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# The Importance of Data Analytics in Physician Practice

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# Conflict of Interest



This speaker has no conflicts of interests to disclose.

# Abraham Lincoln and Data Analytics



“Contained within Abraham Lincoln's famous "House Divided Speech," delivered to the Republican Convention on April, 16, 1856, is the imperative for data analytics and performance auditing by healthcare providers today.

# Abraham Lincoln and Data Analytics



Lincoln said,

“If we could first know where we are, and whither we are tending, we could better judge what to do, and how to do it.”

(Quoted by David Eisenhower in the Foreword to Churchill: The Prophetic Statesman, by James C. Humes, Regnery, New York, 2012)

# Application of Lincoln's Ideal



“In any human enterprise, if the participants are unwilling to objectively and honestly face where they are, it is improbable that they will ever get to where they want to be, let alone to where they need to be or should be.”

# The Nature of Knowledge



- “Information” is inherently static while “learning” is dynamic and generative (creative). In *The Fifth Discipline*, Peter Senge, said: “Learning is only distantly related to taking in more information...”
- Classically, taking in more information has been the foundation of medical education. Traditional CME has perpetuated the idea that “learning” is simply accomplished by “learning more facts.”

# Knowledge Can Transform



Knowledge only has power to transform when it is held in the mind of persons who have “Personal Mastery,” which is the discipline of:

1. continually clarifying and deepening your personal vision (where you want to go),
2. focusing your energies (attention & resources),
3. developing patience (relentlessness), and
4. seeing reality objectively (telling yourself the truth)

# Transformation Distinguishes Two Groups



Forward thinkers transform; day dreamers wish for change but seldom see it. Senge said:

“The juxtaposition of vision (what we want) and a clear picture of current reality (where we are) generates... ‘**creative tension**,’ (which is) a force to bring vision and reality together, through the natural tendency of tension to seek resolution.”



# Analytics Transform Knowledge



- Analytics transform knowledge into an agent for change. In reality, without analytics, we will neither know where we are, where we are going or how to sustain the effort to get there.
- For transformation to take place through knowledge, we must be prepared to ask the right questions, courageously accept the answers and to require ourselves to change.

# Transformation Requires Truthfulness



Those with “personal mastery”

- Live in a continual learning mode.
- They never ARRIVE!
- They are acutely aware of their ignorance, their incompetence, their growth areas.
- And they are deeply self-confident!

# Knowing Limitations



- The safest person is not the one who knows everything, which is impossible, but the safest person is the one who knows what she/he does not know.
- You will never be held accountable for what you don't know; you will be held account-able for what you don't know that you don't know.

# Healthcare Transformation



- Healthcare transformation, which will produce continuous performance improvement, results from **internalized ideals**, which create **vision and passion**, both of which produce and sustain “**creative tension**” and “**generative thinking.**”
- Transformation is not the result of external pressure and it is not frustrated by obstacles. In fact, the more difficult a problem is, the more power is created by the process of transformation in order to overcome the problem.

# Analytics and Transformation



- The greatest frustration to transformation is the unwillingness or the inability to face current reality. Often, the first time healthcare providers see audits of their performance, they say, “That can’t be right!”
- Through analytics – tracking data, auditing performance, statistical analysis of results – we learn the truth. For that truth to impact our performance, we must believe it.

# Analytics and Transformation



Through acknowledging truth, privately and publicly, we empower sustainable change, making analytics a critical aspect of healthcare transformation.

# Technology Alone Is Not The Answer



- While an **Electronic Health Record (EHR)** has tremendous capacity to capture data, that is only part of the solution. **The ultimate goal must be to improve patient care and patient health, and to decrease cost, not just to capture and store information!**
- **Electronic Patient Management** employs the power of electronics to track, audit, analyze and display performance and outcomes, thus powering transformation.

# Continuous Performance Improvement



- SETMA's philosophy of health care delivery is that every patient encounter ought to be evaluation-al and educational for the patient and provider.
- CPI is not an academic exercise; it is the dynamic of healthcare transformation. The patient and the provider must be learning, if the patient's delivered healthcare and the provider's healthcare delivery are to be continuously improving.



# Continuous Performance Improvement



- Addressing the foundation of Continuous Performance Improvement, IOM produced a report entitled: “Redesigning Continuing Education in the Health Professions” (Institute of Medicine of National Academies, December 2009). The title page of that report declares:

“Knowing is not enough; we must apply.

Willing is not enough; we must do.”

- Goethe

# Public-Reporting: Assumptions



1. Public Reporting by Provider name is transformative but quality metrics are not an end in themselves.

Optimal health at optimal cost is the goal of quality care. Quality metrics are simply “sign posts along the way.” They give directions to health.

# The Nature of Quality Metrics



- Metrics are like a healthcare “Global Positioning System”: it tells you where you are, where you want to be, and how to get from here to there.
- If you are unwilling to know and to acknowledge “where you are,” then improvement is not possible.
- Data Analytics is simply a tool whereby you can know where you are.

# Public-Reporting: Assumptions



2. Business Intelligence (BI) statistical analytics are like coordinates to the destination of optimal health at manageable cost.

Ultimately, the goal will be measured by the well-being of patients, but the guide posts to that destination are given by the analysis of patient and population data.

# Public-Reporting: Assumptions



3. There are different classes of quality metrics. No metric alone provides a granular portrait of the quality of care a patient receives, but together, multiple sets of metrics can give an indication of whether the patient's care is going in the right direction. Some of the categories of quality metrics are:
  1. access,
  2. outcome,
  3. patient experience,
  4. process,
  5. structure and
  6. costs of care.

# Public-Reporting: Assumptions



4. The tracking of quality metrics should be **incidental** to the care patients are receiving and should not be the object of care, i.e., the fulfillment of quality metrics is not the intention of care.

Consequently, the design of the data aggregation in the care process must be as non-intrusive as possible.

Notwithstanding, the very act of collecting, aggregating and reporting data will tend to create a Hawthorne effect.

# SETMA's Lipid Audit



### Lipids Treatment Audit

<b>Most Recent Values</b>	Cholesterol	161	03/24/2014	HDL	58	03/24/2014
	Triglycerides	51	03/24/2014	LDL	93	03/24/2014

Has the patient had a lipid profile within the last year?

Has the Lipids Treatment Plan been completed within the last year?

Has the patient been assessed for Cardiometabolic Risk Syndrome within the last year?

If Cardiometabolic Risk Syndrome present, is it listed as a chronic condition?

If most recent LDL > 100, is the patient on a statin?

Is the patient allergic to statins?  Yes  No

Have the following lifestyle changes been recommended if applicable?

Stop Smoking, Exercise, Lose Weight, Low Cholesterol Diet, Low Carbohydrate Diet

Has risk stratification for Lipids and Heart Disease been completed within the last year by using the Framingham Cardiovascular Risk Score AND one of the following?

Global Cardiovascular Risk Score, Frederickson Classification of Dyslipidemia, Lipid Disease Management Risk Assessment

If the most recent LDL > 100, has the patient been referred to Medical Nutrition Therapy at least once?

Referral

Order

Refer to: Podiatry

Does the patient have Diabetes?

If most recent LDL > 70, is the patient on a statin?

Is the patient's HgbA1c below 7.0%?

Most Recent Result

Ordered Today

Does the patient have Hypertension?

Is the patient's blood pressure below 140/90?

Today's Blood Pressures

/  mmHg

/  mmHg

/  mmHg

# Public-Reporting: Assumptions



5. The power of quality metrics, like the benefit of the GPS, is enhanced if the healthcare provider and the patient are able to know the coordinates – their performance on the metrics - - while care is being received.

SETMA's information system is designed so that the provider can know how she/he is performing at the point-of-service.





## 2014 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.

### 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
- Glaucoma Screening in Older Adults
- Use of High-Risk Medications in the Elderly 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 Management for Patients with Cardiovascular Disease**
- [View](#) **Comprehensive Adult Diabetes Care**
- [View](#) 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 Medication Management
- Follow-Up Care for Children Prescribed Attention-Deficit/Hyperactivity Disorder Medication
- Osteoporosis Management in Women
- Disease Modifying Anti-Rheumatic Drug Therapy for Rheumatoid Arthritis
- [View](#) Annual Monitoring for Patients on Persistent Medications
- Medication Reconciliation Post-Discharge

# Public-Reporting: Assumptions



6. Public reporting of quality metrics by provider name must not be a novelty in healthcare but must be the standard. Even with the acknowledgment of the Hawthorne effect, the improvement in healthcare outcomes achieved with public reporting is real.

# PCPI Diabetes



## Diabetes Consortium - Blood Pressure Management

E & M Codes: Clinic Only  
 Encounter Date(s): Jan 1, 2014 through Dec 31, 2014  
 Report Criteria: Patients 18 to 75 With a Chronic Diagnosis of Diabetes  
 Specialists Excluded (Dr. Ahmed Included)

Location	Provider	Systolic									Diastolic						
		< 120	120-129	130-139	140-149	150-159	160-169	170-179	>= 180	Not Present	< 75	75-79	80-89	90-99	100-109	>= 110	Not Present
SETMA 1	Aziz	14.3%	17.4%	25.1%	18.3%	11.0%	6.8%	4.7%	2.0%	0.5%	43.0%	15.1%	30.1%	10.0%	1.3%	0.0%	0.5%
	Duncan	30.6%	35.0%	22.9%	7.6%	1.1%	0.9%	0.5%	0.5%	0.9%	49.8%	10.0%	34.0%	4.2%	0.9%	0.2%	0.9%
	Foster	27.6%	40.2%	19.7%	8.3%	1.4%	2.1%	0.2%	0.5%	0.0%	34.8%	11.1%	43.9%	8.3%	1.6%	0.3%	0.0%
	Henderson	31.3%	35.2%	20.8%	7.7%	2.3%	1.1%	0.7%	0.7%	0.2%	46.6%	8.9%	40.3%	4.1%	0.0%	0.0%	0.2%
	Holly	21.6%	44.0%	23.3%	5.2%	1.7%	0.9%	0.9%	0.9%	1.7%	57.8%	18.1%	21.6%	0.9%	0.0%	0.0%	1.7%
	Le	25.1%	22.5%	20.9%	17.8%	7.8%	3.6%	2.1%	0.0%	0.3%	45.5%	5.9%	31.0%	13.7%	3.4%	0.3%	0.3%
	Murphy	23.1%	24.1%	29.1%	11.5%	6.6%	3.0%	0.9%	1.1%	0.6%	40.7%	14.6%	33.4%	8.5%	1.4%	0.8%	0.5%
	Palang	10.6%	36.7%	35.1%	13.1%	2.5%	0.9%	0.2%	0.4%	0.5%	48.2%	19.1%	30.3%	1.2%	0.6%	0.0%	0.5%
	Thomas	8.5%	48.9%	14.9%	12.8%	4.3%	8.5%	2.1%	0.0%	0.0%	17.0%	21.3%	44.7%	17.0%	0.0%	0.0%	0.0%
<b>SETMA 1 Totals:</b>		22.4%	30.9%	25.6%	11.6%	4.5%	2.6%	1.2%	0.8%	0.5%	43.9%	13.1%	34.4%	6.7%	1.2%	0.3%	0.4%
SETMA 2	Anthony	18.6%	27.5%	37.4%	8.1%	2.8%	3.2%	0.9%	0.7%	0.7%	32.5%	6.2%	47.9%	9.9%	2.4%	0.3%	0.9%
	Anwar	10.6%	49.4%	26.9%	9.1%	1.9%	1.6%	0.0%	0.1%	0.4%	66.7%	18.7%	12.3%	1.6%	0.4%	0.0%	0.4%
	Cash	34.1%	25.8%	36.7%	3.0%	0.2%	0.1%	0.0%	0.1%	0.1%	58.6%	19.7%	20.3%	1.2%	0.1%	0.0%	0.1%
	Cricchio, M	18.0%	32.0%	14.0%	12.0%	14.0%	6.0%	2.0%	0.0%	2.0%	60.0%	10.0%	20.0%	8.0%	0.0%	0.0%	2.0%
	Foster	33.3%	16.7%	26.7%	16.7%	3.3%	0.0%	3.3%	0.0%	0.0%	70.0%	6.7%	20.0%	0.0%	3.3%	0.0%	0.0%
	Smith	26.2%	21.4%	22.0%	14.3%	4.8%	8.3%	3.0%	0.0%	0.0%	42.9%	11.9%	30.4%	12.5%	1.8%	0.6%	0.0%
	Wheeler	13.2%	29.9%	32.5%	12.1%	6.7%	3.3%	0.7%	0.6%	0.9%	56.1%	16.2%	22.7%	3.5%	0.6%	0.2%	0.7%
	<b>SETMA 2 Totals:</b>		23.3%	31.3%	33.3%	7.0%	2.2%	1.8%	0.4%	0.2%	0.4%	55.1%	16.2%	24.0%	3.6%	0.7%	0.1%
SETMA Lumberton	Anwar	0.0%	0.0%	25.0%	75.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	25.0%	0.0%	25.0%	0.0%	0.0%	0.0%
	Foster	9.1%	59.1%	13.6%	9.1%	9.1%	0.0%	0.0%	0.0%	0.0%	22.7%	22.7%	36.4%	13.6%	4.5%	0.0%	0.0%
	Holly	12.5%	62.5%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	12.5%	37.5%	0.0%	0.0%	0.0%	0.0%
	Le	34.1%	19.5%	19.5%	15.9%	8.5%	1.2%	1.2%	0.0%	0.0%	53.7%	8.5%	25.6%	8.5%	2.4%	1.2%	0.0%
	Leifeste	23.1%	29.1%	28.0%	13.8%	4.4%	1.3%	0.3%	0.0%	0.0%	65.2%	11.5%	19.8%	3.4%	0.0%	0.0%	0.0%
	Read	17.8%	22.8%	36.6%	16.5%	3.4%	1.8%	0.7%	0.4%	0.0%	47.8%	14.7%	32.6%	4.2%	0.4%	0.2%	0.2%
Thomas	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	

# Public-Reporting: Assumptions



7. Quality metrics are not static. New research and improved models of care will require updating and modifying metrics.

## Illustrations:

- With diabetes, it may be that HbA1C goals, after twenty years of having the disease, should be different.
- With diabetes, if after twenty years, a patient does not have renal disease, they may not develop it.

# Clusters and Galaxies

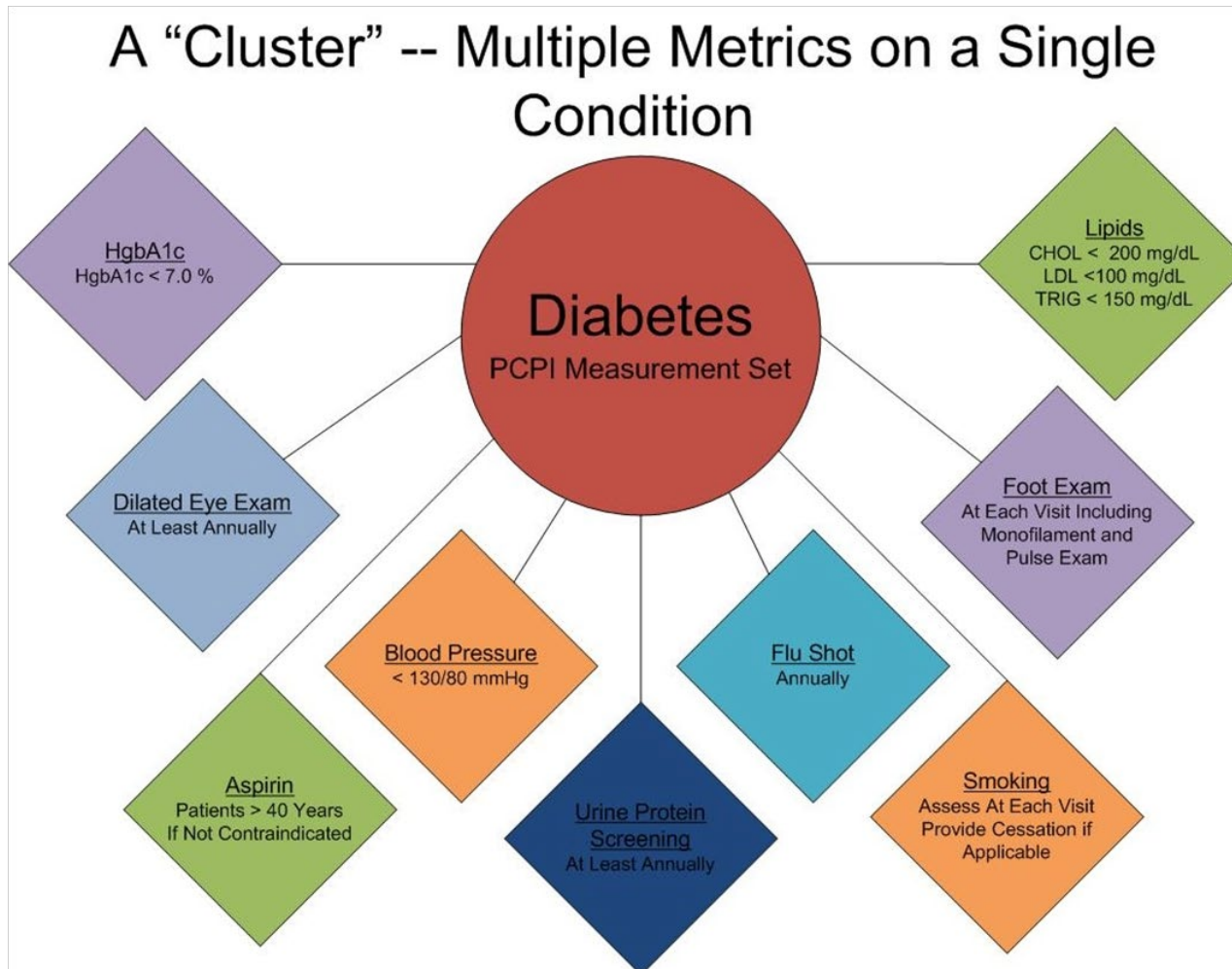


- A “cluster” is seven or more quality metrics for a single condition, i.e., diabetes, hypertension, etc.
- A “galaxy” is multiple clusters for the same patient, i.e., diabetes, hypertension, lipids, CHF, etc.
- Fulfilling a single or a few quality metrics does not change outcomes, but fulfilling “clusters” and “galaxies” of metrics at the point-of-care, can and will change outcomes.

# Clusters



## A "Cluster" -- Multiple Metrics on a Single Condition





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



# Statistical Analysis



- Beyond these clusters and galaxies of metrics, SETMA uses statistical analysis to give meaning to the data we collect.
- While the clusters and galaxies of metrics are important, we can learn much more about how we are treating a population as a whole through statistical analysis.





## Mean Versus Standard Deviation

- The mean (average) is a useful tool in analytics but can be misleading when used alone. The mean by itself does not address the degree of variability from the mean.
  - The mean of 40, 50 and 60 is 50.
  - The mean of 0, 50 and 100 is also 50.
- Standard deviation gives added value to the mean by describing how far the range of values vary from the mean.
  - The standard deviation of 0, 50 and 100 is 50.
  - The standard deviation of 40, 50 and 60 is 10.

# Mean Versus Standard Deviation



- SETMA's mean HgbA1c has been steadily improving for the last 14 years. Yet, our standard deviation calculations revealed that a small 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.

# Diabetes Care Improvements

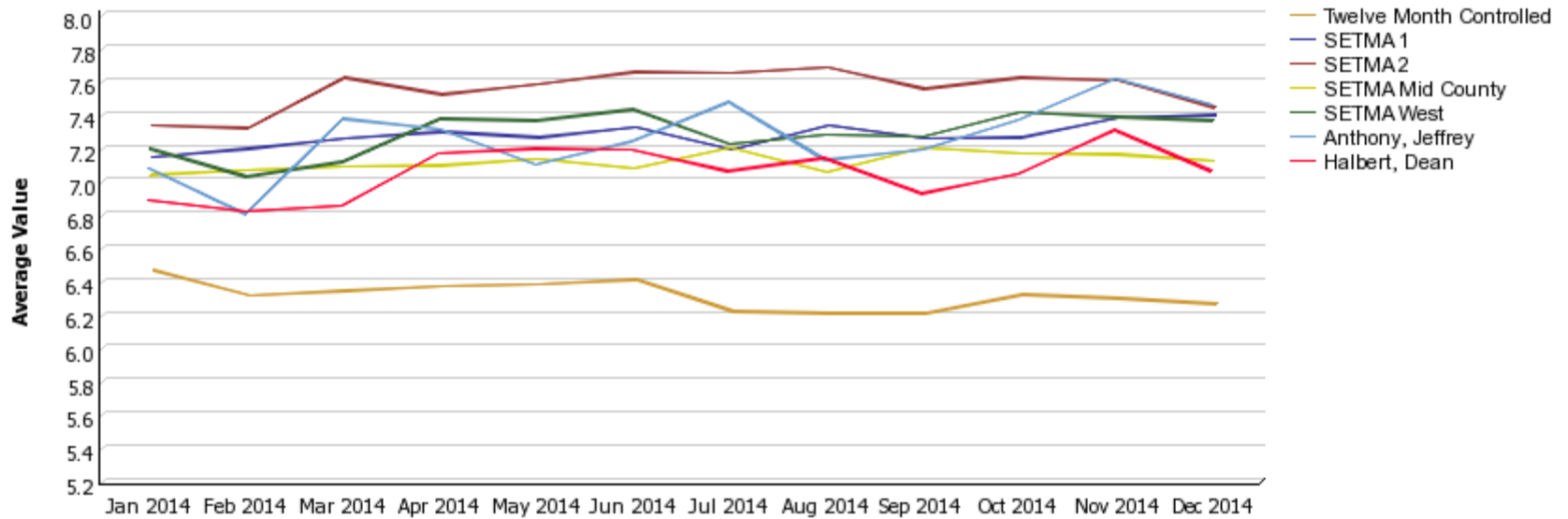


- 2000 – Design and Deployment of EHR-Based Diabetes Management Tool
  - HbA1c Improvement of 0.3%
- 2004 – Design and Deployment of American Diabetes Association Recognized Diabetes Self Management (DSME) Program
  - HbA1c Improvement of 0.3%
- 2006 – Recruitment of Endocrinologist
  - HbA1c Improvement of 0.25%

# Diabetes Audit - Trending



## Chronic Diabetes - HgbA1c Trending



# The Value of Trending



- In 2009, SETMA launched a Business Intelligence software solution for real-time analytics.
- Trending revealed that from October-December, 2009, many patients were losing HbA1C control. Further analysis showed that these patients were being seen and tested less often in this period than those who maintained control.

# The Value of Trending



- A 2010 Quality Improvement Initiative included writing all patients with diabetes encouraging them to make appointments and get tested in the last quarter of the year.
- A contract was made, which encouraged celebration of holidays while maintaining dietary discretion, exercise and testing.
- **In 2011, trending analysis showed that the holiday-induced loss of control had been eliminated.**

# Ethnic Disparities



- In its staff, SETMA is a multi-ethnic, multi-national, multi-faith practice and so we are in our patient population.
- It is important to SETMA that all people receive equal care in access, process and outcomes. As a result, we examine our treatment by ethnicity, as well as by many other categories.

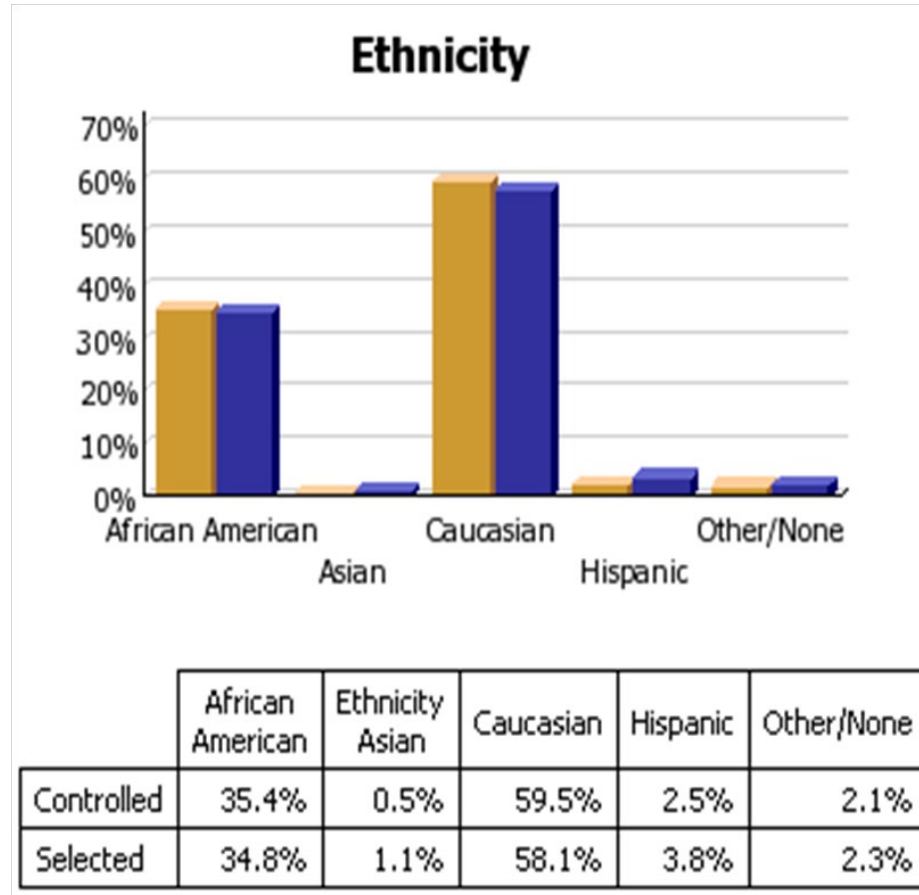
# Ethnic Disparities



- Approximately, one-third of the patients we treat with diabetes are African-American and two-thirds are Caucasian. As the control (gold) and uncontrolled (purple) groups demonstrate, there is no distinction between the treatment of these patients by ethnicity, effectively eliminating ethnic disparity in SETMA's treatment of diabetes.



# Diabetes Audit - Ethnicity

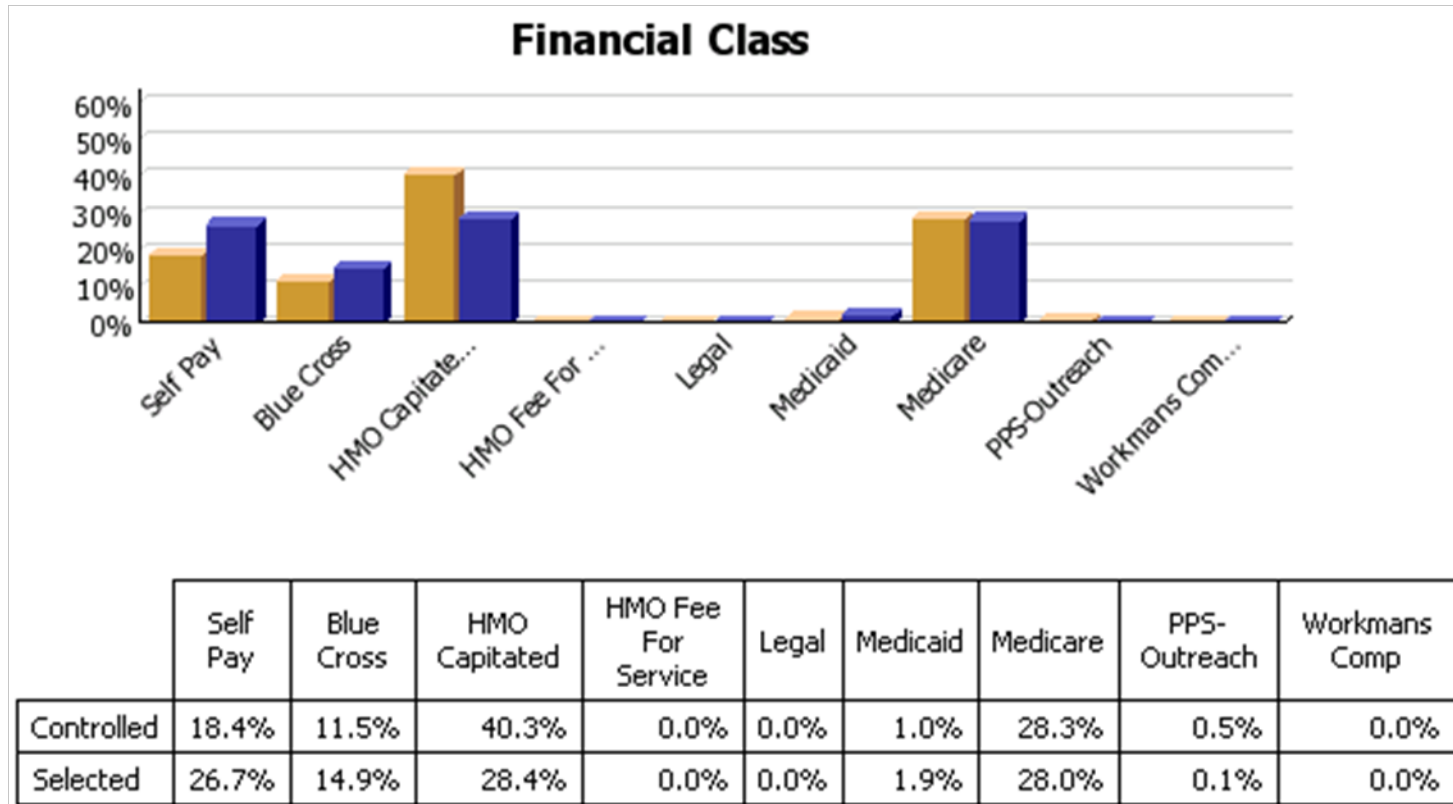


# Diabetes Care Improvements



- Financial barriers to care are a significant problem in the United States. Twelve years ago, SETMA initiated a zero co-pay for capitated, HMO patients in order to eliminate economic barriers to care.
- Comparing FFS Medicare patients and capitated HMO, and uninsured patients, it can be inferred from this data that the elimination of economic barriers results in improved outcomes.
- Through SETMA's Foundation, we are making further attempts to compensate for economic barriers to care.

# Diabetes Audit – Financial Class



# Auditing Data



- SETMA's ability to track, audit and analyze data has improved as illustrated by the following NCQA Diabetes Recognition Program audit which takes 16 seconds to complete through SETMA's Business Intelligence (BI) software deployment.
- While quality metrics are the foundation of quality, auditing of performance is often overlooked as a critical component of the process.

# Auditing Data



## NCQA Diabetes Measures

Encounter Date(s): January 1, 2014 to December 31, 2014

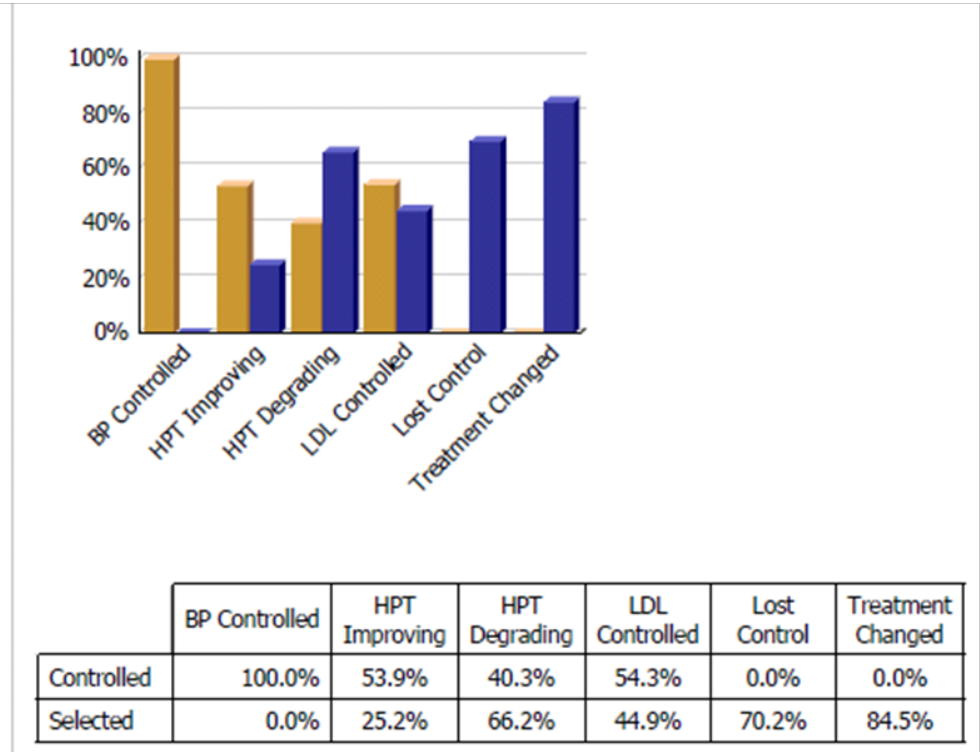
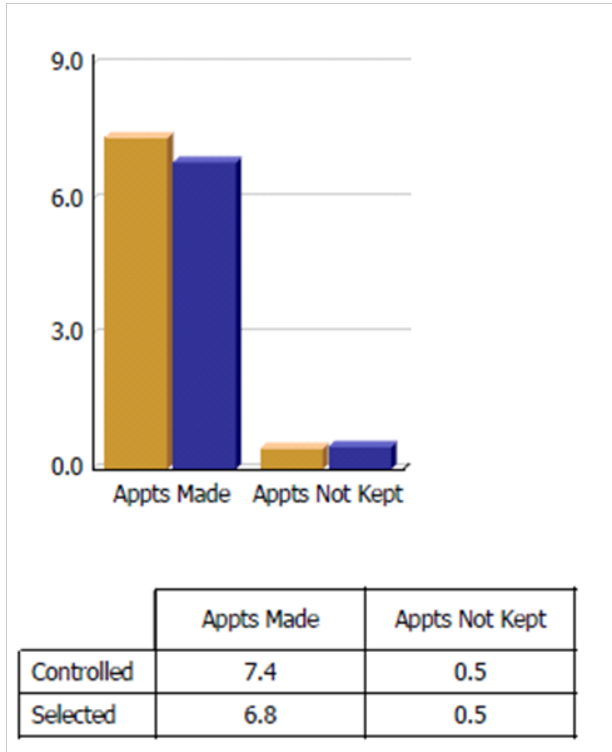
Provider	Encounters	A1c >9.0 <= 15%	A1c < 8.0 >= 65%	A1c < 7.0 >= 40%	BP > 140/90 <= 35%	BP < 130/80 >= 25%	Eye Exam >= 60%	Smoking Cessation >= 85%	LDL >= 130 <= 35 %	LDL < 100 >= 50%	Nephropathy >= 85%	Foot Exam >= 80%	Total Points
Anthony	947	12.8%	78.0%	54.6%	9.2%	63.7%	51.5%	68.9%	13.3%	69.0%	91.3%	96.3%	80
Anwar	1,261	8.9%	78.4%	56.9%	7.5%	71.7%	62.8%	86.1%	11.3%	68.5%	93.0%	69.5%	95
Arcala, A	55	14.5%	40.0%	25.5%	14.5%	36.4%	5.5%	80.0%	1.8%	36.4%	47.3%	85.5%	52
Arcala, F	135	14.1%	38.5%	24.4%	11.9%	52.6%	16.3%	50.0%	7.4%	32.6%	56.3%	96.3%	52
Aziz	861	19.4%	70.3%	50.8%	41.3%	31.7%	44.8%	93.9%	11.8%	73.3%	88.9%	75.6%	58
Cash	2,193	25.4%	55.2%	30.3%	3.0%	56.1%	61.4%	80.1%	12.3%	68.0%	82.4%	99.8%	60
Castro	908	11.0%	77.9%	54.1%	24.1%	43.1%	52.3%	82.5%	10.0%	68.4%	86.7%	98.3%	80
Cox	935	10.8%	66.3%	50.2%	12.6%	40.7%	23.1%	69.8%	11.0%	50.9%	67.0%	94.5%	75
Cricchio, M	296	12.5%	68.9%	54.1%	20.3%	47.3%	45.9%	76.1%	8.1%	61.8%	82.8%	86.8%	75
Darden	543	10.7%	79.6%	60.2%	23.4%	41.6%	44.2%	73.3%	14.7%	62.4%	81.2%	87.1%	75
Deiparine, C	741	15.1%	66.5%	46.7%	25.6%	48.0%	43.7%	75.8%	15.9%	60.9%	75.0%	66.9%	58
Duncan	806	12.5%	79.0%	62.2%	10.4%	66.3%	39.1%	88.1%	12.3%	64.8%	85.4%	80.4%	90
Foster	817	20.8%	67.2%	49.0%	10.0%	68.8%	41.7%	89.3%	19.7%	60.3%	84.6%	99.8%	73
George	303	7.6%	82.2%	55.1%	18.8%	46.9%	27.7%	71.2%	14.9%	61.4%	54.8%	94.1%	75
Green	600	7.0%	65.5%	48.2%	21.5%	43.8%	24.5%	76.2%	12.2%	46.0%	58.0%	88.8%	65
Halbert	1,227	10.4%	77.3%	58.8%	27.9%	43.2%	34.9%	59.7%	14.7%	58.2%	75.1%	54.8%	70
Henderson	865	10.3%	79.4%	61.2%	9.8%	56.8%	46.2%	78.9%	13.1%	71.8%	89.7%	90.9%	80
Holly	185	8.1%	81.6%	63.8%	9.7%	65.4%	72.4%	79.2%	12.4%	73.5%	90.8%	91.4%	90
Horn	801	10.1%	78.5%	59.7%	8.6%	49.8%	50.4%	68.9%	10.2%	62.9%	84.8%	89.6%	75
Le	604	10.8%	73.5%	52.5%	24.3%	52.6%	32.0%	69.6%	14.1%	65.9%	73.0%	89.7%	75
Leifeste	852	9.4%	80.8%	57.0%	19.6%	51.6%	60.2%	41.4%	6.1%	80.9%	88.0%	89.9%	90
Murphy	1,424	11.3%	79.0%	61.7%	22.4%	46.8%	38.6%	60.5%	8.6%	77.5%	92.0%	96.2%	80
Palang	1,115	11.7%	71.5%	49.0%	11.7%	54.3%	38.7%	92.6%	10.1%	65.6%	65.1%	94.5%	85
Qureshi	816	22.3%	64.0%	47.1%	27.9%	41.7%	36.9%	82.5%	13.5%	58.6%	86.2%	86.8%	60
Read	749	14.2%	75.4%	50.9%	17.5%	34.2%	48.5%	78.8%	12.1%	69.4%	85.8%	74.5%	75
Shepherd	1,133	10.6%	77.5%	58.3%	19.6%	47.8%	47.2%	91.3%	8.8%	69.6%	90.3%	88.1%	90
Smith	206	11.2%	60.7%	40.8%	30.1%	40.3%	47.1%	38.1%	13.1%	54.4%	69.4%	74.8%	62
Thomas	586	13.0%	74.4%	53.9%	20.8%	46.8%	36.7%	97.7%	9.7%	65.4%	86.9%	98.8%	90

# Recognizing Patterns

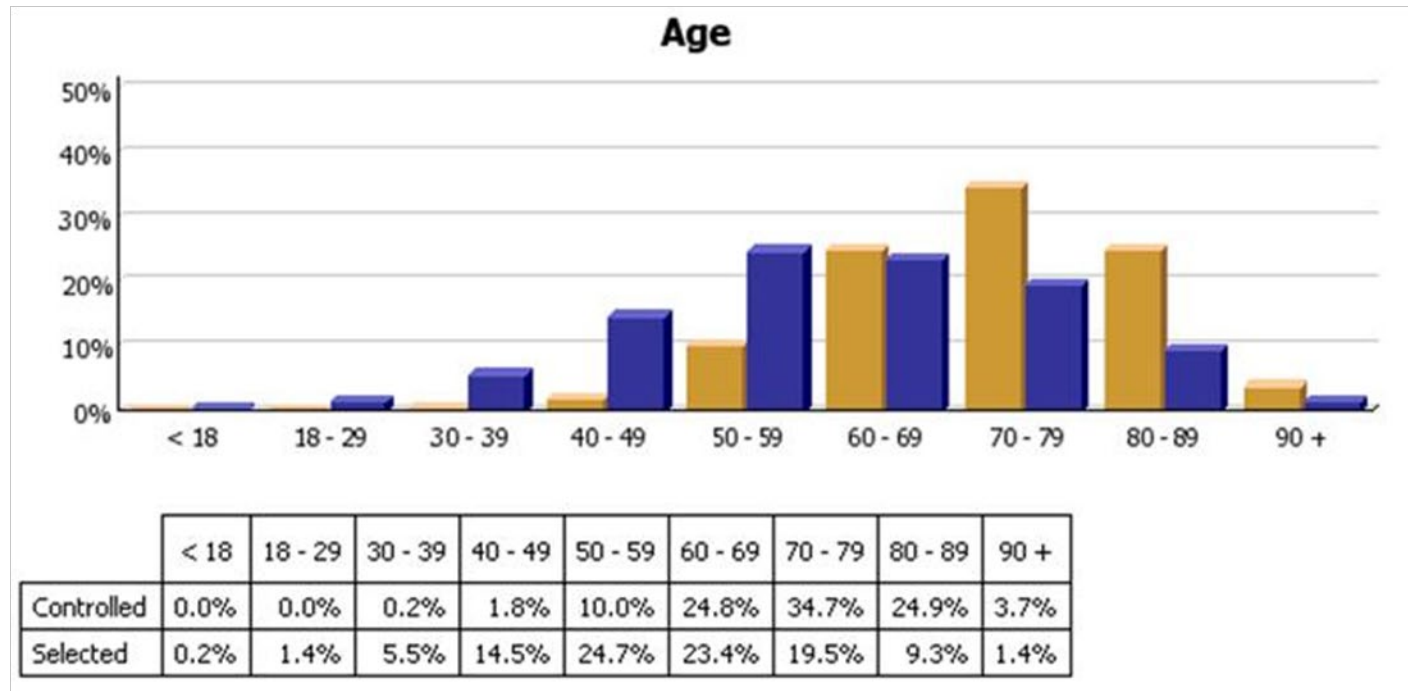


- SETMA is able to analyze patterns to explain why one population, or one patient is not to goal while others are. Our analysis looks at:
  - Frequency of visits
  - Frequency of testing
  - Number of medications
  - Change in treatment if not to goal
  - Attended Education or not
  - Ethnic disparities of care
  - Age and Gender variations, etc.

# Recognizing Patterns



# Recognizing Patterns





# Predictive Modeling



- Our data is not only useful to see how we did or how we are doing, we can also use it to predict the future.
- By looking more closely at our trending results, we can extrapolate those trends into the future and begin to predict what we think will happen.
- By analyzing past trends of patients who have been readmitted to the hospital, we have been able to predict the factors that we believe are likely to reduce a patient's risk of unnecessary readmission to the hospital.

# Hospital Readmissions



When we looked at our past readmission data, we found that three actions played a significant role in keeping patients from coming back to the hospital unnecessarily. They are:

1. The patient received their Hospital Care Summary and Post Hospital Plan of Care and Treatment Plan (previously called the Discharge Summary) and the time of discharge.
2. A 12-30 minute care coaching call the day after discharge from the hospital.
3. Seeing the patient in the clinic within 5 days after discharge.

# Hospital Readmissions



## Hospital Discharge Analysis

### Section I - Admissions and Follow-ups

Prompt Selections		
	<u>Selection Group 1</u>	<u>Selection Group 2</u>
Beginning Discharge Date:	Sep 1, 2014	Sep 1, 2014
Ending Discharge Date:	Sep 30, 2014	Sep 30, 2014
Include Readmits:	Within 30 days	Not Within 30 days
Readmission Risk:	Low, Medium, High, Unknown	Low, Medium, High, Unknown
Scheduled Admission:	Yes, No, Unknown	Yes, No, Unknown
Ethnicity:	All	All
Financial Class:	All	All
Zip Code:	All	All
Age:	All	All
Gender:	Both	Both
Living Arrangement:	None Selected	None Selected
Encounters for this Selection:	69	327

	<u>Selection Group 1</u>	<u>Selection Group 2</u>
<b>Readmission</b>		
Average Days:	11.52	
Mode:	10.00	
<b>Previous Hospitalization</b>		
Average Days:	6.35	6.72
Mode:	2.00	2.00
<b>Follow-up (Clinic Visit)</b>		
Average Days:	8.75	21.34
Follow-up Visit (%):	28.99%	48.93%
<b>Follow-up (Call)</b>		
Call Completed (%):	91.30%	94.80%
Unable to Complete (%):	11.59%	21.10%

# Predictive Modeling



- By predicting our future, we are able proactively to respond in the present. As a result, we have
  - Increased the quality of our care
  - Decreased the cost of our care
  - Increased patient adherence with treatment
  - Increased patient satisfaction

# The Four Domains of Health's Future



Since SETMA adopted electronic medical records in 1998, we have come to believe the following about the future of healthcare:

The Substance	Evidence-based medicine and comprehensive health promotion
The Method	Electronic Patient Management
The Dynamic	Patient-Centered Medical Home
The Funding	Capitation and Payment for Quality

# The SETMA Model of Care



Founded on the four domains of what we believe to be the future of healthcare, SETMA's mode of care includes the following:

1. Personal Performance Tracking - One patient at a time
2. Auditing of Performance - By panel or population
3. Analysis of Provider Performance - Statistical analysis
4. Public Reporting - By provider name at [www.jameshollymd.com](http://www.jameshollymd.com)
5. Quality Assessment and Performance Improvement

# The Key to The SETMA Model of Care



The key to this Model is the real-time ability of providers to measure their own performance at the point-of-care. This is done with multiple displays of quality metric sets, with real-time aggregation of performance, incidental to excellent care. The following are several examples which are used by SETMA providers.

# Data Aggregation Incidental to Care Pre-Visit/Preventive Screening



## Pre-Visit/Preventive Screening

### General Measures (Patients >18)

Has the patient had a tetanus vaccine within the last 10 years? **Yes**  
 Date of Last

Has the patient had a flu vaccine within the last year? **Yes**  
 Date of Last

Has the patient ever had a pneumonia shot? (Age>50) **N/A**  
 Date of Last

Does the patient have an elevated (>100 mg/dL) LDL? **Yes**  
 Last

Has the patient been screened at least once for HIV? (Age 13-64) **Yes**  
 Date of Last

Testing not required if patient refused or if positive diagnosis previously confirmed.  
 Click If Patient Refuses Testing

### Elderly Patients (Patients >65)

Has the patient had an occult blood test within the last year? (Patients >50) **N/A**  
 Date of Last

Has the patient had a fall risk assessment completed within the last year? **N/A**  
 Date of Last

Has the patient had a functional assessment within the last year? **N/A**  
 Date of Last

Has the patient had a pain screening within the last year? **N/A**  
 Date of Last

Has the patient had a glaucoma screen (dilated exam) within the last year? **N/A**  
 Date of Last  *Add Referral At Right*

Does the patient have advanced directives on file or have they been discussed with the patient? **N/A**  
 Discussed?  Completed?

Is the patient on one or more medications which are considered high risk in the elderly? **N/A**

### Diabetic Patients

Has the patient had a HgbA1c within the last year? **Yes**  
 Date of Last

Has the patient had a dilated eye exam within the last year? **Yes**  
 Date of Last  *Add Referral Below*

Has the patient had a 10-gram monofilament exam within the last year? **Yes**  
 Date of Last

Has the patient had screening for nephropathy within the last year? **No**  
 Date of Last

Has the patient had a urinalysis within the last year? **Yes**  
 Date of Last

Has the patient ever been referred to DSME? **Yes** Has the patient been referred to DSME within the last two years? **No**

*Add Referrals Below*

### Female Patients

Has the patient had a pap smear within the last two years? (Ages 21 to 64) **N/A**  
 Date of Last  *Add Referral Below*

Has the patient had a mammogram within the last two years? (Ages 40 to 69) **N/A**  
 Date of Last  *Add Referral Below*

Has the patient had a bone density within the last two years? (Age >50) **N/A**  
 Date of Last  *Add Referral Below*

### Male Patients

Has the patient had a PSA within the last year? (Age >40) **No**  
 Date of Last

Has the patient had a bone density within the last two years? (Age >65) **N/A**  
 Date of Last  *Add Referral Below*

### Referrals (Double-Click To Add/Edit)

Referral	Status	Referring



# Data Aggregation Incidental to Care National Quality Forum Measures



There are similar tools for all of the quality metrics which SETMA providers track each day. The following is the tool for NQF measures currently tracked and audited by SETMA:

# Data Aggregation Incidental to Care National Quality Forum Measures



## 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  
Proper Assessment for Chronic COPD  
Adult Immunization Status

### Blood Pressure Measures

- [View](#) **Blood Pressure Measurement**
- [View](#) Blood Pressure Classification/Control

### Medication Measures

- [View](#) **Current Medication List**
- [View](#) **Documentation of Allergies/Reactions**
- [View](#) Therapeutic Monitoring of Long Term Medications  
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

### Chronic Conditions Measures

- [View](#) **Comprehensive CHF Care**
- Osteoarthritis Care

### Care for Older Adults

- Counseling on Physical Activity
- [View](#) Urinary Incontinence in Older Adults
- Colorectal Cancer Screening
- 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

- Breast Cancer Screening
- Cervical Cancer Screening
- Chlamydia Screening
- Osteoporosis Management

### Pediatric Measures

- Appropriate Screening for Children with Pharyngitis
- Childhood Immunization Status

# 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



Once you “open your books on performance” to public scrutiny;  
the only place you have in which to hide is excellence!

# Engaging The Patient In Their Care



- While we use public reporting to induce change in the care given by our providers, we also take steps to engage the patient and avoid “patient inertia.”
- We challenge the patient by giving them information needed to change and the knowledge that making a change will make a difference.

# Engaging The Patient In Their Care



## Framingham Heart Study Risk Calculators

[Return](#)

Last Updated/Reviewed 12/13/2010

### General Cardiovascular Disease, 10-Year Risk

Total Points  Total Risk  % Relative Heart Age  years  
 Real Heart Age  years

#### WHAT IF?

All Elements To Goal	<input type="text" value="10"/>	<input type="text" value="9.4"/>	<input type="text" value="54"/>
Overall 20% Improvement	<input type="text" value="14"/>	<input type="text" value="18.4"/>	<input type="text" value="68"/>
Blood Pressure To Goal	<input type="text" value="15"/>	<input type="text" value="21.6"/>	<input type="text" value="72"/>
Lipids To Goal	<input type="text" value="13"/>	<input type="text" value="15.6"/>	<input type="text" value="64"/>
Smoking Cessation (if applicable)	<input type="text" value="0"/>	<input type="text" value="N/A"/>	<input type="text" value="N/A"/>

### Global Cardiovascular Risk Score

Total Points  A score above 4 indicates increased risk of a cardiovascular event.

#### WHAT IF?

All Elements To Goal	<input type="text" value="0.5"/>
Overall 20% Improvement	<input type="text" value="5.2"/>
Blood Pressure To Goal	<input type="text" value="9.3"/>
Lipids To Goal	<input type="text" value="8.9"/>
HgbA1c To Goal	<input type="text" value="11.9"/>
Smoking Cessation (if applicable)	<input type="text" value="0.0"/>

### Coronary Heart Disease, 10-Year Risk

Total Points  Total Risk  %

#### WHAT IF?

All Elements To Goal	<input type="text" value="4"/>	<input type="text" value="7"/>
Overall 20% Improvement	<input type="text" value="4"/>	<input type="text" value="7"/>
Blood Pressure To Goal	<input type="text" value="7"/>	<input type="text" value="13"/>
Lipids To Goal	<input type="text" value="7"/>	<input type="text" value="13"/>
Smoking Cessation (if applicable)	<input type="text" value="10"/>	<input type="text" value="25"/>



# Engaging The Patient In Their Care



## Your Cardiovascular Risk

As we have discussed, the Framingham Study is the longest longitudinal study ever done. It was started in 1949 and is now multi-generational. While the scores have been criticized for overestimating the cardiovascular and cerebrovascular risk, the values give you a good estimate of the state of your heart health. These are your Framingham Risk Scores calculated on the basis of your current condition. For some scores, you will see a section entitled, "What IF?," which will give you your scores if you made a variety of changes in your life, health or habits. This will let you know how making changes in your life can improve your future health and how those changes will affect your risk scores. These changes are achievable and they will improve your scores and your health. These "What IF?" scores lets you know "if you make a change, it will make a difference."

The good news is that you are not bound by your current scores. If your scores are good, congratulations, but if they are not, you can make a change and that change **WILL MAKE A DIFFERENCE**. There are a number of elements used in calculating the various risk scores. Some of them are not changeable, such as age, gender, past medical history, etc. However, many of them are changeable, such as: smoking, blood pressure, diabetes control as measured by hemoglobin A1C, cholesterol control as measured by cholesterol or HDL (the good cholesterol), weight, etc.

## Global Cardiovascular Risk

Your current Global Cardiovascular Risk Score is 13.9 points. (a score below 4 is desirable)

### WHAT IF?

If you improved only your blood pressure to a controlled value, you would reduce your risk to 9.3 points.

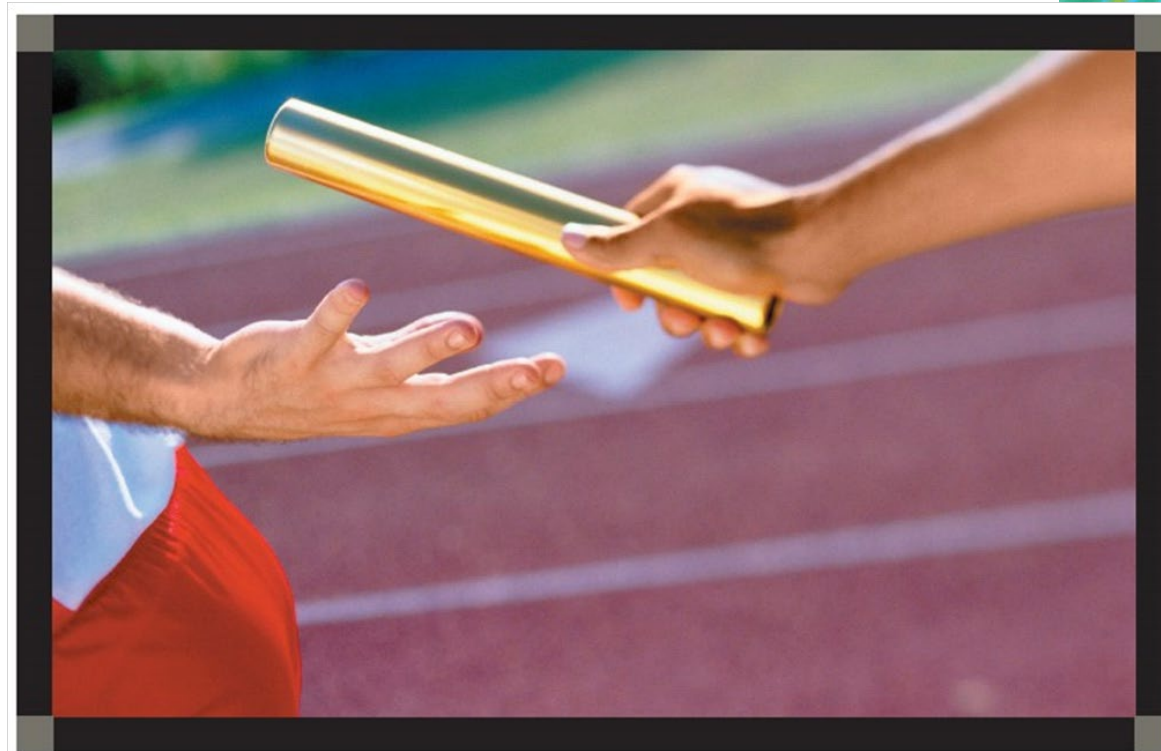
If you improved only your cholesterol and HDL to controlled values, you would reduce your risk to 8.9 points.

If you improved only your HgbA1c to a controlled value, you would reduce your risk to 11.9 points.

If you improved your blood pressure, cholesterol and HDL and HgbA1c by only 20%, you would reduce your risk to 5.2 points.

If you brought your blood pressure, cholesterol and HDL and HgbA1c each to controlled values, you would reduce your risk to .5 points.

# Engaging The Patient In Their Care



■  
Firmly in the provider's hand,  
**the baton** – *the care and treatment plan* –  
must be confidently and securely grasped by the patient,  
if change is to make a difference,  
8,760 hours a year.  
■