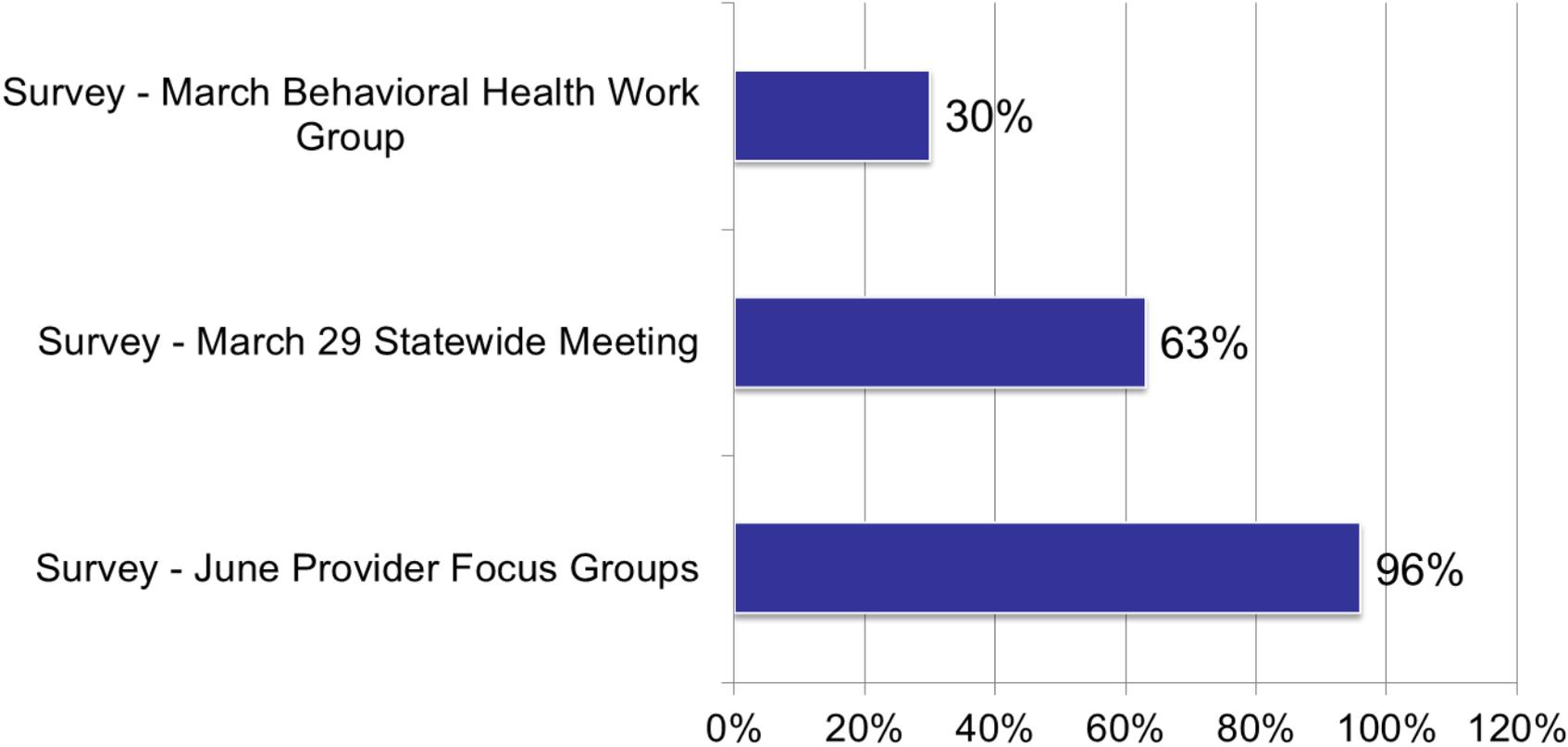
SAMHSA-HRSA Center for Integrated Health Solutions  
Southeast Learning Community  
In Person Meeting

# Utilizing EHR Data at population level to improve quality

Fred D. Rachman, MD

# Illinois Behavioral Health Integration Project

## EHR Adoption - Existing & Implementing



# What is quality in healthcare?

Safe

Effective

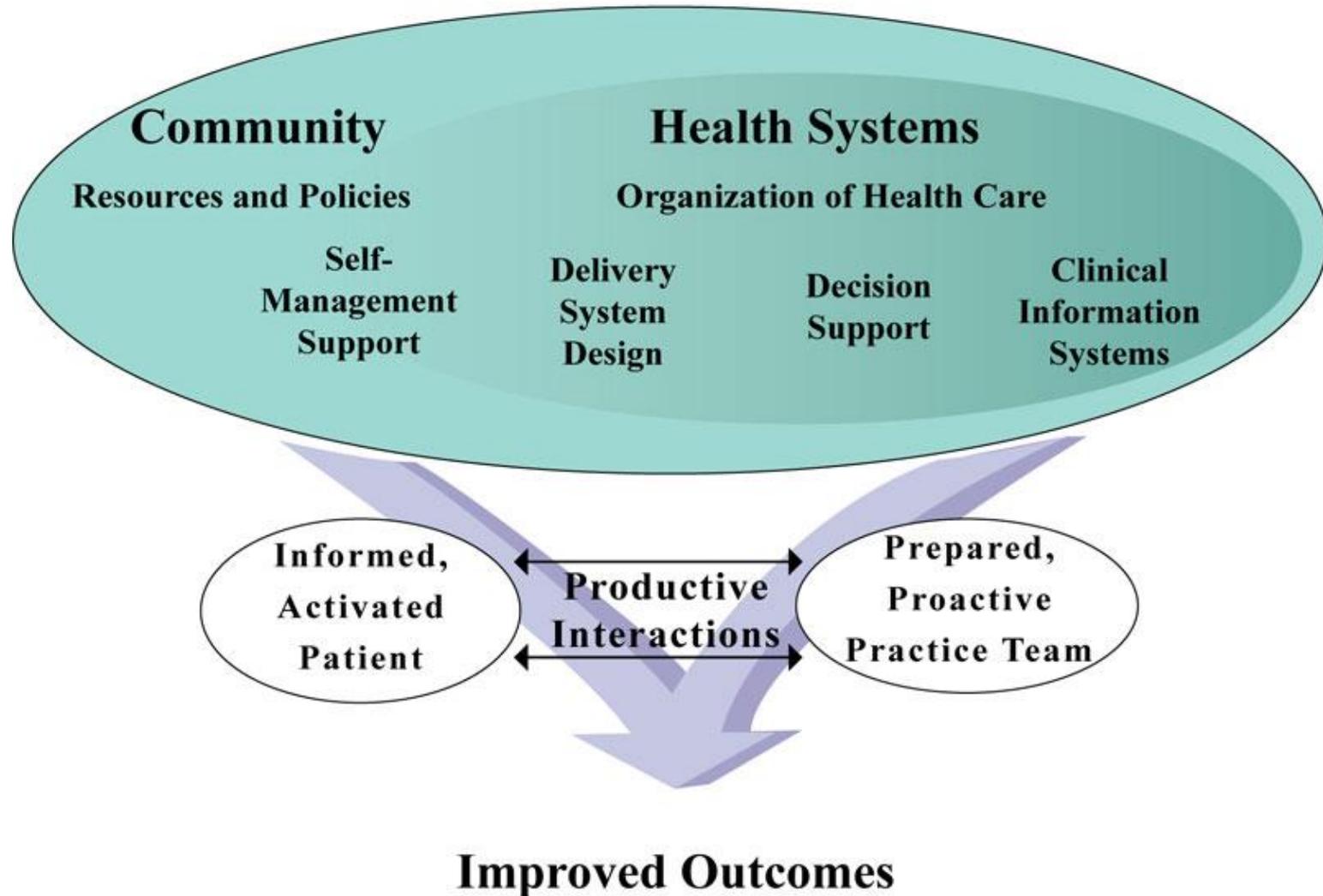
Patient-  
centered

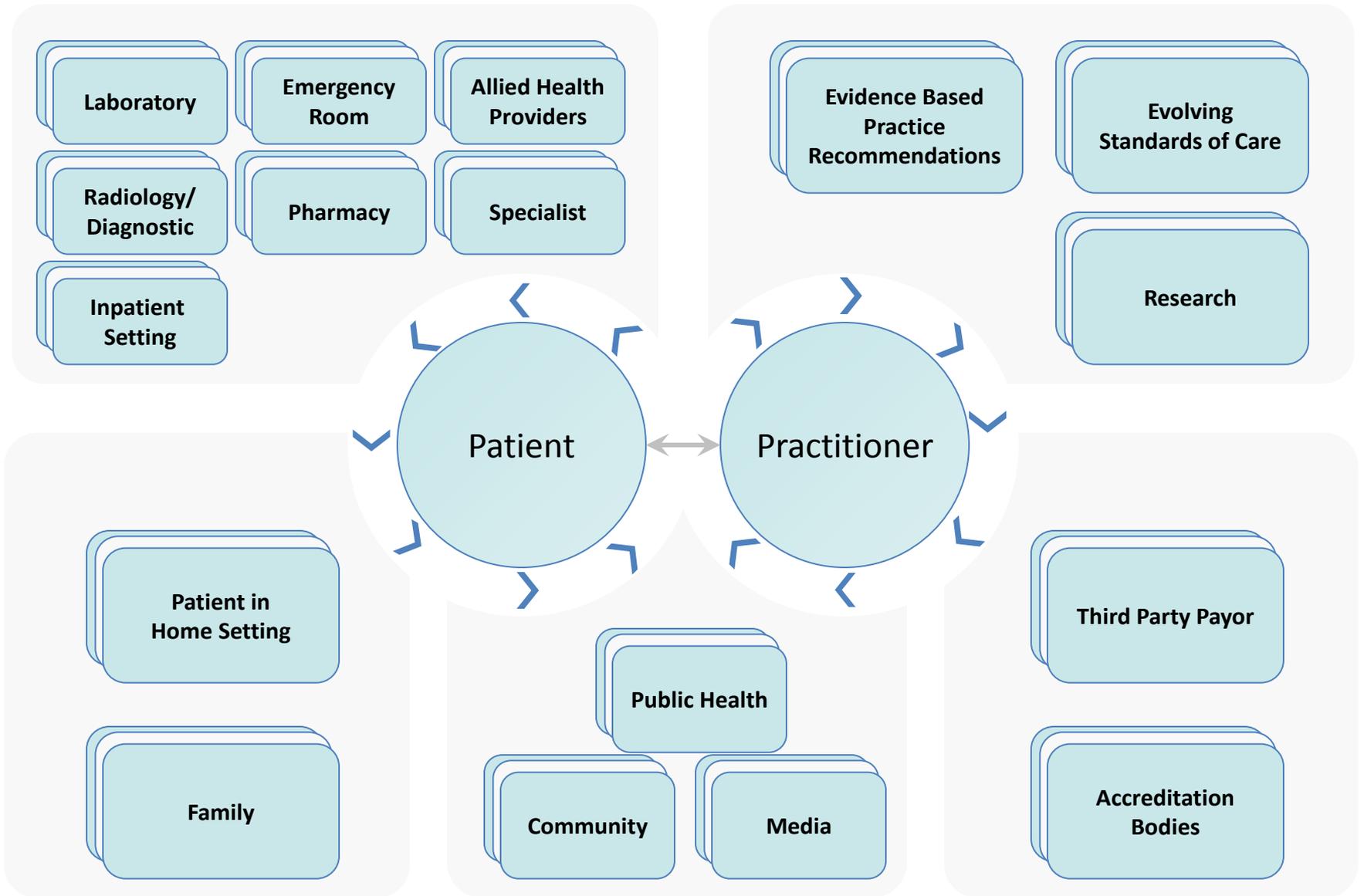
Timely

Efficient

Equitable

# The Chronic Care Model

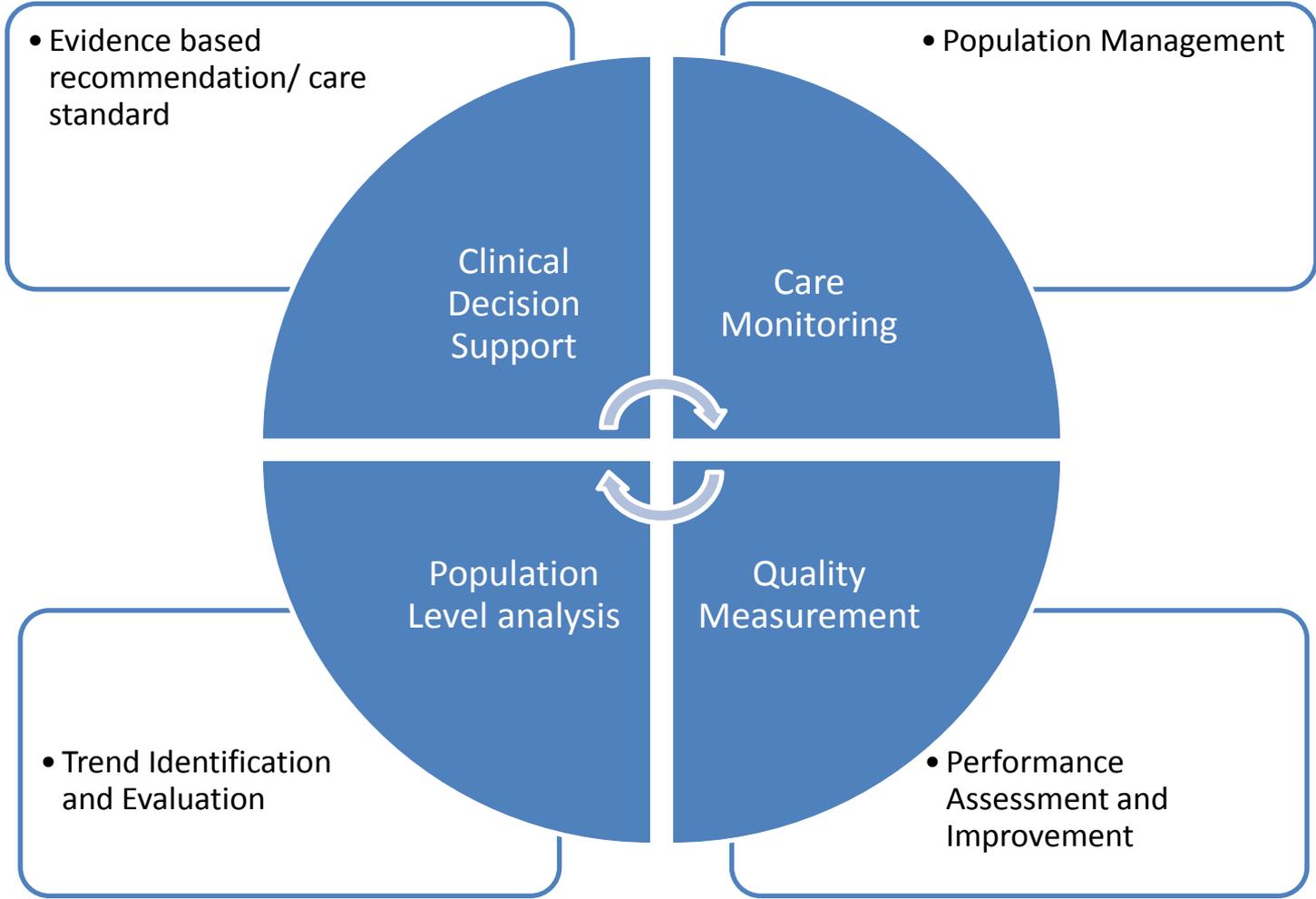






# Health Care Transformed

- Information that follows the patient – timely, accessible, complete to enable patient centered, integrated care across all settings
- Evidence based decision support at point of care for practitioners of all disciplines to assure consistent, high quality care
- Access to decision support and tools for managing health by/for patients
- Population based data to advance medical knowledge, understanding of factors influencing health practice and status and drive improvement
- Transparency of quality information to incentivize quality rather than cost/profit



## Use of EMR data for quality

- Individual patient level clinical decision support
- Support for care delivery processes
- Population level management
- Data to support quality improvement initiatives and program development

# Types of Clinical Decision Support

- Passive
  - e.g., templates, order sets, display of protocols
- Active
  - e.g Prompts, popups, alerts

Chart <

**Alex TEST PT Diaz** Pt ID:206225 Loc:EFHC-WT Lang: Spanish Race: Caucasian Ins:Title X Sliding Fee Scale Grp: PCP: Sara Naureckas MD  
 15 Years & 5 Months Old Male, DOB:08/08/1997 Next Appt: None Scheduled Work: (312) 666-3494

**Documents for Edit (1)**  
 MHTX:Mental Hea... End  
 New Document

Problems Medications

- Chart Summary**
- Problems
  - Medications ⚠
  - Allergies
  - Directives
  - Alerts / Flags 3

- Documents**
- Flowsheet
  - Orders
  - Histories
  - Quality
  - Protocols
  - Graphs
  - Handouts
  - Registration

Desktop  
 Chart

Update - Alex TEST PT Diaz - Mental Health Treatment Plan (MHTX) at EFHC-WT on 1/31/2013 8:23:31 AM by Fred Rachman MD [Doc ID: 105]

Summary: Mental Health Treat... < + Order + Medication + Problem

Interactions: ⚠

Forms Text

Forms Add...

- Treatment Plan
- Multi Axis
- Assessment & Plan

Attachments Add...

**Goals** Objective # 1 Objective # 2 Objective # 3 Objective # 4

**Treatment Plan** DOB: 08/08/1997 Patient Age: 15 Years & 5 Months Old

**Review Due Dates**  
 Review Due: [ ] in 30 days in 60 days in 3 months in 6 months

**Goals**  
 improve mental and emotional health  
 maintain mental and emotional health

**In the patient's words:**  
 [ ]

**Diagnostic Focus**  
 Anxiety  Depression/Mania  Personality Disorder  
 Substance Abuse  Psychosis  ADHD  
 Other: [ ]

**Objectives** **Interventions**

# 1: [ ] [ Interv ]  
 # 2: [ ] [ Interv ]  
 # 3: [ ] [ Interv ]  
 # 4: [ ] [ Interv ]

Obj #1 Interv >>>

Interactions:  Forms  Text Forms 

-  Treatment Plan
-  PHQ-9
-  Multi Axis
-  Assessment & Plan

Attachments 

Favorites 

-  Labs In-House
-  Medication Administratio
-  Newborn History
-  Nursing Assessment
-  Pediatric Education

## PHQ-9

## Survey Results

Prev Score: 9 (11/13/2012 8:51:48 AM) 

1. Over the last 2 weeks, patient reports the following frequency of symptoms:

a. Little interest or pleasure in doing things

 Not at all       Several days       More than half the days       Nearly every day

b. Feeling down, depressed, or hopeless

 Not at all       Several days       More than half the days       Nearly every day

c. Trouble falling asleep, staying asleep, or sleeping too much

 Not at all       Several days       More than half the days       Nearly every day

d. Feeling tired or having little energy

 Not at all       Several days       More than half the days       Nearly every day

e. Poor appetite or overeating

 Not at all       Several days       More than half the days       Nearly every day

f. Feeling bad about yourself, feeling that you are a failure, or feeling that you have let yourself or your family down

 Not at all       Several days       More than half the days       Nearly every day

g. Trouble concentrating on things such as reading the newspaper or watching television

 Not at all       Several days       More than half the days       Nearly every day

h. Moving or speaking so slowly that other people could have noticed. Or being so fidgety or restless that you have been moving around a lot more than usual

 Not at all       Several days       More than half the days       Nearly every day

i. Thinking that you would be better off dead or that you want to hurt yourself in some way

 Not at all       Several days       More than half the days       Nearly every day

2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

 Not Difficult at All       Somewhat Difficult       Very Difficult       Extremely Difficult

Score Form

Scoring Results

v1.05 - version date: 03/21/2011

Alliance of Chicago Community Health Services, L3C

Prev Form (Ctrl+PgUp)

Next Form (Ctrl+PgDn)

Practice Guideline

Decision Support

Structured Data Entry

Patient Status

- Inserted
- Adult CC/HPI
  - Past Med Surg Farr
  - Adult HM & Ed
  - Adult ROS
  - Physical Exam
  - Disease Management
  - Diabetes Management
  - Assessment & Plan

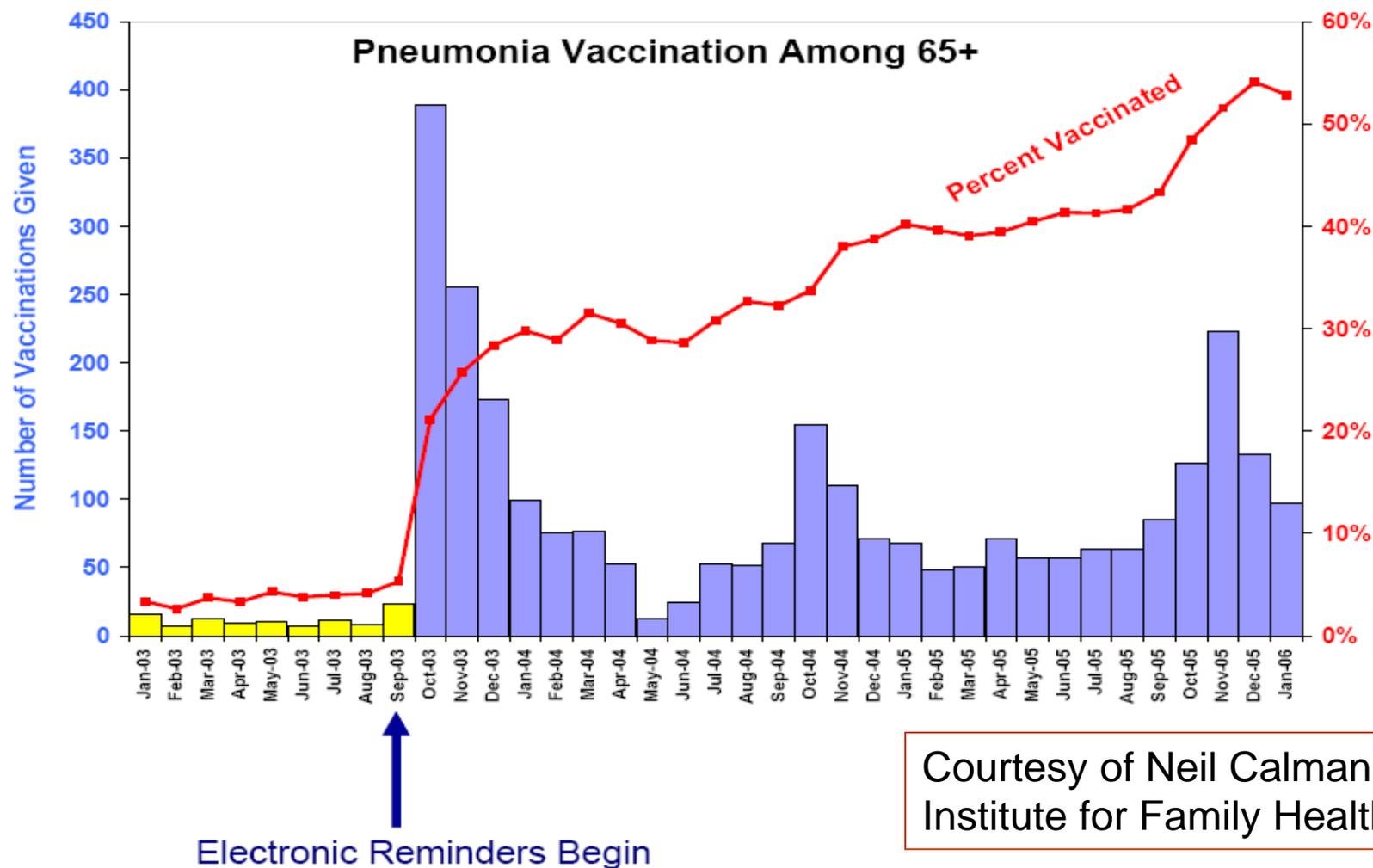
- Attachments

- Favorites
- Blank image
  - E&M Advisor
  - EKG Interpretation
  - Immunizations
  - IUD Insertion
  - Labs In-House
  - Suture Removal

Diabetes Management

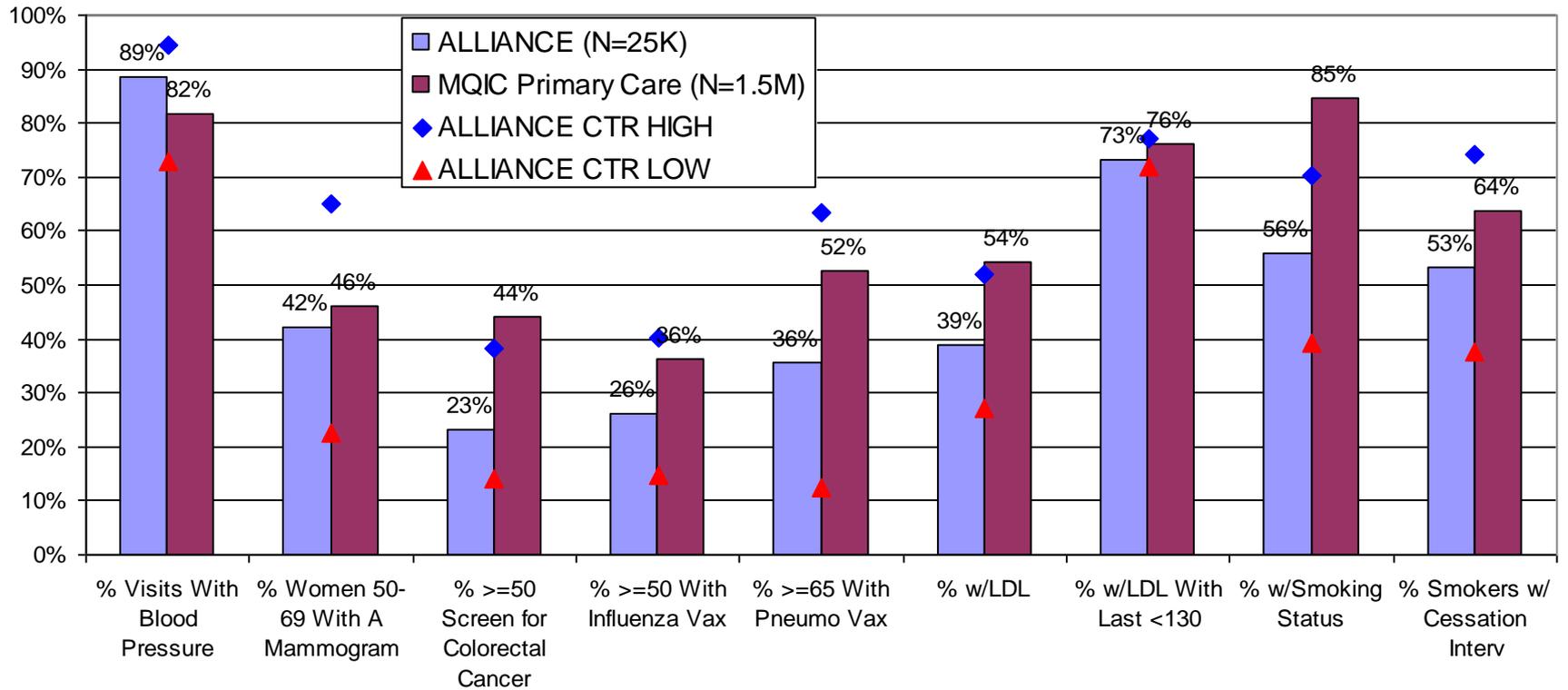
TEST	PROTOCOL	LAST TEST	TODAYS RESULTS	RECOMMENDATION
Blood Pressure	Every Visit	120 / 96		Blood Pressure Measurement Due Today
Left Foot Check	Every Visit		Visual Normal exam	Protocol Satisfied
Left Pedal Pulse	Yearly		Pulse Rating	Left Pulse Check Due Today
Left Monofilament	Yearly		Sensory	Left Monofilament Due Today
Right Foot Check	Every Visit		Visual Normal exam	Protocol Satisfied
Right Pedal Pulse	Yearly		Pulse Rating	Right Pulse Check Due Today
Right Monofilament	Yearly		Sensory	Right Monofilament Due Today
Eye Exam	Yearly after Age 12		Date 05/07/2007	Protocol Satisfied

# Clinical Decision Support – Impact on Vaccine Administration in Adults



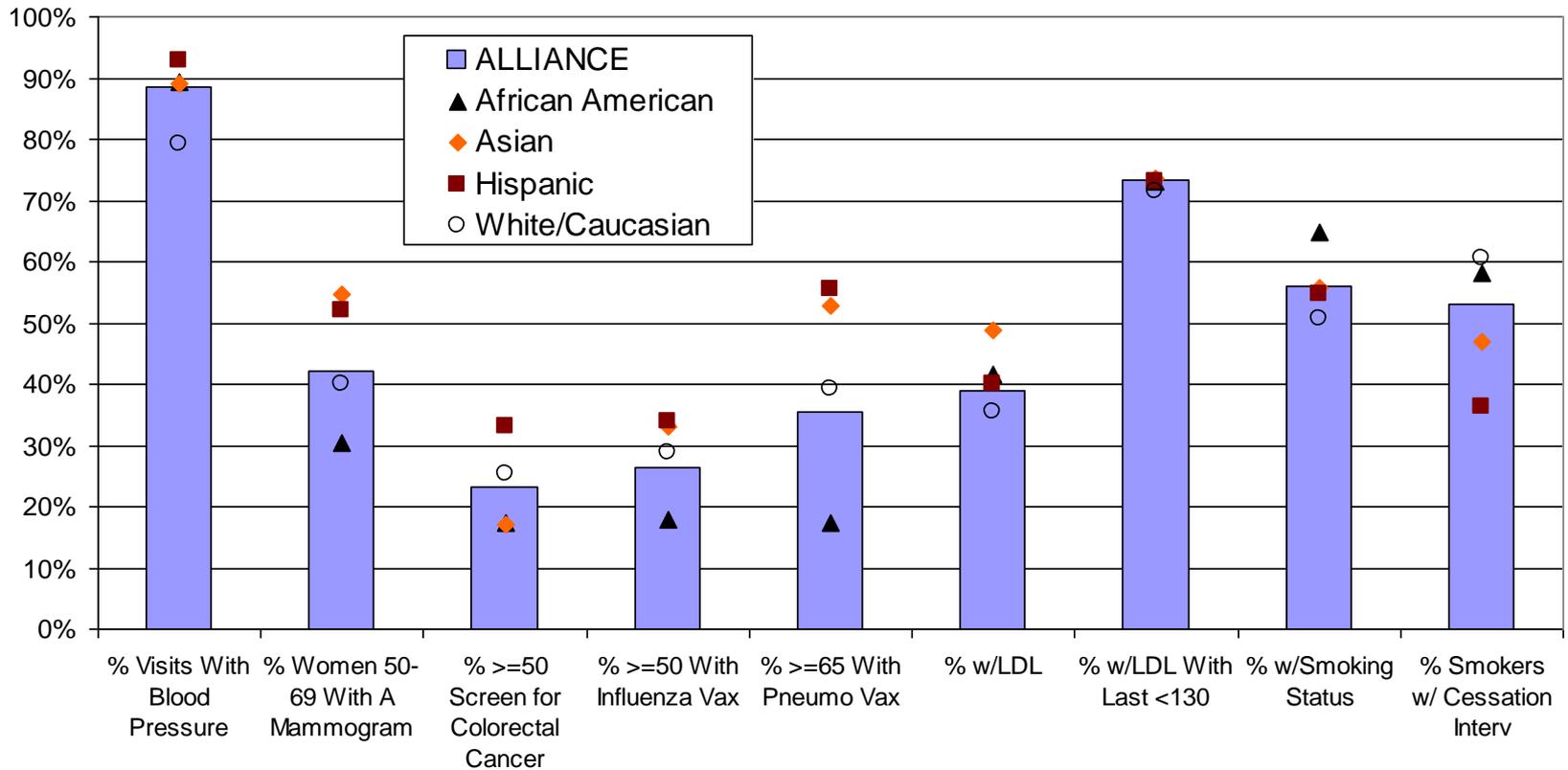
# Health Outcomes – Preventive Care

**DOQ-IT Preventive Care Measures General Population  
Alliance Centers vs. MQIC National**



# Health Outcomes Preventive Care Disparities

**DOQ-IT Preventive Care Measures General Population  
Health Disparities by Race**



# Data Visualization

Abklfdfdbgkdselrjeflkgswerwersmdkmdaoinglknds  
lakjfkjggaijkdlglktjejilralkngslinahfkmgkadmfaero  
hrqpfmgubgpemlamxzdliangldkdsfmalmemlsignld  
ksnglxxakmdslslkdglslvmaslifmlasckwofjgmdflkm  
alk**important**informationcandsmclgndlksandlakfjl  
kmdflmklgklt**significant**trendsmgkmdslkfmklmgl  
imlnzmdfmlkamfxplfdslkfmslrepormfs;mfsdfsdglks  
lgjdsklgdskskjlgagljdsllkaslfkjelrjldlnmaglndlgnsde  
gkdjakerelimagbkdmjlleindfkxjuhvrewdgujlkjncfr  
defgjmlldkfjuyeeidogkgjtuggkhoihjrudsheyzkfkjsd  
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jnzvufdhsouahgorkgprikyowjtlhmoihjgrauakjgnka  
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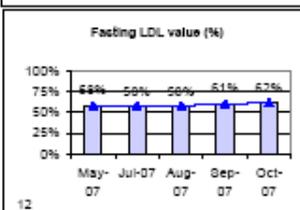
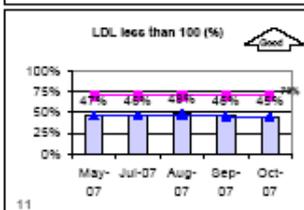
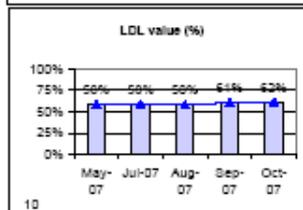
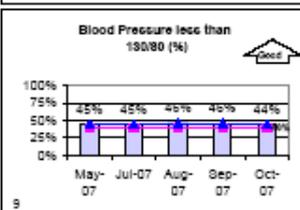
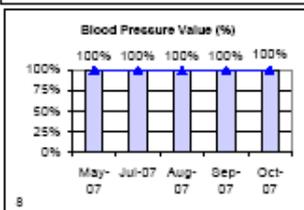
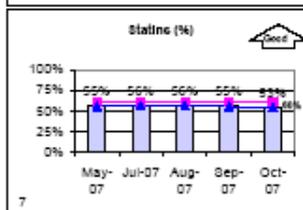
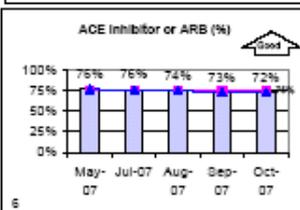
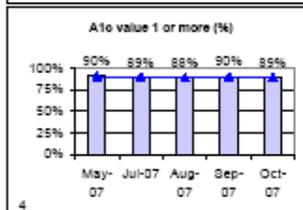
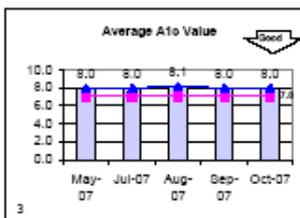
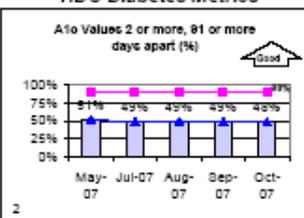
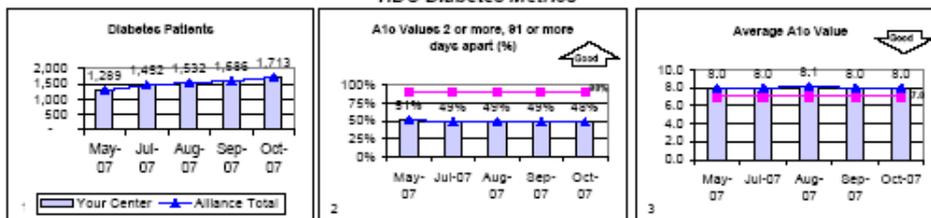
# Data into information

**Alliance Total**

Health Outcomes Dashboard for the Year Ending October 2007 Note: Monthly measurements reflect 12 month rolling period

With comparisons to: Alliance Total = ↔ National Goal (where available) = ↔

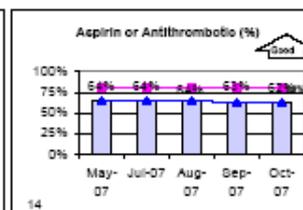
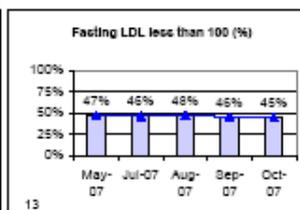
### HDC Diabetes Metrics



### Stoplight Summary

Variance from Comparison Group: Better than Within 5% None 5%

#	Metric	Year Ending October 2007			
		ALL	Alliance	Var %	Nat'l Goal Var %
1	Diabetic Patients	1,713	1,713	0.0%	
2	A1c Values 2 or more, >=81 days apart	48.2%	48.2%	0.0%	90.0% -46.6%
3	Average A1c Value	8.0	8.0	0.0%	7.0 14.3%
4	A1c value 1 or more (%)	89.4%	89.4%	0.0%	
5	Self Management Goal (%)	9.3%	9.3%	0.0%	70.0% -60.7%
6	ACE Inhibitor or ARB (%)	71.9%	71.9%	0.0%	75.0% -4.2%
7	Statins (%)	53.4%	53.4%	0.0%	60.0% -11.0%
8	Blood Pressure Value (%)	99.8%	99.8%	0.0%	
9	Blood Pressure less than 130/80 (%)	44.0%	44.0%	0.0%	40.0% 10.0%
10	LDL value (%)	61.6%	61.6%	0.0%	
11	LDL less than 100 (%)	45.0%	45.0%	0.0%	70.0% -36.7%
12	Fasting LDL value (%)	61.6%	61.6%	0.0%	
13	Fasting LDL less than 100 (%)	45.0%	45.0%	0.0%	
14	Aspirin or Antithrombotic (%)	61.8%	61.8%	0.0%	80.0% -22.7%
15	Documented as current Smokers (%)	26.2%	26.2%	0.0%	
16	Smokers With Advice to Quit (%)	38.0%	38.0%	0.0%	
17	Smoking Status Documented (%)	36.4%	36.4%	0.0%	
18	Eye Exam (%)	19.6%	19.6%	0.0%	
19	Foot Exam Complete (%)	27.1%	27.1%	0.0%	90.0% -60.8%
20	Microalbumin Test (%)	28.3%	28.3%	0.0%	50.0% -43.5%
21	Influenza Vaccine (%)	22.5%	22.5%	0.0%	90.0% -75.0%
22	Dental Exam (%)	11.2%	11.2%	0.0%	70.0% -84.1%
23	Depression Screening (%)	23.8%	23.8%	0.0%	50.0% -52.6%
24	Exercise Freq 3 per week (%)	10.0%	10.0%	0.0%	60.0% -83.3%
25	Pneumococcal Vaccine (%)	33.2%	33.2%	0.0%	90.0% -63.1%



## Health Outcomes by Provider

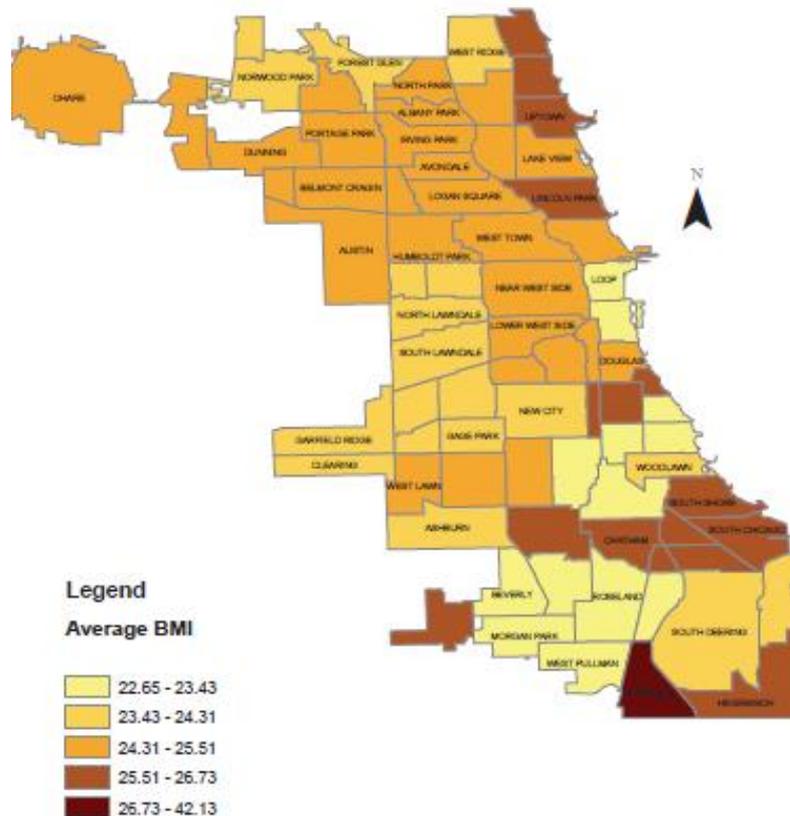
EHRs Patients January - December 2007

Smith MD, John

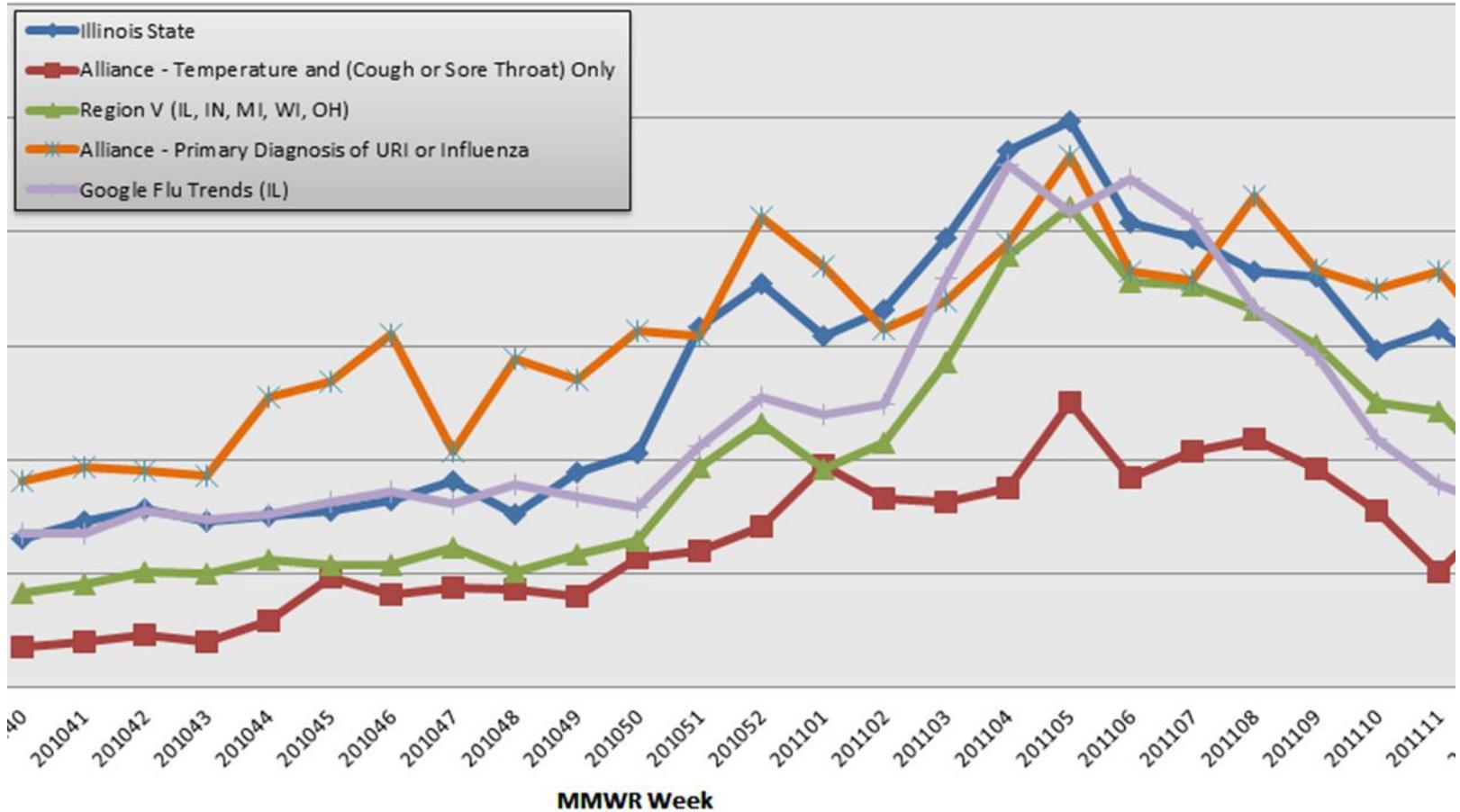
Community Health Center

Stoplight Analysis					
Variance:					
<span style="color: green;">Better than</span> <span style="color: yellow;">Within 5%</span> <span style="color: red;">Worse 5%+</span>					
Measure	Dec-07 Smith MD, John	Dec-07 CHC	Variance from CHC	Dec-07 Alliance	Variance from Alliance
<b>HDC Diabetes Metrics</b>					
1 Diabetes Patients	49	401		1,880	
2 A1c Values 2 or more, >=91 days	65%	50%	31.6%	47%	39.1%
3 Average A1c Value	7.8	7.8	0.0%	7.9	-1.3%
4 A1c value 1 or more (%)	90%	89%	1.4%	89%	1.3%
5 Self Management Goal (%)	35%	38%	-8.5%	12%	194.0%
6 ACE Inhibitor or ARB (%)	87%	78%	11.8%	70%	23.9%
7 Statins (%)	79%	61%	29.3%	52%	53.4%
8 Blood Pressure Value (%)	100%	100%	0.5%	100%	0.3%
9 Blood Pressure less than 130/80 (%)	37%	28%	33.3%	41%	-11.2%
10 LDL value (%)	82%	73%	12.5%	60%	35.5%
11 LDL less than 100 (%)	50%	52%	-4.3%	45%	12.0%
<b>Preventive Care Metrics for General Population</b>					
1 # Patients	212	2,675		14,637	
2 % Visits With Blood Pressure	78%	73%	7.3%	88%	-11.2%
3 % Women 50-69 With A Mammogr	83%	68%	22.1%	55%	52.6%
4 % >=50 Screen for Colorectal Canc	3%	9%	-67.5%	8%	-60.9%
5 % >=50 With Influenza Vax	39%	18%	112.1%	18%	114.3%
6 % >=65 With Pneumo Vax	87%	59%	46.7%	26%	233.9%
7 % w/LDL	65%	44%	46.1%	30%	114.6%
8 % w/LDL With Last <130	80%	72%	10.2%	68%	16.2%
9 % w/Smoking Status	80%	58%	38.8%	44%	83.0%
10 % Smokers w/ Cessation Interv	41%	56%	-27.1%	48%	-15.8%

# Chicago Health Center Average Body Mass by Community Area



## Influenza-Like Illness Surveillance: 2010-2011 Flu Season



# Population level management views of data

- Patient
  - Practitioner
  - Patient Cohort
  - Population
  - System
- BY
- Visit schedule
  - Care protocol schedule
  - Visit
  - Unpredicted Contact
  - All the rest

## Limitations of current EMRs

- Transactional database model, originally designed to function at individual patient level.
- May be difficult to utilize for population level functions such as cohort management, population analysis and reporting
- Has led users to add data warehouse and reporting and chronic disease management approaches to more optimally support these needs.

# Proactive Care – The Power of Planning

Today



Search: Todays Patients	6
Search: Diabetics with Appt tomorrow	22
Search: HbA1c > 9	56
Search: Normal Paps that need notification	0
Search: Abnormal Paps without FU	92
Follow-Ups (Immediate) - Assigned To Me	2
Immunizations that are Due	461
EyePACS Cases that are Abnormal	1
Lab Results that are Abnormal	0
Recalls that are Ready	97
Search: Diabetics out of compliance	279
Patient Tasks that are Due	2

# Proactive Care - Planning

Patient Selection: **Patient list** (All) **Last visit** (ult)

Clinical Data: Hgb A1C, Framingham Risk

Create recalls: letters, email, labels

ID	Name	DOB	LastVisitDOS	HbA1c (Last V...	HbA1c (2n...	HbA1c (3r...	Frami
<input type="checkbox"/> 1024	Dehzad, Lorena	11/17/1968	12/20/2011				
<input type="checkbox"/> 2712	Olguin, Abigail	8/23/1963	9/5/2011				
<input type="checkbox"/> 2714	Min, Adela	4/8/1946	10/9/2011	5.600	5.100		12.3%
<input type="checkbox"/> 2725	Corro, Allyson	4/16/1948	11/21/2011	5.500	5.900	6.100	2.6%
<input type="checkbox"/> 2736	Wallace, Anabel	1/2/1954	12/21/2011	7.900	8.800	7.500	3.1%
<input type="checkbox"/> 2745	Valladares, Marcelo	10/30/1941	1/9/2012	7.000	7.200		
<input type="checkbox"/> 2779	Rodriguez, Christina	4/20/1959	12/29/2011				
<input type="checkbox"/> 2790	Richardson, Connie	2/26/1960	12/19/2011	6.000	6.900		0.4%
<input type="checkbox"/> 2794	Ramirez, Daysi	8/21/1954	1/5/2012	7.700	9.200	9.200	0.3%
<input type="checkbox"/> 2809	Retana, Medardo	5/7/1938	1/9/2012	5.800			
<input type="checkbox"/> 2820	Narez, Esther	1/27/1963	5/29/2011				
<input type="checkbox"/> 2824	Monsivais, Florence	6/17/1956	1/2/2012	5.900			1.7%
<input type="checkbox"/> 2825	Meza, Gabriela	9/6/1947	1/10/2012	8.000	6.000	7.400	
<input type="checkbox"/> 2838	Martin, Graciela	9/29/1961	5/2/2011	6.500	6.000		0.8%
<input type="checkbox"/> 2839	Marin, Greta	8/26/1973	12/19/2011	5.800			
<input type="checkbox"/> 2845	Ortiz, James	8/17/1955	12/7/2011	10.800			
<input type="checkbox"/> 2852	Hart, Jialin	2/25/1967	12/20/2011				0.4%
<input type="checkbox"/> 2866	Cardoza, Maria	2/24/1980	12/22/2011	5.800	5.400	6.100	1.4%
<input type="checkbox"/> 2945	Kingery, Irma Del Carmen	7/26/1978	12/20/2011				
<input type="checkbox"/> 2960	Martinez, Gloria Guadalupe	6/5/1946	1/2/2012	10.200	9.000	9.000	3.2%
<input type="checkbox"/> 2974	Ortiz, Cornelius Karl	8/27/1952	12/20/2011	7.300	8.400	12.300	7.9%

Actions

- Create Recalls
- Print Letters
- Print Labels
- Print Visit Summaries
- Print Perinatal Summaries
- Print Women's Health Summaries
- Send E-Mail
- Add Tracking Type
- Remove Tracking Type
- Inactivate Tracking Type
- Inactivate Patients

# Proactive Care – Morning Huddle

The screenshot shows a software interface for patient search results. The main window title is "Patient Search Results: Today's Patients (Group: De...". Below the title, there is a "Location:" dropdown menu set to "(All)". There are two tabs: "Patients" and "Overdue Profile Items". The "Patients" tab is active, displaying a table with columns: Name, DOB, Age, Gender, Language, and various lab values (Cholesterol, LDL, BP, BMI). The table lists six patients: Frias, Ruben; Prado, Desire; Rivera, Concepcion; Topacio, Ayhra; Tovar, Armida; and Venancio, Sara. A blue callout bubble points to the table with the text "What care needs are outstanding?". Below this, there is another tab: "Patients" and "Overdue Profile Items". The "Patients" tab is active, displaying a table with columns: Patient ID, Name, DOB, Med Rec #, and Type. The table lists seven entries for patient Tovar, Armida, with types including Immunization: Pneumococcal, Procedure / Referral, and Lab: HbA1c. A red callout bubble points to this table with the text "Who are the patients coming in today and what is their current health status?".

File Setup Patients Find Reports Windows Help

Patient Search Results: Today's Patients (Group: De...)

Location: (All) ... X

Patients | Overdue Profile Items

Name	DOB	Age	Gender	Language	Cholesterol	LDL (Last ...)	BP (Last ...)	BMI (La...
<input type="checkbox"/> Frias, Ruben	3/29/1957	54 Yrs	M	Spanish	100	53.000	150/83	23.70
<input type="checkbox"/> Prado, Desire	3/23/1947	64 Yrs	F	Spanish				
<input type="checkbox"/> Rivera, Concepcion	9/24/1952	59 Yrs	F	Spanish		94.000		
<input type="checkbox"/> Topacio, Ayhra	3/2/1985	26 Yrs	F	English	Sam...			
<input type="checkbox"/> Tovar, Armida	11/14/1944	67 Yrs	F	English	Sam...	205.000		
<input type="checkbox"/> Venancio, Sara	4/27/1981	30 Yrs	F	English	Carl...			

Patients | Overdue Profile Items

Patient ID	Name	DOB	Med Rec #	Type
<input type="checkbox"/> 1186	Tovar, Armida	11/14/1944		Immunization: Pneumococcal
<input type="checkbox"/> 1297	Rivera, Concepcion	9/24/1952		Procedure / Referral
<input type="checkbox"/> 1338	Prado, Desire	3/23/1947		Procedure / Referral
<input type="checkbox"/> 2873	Frias, Ruben	3/29/1957		Immunization: Pneumococcal
<input type="checkbox"/> 2873	Frias, Ruben	3/29/1957		Procedure / Referral
<input type="checkbox"/> 2873	Frias, Ruben	3/29/1957		Procedure / Referral
<input type="checkbox"/> 2873	Frias, Ruben	3/29/1957		Lab: HbA1c

What care needs are outstanding?

Who are the patients coming in today and what is their current health status?

# Health Registry Report

Run Date  
Date Ran

Assigned Patients  
and status

Provider/Care  
team

Registry Report (Panel 1 - 12 Months)

Provider:	Adelman, Travis		Ambrosio, Emilia		Arellano, Jesse	
Item	Value	%	Value	%	Value	%
<b>1. Patients</b>						
A. Total Patients Included	1964	100%	1637	100%	1498	100%
<b>2. Visit Count</b>						
A. Patients with 0 visits	0	0%	0	0%	0	0%
B. Patients with 1 to 2 visits	821	41.8%	577	35.25%	474	31.64%
C. Patients with 3 to 5 visits	597	30.4%	554	33.84%	546	36.45%
D. Patients with 6 or more visits	546	27.8%	506	30.91%	478	31.91%
<b>3. Gender</b>						
A. Female	1156	58.86%	1059	64.69%	635	42.39%
B. Male	808	41.14%	578	35.31%	863	57.61%
C. Unknown	0	0%	0	0%	0	0%
<b>4. Age</b>						
A. 0 to 17 years	197	10.03%	404	24.68%	76	5.07%
B. 18 to 44 years	933	47.51%	615	37.57%	530	35.38%
C. 45 to 64 years	677	34.47%	467	28.53%	630	42.06%
D. 65 to 125 years	157	7.99%	151	9.22%	262	17.49%
E. Unknown	0	0%	0	0%	0	0%
<b>5. Race</b>						
A. American Indian/Alaskan Native	5	0.25%	2	0.12%	7	0.47%
B. Asian	11	0.56%	5	0.31%	13	0.87%
C. Black/African American	23	1.17%	7	0.43%	12	0.8%
D. Hispanic Or Latino	368	18.74%	1138	69.52%	650	43.39%
E. More Than One Race	5	0.25%	1	0.06%	1	0.07%
F. Native Hawaiian	2	0.1%	1	0.06%	3	0.2%
G. Other Pacific Islander	8	0.41%	6	0.37%	22	1.47%
H. Unknown Race	71	3.62%	41	2.5%	29	1.94%

# Clinic Diabetes Report

Provider/Care team

Quality Measures

Location:		CHC Atascadero		CHC Cambria		CHC Coastal Medical Center				
Item	Target	Value	%		Value	%		Value	%	
<b>1. Active Diabetes Statistics</b>										
A. Active Diabetic Patients with 2 visits in the past 2 years										
1. Number of Active Diabetic Patients		297	100%		91	100%		243	100%	
2. Number of Visits		1784			513			1261		
B. Labs										
1. Patients that received one HbA1c test in the past one year	> 80%	182	61.28%	↓	78	85.71%	✓	158	65.02%	↓
a. HbA1c <7	> 50%	94	51.65%	✓	50	64.1%	✓	78	49.37%	↓
b. HbA1c between 7-9		55	30.22%		22	28.21%		47	29.75%	
c. HbA1c >9	< 20%	33	18.13%	✓	6	7.69%	✓	33	20.89%	↑
d. Received 2 or more HbA1c tests 90+ days apart		86	47.25%		54	69.23%		45	28.48%	
2. No HbA1c in past one year		115	38.72%		13	14.29%		85	34.98%	
3. Patients that received an LDL test in past one year	> 80%	187	62.96%	↓	74	81.32%	✓	158	65.02%	↓
a. LDL > 100		120	64.17%		47	63.51%		79	50%	
b. LDL >=100		62	33.16%		26	35.14%		73	46.2%	
4. Patients that received a Urine Microalbumin in past one year		158	53.2%		20	21.98%		140	57.61%	
C. Vitals										
1. Number of Patients with recorded BMI	> 80%	268	90.24%	✓	81	89.01%	✓	168	69.14%	↓
a. BMI >25		48	17.91%		9	11.11%		19	11.31%	
b. BMI >=25		220	82.09%		72	88.89%		149	88.69%	
2. Number of Patients with recorded BP	> 80%	282	94.95%	✓	82	90.11%	✓	176	72.43%	↓
a. BP < 130/80		92	32.62%		34	41.46%		69	39.2%	
b. BP >= 130/80		190	67.38%		48	58.54%		107	60.8%	
D. Procedures, Referrals, Immunizations										
1. Dental Visits		5	1.68%		11	12.09%		7	2.88%	
2. Eye Exam		8	2.69%		42	46.15%		60	24.69%	
3. Foot Screening		3	1.01%		52	57.14%		48	19.75%	
4. Received Flu Vaccine	> 60%	86	28.96%	↓	41	45.05%	↓	37	15.23%	↓

# Proactive Care: Diabetes population management report

Clinic F

## Last Values and Dates

<u>Patient ID</u>	<u>Patient Name</u>	<u>DOB</u>	<u>Age</u>	<u>Sex</u>	<u>Resp. Provider</u>	<u>Next Appnt</u>	<u>Last OV Date</u>	<u>HGBA 1C</u>	<u>HGBA1C Date</u>	<u>Systolic BP</u>	<u>Diastolic BP</u>	<u>Date of BP</u>	<u>LDL</u>	<u>LDL Date</u>	<u>Triglyceride s</u>	<u>Triglyceride s Date</u>	<u>Sodium</u>	<u>Potassium</u>	<u>Creatinine</u>	<u>Dental Exam Date</u>	<u>Foot Exam Date</u>	<u>Eye Exam Date</u>	<u>Consult Report Date</u>	<u># Cancel/No Show</u>	<u>On Aspirin?</u>
12345	Test Patient	09/16/1961	51	F	Bailey NP, Kelly	02/06/2013	01/23/2013	9.9	01/23/2013	132	79	01/23/2013	157	01/23/2013	180	01/23/2013	141	3.8	0.75					7	
67890	test 2 Patient	11/16/1972	40	M	Smith MD, Adam	02/19/2013	01/16/2013	10.4	01/16/2013	120	84	01/16/2013										##### #	0		

# Proactive Care: Registry report

Patients with at least one PH

Patients with depression not on an antidepressant

Data relevant to eg, HgbA1C, Blood pressure

Next Scheduled Appointment	Last Values and Dates										N	N	N				
	Last DV Date	HGBA1C	HGBA1C Date	PHQ-9	PHQ-9 Date	LDL	LDL Date	Triglycerides	Triglycerides Date								
	01/21/2013			13	01/21/2013												
	12/11/2012			21	08/14/2012												
	12/26/2012			17	12/26/2012	114	*****	124	12/26/2012								
	11/26/2012			19	11/05/2012												
170981	08/24/1974	39	F	English	08/28/2012	6	08/22/2012	22	08/21/2012	341	*****	190	08/22/2012	N	N	N	
15458	08/29/1978	35	F	English	12/11/2012			14	10/04/2012					N	N	N	
26867-1	05/05/1935	78	M	English	08/07/2012	7	06/15/2011	21	08/07/2012	93	*****	174	06/23/2011	Y	N	N	
127858	09/17/1954	59	M	English	08/09/2012			24	08/09/2012					N	N	N	
25229-1	08/31/1943	70	F	English	02/12/2013	01/08/2013	6	12/04/2012	14	01/08/2013	118	*****	62	12/04/2012	N	N	N
109761	07/09/1945	48	F	English	09/06/2012	6	09/01/2011	13	09/06/2012	108	*****	86	09/01/2011	N	N	N	
16299	08/01/1959	54	M	English	01/03/2013			17	01/03/2013					N	N	N	
72566	12/24/1956	57	F	English	04/28/2011			18	01/23/2013					Y	N	N	
166340	08/24/1955	58	F	English	10/25/2012			21	10/25/2012					N	N	N	
173439	10/12/1963	50	F	English	12/13/2012			16	12/13/2012	109	*****	205	09/12/2012	Y	N	N	
118458	10/24/1968	45	F	English	01/31/2013	01/17/2013	5	11/06/2012	14	01/17/2013	107	*****	107	08/29/2012	Y	N	N
177359	12/26/1969	44	M	English	11/21/2012			16	11/21/2012					Y	N	N	
1099-1	09/24/1962	51	F	English	01/24/2013	9	01/12/2013	18	12/06/2012	70	*****	115	10/19/2012	N	N	N	
179379	05/18/1978	35	F	English	02/25/2013	01/28/2013			16	01/28/2013				Y	N	N	
21982	02/14/1961	52	F	English	12/19/2012			18	10/23/2012	131	*****	170	04/02/2012	N	N	N	
88622	04/10/1952	61	M	English	01/10/2013			15	01/10/2013					Y	N	N	
181530	05/07/1978	35	F	English	01/24/2013			14	01/24/2013					N	N	N	
158579	07/11/1942	71	M	English	02/15/2013	01/18/2013	6	08/10/2012	21	01/18/2013	69	*****	67	05/22/2012	N	N	N
180048	06/29/1950	63	M	English	02/12/2013	01/14/2013			15	01/14/2013				Y	N	N	
188203	07/30/1969	44	F	English	10/19/2012			14	09/24/2012	139	*****	80	07/13/2012	Y	N	N	
155554	02/24/1984	29	F	English	01/17/2013			19	12/10/2012					Y	N	N	
99774	06/20/1990	23	F	English	11/26/2012			14	11/26/2012	62	*****	69	10/02/2012	N	N	N	
123581	03/29/1963	50	F	English	02/09/2011			13	10/12/2012	132	*****	185	08/20/2010	N	N	N	
161100	04/17/1979	34	F	English	01/16/2013	6	04/19/2012	13	12/03/2012	87	*****	238	04/19/2012	N	N	N	
162920	08/07/1951	62	F	English	01/16/2013			13	01/16/2013	110	*****	62	04/26/2012	Y	N	N	
135215	05/02/1945	48	F	English	01/18/2013	5	08/24/2012	22	11/05/2012	117	*****	97	08/24/2012	Y	N	N	

# From data to information to intelligence

- Capture data
- Analyze data
- Present data
- Display data
- Visualize data

## Future directions

- Balance measures across dimensions of quality: Timeliness, efficiency, effectiveness, safety, equitableness, and patient centeredness.
- Patient level measures Patient defined/reported outcome measures
- Structural measures
- Integration across levels of care
- Integration/expansion to other important health aspects: eg; nursing, nutrition, behavioral health, social services, health education
- Integration of measures across programs (e.g., substance abuse, housing)

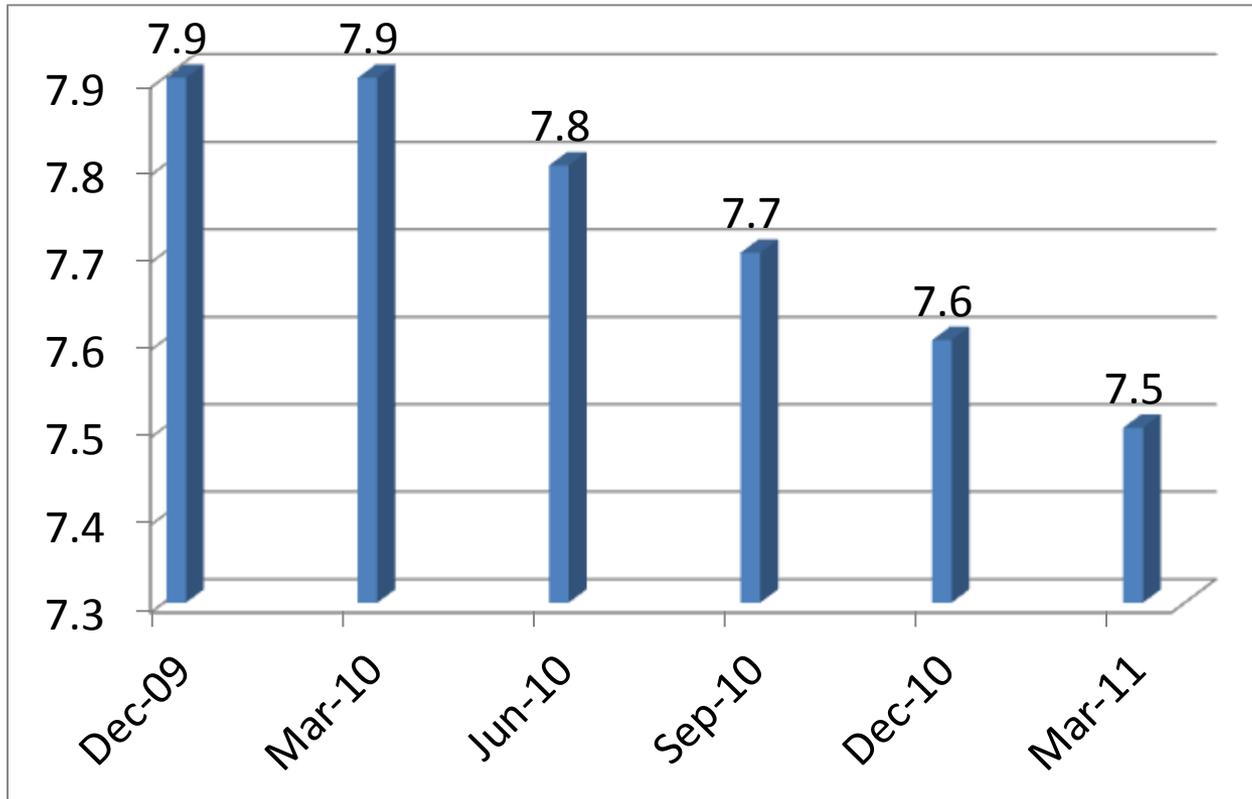
# Underlying data infrastructure challenges

- Is documentation consistent?
- Are relevant data elements captured as structured data?
- Where in the workflow is the element best captured, and does this require workflow redesign?
- Do current clinical workflows support use of advanced clinical decision support by appropriate members of the team at appropriate points in care process?
- Do technology and information processes support necessary analytics?

# Challenges to comprehensive interdisciplinary records

- Data concepts and standards have developed largely around billable services
- Many important aspects of care therefore do not have standardized data strategies
- Just as among medical practitioners, there may be resistance to developing/adhering to structured data capture and or to integrating information.
- Other barriers:
  - Current, competing reporting requirements tied to categorical funding
  - Legal barriers to integrated records (eg, HIV information)

# Clinical Outcomes



Approximately 4300 Patients

**There is a 10% decrease in relative risk for every 1% reduction in A1c**

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THANK YOU!

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