Quality Improvement through HIT

What is quality in healthcare?

Safe	**Effective**	**Patient-centered**
Timely	**Efficient**	**Equitable**

Overview

- Reinforce a vision for using HIT to improve quality
- Share our approach and experience
- Suggest some questions for us to ponder together

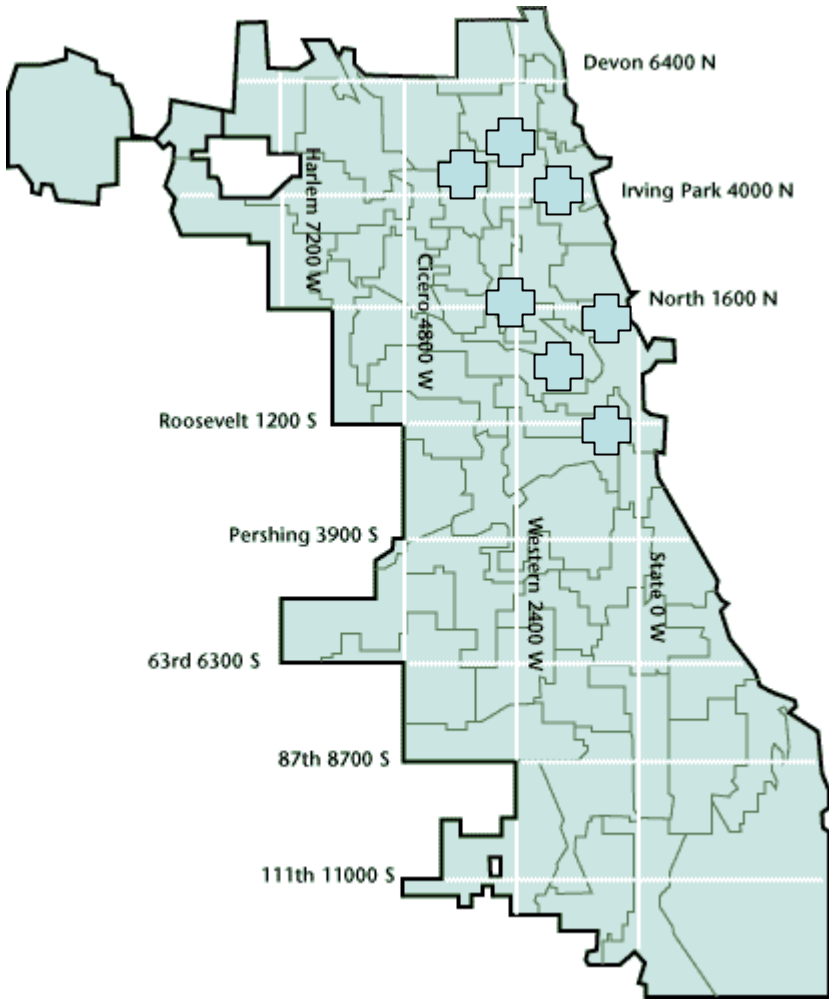
“Due to the rapid and fundamental changes in the health care environment, it is neither desirable nor acceptable for health centers to operate in isolation.”

- from the BPHC overview of the ISDI initiative.

Alliance Overview

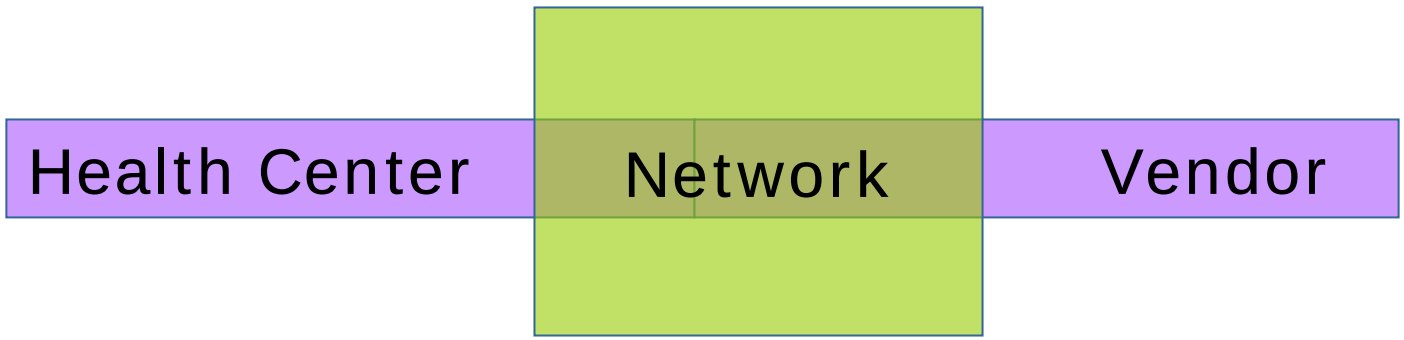
- HRSA funded Network of 4 Federally funded Health Centers located on the Near North Side of Chicago
- Health Centers target Latino, African American, Gay and Lesbian, and Immigrant and Homeless populations
- Services encompass comprehensive Primary Care, Dental, Mental Health and Social Services, Health Education, and Research
- Founded based upon long standing history of collaboration and close relationship among Medical Directors

Map of Main Sites



Alliance Founding Members

- 34 service delivery sites
- Users - ~100,000; Encounters ~340,000
- Annual Budgets ~$50 million
- >600 total FTE across the network:
  - 48 Physicians and Dentists
  - 28 Nurse Practitioners, Certified Nurse Midwives, and Physician Assistants
  - Primary Care: Pediatrics, Internal Medicine, Family Practice, OB/Gyn Psychiatry, Dentistry
  - Specialists: Infectious Disease and Perinatology, Ophthalmology, Podiatry
  - 124 FTE Medical Personnel Nursing, lab, etc.


Health Center
Network
Vendor

HIT Services provided by the Alliance

- Procurement and management of licenses /Vendor relations
- Hosting
- Clinical content development
- Implementation support
- Help desk
- Development and management of interfaces
- Optimization of Use
- Continued leveraging of HIT
- Quality Improvement and Research Support Infrastructure

Status of EHR System use

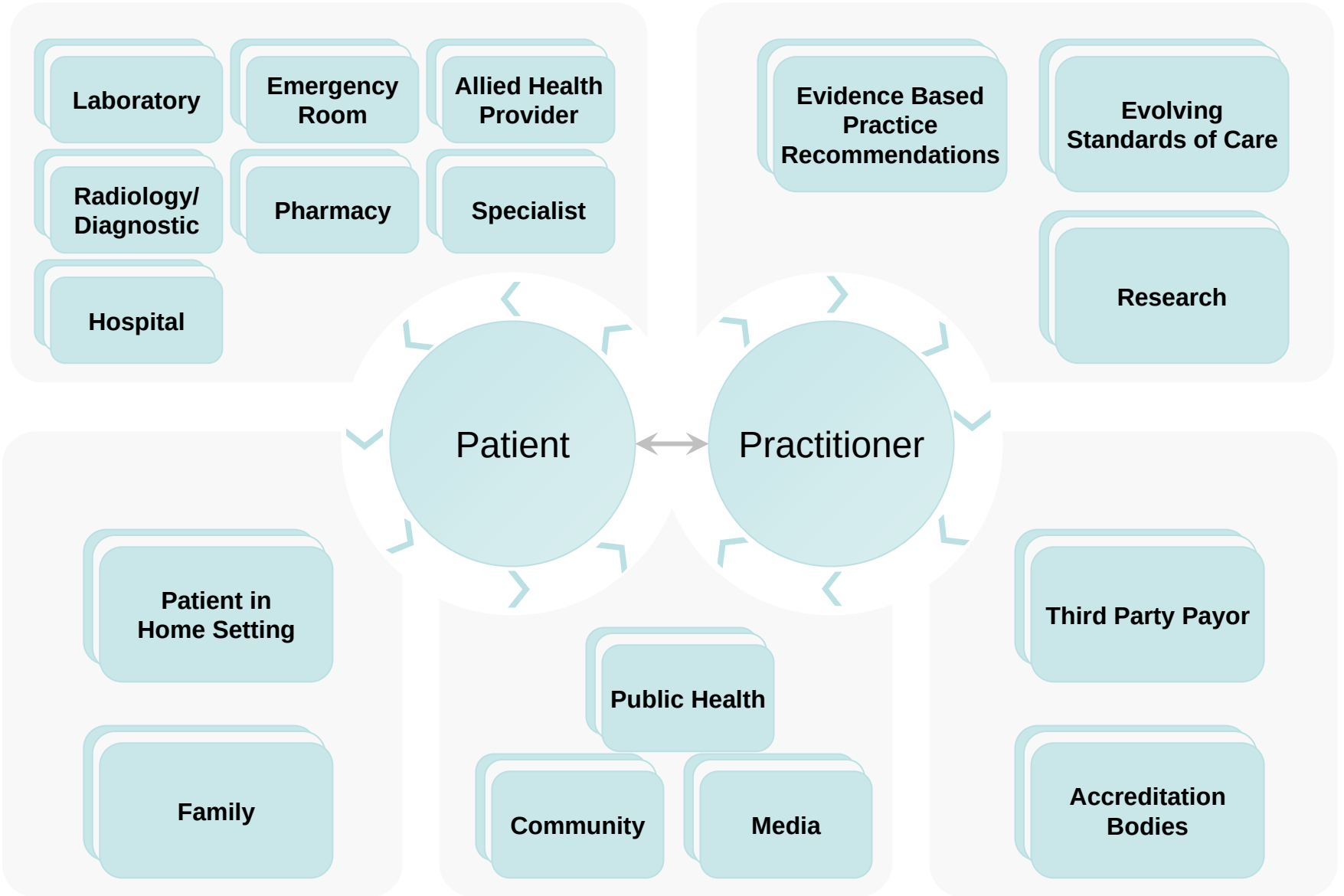
- “Big Bang” implementation - All staff, with full functionality of the system
- Implementation includes specialized settings: school based, youth drop-in, dental, behavioral health
- Expanding to additional Health Centers having a shared vision nationally (9 states, additional 20 Health Centers and 725 users)
- Working on patient portal, health information exchange and medical device integration

Why?

To improve the quality of the care we provide and the health of our communities

Elements of Quality Improvement Approach

- Evidence basis for care
- Interdisciplinary collaboration
- Use of performance and health status data to evaluate care and health status, and to guide improvement efforts
- Infrastructure for developing and sharing improvement strategies
- Care model as the organizing framework for health care design


Laboratory
Emergency Room
Allied Health Provider
Radiology/ Diagnostic
Pharmacy
Specialist
Hospital
Evidence Based Practice Recommendations
Evolving Standards of Care
Research
Patient
Practitioner
Patient in Home Setting
Family
Public Health
Community
Media
Third Party Payor
Accreditation Bodies


CASE MANAGEMENT

Elements of HIT to support Quality

- Standardization of documentation
- Enhanced availability of information – patient, population and knowledge based
- Enhanced ability to analyze and display information
- Decision support for care against evidence based standards
- Performance measurement and reporting
- Ability to participate in ongoing research

Considerations in utilizing HIT for quality: **Vision**

- Acceptance of common vision of quality by clinicians

as well as

- understanding and agreement on the relationship between evidence based recommendations, decision support and quality measures
- Willingness and ability to capture and process relevant data in standardized ways by clinical staff

Considerations in utilizing HIT for Quality: **Technical**

- Underlying functionality of software selected that allows data to be defined and captured in uniform ways mapped to practice recommendations and performance measures
- System capable of modification as measures and recommendations change over time or as understanding changes
- Ability to support population level analysis, and algorithms for measures that require more complex analysis or queries than are native to an EMR.

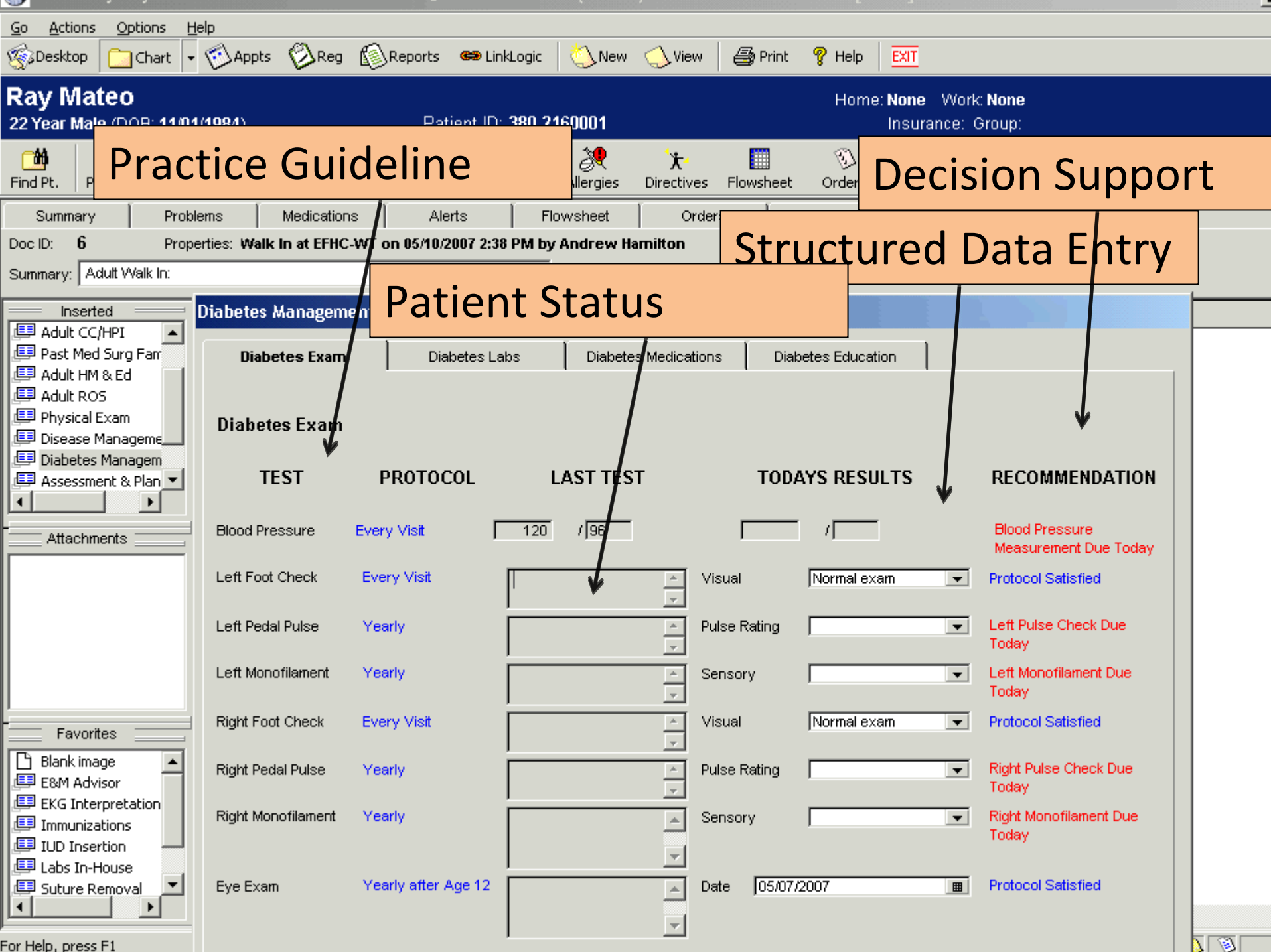
Considerations in utilizing HIT for Quality: **Implementation**

- Full use of system, all elements of care process, captured at the point of care
- Data capture as simple as possible and integrated into the workflow
- Support for clinical staff to reinforce use and vision
- Infrastructure present for using data to make improvements.

Key elements of Alliance EHRS Development

- Agreed upon protocols against which to benchmark care
- Content covering full spectrum of care (eg, mental health/case management, nutrition, dental)
- Structured data entry
- Mapping of data elements to care protocols and measures
- Ease of data entry to encourage providers to capture needed information as part of care delivery
- Population level data analysis and reporting infrastructure


CASE MANAGEMENT


Practice Guideline
Patient Status
Decision Support
Structured Data Entry
Go Actions Options Help
Desktop Chart Appts Reg Reports LinkLogic New View Print Help EXIT
Ray Mateo
22 Year Male (DOB: 11/01/1984)
Patient ID: 380 2160001
Home: None Work: None
Insurance: Group:
Find Pt.
Allergies Directives Flowsheet Order
Summary Problems Medications Alerts Flowsheet Orders
Doc ID: 6
Properties: Walk In at EFHC-WT on 05/10/2007 2:38 PM by Andrew Hamilton
Summary: Adult Walk In:
Inserted
Adult CC/HPI
Past Med Surg Fam
Adult HM & Ed
Adult ROS
Physical Exam
Disease Manageme
Diabetes Managem
Assessment & Plan
Attachments
Favorites
Blank image
E&M Advisor
EKG Interpretation
Immunizations
IUD Insertion
Labs In-House
Suture Removal
Diabetes Managemen
Diabetes Exam
Diabetes Labs
Diabetes Medications
Diabetes Education
Diabetes Exam
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
For Help, press F1

Measure Example

Diabetes Measurement Set (foot exam)

- *Measure:* Percentage of patients who received at least one complete foot exam (visual inspection, sensory exam with monofilament, and pulse exam)

  Numerator = patients who received at least one complete foot exam (visual inspection, sensory exam with monofilament, and pulse exam)

  Denominator = All patients with diabetes 18-75 years of age

Technical Specifications
Numerator

- Three components of foot exam (visual inspection, sensory exam with monofilament, and pulse exam)
- All components must be completed within the reporting period but they do not have to be completed at the same visit.

Technical Specifications
Denominator

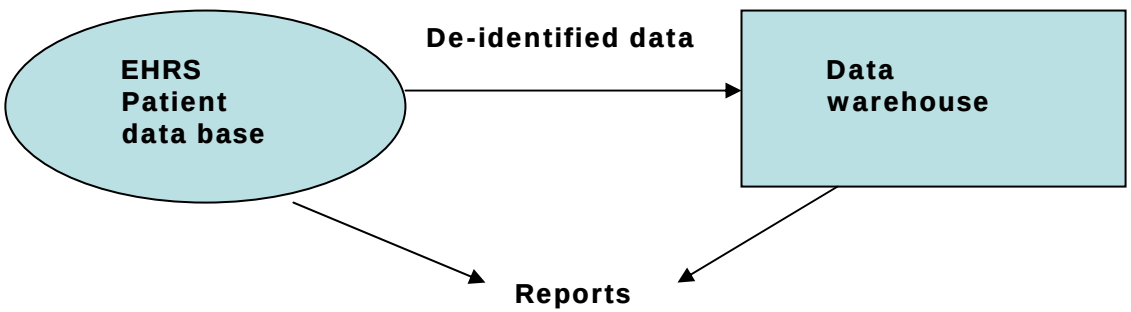
- All patients with diabetes 18-75 years of age
- Codes to identify patients with diabetes include:
  - ICD-9-CM Codes: 250, 357.2, 362.0, 366.41, 648.0) (DRGs) 294, 205
- Prescriptions to identify patients with diabetes include:
  - Insulin prescriptions (drug list is available) and Oral hypoglycemics/ antihyperglycemics prescriptions (drug list is available)

Technical Specifications
Exclusions

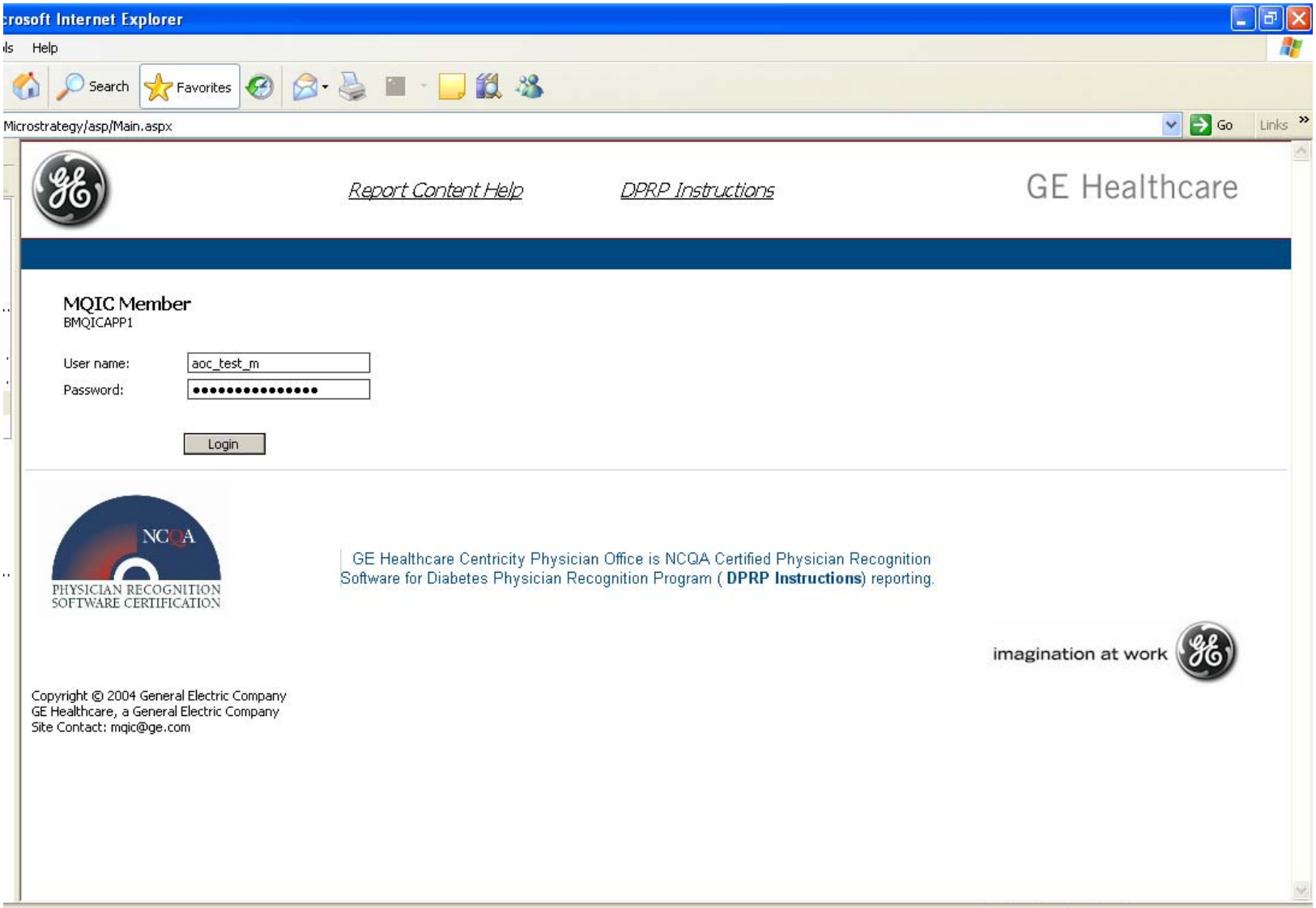
- Exclude patients with a diagnosis of polycystic ovaries (ICD-9-CM Code 256.4) who do not have a diagnosis of diabetes, in any setting, during the measurement year or year prior to the measurement year.
- Exclude patients with gestational diabetes (ICD-9-CM Code 648.8) or steroid-induced diabetes (ICD-9-CM Code 962.0, 251.8) during the measurement year
- Patients with bilateral foot/leg amputation
- ICD-9-CM exclusion codes for 2.9 Foot Exam: 896.2, 896.3, 897.6, 897.7
- Other reason documented by the practitioner for not performing a complete foot exam

Reporting

- Simple reporting done directly from the EHRS
- More complex reporting done through the clinical data warehouse

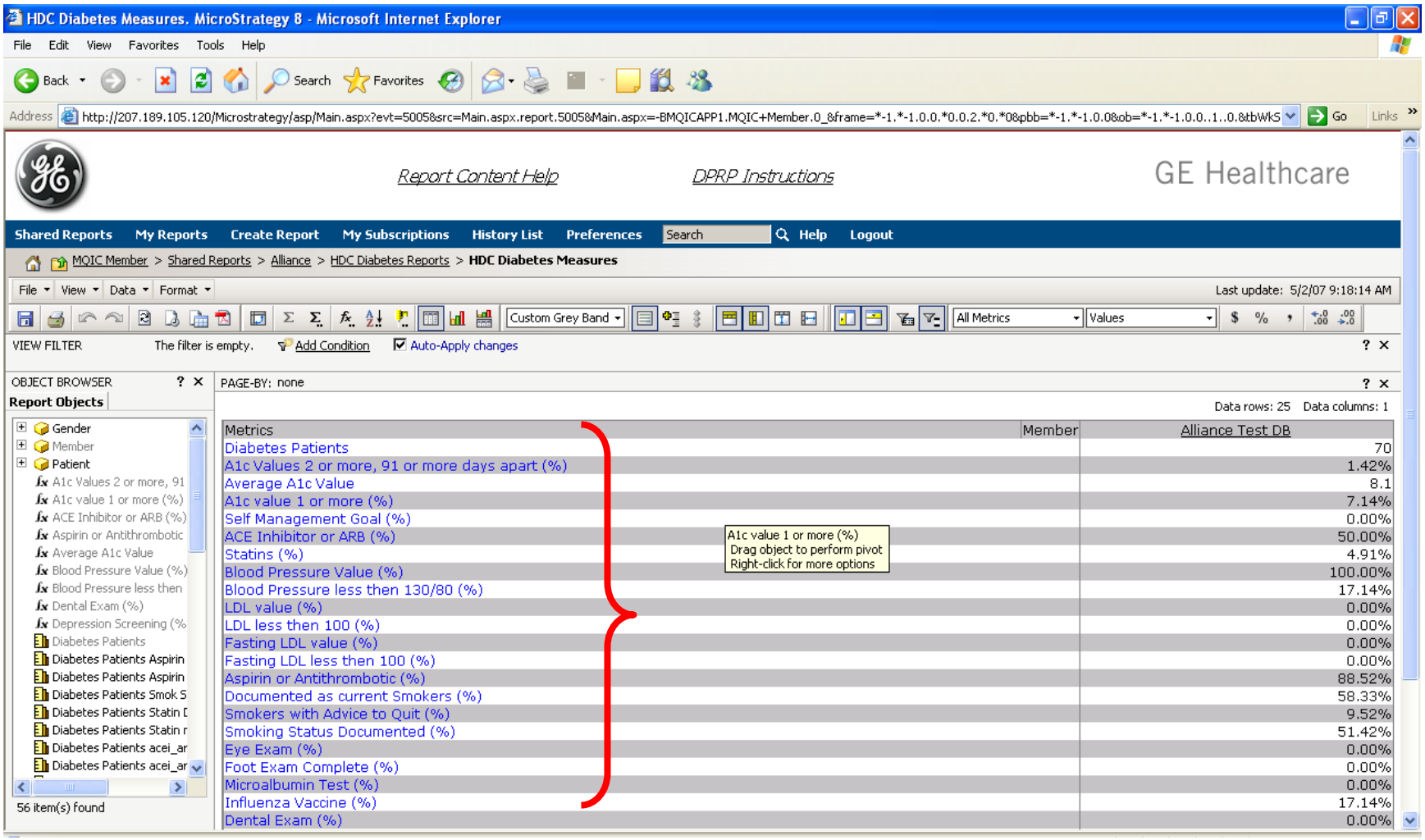


Alliance CDW Reports Portal



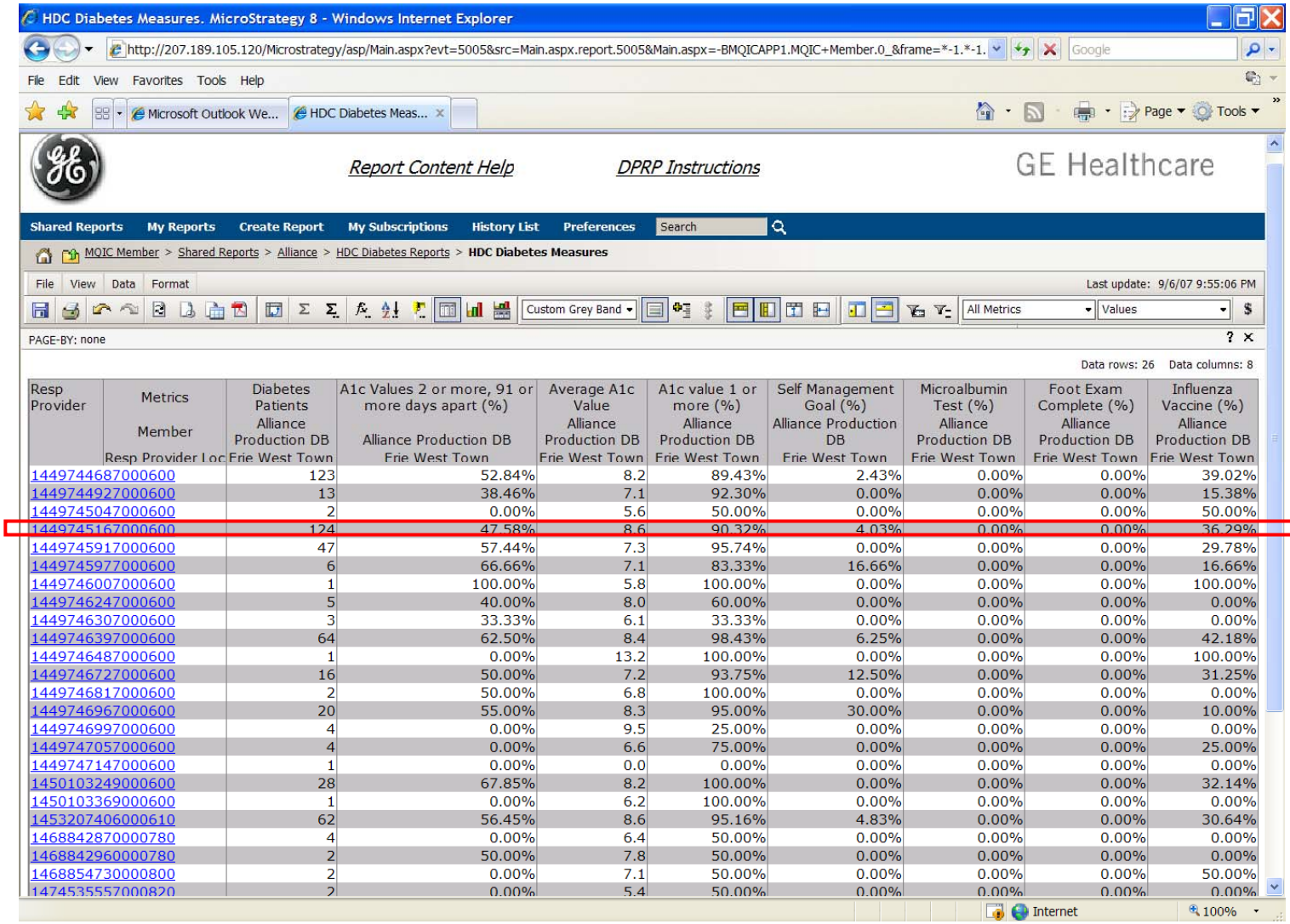
- Login screen

Population level report



Metrics	Member	Alliance Test DB
Diabetes Patients		70
A1c Values 2 or more, 91 or more days apart (%)		1.42%
Average A1c Value		8.1
A1c value 1 or more (%)		7.14%
Self Management Goal (%)		0.00%
ACE Inhibitor or ARB (%)		50.00%
Statins (%)		4.91%
Blood Pressure Value (%)		100.00%
Blood Pressure less then 130/80 (%)		17.14%
LDL value (%)		0.00%
LDL less then 100 (%)		0.00%
Fasting LDL value (%)		0.00%
Fasting LDL less then 100 (%)		0.00%
Aspirin or Antithrombotic (%)		88.52%
Documented as current Smokers (%)		58.33%
Smokers with Advice to Quit (%)		9.52%
Smoking Status Documented (%)		51.42%
Eye Exam (%)		0.00%
Foot Exam Complete (%)		0.00%
Microalbumin Test (%)		0.00%
Influenza Vaccine (%)		17.14%
Dental Exam (%)		0.00%

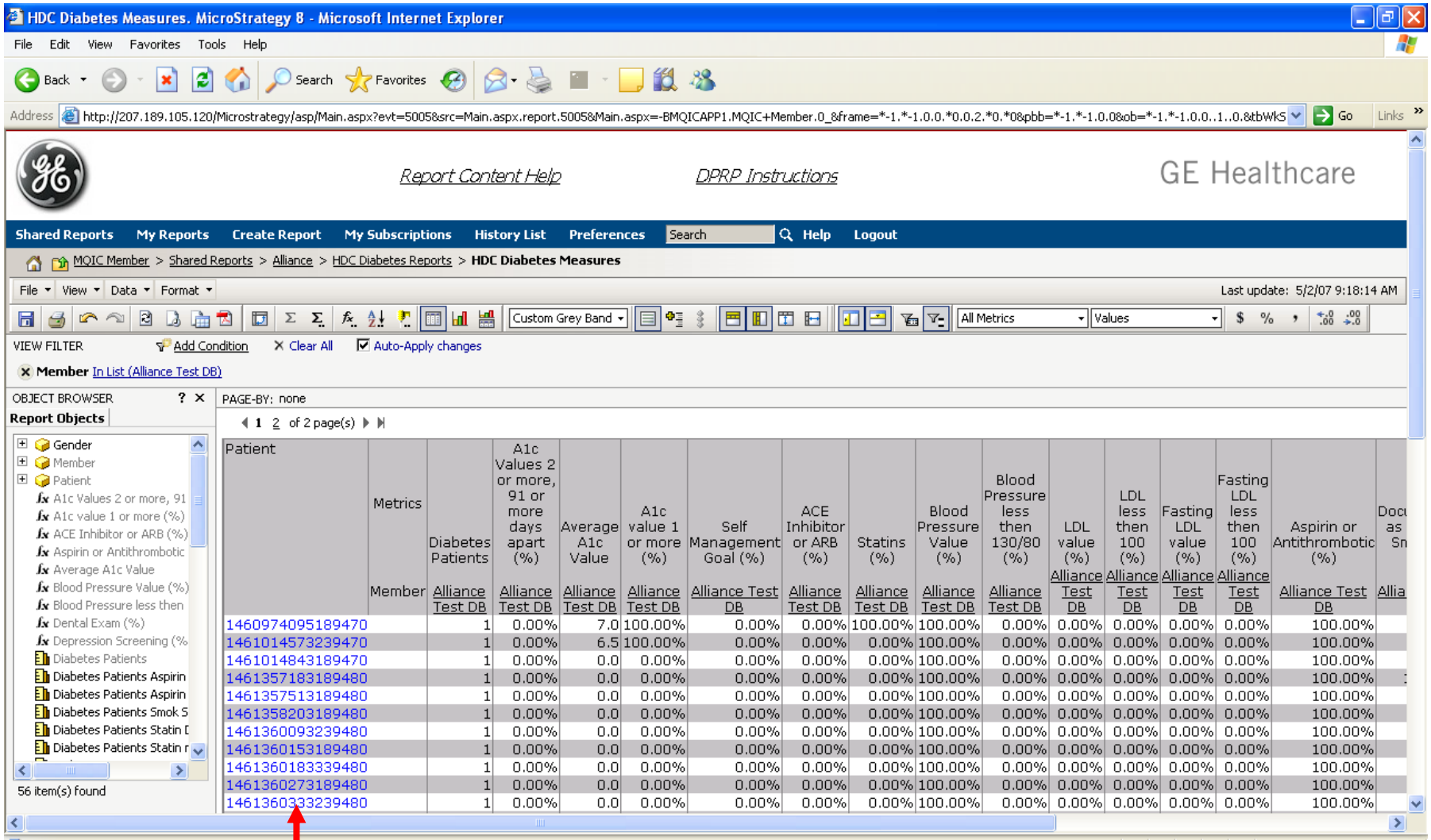
Provider Level Drill Down



Resp Provider	Metrics Member Resp Provider Loc	Diabetes Patients Alliance Production DB Erie West Town	A1c Values 2 or more, 91 or more days apart (%) Alliance Production DB Erie West Town	Average A1c Value Alliance Production DB Erie West Town	A1c value 1 or more (%) Alliance Production DB Erie West Town	Self Management Goal (%) Alliance Production DB Erie West Town	Microalbumin Test (%) Alliance Production DB Erie West Town	Foot Exam Complete (%) Alliance Production DB Erie West Town	Influenza Vaccine (%) Alliance Production DB Erie West Town
1449744687000600		123	52.84%	8.2	89.43%	2.43%	0.00%	0.00%	39.02%
1449744927000600		13	38.46%	7.1	92.30%	0.00%	0.00%	0.00%	15.38%
1449745047000600		2	0.00%	5.6	50.00%	0.00%	0.00%	0.00%	50.00%
1449745167000600		124	47.58%	8.6	90.32%	4.03%	0.00%	0.00%	36.29%
1449745917000600		47	57.44%	7.3	95.74%	0.00%	0.00%	0.00%	29.78%
1449745977000600		6	66.66%	7.1	83.33%	16.66%	0.00%	0.00%	16.66%
1449746007000600		1	100.00%	5.8	100.00%	0.00%	0.00%	0.00%	100.00%
1449746247000600		5	40.00%	8.0	60.00%	0.00%	0.00%	0.00%	0.00%
1449746307000600		3	33.33%	6.1	33.33%	0.00%	0.00%	0.00%	0.00%
1449746397000600		64	62.50%	8.4	98.43%	6.25%	0.00%	0.00%	42.18%
1449746487000600		1	0.00%	13.2	100.00%	0.00%	0.00%	0.00%	100.00%
1449746727000600		16	50.00%	7.2	93.75%	12.50%	0.00%	0.00%	31.25%
1449746817000600		2	50.00%	6.8	100.00%	0.00%	0.00%	0.00%	0.00%
1449746967000600		20	55.00%	8.3	95.00%	30.00%	0.00%	0.00%	10.00%
1449746997000600		4	0.00%	9.5	25.00%	0.00%	0.00%	0.00%	0.00%
1449747057000600		4	0.00%	6.6	75.00%	0.00%	0.00%	0.00%	25.00%
1449747147000600		1	0.00%	0.0	0.00%	0.00%	0.00%	0.00%	0.00%
1450103249000600		28	67.85%	8.2	100.00%	0.00%	0.00%	0.00%	32.14%
1450103369000600		1	0.00%	6.2	100.00%	0.00%	0.00%	0.00%	0.00%
1453207406000610		62	56.45%	8.6	95.16%	4.83%	0.00%	0.00%	30.64%
1468842870000780		4	0.00%	6.4	50.00%	0.00%	0.00%	0.00%	0.00%
1468842960000780		2	50.00%	7.8	50.00%	0.00%	0.00%	0.00%	0.00%
1468854730000800		2	0.00%	7.1	50.00%	0.00%	0.00%	0.00%	50.00%
1474535557000820		2	0.00%	5.4	50.00%	0.00%	0.00%	0.00%	0.00%

Notes:
- This report period covers the year ending August 2007

Patient Level Drill Down

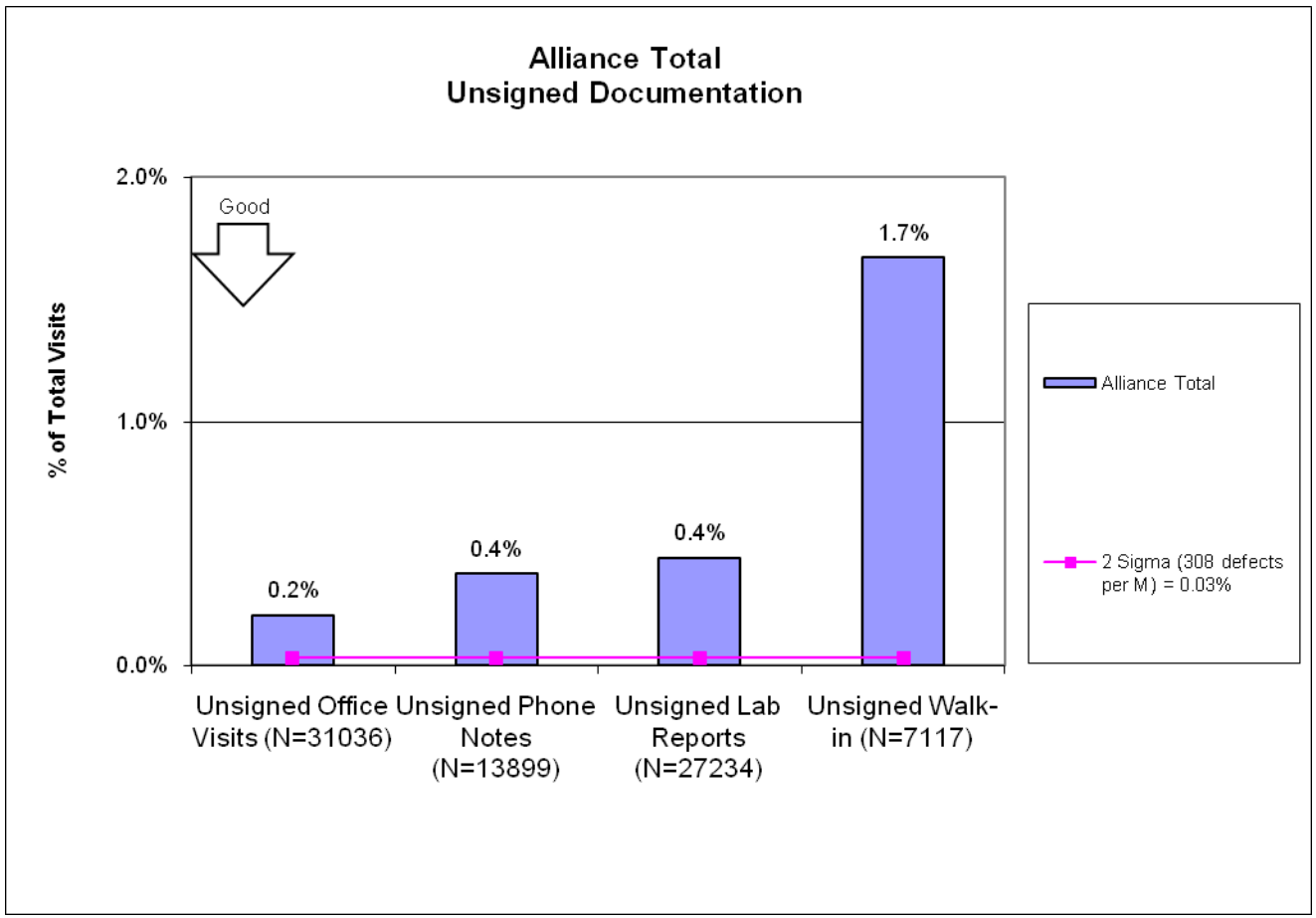


- Note patient ID is encrypted in Portal Reports

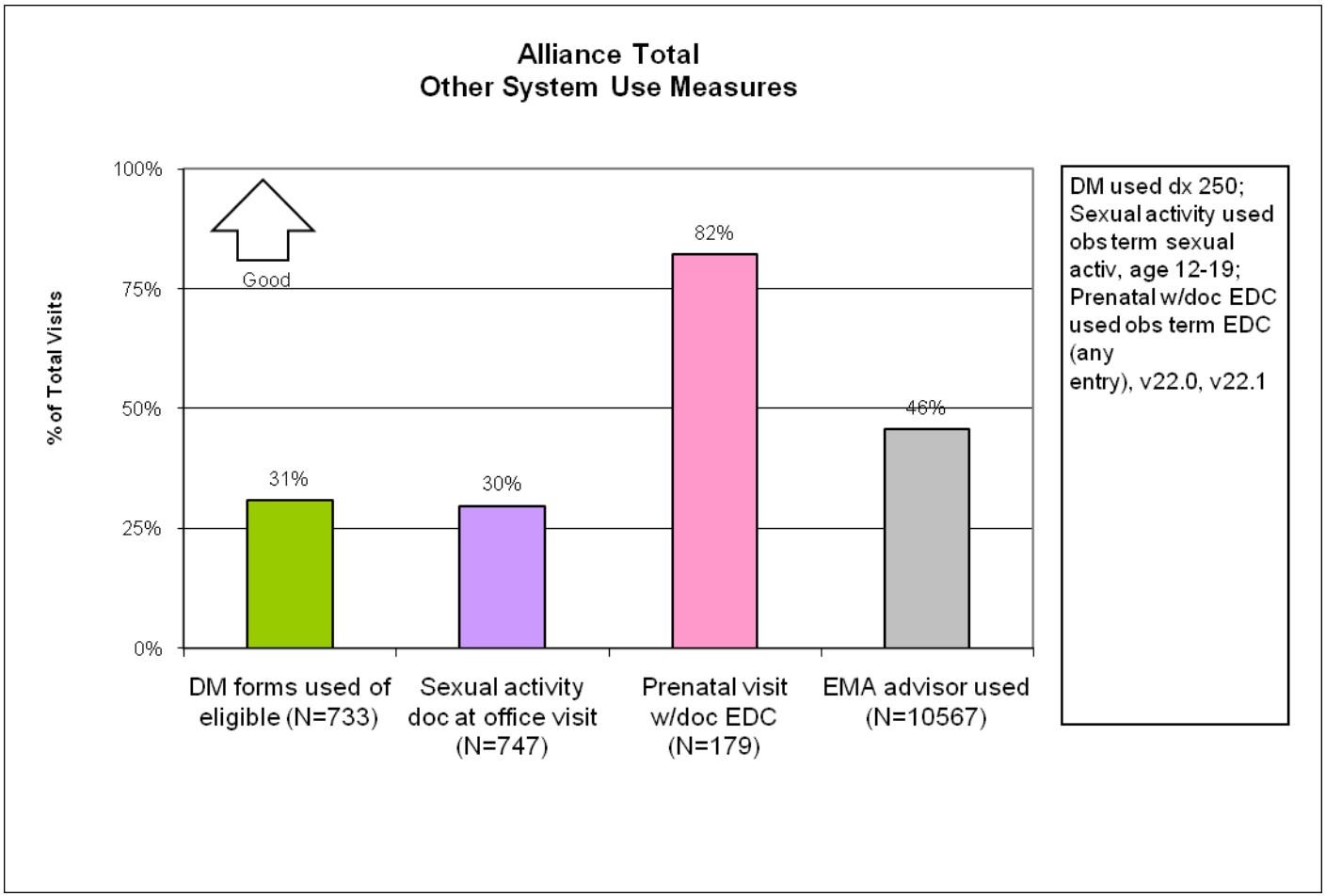
Domains of performance

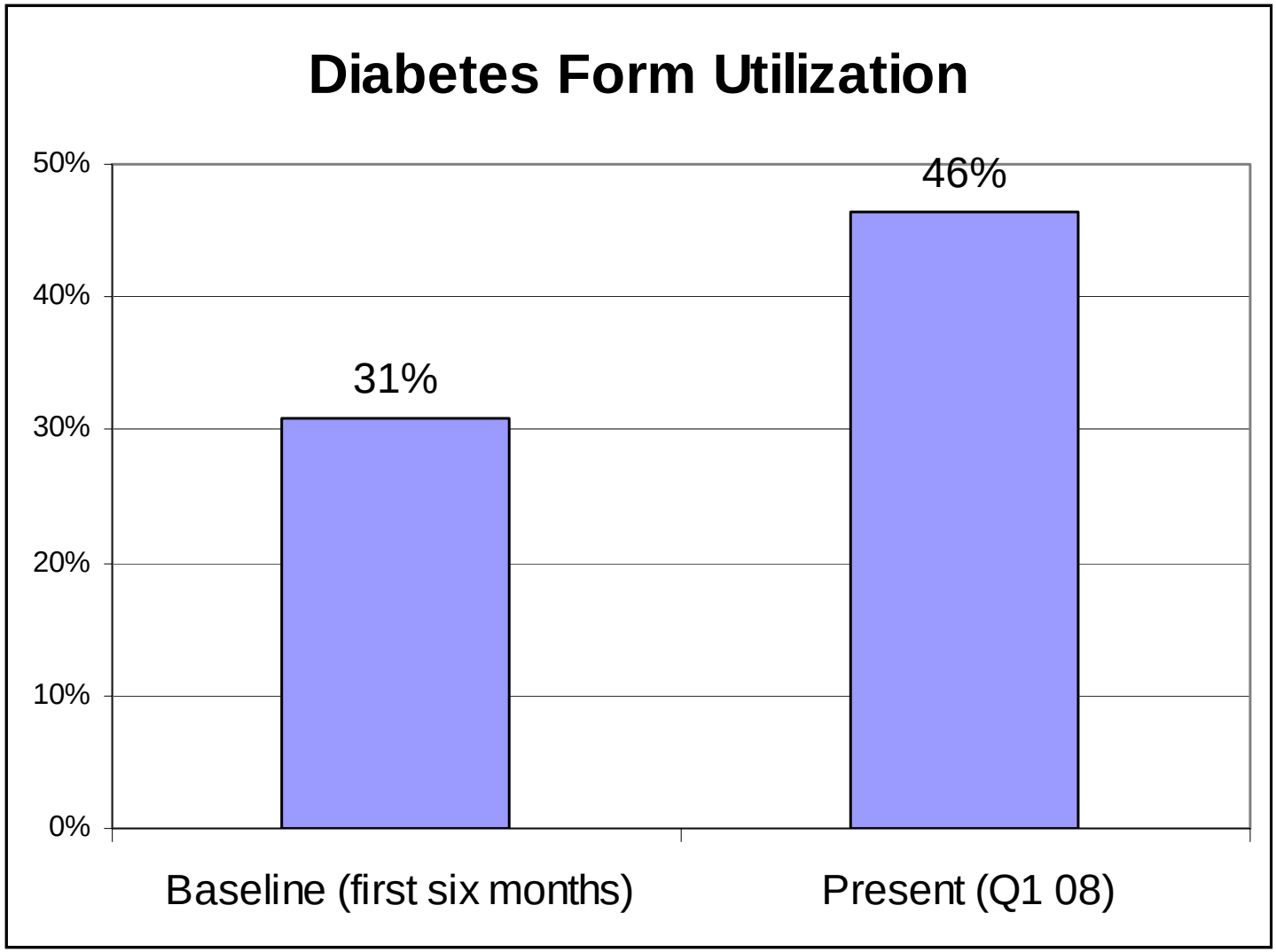
- Clinical
- Financial
- Staff and patient satisfaction
- Access to care
- System Use
- Information Technology

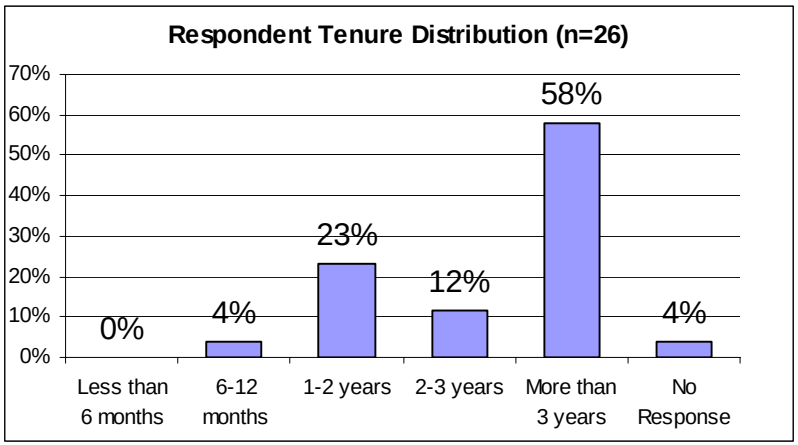
Unsigned Documentation

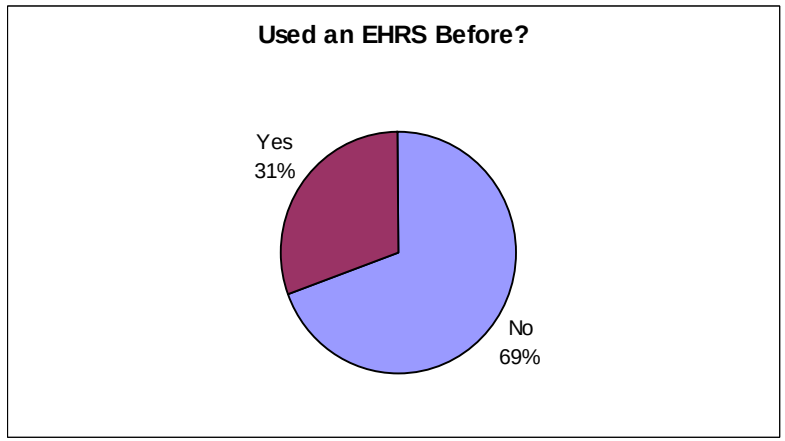


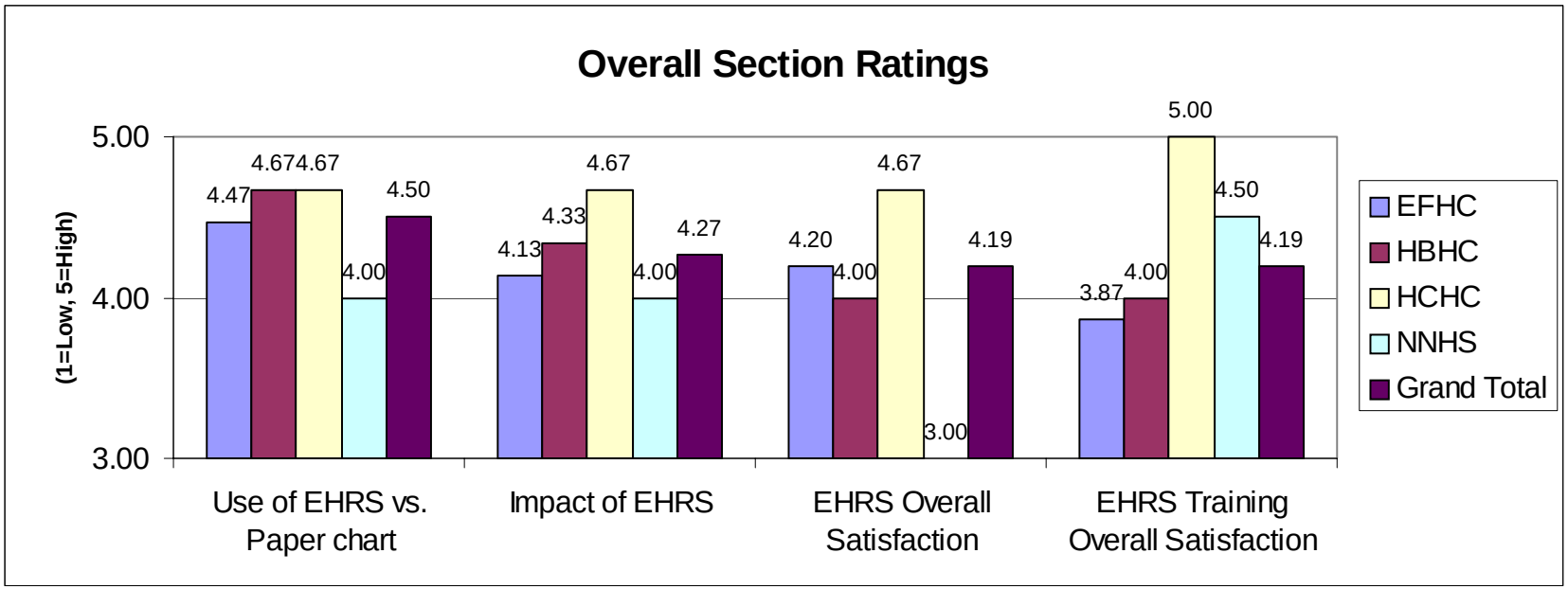
System Use Measures




Diabetes Form Utilization
50%
40%
30%
20%
10%
0%
46%
31%
Baseline (first six months)
Present (Q1 08)

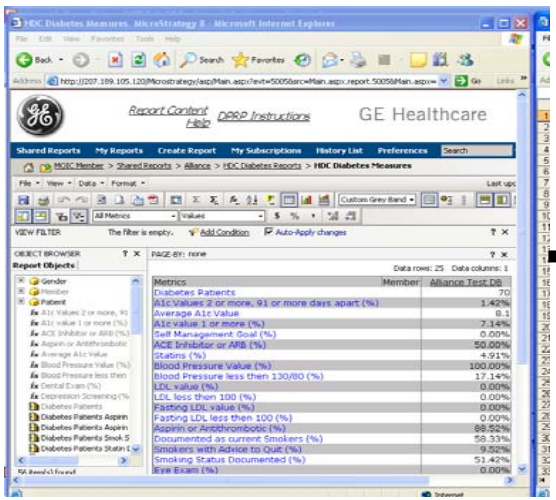

Respondent Tenure Distribution (n=26)
70%
60%
50%
40%
30%
20%
10%
0%
0%
4%
23%
12%
58%
4%
Less than 6 months
6-12 months
1-2 years
2-3 years
More than 3 years
No Response


Used an EHRS Before?
Yes 31%
No 69%

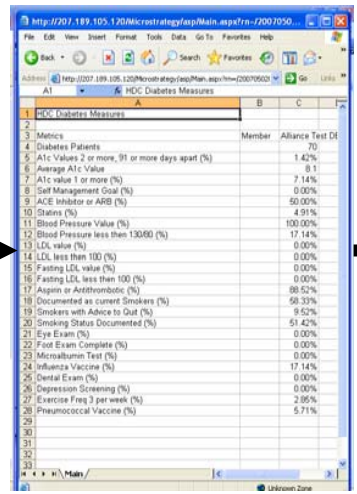

Overall Section Ratings
(1=Low, 5=High)
5.00
4.00
3.00
4.47
4.67
4.67
4.00
4.50
4.13
4.33
4.67
4.00
4.27
4.20
4.00
4.67
3.00
4.19
3.87
4.00
5.00
4.50
4.19
Use of EHRS vs. Paper chart
Impact of EHRS
EHRS Overall Satisfaction
EHRS Training Overall Satisfaction
EFHC
HBHC
HCHC
NNHS
Grand Total

Turning Data into Information

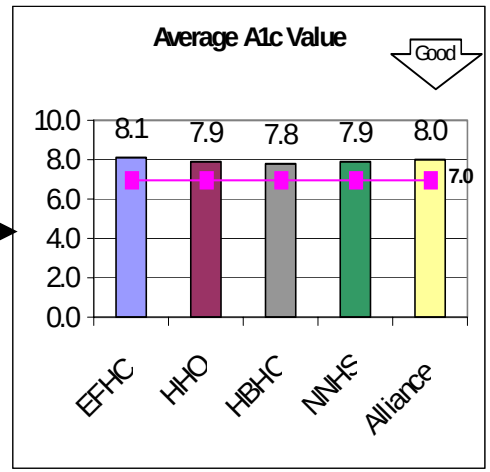
CDW



Export to Excel



Dashboard Report

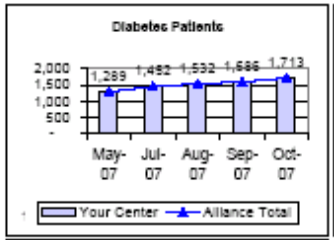


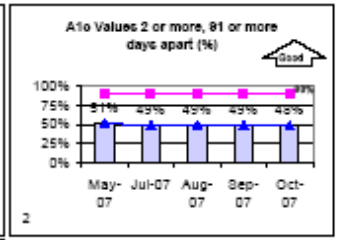
Alliance Total

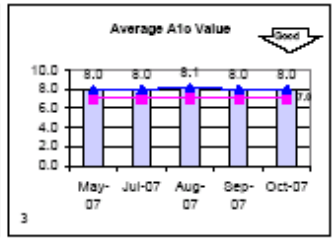
Health Outcomes Dashboard for the Year Ending October 2007 — Note: Monthly measurements reflect 12 month rolling period

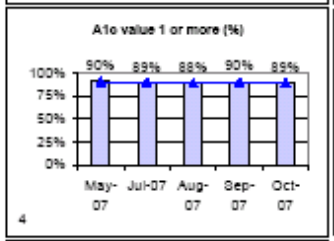
With comparisons to: Alliance Total = — National Goal (where available) = —

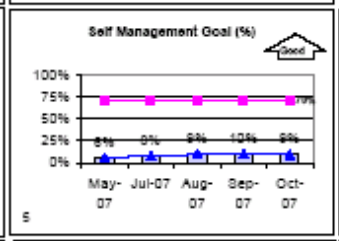
HDC Diabetes Metrics

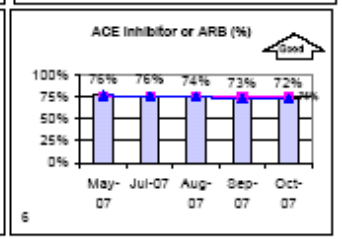


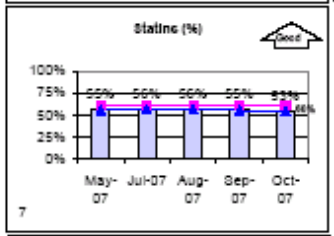


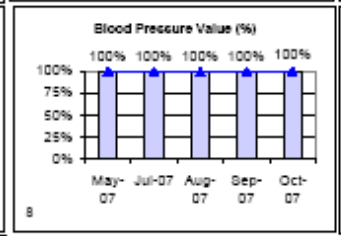


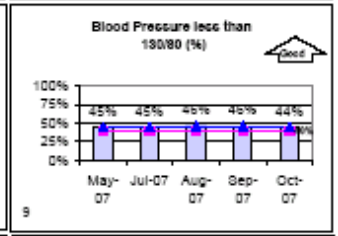


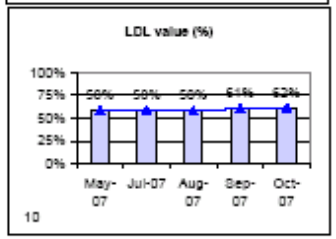


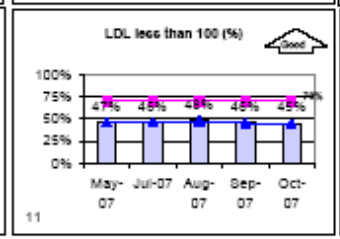


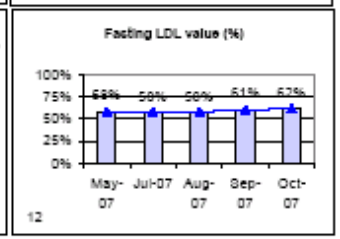


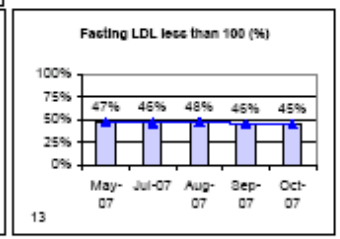


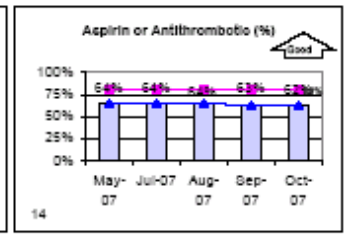












Stoplight Summary

Variance from Comparison Group: Better than | Within 5% | Worse 5%+

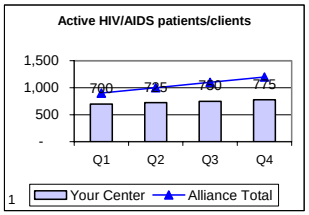
#	Metric	Year Ending October 2007 ALL	Alliance	Var %	Nat'l Goal	Var %
1	Diabetes Patients	1,713	1,713			
2	A1c Values 2 or more, >=91 days apart (	48.2%	48.2%	0.0%	90.0%	-46.5%
3	Average A1c Value	8.0	8.0	0.0%	7.0	14.3%
4	A1c value 1 or more (%)	89.4%	89.4%	0.0%		
5	Self Management Goal (%)	9.3%	9.3%	0.0%	70.0%	-86.7%
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 then 130/80 (%)	44.0%	44.0%	0.0%	40.0%	10.0%
10	LDL value (%)	61.6%	61.6%	0.0%		
11	LDL less then 100 (%)	45.0%	45.0%	0.0%	70.0%	-35.7%
12	Fasting LDL value (%)	61.6%	61.6%	0.0%		
13	Fasting LDL less then 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%			
16	Smokers with Advice to Quit (%)	38.0%	38.0%	0.0%		
17	Smoking Status Documented (%)	38.4%	38.4%	0.0%		
18	Eye Exam (%)	19.6%	19.6%	0.0%		
19	Foot Exam Complete (%)	27.1%	27.1%	0.0%	90.0%	-69.8%
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%	-52.5%
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%

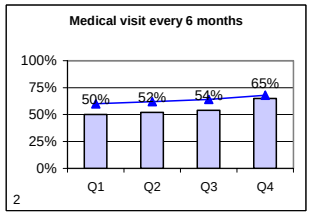
Community Health Center

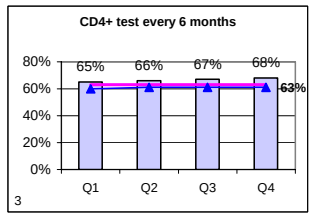
Health Outcomes Dashboard for the Year Ending July 2008 **Note: Monthly measurements reflect 12 month rolling period**

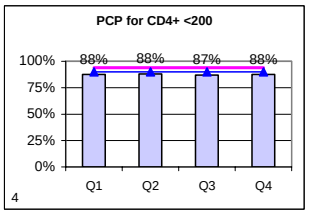
With Comparison To: **Alliance Total =** **National Goal (where available) =**

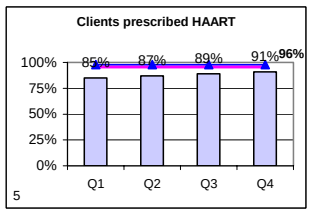
HRSA/HAB 1st Tier Management of Antiretroviral Therapy

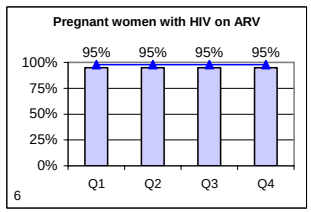












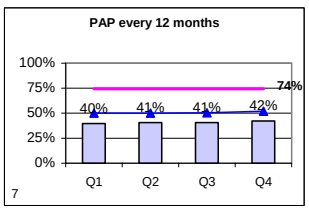
Stoplight Summary

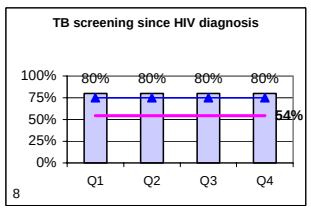
Variance from Comparison Group: Better than | Within 5% | Worse 5%+

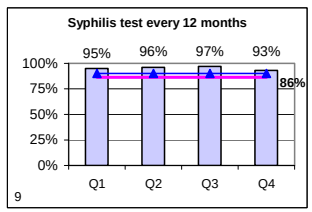
#	Metric	Year Ending July 2008 CHC	Alliance	Var %	Nat'l Goal	Var %
1	Active HIV/AIDS patients/clients	775	1,200			
	1st Tier Management of Antiretroviral Therapy					
2	Medical visit every 6 months	65.0%	68.0%	-4.4%		
3	CD4+ test every 6 months	68.0%	61.0%	11.5%	63.0%	7.9%
4	PCP for CD4+ <200	87.6%	90.0%	-2.6%	94.0%	-6.8%
5	Clients prescribed HAART	91.0%	98.0%	-7.1%	95.7%	-4.9%
6	Pregnant women with HIV on ARV	95.0%	98.0%	-3.1%		
	2nd Tier Monitoring, Screening and Management					
7	PAP every 12 months	42.1%	51.9%	-18.9%	74.3%	-43.3%
8	TB screening since HIV diagnosis	80.0%	75.0%	6.7%	54.4%	47.1%
9	Syphilis test every 12 months	93.0%	90.0%	3.3%	86.3%	7.8%
10	Hepatitis C screen	85.0%	85.0%	0.0%	96.7%	-12.1%
11	Adherence counseling every 6 months for pts on HAART	37.5%	44.5%	-15.7%	60.8%	-38.4%
12	Lipid screen every 12 months for patients on HAART	94.0%	78.0%	20.5%	97.9%	-4.0%
13	Competed Hepatitis B vaccination series	37.5%	44.5%	-15.7%	45.0%	-16.8%
14	HIV+ risk reduction counseling every 12 months	93.0%	75.0%	24.0%		

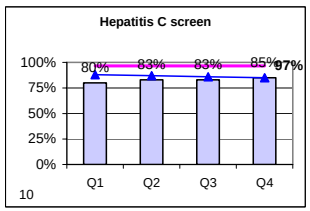
2nd Tier Monitoring, Screening and Management

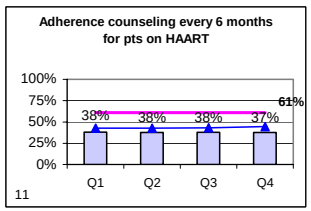
Note: HIVQUAL 50%-tile used for Nat'l Goal

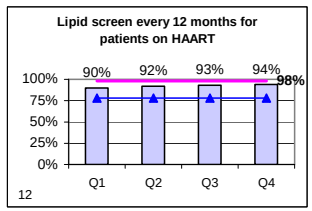


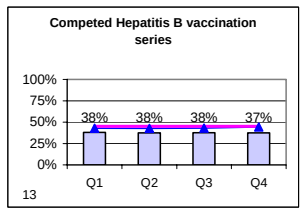


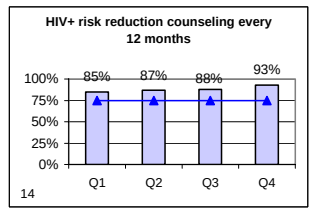












HIV Performance Measures - Provider Dashboard

EHRS Patients July 2007 - June 2008

Smith MD, Pat — **Community Health Center**

			Stoplight Analysis		
			Variance:	Better than	Within 5%	Worse 5%+
Measure	Jun-08 Smith MD, Pat	Jun-08 CHC	Variance from CHC	Jun-08 Alliance	Variance from Alliance
1st Tier Management of Antiretroviral Therapy					
1 Active HIV/AIDS patients/clients	78	775		1,200	
2 Medical visit every 6 months	80%	65%	23.1%	68%	17.6%
3 CD4+ test every 6 months	75%	68%	10.3%	61%	23.0%
4 PCP for CD4+ <200	85%	88%	-3.0%	90%	-5.6%
5 Clients prescribed HAART	95%	91%	4.4%	98%	-3.1%
6 Pregnant women with HIV on ARV	99%	95%	4.2%	98%	1.0%
2nd Tier Monitoring, Screening and Management					
7 PAP every 12 months	50%	42%	18.8%	52%	-3.7%
8 TB screening since HIV diagnosis	78%	80%	-2.3%	75%	4.3%
9 Syphilis test every 12 months	83%	93%	-10.4%	90%	-7.4%
10 Hepatitis C screen	84%	85%	-1.2%	85%	-1.2%
11 Adherence counseling every 6 months for pts on HAA	46%	37%	22.8%	44%	3.5%
12 Lipid screen every 12 months for patients on HAART	87%	94%	-7.8%	78%	11.1%
13 Competed Hepatitis B vaccination series	54%	37%	44.2%	44%	21.5%
14 HIV+ risk reduction counseling every 12 months	89%	93%	-4.3%	75%	18.7%

Measurement Sets

- Diabetes
- Cardiovascular Disease
- HIV
- Preventive Care
- HRSA Core Measures

Measures reported by health center, site, provider and population

A few challenges to performance measurement

- Labor intensity of defining measures, gaining consensus
- Lack of definition of data elements for some measures
- Lack of alignment of measures
- Distinction between performance measures and evidence based recommendations
- Analytics required not native to EHRS nor integrated with care
- Effect of clinical work flow on measure collection and results and vice versa
- Continued need to maintain clinician support
- Need for ongoing updates

Some Key Strategies employed

- Strong, organized clinician involvement
- Collaboration between measure developer, clinician/end user, vendor and measure consumer
- Optimizing commonality in data elements and advocacy for alignment
- Resources for ongoing evaluation and refinement from a clinical informatics perspective
- Working at a Network rather than individual Health Center level

Where are we going next?

- Optimization of use
- Attaching resources for interventions suggested by performance measures
- Expanded and more varied clinical decision support
- Research as a quality improvement strategy
- Personal health

Some Questions Raised…..

- What is the connection between the performance measure and clinician decision making at the point of care?
- Are we measuring data capture or performance?
- At what level are we/should we be measuring performance: provider, health center or system, and how might this vary by measure?

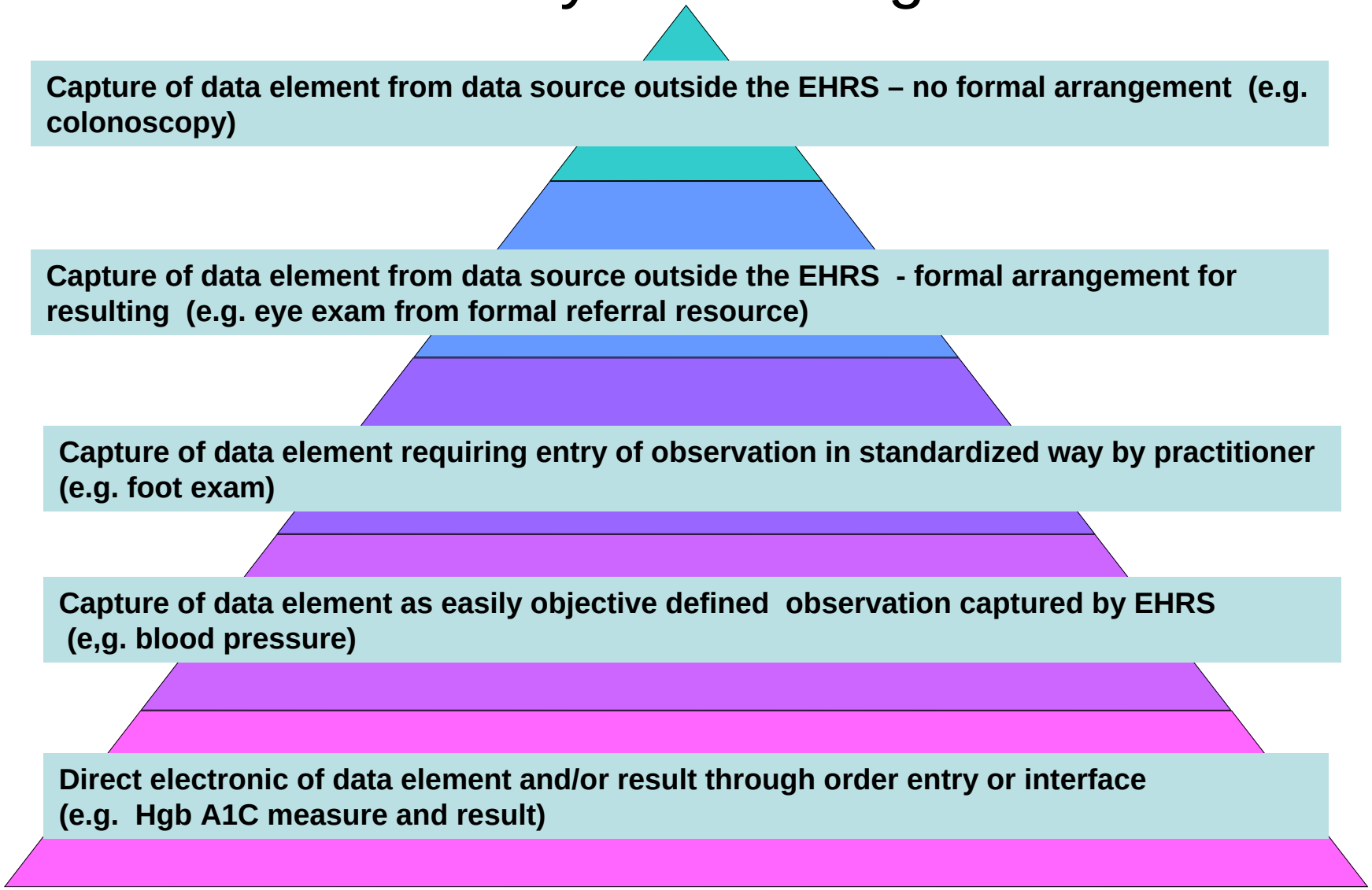
What performance are we supporting?

Evidence Based Practice Guideline

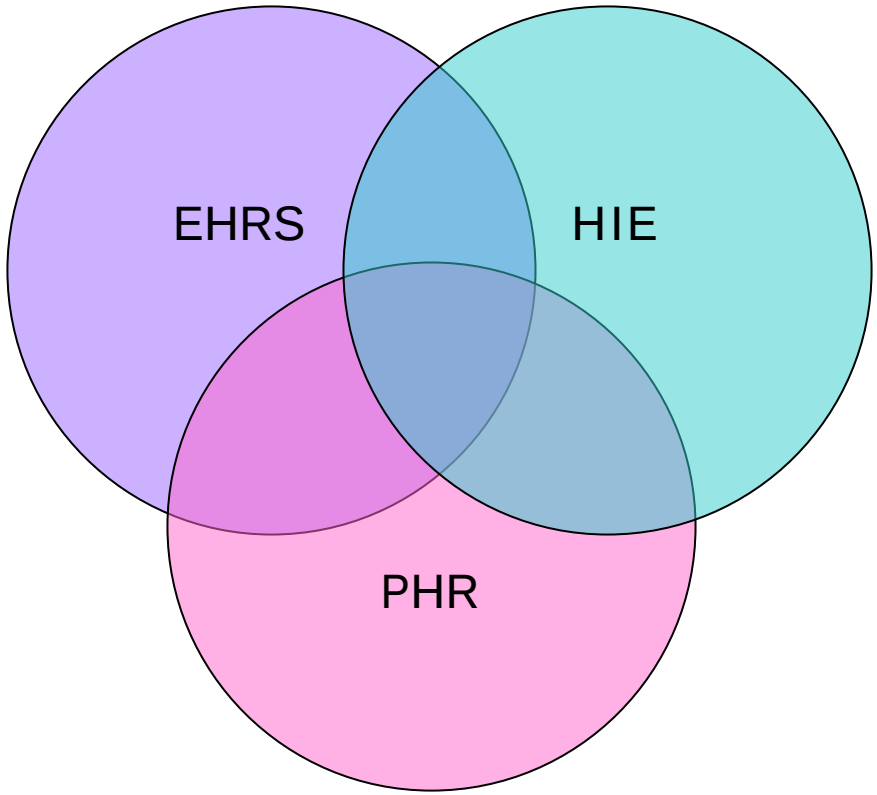
Decision Support

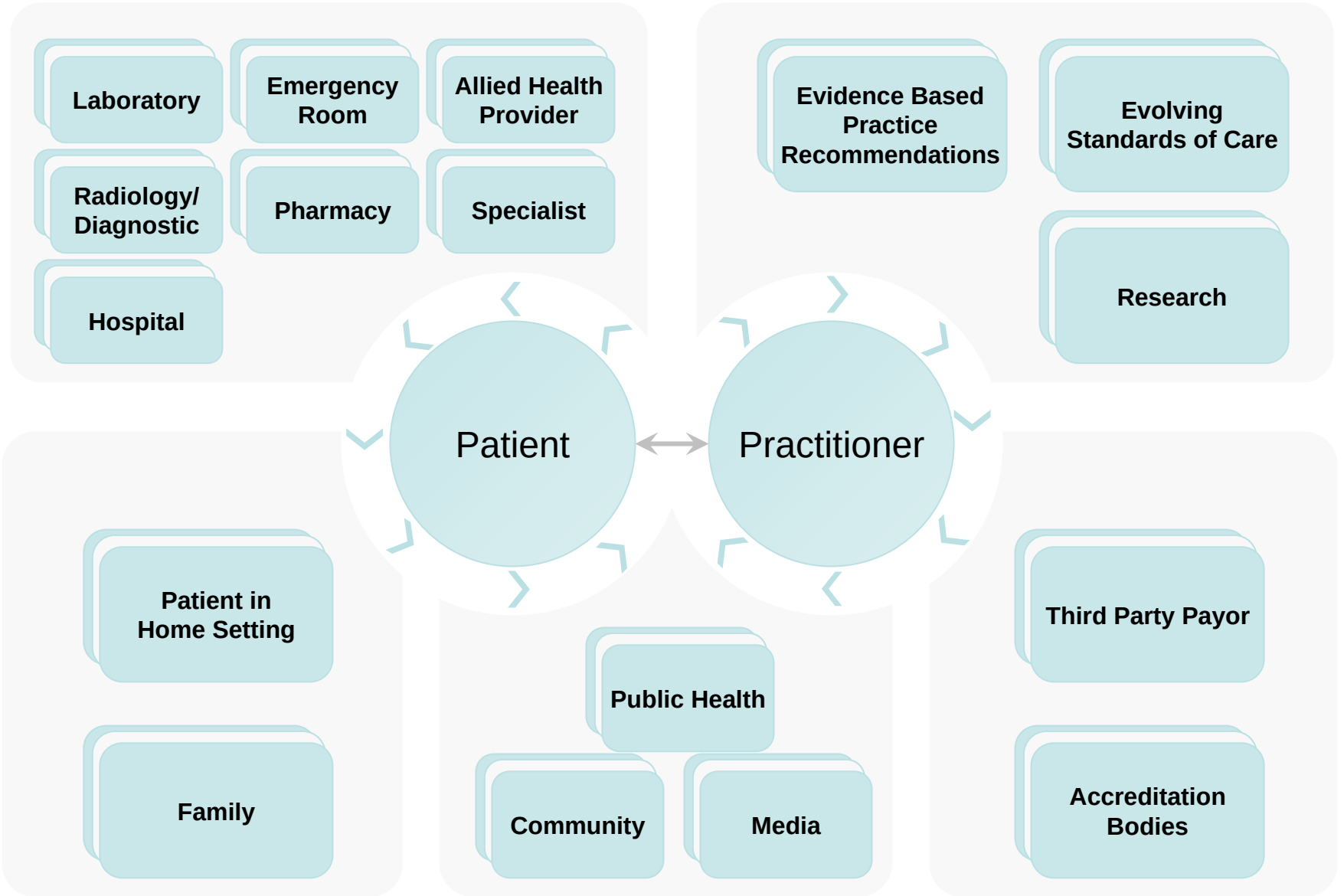
Performance measure

What are we truly measuring?



What information truly reflects performance?




Laboratory
Emergency Room
Allied Health Provider
Radiology/ Diagnostic
Pharmacy
Specialist
Hospital
Evidence Based Practice Recommendations
Evolving Standards of Care
Research
Patient
Practitioner
Patient in Home Setting
Family
Public Health
Community
Media
Third Party Payor
Accreditation Bodies

- The ultimate requirement to realize the potential benefits of the EHRS is the organizational vision and infrastructure to utilize the data to introduce improvements in the health care system