# Business Intelligence and Reporting at SETMA: Improving Quality, Outcomes and Clinical Practices
Texas A&M University, School of Medicine Alumni CME

Dr. James L. Holly, MD
CEO, Southeast Texas Medical Associates, LLP
April 30, 2011

"Business Intelligence for Improving Quality, Outcomes, and Clinical Practices: Continuing the Health Transformation Journey at SETMA"
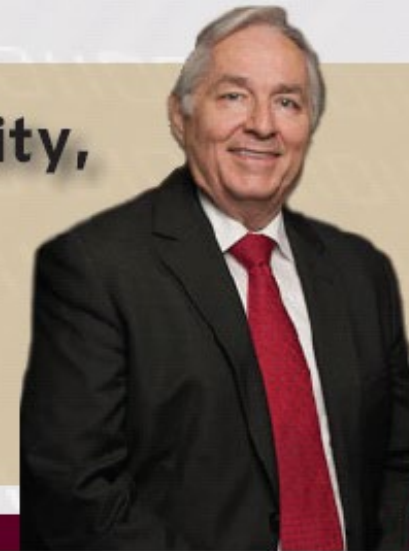
by Dr. James Holly, MD, CEO
Southeast Texas Medical Associates (SETMA)

About SETMA

Southeast Texas Medical Associates, LLP (SETMA) was founded August 1, 1995.

SETMA currently has 29 healthcare providers in the following specialties:

- Internal Medicine
- Family Practice
- Pediatrics
- Nurse Practitioners
- Cardiology
- Neurology
- Infectious Disease
- Ophthalmology

SETMA's Landmarks

- March 1998 – Acquired Electronic Health Records (EHR)

- January 1999 – All patients seen using EMR

- May 1999 – Began thinking in terms of "*Electronic Patient Management*" (EPM), rather than EHR

- October 2009 – Began "COGNOS Project"

- June 2010 – NCQA Tier 3 Patient-Centered Medical Home (PCMH)

- August 2010 – Affiliate of Joslin Diabetes Center, an Affiliate of Harvard Medical School

- August 2010 – NCQA Diabetes Recognition

SETMA's Landmarks

- August 2010 - Accreditation Association Ambulatory Healthcare (AAAHC) Accredited Ambulatory Care

- August 2010 – AAAHC Accredited Medical Home

- January 2011 - All SETMA Primary Providers Certified as Joslin Certified Primary Care Providers

- February 2011 - Named one of 30 Exemplary Practices by Office of National Coordinator, Health Information Technology, Health & Human Services

SETMA's Landmarks

- February 2011 - Innovator Award, *Healthcare Informatics*

- March 2011 - Patient Centered Primary Care Consortium, Practices in the Spotlight: The Medical Home and Diabetes Care

- March 2011 - Dr. And Mrs. James L. Holly Distinguished Professorship, Patient-Centered Medical Home, University of Texas Health Science Center San Antonio, Texas

- May 2011 – Semi-Finalist, Gartner Award

Systems Thinking and Health

"Systems-thinking" (Senge, *The Fifth Discipline*) and the data display designed on those principles allow the provider to "see" the patient as a whole: as a "granular portrait", rather than as a faceless "silhouette."

Data display can obscure effective management, if it simply presents more detail while ignoring or obscuring the dynamic interaction of one part of a biological system with another.
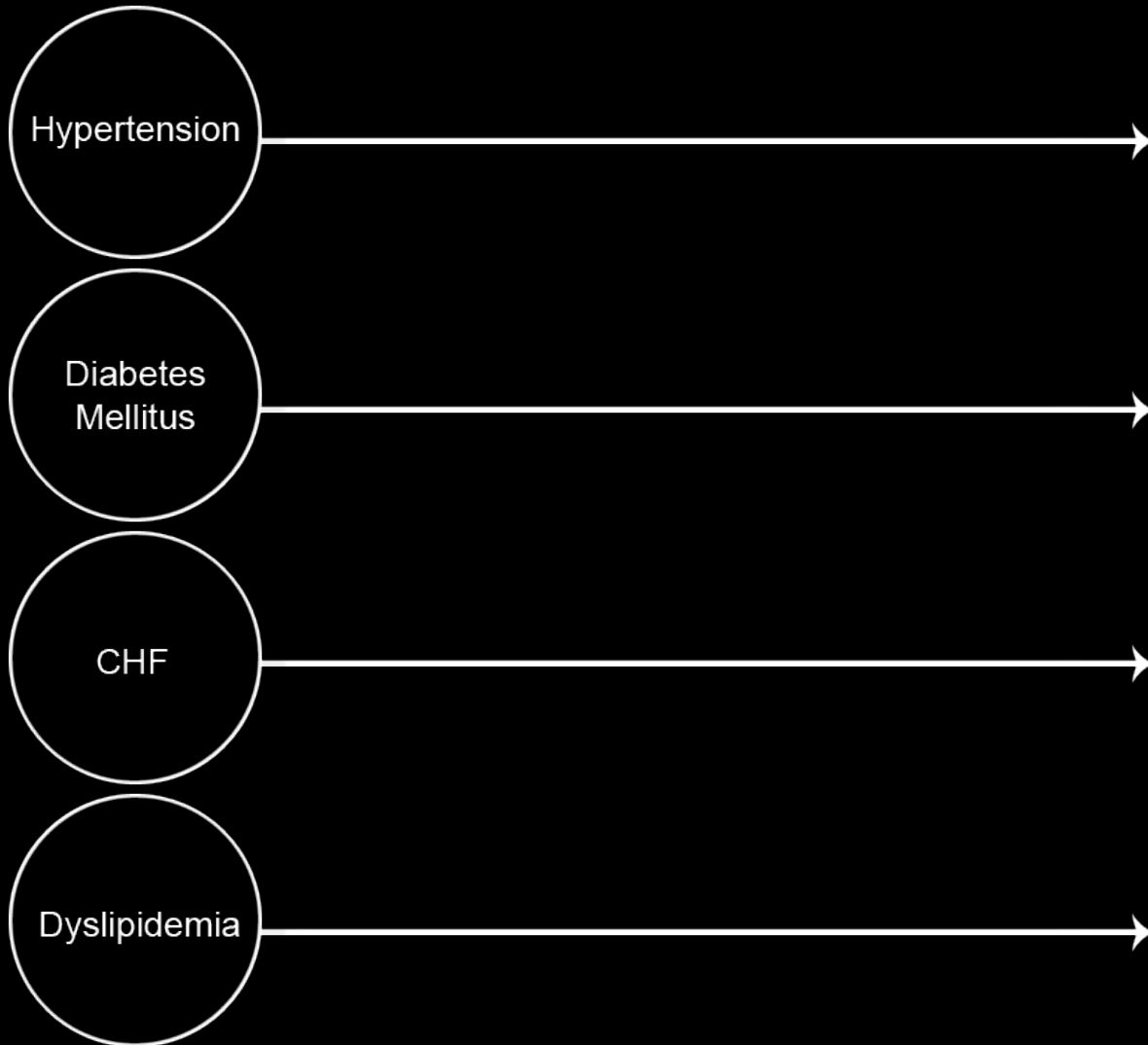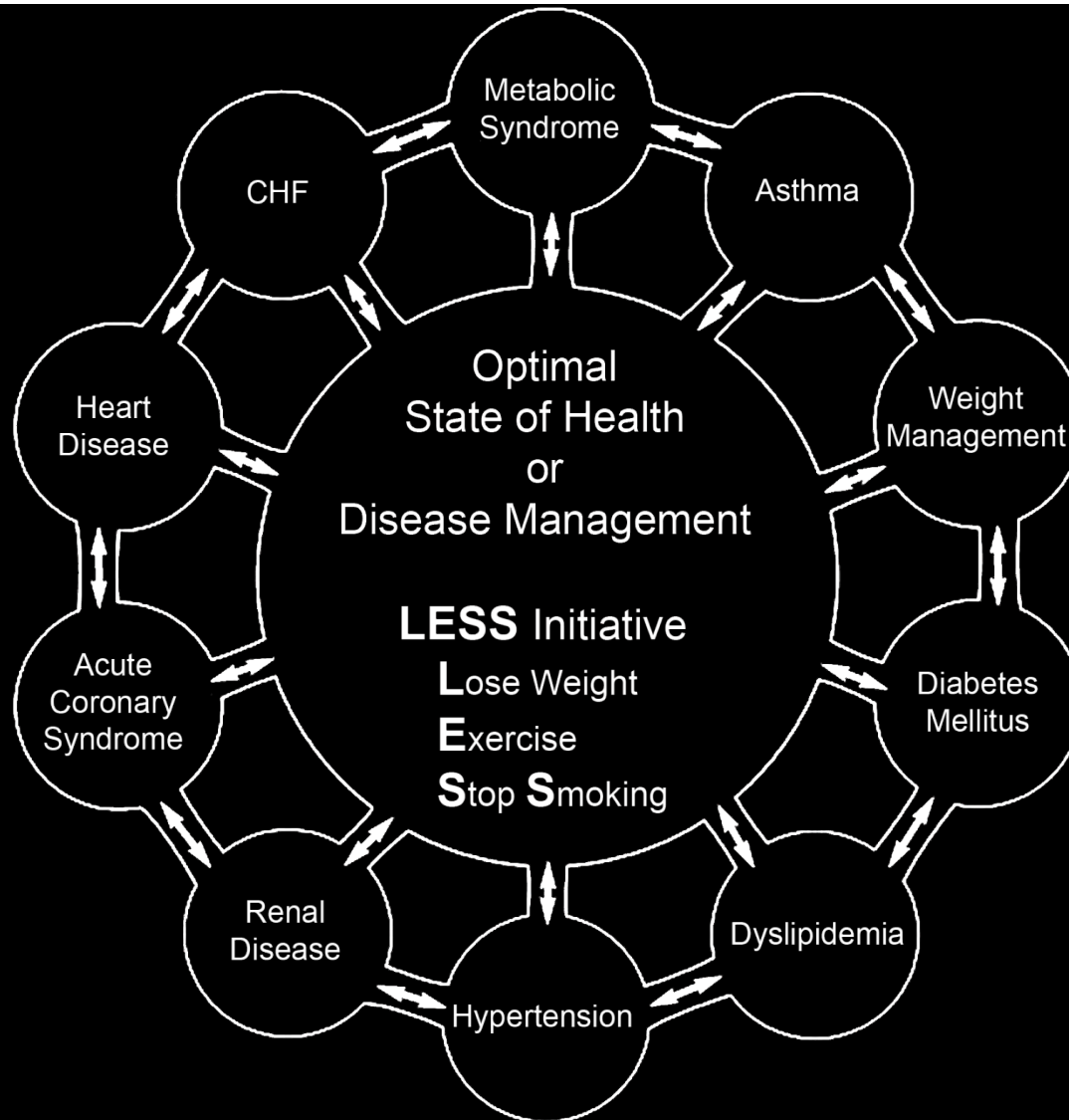
Seeing Circles of Causality

"Reality is made up of circles, but we see straight lines…Western languages…are biased toward a linear view. If we want to see system-wide interrelationships…we need a language of interrelationships, a language of circles."

(The Fifth Disciple, Dr. Peter Senge)

Linear Thinking

Circular Causality

SETMA's Diabetes Management

SETMA's Model of Care

1. Performance Tracking – one patient at a time

2. Performance Auditing – by panel or population

3. Analysis of Provider Performance Data

4. Public Reporting by Provider Name

5. Quality Assessment/Performance Improvement

Tracking Performance At The Point of Care

SETMA tracks multiple Physician Consortium for Performance Improvement (PCPI) measurement sets:

- Chronic Stable Angina

- Congestive Heart Failure

- Diabetes

- Hypertension

- Chronic Renal Disease

- Weight Management

- Care Transitions

Tracking Performance At The Point of Care

SETMA also tracks the following published quality performance measure sets:

- HEDIS
- NQF
- AQA
- PQRI
- BTE

Each is available to the provider, interactively at each patient encounter.

National Quality Forum (NQF)
National Voluntary Consensus Standards

Legend
Measures in red are measures which apply to this patient that are not in compliance.
Measures in black are measures which apply to this patient that are in compliance.
Measures in gray are measures which do not apply to this patient.

General Health Measures
View Body Mass Index Measurement
View Smoking Cessation
View Proper Assessment for Chronic COPD
View Adult Immunization Status

Blood Pressure Measures
View Blood Pressure Measurement
View Blood Pressure Classfication/Control

Medication Measures
View Current Medciation List
View Documentation of Allergies/Reactions
View Therapeutic Monitoring of Long Term Medications
View Drugs to Avoid in the Elderly
View Appropriate Medications for Asthma
View Inappropriate Antibiotic Treatment for Adults with Acute Bronchitis
View LDL Drug Therapy for Patients with CAD
View Warfarin Therapy for Atrial Fibrilation

Care for Older Adults
View Counseling on Physical Activity
View Urinary Incontinence in Older Adults
View Colorectal Cancer Screening
View Fall Risk Management

Diabetes Measures
View Dilated Eye Exam
View Foot Exam
View Hemoglobin A1c Testing/Control
View Blood Pressure
View Urine Protein Screening
View Lipid Screening

Female Specific Measures
View Breast Cancer Screening
View Cervical Cancer Screening
View Chlamydia Screening
View Osteoporosis Management

Pediatric Measures
View Appropriate Screening for Children with Pharyngitis
View Childhood Immunization Status

Tracking Performance At The Point of Care

This tool allows the provider to assess comprehensive quality measures for "screening" and "prevention" of each patient.

Tracking Performance At The Point of Care

2009 HEDIS Technical Specifications for Physician Measurement

Legend
Measures in red are measures which apply to this patient that are not in compliance
Measures in black are measures which apply to this patient that are in compliance.
Measures in gray are measures which do not apply to this patient.

Return

Tutorial

Information
NCQA
CAHPS
HEDIS

Effectiveness of Preventive Care

View — Adult BMI Assessment
Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents
Childhood Immunization Status
Immunizations for Adolescents
Lead Screening in Children
View — Colorectal Cancer Screening
Breast Cancer Screening
Cervical Cancer Screening
Chlamydia Screening in Women
View — Glaucoma Screening in Older Adults
View — Use of High-Risk Medications in the Elderly
View — Care for Older Adults

Effectiveness of Acute Care

View — Appropriate Treatment for Children with Upper Respiratory Infection
View — Appropriate Testing for Children with Pharyngitis
Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis

Effectiveness of Chronic Care

View — Persistence of Beta-Blocker Therapy After a Heart Attack
View — Controlling High Blood Pressure
View — Cholesterol Managment for Patients with Cardiovascular Disease
View — Comprehensive Adult Diabetes Care
Use of Appropriate Medications for People with Asthma
View — Use of Spirometry Testing in the Assessment and Diagnosis of COPD
View — Pharmacotherapy Management of COPD Exacerbation
View — Follow-Up After Hospitalization for Mental Illness
View — Antidepressant Medciation Management
Follow-Up Care for Children Prescribed Attention-Deficit/Hyperactivity Disorder Medication
Osteoporsis Management in Women
Disease Modifying Anti-Rheumatic Drug Therapy for Rheumatoid Arthritis
View — Annual Monitoring for Patients on Persistent Medications
View — Medication Reconciliation Post-Discharge

PQRI

PQRI Submittal Summary

Diabetes Measures Group

This patient [IS] eligible for submittal of the measures in the diabetes group.

Patients 18 to 79 with Diabetes Mellitus are eligible for this measure.

Hemoglobin A1c — Target < 9.0

Most recent value less than 7.0.

Blood Pressure

Systolic — Target < 140

Most recent value less than 130.

Diastolic — Target < 80

Most recent value less than 80.

Foot Exam

Completed this visit.

Lipids — Target < 100

Most recent value less than 100.

Nephropathy

Not assessed since Januray 1st.

Eye Exam

Dilated eye exam results reviewed.

Preventive Measures Group

This patient [IS] eligible for submittal of the measures in the preventive group.

Patients ages 50 and older are eligible for this measure.

Tobacco Use Assessment

Patient is current tobacco non-user.

Tobacco Cessation Assessment

Patient is not a tobacco user.

Body Mass Index

Body Mass Index measured/assessed.

Influenza Immunization

Influenza immnuzation administered within the last year.

Colorectal Cancer Screening

Appropriate screening performed.

Pneumococcal Vaccination

Pneumococcal vaccination previously administered.

Mammography Screening

Measure not applicable for this patient.

Urinary Incontinence Assessment

Measure not applicable for this patient.

Clusters and Galaxies

- A "*cluster*" is seven or more quality metrics for a single condition, i.e., diabetes, hypertension, etc.

- A "*galaxy*" is multiple clusters for the same patient, i.e., diabetes, hypertension, lipids, CHF, etc.

- Fulfilling a single or a few quality metrics does not change outcomes, but fulfilling "clusters" and "galaxies" of metrics at the point-of-care can and *will* change outcomes.

Auditing Performance After the Visit

A "Galaxy" -- Multiple "Clusters" Tracked on a Single Patient at a Single Visit

Auditing Performance After the Visit

Unlike a single metric, such as "was the blood pressure taken," which will not improve care, fulfilling and then auditing a "cluster" or a "galaxy of clusters" in the care of a patient *will* improve treatment outcomes and *will* result in quality care.

Auditing Performance After the Visit

What is most often missing in quality improvement initiative is real-time, auditing with comparative display of results, and public reporting.

Auditing Performance After the Visit

SETMA employed IBM's Business Intelligence software, *COGNOS* to audit provider performance and compliance.

COGNOS allows all providers to:

1. Display their performance for their entire patient base

2. Compare their performance to all practice providers

3. See outcome trends to identify areas for improvement

4. See this at the point-of-care

Auditing Performance After the Visit

- SETMA contracted with LPA Systems (www.lpa.com) to build our auditing tools.

- LPA designed a data warehouse to minimize the impact on our production servers.

Analyzing Provider Performance

- LPA used SQL Server Integration Services (SSIS) to clean and scrub the hundreds of data points we needed for our audit rather than having to process the millions of data points contained in our EHR.

- SSIS scrubs and preloads our EHR data into the warehouse, which gives us both speed in reporting and confidence in the results in our COGNOS reports.

Auditing Performance After the Visit

Chronic Diabetes - HgbA1c Trending
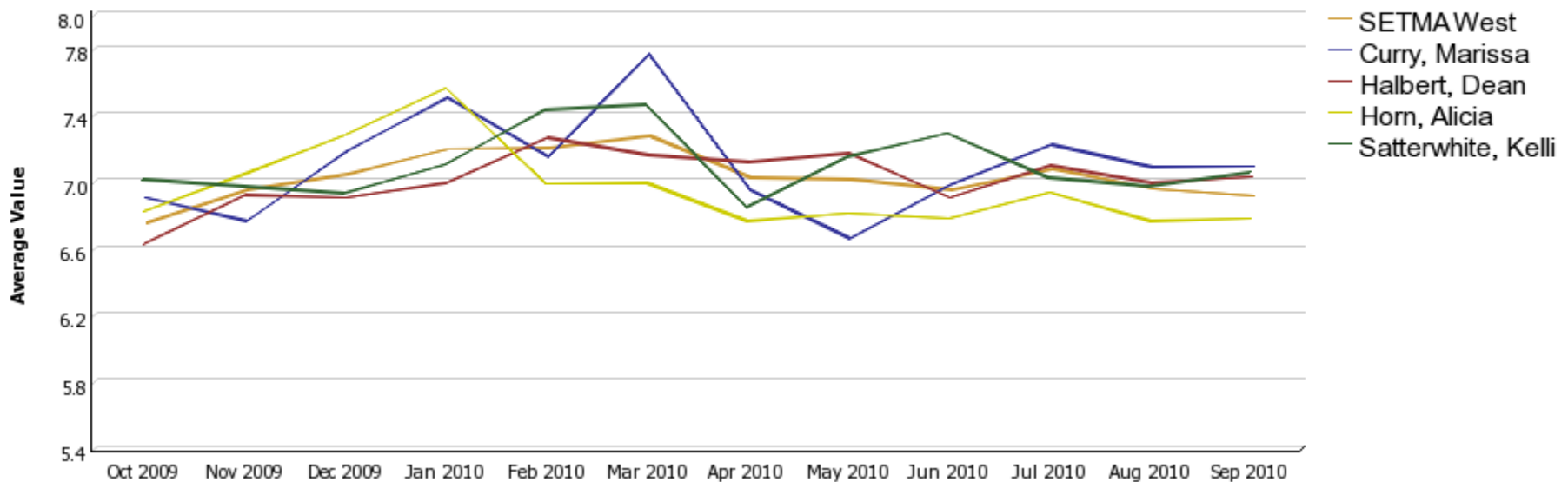
Auditing Performance After the Visit

Chronic Hyperlipidemia - LDL Trending
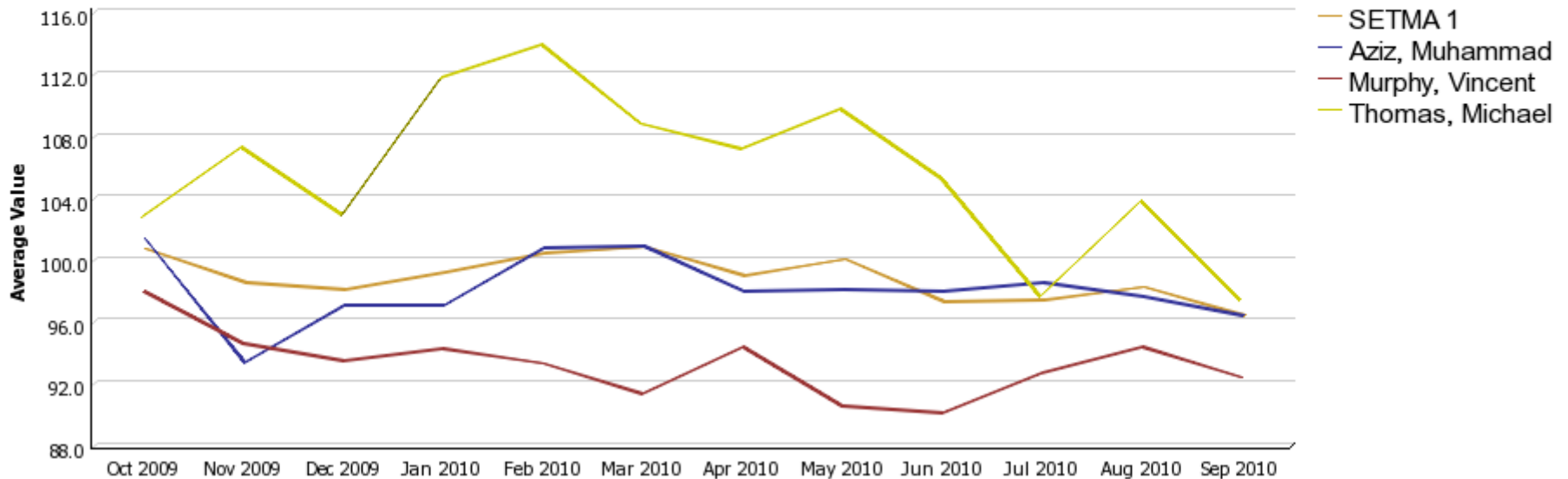
Auditing Performance After the Visit

Systolic Trending

Legend:
- Twelve Month Controlled Group Aver...
- SETMA 2
- Anwar, Syed
- Holly, James
- Leifeste, Alan

Diastolic Trending

Legend:
- Twelve Month Controlled Group Aver...
- SETMA 2
- Anwar, Syed
- Holly, James
- Leifeste, Alan
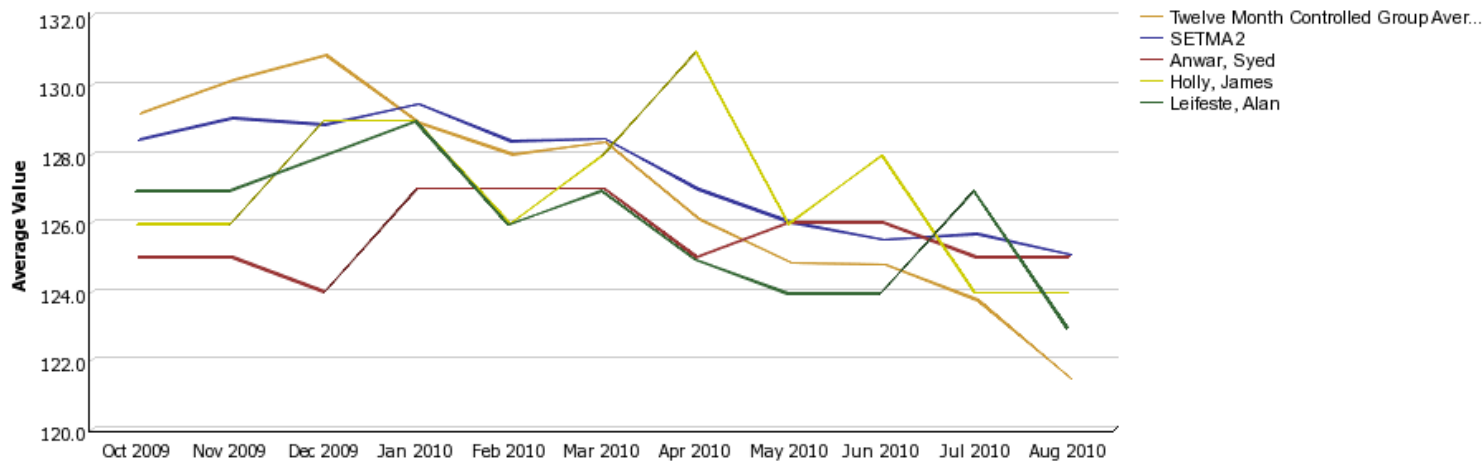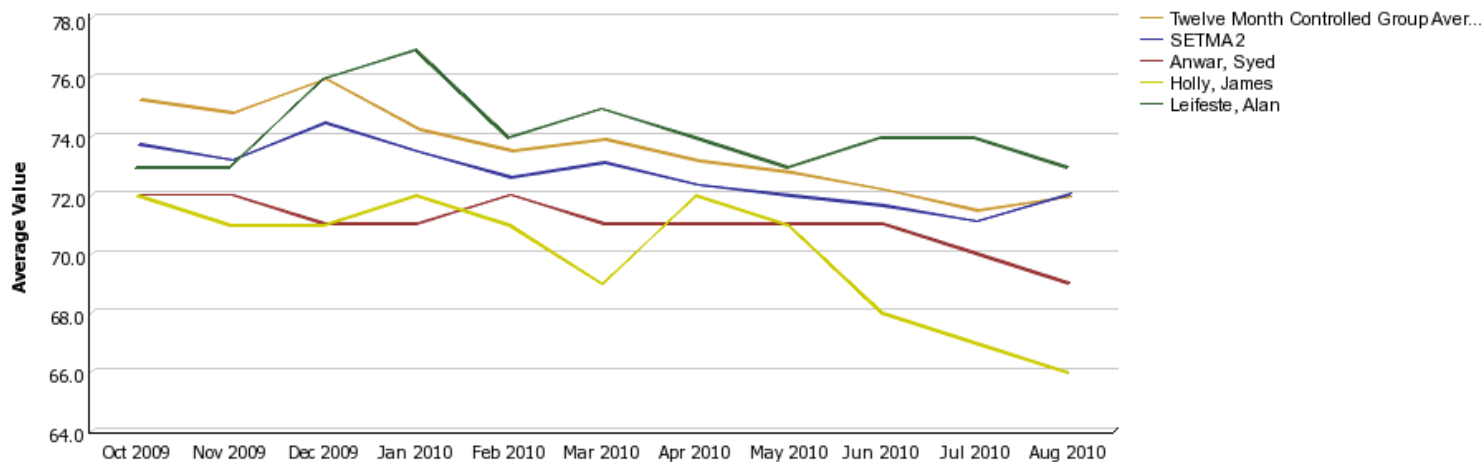
Auditing Performance After the Visit

Beyond how one provider performs (tracking and auditing), SETMA looks at data as a whole (analyzing) from which to develop new strategies for improving patient care.

We analyze patterns which may explain why one population is not to goal while another is. Some of the parameters, we analyze are:

- Frequency of visits
- Frequency of key testing
- Number of medications prescribed
- Were changes in treatments made, if patient not to goal
- Referrals to educational programs
- Etc.

Analyzing Provider Performance

Chronic Diabetes - Measures Comparison (Most Recent 12 Months)

	Controlled Group			Selected Group	
Population:	**All SETMA**		Practice:	**SETMA 1, SETMA 2, SETMA West**	
Time Basis:	**Prior 12 Months**		Provider:	**None**	
			Controlled or Not Controlled:	**Not Controlled**	

	HgbA1c Avg	Standard Deviation
Controlled	6.1	0.7
Selected	8.0	1.7
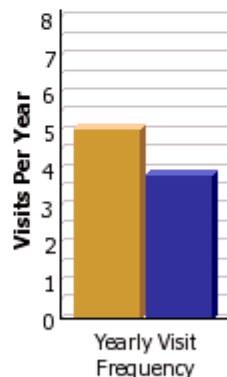
	Visit Frequency
Controlled	5.1
Selected	3.8
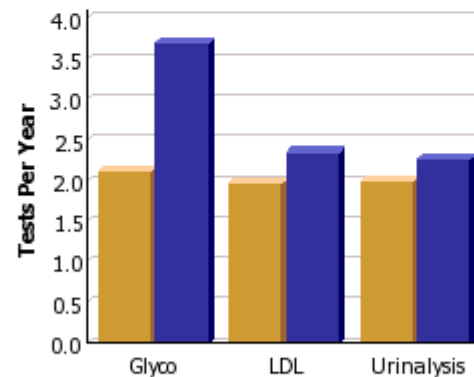
	Yearly Glyco Tests	Yearly LDL Tests	Yearly UA Tests
Controlled	2.1	2.0	2.0
Selected	3.7	2.4	2.3

Analyzing Provider Performance

Chronic Hypertension - Measures Comparison (Most Recent 12 Months)

	Controlled Group		Selected Group	
Population: **All SETMA**			Practice: **SETMA 1, SETMA 2, SETMA West**	
Time Basis: **Prior 12 Months**			Provider: **None**	
			Controlled or Not Controlled: **Not Controlled**	

Ethnicity
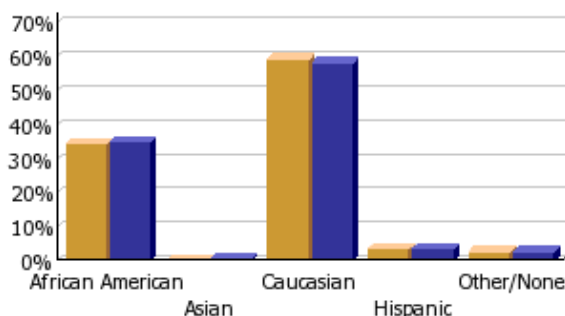
	African American	Ethnicity Asian	Caucasian	Hispanic	Other/None
Controlled	34.6%	0.1%	59.3%	3.4%	2.6%
Selected	34.9%	0.8%	58.3%	3.4%	2.7%

Financial Class
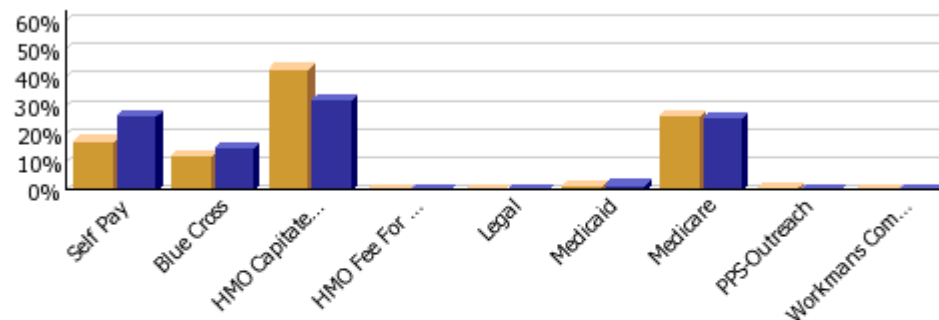
	Self Pay	Blue Cross	HMO Capitated	HMO Fee For Service	Legal	Medicaid	Medicare	PPS-Outreach	Workmans Comp
Controlled	17.3%	11.8%	43.0%	0.0%	0.0%	1.2%	26.2%	0.5%	0.0%
Selected	26.0%	14.7%	32.0%	0.0%	0.0%	1.6%	25.4%	0.1%	0.0%

Analyzing Provider Performance

Chronic Hyperlipidemia - Measures Comparison (Most Recent 12 Months)

Controlled Group Time Basis: **Prior 12 Months**
Controlled Group Constrained to: **All SETMA**
Practice: **SETMA 1, SETMA 2, SETMA West**
Provider: **None**

Controlled Group
Selected Group

Gender
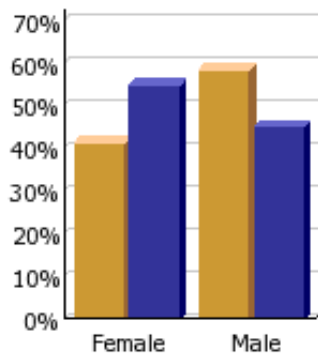
	Female	Male
Controlled	41.4%	58.5%
Selected	55.0%	45.0%

Age
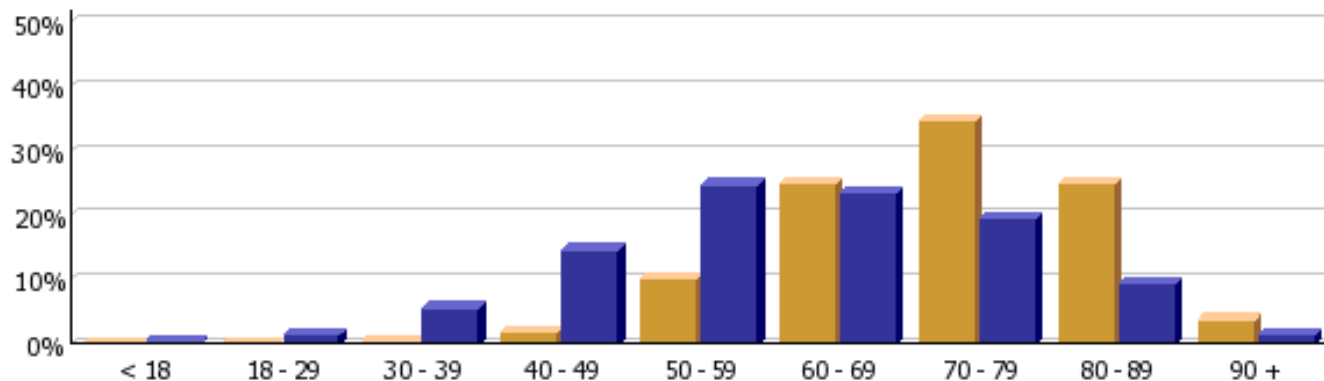
	< 18	18 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 +
Controlled	0.0%	0.0%	0.2%	1.8%	10.0%	24.8%	34.7%	24.9%	3.7%
Selected	0.2%	1.4%	5.5%	14.5%	24.7%	23.4%	19.5%	9.3%	1.4%

Analyzing Provider Performance

Raw data can be misleading. For example, with diabetes care, a provider may have many patients with very high HgbA1cs and the same number with equally low HgbA1cs which would produce a misleadingly good average. As a result, SETMA also measures the:

- Mean

- Median

- Mode

- Standard Deviation

Analyzing Provider Performance

SETMA's average HgbA1c as been steadily improving for the last 10 years. Yet, our standard deviation calculations revealed that a subset of our patients were not being treated successfully and were being left behind.

By analyzing the standard deviation of our HgbA1c we have been able to address the patients whose values fall far from the average of the rest of the clinic.

Public Reporting of Performance

One of the most insidious problems in healthcare delivery is reported in the medical literature as "treatment inertia." This is caused by the natural inclination of human beings to resist change. As a result, when a patient's care is not to goal, often no change in treatment is made.

To help overcome this "treatment inertia," SETMA publishes all of our provider auditing (both the good and the bad) as a means to increase the level of discomfort in the healthcare provider and encourage performance improvement.

Public Reporting of Performance

NQF
Diabetes
Measures

NQF - Diabetes Measures

E & M Codes: Clinic Only
Encounter Date(s): Jan 1, 2011 through Mar 31, 2011

Location	Provider	Dilated Eye within 12 Months	Micral Strip within 12 Months	Foot Exam within 12 Months
SETMA 1	Aziz	55.7%	75.3%	73.0%
	Duncan	52.8%	79.7%	78.9%
	Henderson	54.5%	78.6%	94.8%
	Murphy	50.0%	87.6%	84.4%
	Sims	44.6%	83.8%	51.4%
	Thomas	81.8%	76.6%	85.7%
	SETMA 1 Totals:	55.0%	80.7%	80.2%
SETMA 2	Ahmed	69.0%	63.1%	99.7%
	Anthony	56.8%	86.9%	96.2%
	Anwar	67.1%	92.7%	82.1%
	Cricchio	61.2%	80.8%	92.3%
	Holly	80.0%	94.3%	88.6%
	Leifeste	67.8%	86.3%	81.5%
	Wheeler	60.0%	84.8%	84.8%
	SETMA 2 Totals:	65.4%	78.0%	92.1%
SETMA West	Curry	70.2%	87.2%	91.5%
	Deiparine	57.9%	63.8%	89.5%
	Halbert	44.9%	60.0%	83.4%
	Horn	51.0%	81.9%	94.8%
	Qureshi	51.0%	71.9%	97.9%
	Satterwhite	51.1%	78.7%	88.3%
	Vardiman	57.3%	53.7%	78.0%
	SETMA West Totals:	53.4%	70.2%	89.0%
	SETMA Totals:	59.8%	76.6%	88.5%

Public Reporting of Performance

NQF
Diabetes
Measures

NQF - Diabetes Measures - Blood Pressure Control

E & M Codes: Clinic Only
Encounter Date(s): Jan 1, 2011 through Mar 31, 2011

Location	Provider	Blood Pressure on Last Visit			
		< 120 / 70	< 130 / 80	< 140 / 90	> 140 / 90
SETMA 1	Aziz	18.4%	50.0%	79.3%	20.7%
	Duncan	27.6%	68.3%	95.1%	4.9%
	Henderson	25.3%	58.4%	85.1%	14.9%
	Murphy	23.4%	57.8%	86.2%	13.8%
	Sims	24.3%	50.0%	70.3%	29.7%
	Thomas	18.2%	57.1%	79.2%	20.8%
	SETMA 1 Totals:	22.9%	57.1%	83.8%	16.2%
SETMA 2	Ahmed	27.1%	62.6%	90.0%	10.0%
	Anthony	35.2%	84.5%	97.7%	2.3%
	Anwar	9.4%	79.1%	95.3%	4.7%
	Cricchio	24.5%	67.8%	89.5%	10.5%
	Holly	25.7%	88.6%	94.3%	5.7%
	Leifeste	27.0%	61.1%	87.7%	12.3%
	Wheeler	20.0%	60.0%	79.2%	20.8%
	SETMA 2 Totals:	24.7%	68.6%	90.6%	9.4%
SETMA West	Curry	17.0%	64.9%	88.3%	11.7%
	Deiparine	13.8%	46.7%	77.6%	22.4%
	Halbert	25.4%	54.6%	81.5%	18.5%
	Horn	25.2%	59.4%	98.7%	1.3%
	Qureshi	17.7%	68.8%	91.7%	8.3%
	Satterwhite	14.9%	63.8%	87.2%	12.8%
	Vardiman	8.5%	31.7%	70.7%	29.3%
	SETMA West Totals:	18.9%	55.6%	85.3%	14.7%
	SETMA Totals:	22.8%	62.5%	87.6%	12.4%

Public Reporting of Performance

NCQA Diabetes Recognition

NCQA Diabetes Measures
Encounter Date(s): January 1, 2011 to March 31, 2011

Location	Provider	Encounters	A1c >9.0 <= 15%	A1c < 8.0 >= 60%	A1c < 7.0 >= 40%	BP > 140/90 <= 35%	BP < 130/80 >= 25%	Eye Exam >= 60%	Smoking Cessation >= 80%	LDL >= 130 <= 37 %	LDL < 100 >= 36%	Nephropathy >= 80%	Foot Exam >= 80%	Total Points
SETMA 1	Aziz	259	10.0%	79.2%	58.3%	23.2%	52.1%	57.9%	97.6%	11.2%	66.4%	73.0%	74.1%	80
	Duncan	190	10.5%	85.3%	67.4%	11.6%	64.7%	57.4%	85.4%	14.7%	66.3%	86.3%	81.1%	90
	Henderson	207	8.7%	82.1%	69.6%	15.5%	59.4%	56.0%	94.6%	12.6%	61.4%	80.7%	95.7%	90
	Murphy	337	5.6%	89.3%	68.0%	16.9%	55.2%	47.5%	77.5%	12.5%	70.9%	86.4%	85.8%	80
	Sims	122	11.5%	81.1%	62.3%	28.7%	49.2%	43.4%	87.5%	19.7%	54.9%	85.2%	61.5%	85
	Thomas	109	11.0%	71.6%	46.8%	20.2%	58.7%	82.6%	100.0%	12.8%	61.5%	78.9%	83.5%	95
SETMA 2	Ahmed	797	19.1%	62.1%	39.5%	9.2%	63.1%	67.6%	75.3%	11.7%	64.7%	63.1%	99.7%	68
	Anthony	293	12.3%	80.2%	62.5%	2.7%	85.0%	59.0%	81.1%	10.9%	72.0%	89.1%	96.2%	90
	Anwar	375	9.3%	82.4%	65.6%	3.5%	80.5%	64.3%	96.3%	14.7%	60.3%	94.1%	80.5%	100
	Cricchio	378	14.3%	67.2%	50.5%	11.1%	67.7%	58.7%	71.6%	11.6%	64.6%	79.9%	91.8%	75
	Holly	60	6.7%	83.3%	68.3%	3.3%	83.3%	81.7%	100.0%	16.7%	66.7%	95.0%	90.0%	100
	Leifeste	271	8.5%	80.4%	69.0%	11.1%	65.7%	70.1%	66.1%	10.0%	64.9%	88.6%	81.5%	90
	Wheeler	162	8.6%	85.8%	75.9%	23.5%	58.0%	61.7%	73.9%	14.8%	62.3%	87.0%	84.6%	90
SETMA West	Curry	116	13.8%	74.1%	51.7%	12.1%	62.9%	72.4%	81.0%	17.2%	60.3%	87.1%	93.1%	100
	Deiparine	192	8.9%	74.5%	53.1%	24.0%	45.8%	59.9%	92.3%	11.5%	55.7%	66.1%	90.1%	85
	Halbert	302	13.9%	75.8%	61.3%	19.9%	56.6%	42.4%	97.5%	16.9%	56.0%	57.9%	84.8%	85
	Horn	192	3.1%	82.3%	66.7%	1.6%	60.4%	49.0%	82.1%	15.6%	51.0%	81.8%	95.3%	90
	Satterwhite	116	14.7%	68.1%	47.4%	14.7%	63.8%	53.4%	90.3%	23.3%	44.8%	76.7%	87.1%	85

Quality Assessment & Performance Improvement

Quality Assessment and Performance Improvement (QAPI) is SETMA's roadmap for the future. With data in hand, we can begin to use the outcomes to design quality initiatives for our future.

We can analyze our data to identify disparities in care between

- Ethnicities

- Socio-Economic Groups

- Age Groups

- Genders

Quality Assessment & Performance Improvement

SETMA's Model of Care along with the technology of COGNOS -- this pairing of medicine and technology -- can transform the delivery of healthcare and is worthy of being adopted by others.

Quality Assessment & Performance Improvement

By expanding SETMA's COGNOS Project, we are also designing a quality improvement initiative for the elimination of preventable readmissions to the hospital.

www.jameslhollymd.com

Please visit us at www.jameslhollymd.com where you will find all of our public reporting, electronic patient management and medical h

www.jameslhollymd.com

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Electronic Patient Management Tools ⌄ | Public Reporting ⌄ | Medical Home ⌄ | NCQA PC-MH Application ⌄ | NextMD

"Healthcare improvement will result from transformation, not reformation. Reform comes from external pressure; transformation comes from internalized values and energy." -

James L. Holly, MD, CEO, SETMA, LLP

Featured Content of Website and of SETMA's Work

- Gartner Business Intelligence Excellence Award – SETMA One of Three Semi-Finalist for 2011
- SETMA's Transitions of Care Letter to Don Berwick, Administrator of CMS, April, 2011
- Address to the Spring meeting of the Society for Academic CME, April, 2011
- Address to the staff of the Office of the National Coordinator HIT, HHS, March 31, 2011
- Address to the Patient-Centered Primary Care Collaborative Stakeholders' Workshop, March 30, 2010
- SETMA's Pilgrimage to a Patient-Centered Medical Home, The Doctor's Office, HealthLeader's Media, March 2011
- James L. Holly, MD, Healthcare Informatics Magazine Blog, February 2011
- SETMA Awards and Recognitions

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About Gartner

Gartner, Inc. (NYSE: IT) is the world's leading information technology research and advisory company. Gartner delivers the technology-related insight necessary for its clients to make the right decisions, every day. From CIOs and senior IT leaders in corporations and

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The Future

The future of quality metrics and the auditing of provider performance are constantly evolving. SETMA's COGNOS Project allows us to both participate in the future and to define it; and, ultimately to pay attention to the things that matter and the things that will result in improved health for all of our patients.