

# Accountable Care Organizations... (and other things that go bump in the night...)

**Ronald A. Paulus, MD**

*President and CEO – Mission Health System  
Formerly EVP, Clinical Enterprise and Chief Innovation Officer*

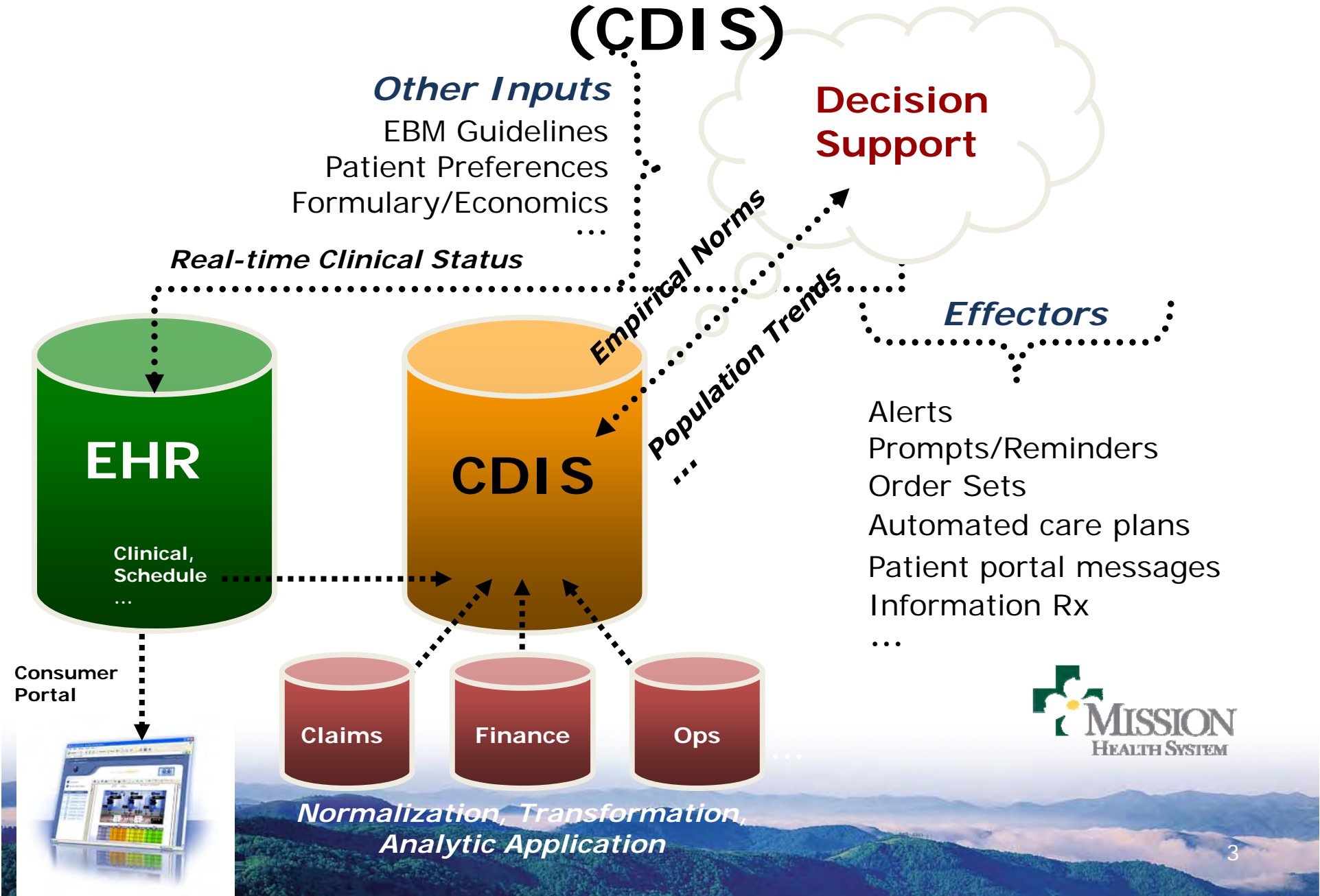
*Note: All Geisinger Slides Courtesy of and Success Attributed Exclusively to Geisinger Health System*



# Geisinger Transformation Infrastructure



# Clinical Decision Intelligence System (CDIS)



# Creating Real Value: Geisinger's Core Care Transformation Initiatives

- Population Health Optimization
  - Geisinger Medical Home
    - ProvenHealth Navigator<sup>SM</sup>
  - Chronic Disease Care Optimization
    - ProvenCare - Chronic<sup>®</sup>
- Acute Episodic Care Optimization
  - ProvenCare - Acute<sup>®</sup> (aka the “surgical warranty”)
- Transitions of Care Optimization
  - ProvenTransitions<sup>SM</sup>
- Patient engagement and activation throughout all initiatives
  - ProvenEngagement<sup>SM</sup> (dealing with “non compliance”)



# Continuous Innovation In Health Care: Implications Of The Geisinger Experience

Adoption of integrated electronic health systems is the beginning of a long care-transformation journey.

by **Ronald A. Paulus, Karen Davis, and Glenn D. Steele**

**ABSTRACT:** To achieve the diverse health care goals of the United States, health care value must increase. The capacity to create value through innovation is facilitated by an integrated delivery system focused on creating value, measuring innovation returns, and receiving market rewards. This paper describes the Geisinger Health System's innovation strategy for care model redesign. Geisinger's clinical leadership, dedicated innovation team, electronic health information systems, and financial incentive alignment each contribute to its innovation record. Although Geisinger's characteristics raise serious questions about broad applicability to nonintegrated health care organizations, its experience can provide useful insights for health system reform. [*Health Affairs* 27, no. 5 (2008): 1235–1245; 10.1377/hlthaff.27.5.1235]

# Population Health Optimization: Value

Patient-Centered Medical Home



# Value and the Medical Home: Effects of Transformed Primary Care

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Richard J. Gilfillan, MD; Janet Tomcavage, RN, MSN; Meredith B. Rosenthal, PhD;  
Duane E. Davis, MD; Jove Graham, PhD; Jason A. Roy, PhD; Steven B. Pierdon, MD;  
Frederick J. Bloom Jr, MD, MMM; Thomas R. Graf, MD; Roy Goldman, PhD, FSA; Karena M. Weikel, BA;  
Bruce H. Hamory, MD; Ronald A. Paulus, MD, MBA; and Glenn D. Steele Jr, MD, PhD

**B**oth policy makers and private payers in the United States have begun to recognize that improving care coordination across the fragmented healthcare delivery system is essential to improve the quality and affordability of care. Related efforts include recent Medicare demonstrations examining the impact of external disease management programs and payment reforms that reward integrated care organizations.<sup>1,2</sup> An alternative approach—the patient-centered medical home—involves enhanced primary care practices as the locus of integration and coordination of care. A version of the medical home model was originally described by the American Academy of Pediatrics

**Background:** The primary care medical home has been promoted to integrate and improve patient care while reducing healthcare spending, but with little formal study of the model or evidence of its efficacy. ProvenHealth Navigator (PHN), an intensive multidimensional medical home model that addresses care delivery and financing, was introduced into 11 different primary care practices. The goals were to improve the quality, efficiency, and patient experience of care.

**Objective:** To evaluate the ability of a medical home model to improve the efficiency of care for Medicare beneficiaries.

*(Am J Manag Care. 2010;16(8):607-614)*

HEALTH SYSTEM



# Functional Components

1. Team-based, patient-centered primary care (including embedded care management nurse)
2. Joint payor-provider population management
3. High quality, efficient specialist identification and referral
4. Quality Outcomes Program
5. Value-based Reimbursement Program
  1. Baseline FFS
  2. Practice transformation stipends
  3. Quality-gated gain sharing



By Glenn D. Steele, Jean A. Haynes, Duane E. Davis, Janet Tomcavage, Walter F. Stewart, Tom R. Graf, Ronald A. Paulus, Karena Weikel, and Janet Shikles

**ANALYSIS & COMMENTARY**

# How Geisinger's Advanced Medical Home Model Argues The Case For Rapid-Cycle Innovation

**ABSTRACT** The Patient Protection and Affordable Care Act of 2010 provides for a number of major payment and delivery system initiatives. These potential changes need to be tested, scaled, and adapted with an urgency not evident in previous demonstration projects of the Centers for Medicare and Medicaid Services. We discuss lessons learned from our iterative tests of care reengineering at Geisinger—specifically, through our advanced medical home model, ProvenHealth Navigator<sup>SM</sup>, and the way we continuously modified the model to improve quality and value. We hypothesize that the most important ingredient in our model has been the embedding of nurse case managers into our community practices and the real-time feedback of data on the use of health services by the most complex patients.

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The People-to-People Health  
Foundation, Inc.

**Glenn D. Steele** (gsteele@geisinger.edu) is president and chief executive officer of Geisinger Health System, in Danville, Pennsylvania.

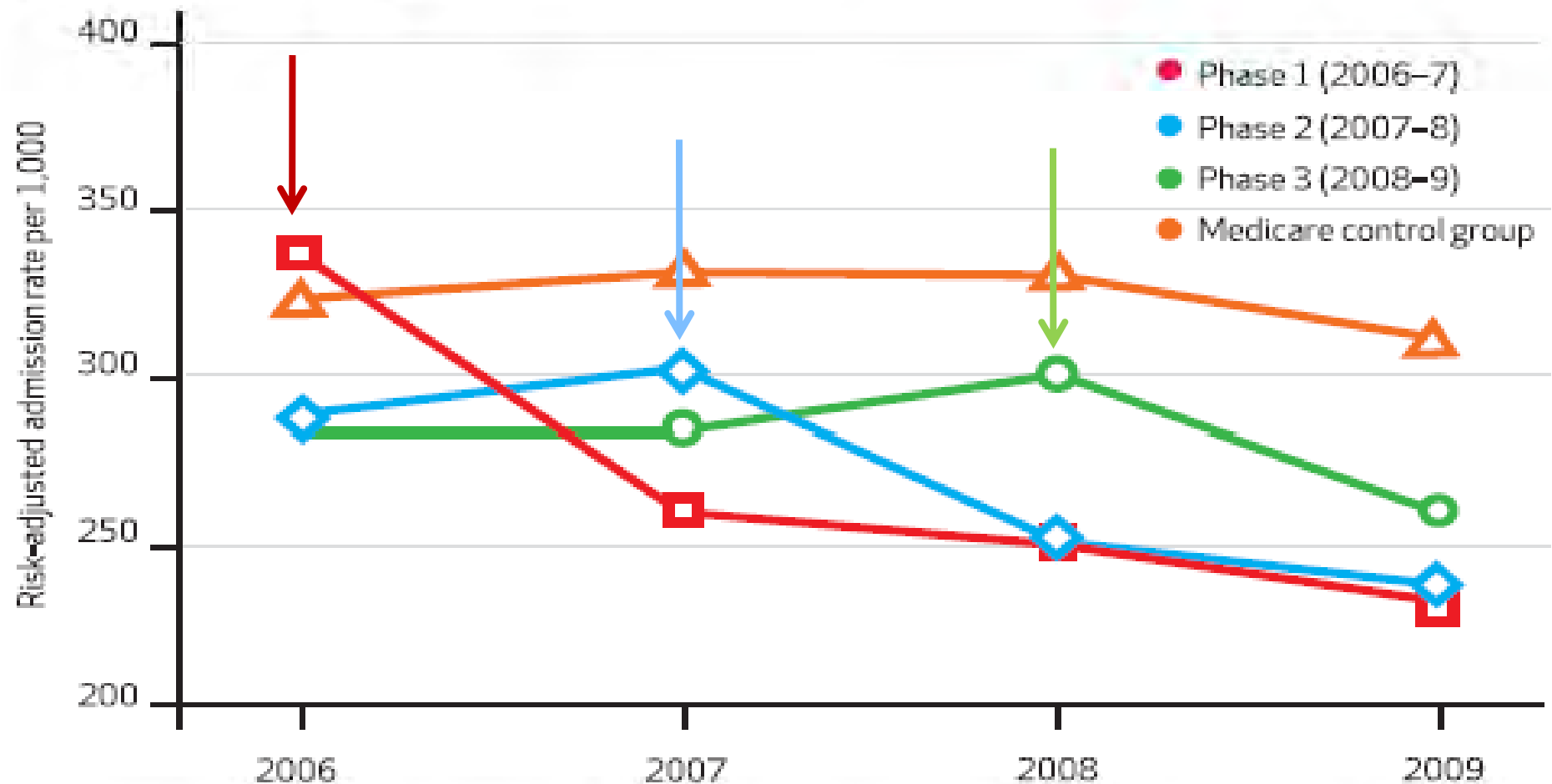
**Jean A. Haynes** is president and chief executive officer of Geisinger Health Plan, in Danville.

**Duane E. Davis** is vice president and chief medical officer of Geisinger Health Plan.

**Janet Tomcavage** is vice president of health services for Geisinger Health Plan.

**EXHIBIT 3**

**Risk-Adjusted Acute Hospital Admission Rates Per 1,000 For Primary Care Patients In Geisinger Health System Clinics That Launched ProvenHealth Navigator™ In Different Years, By Calendar Year, 2006-9**



**SOURCE** Geisinger Health System. **NOTE** Phases 1, 2, and 3 were all significantly different from Medicare control group ( $p < 0.001$ ).

**EXHIBIT 4****Experience With ProvenHealth Navigator™, Geisinger Health Plan's Contracted Network, Among Medicare And Commercially Insured Populations, Calendar Year 2009**

CY 2009 experience

Insured population	Comparison group*	Non-Geisinger ProvenHealth Navigator™ sites	Percent difference
<b>MEDICARE</b>			
Acute admissions per 1,000	316.7	227.5	-28.0
ED visits per 1,000	307.0	282.2	-8.1
<b>COMMERCIAL</b>			
Acute admissions per 1,000	65.2	40.5	-37.9
ED visits per 1,000	240.0	157.5	-34.4

**SOURCE** Geisinger Health System. **NOTE** ED is emergency department. \*Comparison group contracted with Geisinger Health System that did not use ProvenHealth Navigator™.

# PRESS ENTERPRISE

SERVING DANVILLE, BLOOMSBURG, BERWICK, ELYSBURG, MAINVILLE, BEACH HAVEN

MONDAY, JULY 6, 2009

75¢

## Central teachers gain \$7G average

Super: Health-care savings balance raises in contract

By GARY PANG  
Press Enterprise Writer

**SOUTH CENTRE TWP.** — Central Columbia teachers will see their average salary of \$53,417 jump up by \$7,000 under a new three-year contract, newspaper calculations show.

School directors recently gave 4.54 percent raises to their teachers, the largest in the area for the coming year.

But Superintendent Harry Mathias said the district can afford the pay increases because the teachers agreed to changes that will slash health insurance costs.

Teachers also agreed to pay more toward their health insurance.

The changes will let Central keep the lowest insurance costs among area school districts, he said.

The new contract costs \$8.3 million in the coming year, Mathias estimated. However, retirements would reduce expenses, he added.

### Higher starting salary

Pay raises were set at 4.54 percent for the coming year; 3.62 percent in the contract's second year, 2010-11, and 4.36 percent in 2011-12.

These raises would push the average teacher salary up to \$55,842 in the coming year, \$57,864 in the second year and \$60,387 in the third year, calculations show.

Central also raised the starting salary for teachers. The \$33,638 figure would jump up in three years by \$4,774, calculations show.

The starting salary will be \$35,656 in the coming year, \$37,054 in the second year and \$38,412 in the final year, Mathias said.

But the contract isn't just about pay raises, he said.

### New insurance

Back in April, Central was predicting a big rise in insurance premiums. To lower costs, the district switched from Capital Blue Cross to Geisinger Health Plan for all employees.

The switch will reduce costs by \$130,000 to \$140,000, Mathias estimated.

The union accepted the change as part of the new contract, Mathias said.

While other school districts are facing 7 to 8 percent increases in insurance costs, Central is dealing with just a 2.5 percent increase, the superintendent said.

Central's average health insurance cost is \$8,400 per teacher, Mathias estimated. He said other school districts are paying thousands of dollars more.

That's because many school districts get health insurance through the Northeast Pennsylvania School Health Trust, he said. Central, however, finds insurance and bargains on its own. That reduces district costs by \$500,000.

### Teachers' concession

Teachers made another concession that might save Central an additional \$20,000, Mathias said.

Before, teachers could choose between an ordinary plan and a more expensive one. If they chose the pricier plan, they paid more money toward the upgrade, but the district picked up some of the additional cost.

Now if they choose a pricier insurance plan, they'll swallow all the extra expenses.

The pricier plan costs \$250 more for single employees and \$650 more for employees with families.

### What they'll pay

Teachers had been paying 10 percent of their insurance premiums. That will increase to 11 percent in the first year of the new contract, then 12 percent the second year and 13 percent the third year.

Mathias gave examples of what they might pay in the coming year. These figures do not include the "buy-up" option.

- The premium for a single employee is \$4,500, with the employee paying \$500.
- The premium for a family plan is \$10,500, so the employee pays \$1,150.

The rate is different for non-teacher employees, Mathias noted. Support staff members pay 5 percent of their premiums, while administrators pay 6 percent of their premiums, plus .6 percent of their salaries.

### Expense breakdown

The contract's cost of \$8.3 million for the coming year includes insurance expenses: \$1 million for teachers and \$800,000 to \$900,000 for everyone else, Mathias estimated.

In 2008-09, Central paid about \$7.17 million in teacher salaries and \$1 million in benefits, Mathias said.

Despite the recent raises, the Central board is not increasing taxes in the coming year under its recently passed budget.

# Population Health Optimization: Ambulatory

## Chronic Disease



# Employing the Electronic Health Record to Improve Diabetes Care: A Multifaceted Intervention in an Integrated Delivery System

Valerie Weber, MD<sup>1</sup>, Frederick Bloom, MD<sup>2</sup>, Steve Pierdon, MD<sup>2</sup>, and Craig Wood, MS<sup>3</sup>

<sup>1</sup>Department of General Internal Medicine, Geisinger Health System, Danville, PA, USA; <sup>2</sup>Division of Community Practice, Geisinger Health System, Danville, PA, USA; <sup>3</sup>Center for Health Research, Geisinger Health System, Danville, PA, USA.

**INTRODUCTION:** Type 2 diabetes is one of the nation's most prevalent chronic diseases. Although well-known practice guidelines exist, real-life clinical performance often falls short of benchmarks.

**AIM:** Employ an electronic registry derived from a fully integrated electronic health record (EHR) as the cornerstone of an intervention to improve compliance with recommended diabetes performance measures in an integrated practice network.

**SETTING:** Geisinger Health System's network of 38 practice sites providing care to over 20,000 persons with diabetes located in a 40-county region of central and northeastern Pennsylvania.

**PROGRAM DESCRIPTION:** A multidisciplinary group of physicians worked to create a "bundle" of best practice measures for diabetes. This measurement tool was then used as part of a multifaceted intervention to improve physician performance in diabetes care, including audit and feedback, computerized reminders, and financial incentives. Changes in performance of individual measures and the total "bundle" were tracked monthly over 1 year.

## INTRODUCTION

Diabetes is a chronic illness which requires coordinated medical care and patient self-management to decrease the risk of downstream complications including vascular, renal, and ophthalmologic morbidities. Type 2 diabetes affects approximately 7% of the United States population, and an estimated 26% have impaired fasting glucose. National guidelines for the care of patients with type 2 diabetes are in existence,<sup>1</sup> yet care often fails to meet these guidelines. For example, blood pressure control can reduce the risk of cardiovascular disease among persons with diabetes by 33% to 50%, but in most studies, less than a third of patients exhibit appropriate degrees of blood pressure control. Similarly, compliance with immunizations, cholesterol control, and other performance indicators fall short of ideal. Data collected by the Centers for Disease Control indicates that improved diabetes care is needed. In 2004, just 45.9% of diabetics had influenza vaccinations, 38.8% had pneumococcal vaccinations, and only 68.8% had a hemoglobin A1c measured in the past year (<http://www.cdc.gov/diabetes/statistics/preventive/mUSMenu.htm>).

What are the reasons for such care gaps? Commonly cited barriers include lack of time during office visits, reimburse-

# Diabetes Bundle

Measures	Quality Standard	FY07
HgbA1C measurement	Every 6 months	X
HgbA1C control	< 7	X
LDL measurement	Yearly	X
LDL control	< 100	X
Blood pressure control	< 130/80	X
Retinal exam	Yearly	
Urine (protein) exam	Yearly	X
Foot exam	Yearly	
Influenza immunization	Yearly	X
Pneumococcal immunization	Once	X
Smoking status	Non-smoker	X
Use of ACE/ARB for microalbuminuria/DM nephropathy	Yes	
Use of ACE/ARB for hypertension	Yes	
Patients who receive/achieve ALL of the above	Yearly	X

# DM Best Practice Alert/Order Set

Visit Navigator (4/28/2006 visit with GILL) - Viewing

SmartSets Open Orders SmartForms Images Questionnaires Graphs Scans Admin Benefits Print AVS

**Epic**

## Charting

### ▼ BestPractice

- Chief Complaint
- Episodes
- Vitals
- Nursing Notes
- Progress Notes
- Diagnoses
- **Orders**
- Pt. Instructions
- LOS & Follow-up
- AVS
- Communication
- Close Encounter
- Comm Mgt

[Nav Hotkey List](#)

**Allergies:** Not On File

MRN: 5235276 TEST,TRICIA Sex: F DOB: 4/9/1966 Age: 40 \*GILL  
[No Coverage] PCP: [Not avail.] Practice: [Not avail.]

## Charting

### BestPractice Alerts

#### Action(s)

#### ▼ Dx of DM. LDL every 12 months, Standard <100.

Open SmartSet: BPA\_GHS\_DIABETES\_LDL

#### ▼ Dx of DM. Pneumovax - at least one lifetime vaccine. One time revaccination >64 years old (if vaccine given more than 5 years ago).

Open SmartSet: BPA\_GHS\_PNEUMOVAX

#### ▼ Dx of DM. Flu vaccine - once per flu season is standard.

Open SmartSet: BPA-GHS\_DIABETES\_FLU

#### ▼ Dx of DM. HgbA1c every 3 months, Standard < 7%

Last HGBA1C: Not on file


Open SmartSet: BPA - GHS DIABETES - HGBA1C Greater than 7.0

#### ▼ Dx of DM. Microalbumin every 12 month, Standard < 30.

Open SmartSet: BPA\_GHS\_DIABETES\_MICROALBUMIN

Accept

# Patient Reminder View


Your online health management tool

May 01, 2006, Maria Zasp

[Back](#) [Home](#) [Logout](#) [Help](#)

<b>Parent/Caregiver Access</b>	<b>Health Reminders</b>	<b>Printer Friendly Page</b>																																																		
<a href="#">View Other Records</a>	<p>The following Health Reminders are recommended for people of your age, gender, and medical history. <b>If the procedures and dates are different from what your doctor has discussed with you, please follow your doctor's recommendation.</b></p> <p>If you want to find previous dates that health reminders were completed, click date Last Done.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Schedule</th> <th style="text-align: left;">Name</th> <th style="text-align: left;">Due Date</th> <th style="text-align: left;">Status</th> <th style="text-align: left;">Last Done</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>DILATED EYE EXAM (PERFORMED BY AN EYE DOCTOR)</td> <td>03/06/1968</td> <td>Overdue</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>URINE MICROALBUMIN (URINE PROTEIN)</td> <td>03/06/1968</td> <td>Overdue</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>DIABETIC FOOT EXAM (AT LEAST EVERY 12 MONTHS)</td> <td>03/06/1968</td> <td>Overdue</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>PNEUMONIA SHOT (ONCE IN A LIFETIME, MINIMUM)</td> <td>03/06/1968</td> <td>Overdue</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>HEMOGLOBIN A1C (3 MONTH BLOOD SUGAR AVERAGE)</td> <td>03/06/1968</td> <td>Overdue</td> <td></td> </tr> <tr> <td></td> <td>Mammogram-yearly, Ages 40-75</td> <td>07/07/2006</td> <td></td> <td>07/07/2005</td> </tr> <tr> <td></td> <td>DILATED EYE EXAM (PERFORMED BY AN EYE DOCTOR)</td> <td>10/01/2006</td> <td></td> <td></td> </tr> <tr> <td></td> <td>LDL CHOLESTEROL (BAD CHOLESTEROL)</td> <td>01/28/2007</td> <td></td> <td>01/28/2006</td> </tr> <tr> <td></td> <td>Pap Smear (Every 2 Years)</td> <td>02/13/2008</td> <td></td> <td>02/13/2006</td> </tr> </tbody> </table>	Schedule	Name	Due Date	Status	Last Done	<input type="checkbox"/>	DILATED EYE EXAM (PERFORMED BY AN EYE DOCTOR)	03/06/1968	Overdue		<input type="checkbox"/>	URINE MICROALBUMIN (URINE PROTEIN)	03/06/1968	Overdue		<input type="checkbox"/>	DIABETIC FOOT EXAM (AT LEAST EVERY 12 MONTHS)	03/06/1968	Overdue		<input type="checkbox"/>	PNEUMONIA SHOT (ONCE IN A LIFETIME, MINIMUM)	03/06/1968	Overdue		<input type="checkbox"/>	HEMOGLOBIN A1C (3 MONTH BLOOD SUGAR AVERAGE)	03/06/1968	Overdue			Mammogram-yearly, Ages 40-75	07/07/2006		07/07/2005		DILATED EYE EXAM (PERFORMED BY AN EYE DOCTOR)	10/01/2006				LDL CHOLESTEROL (BAD CHOLESTEROL)	01/28/2007		01/28/2006		Pap Smear (Every 2 Years)	02/13/2008		02/13/2006	
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# Patient Trend Report

## Personal Diabetic Report Card: Abigail L George

4/28/2006

Below is a summary of relevant Diabetes values that we feel could help you manage your health better. Feel free to discuss this with your care provider.

### HEMOGLOBIN A1C

Your most recent Hemoglobin A1c values are:	HEMOGLOBIN, A1C(%)			
	Coll	Dt/Tm	Resulted	Value Status
	3/2/06	11:23A	3/2/06	6.6* FINAL
	11/21/05	4:21P	11/22/05	8.7* FINAL

**Most recent values displayed**

The above values should be LESS than 7 (< 7). If these are more than 7 then you have a higher chance of having eye, kidney, and heart problems in the future.

### CHOLESTEROL

Your most recent LDL cholesterol (bad cholesterol) results are:	LDL (CALCULATED)(mg/dL)			
	Coll	Dt/Tm	Resulted	Value Status
	11/15/05	8:20A	11/15/05	110 FINAL

**Therapeutic goals are stated**

The above values should be LESS than 100 (<100). If these are consistently higher than 100, then your chance for heart attack and stroke increases yearly.

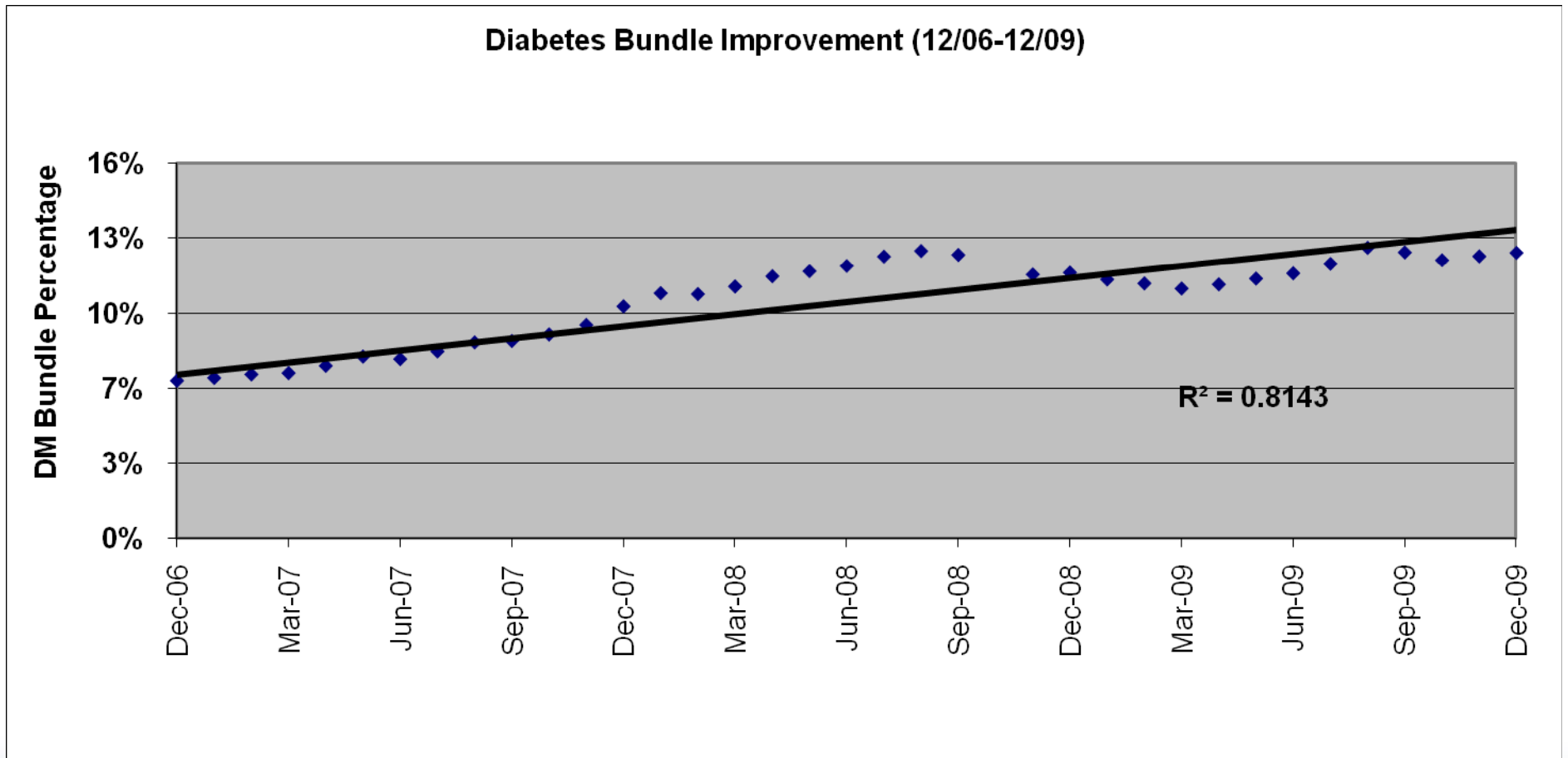
### BLOOD PRESSURE

Your most recent Blood Pressure readings are:	Last 3 BP Readings:	
	Date:	BP:
	04/28/2006	100/60
	04/25/2006	140/80
	03/02/2006	124/80

**Clinical consequences are stated**

The above values should be LESS than 130/80. Contact me if your readings at home are consistently higher than this.

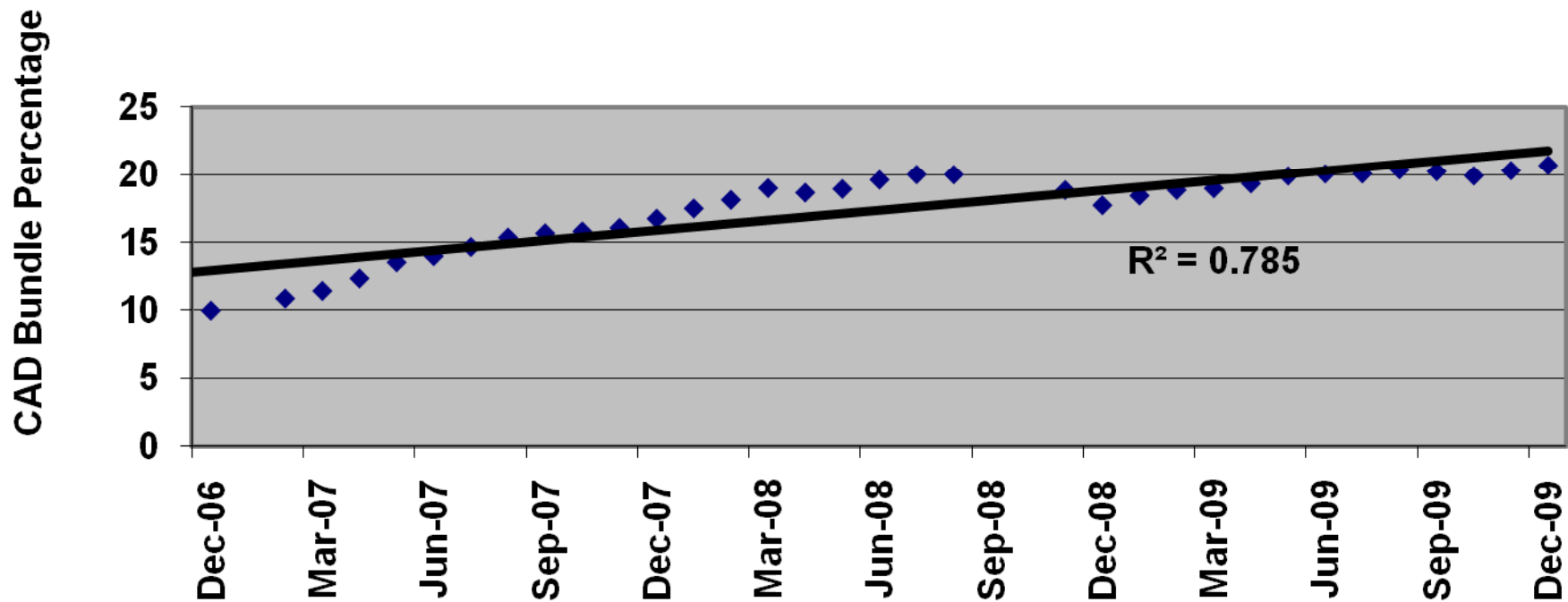
# Diabetes Bundle Results Primary Care Average (n=23,404)



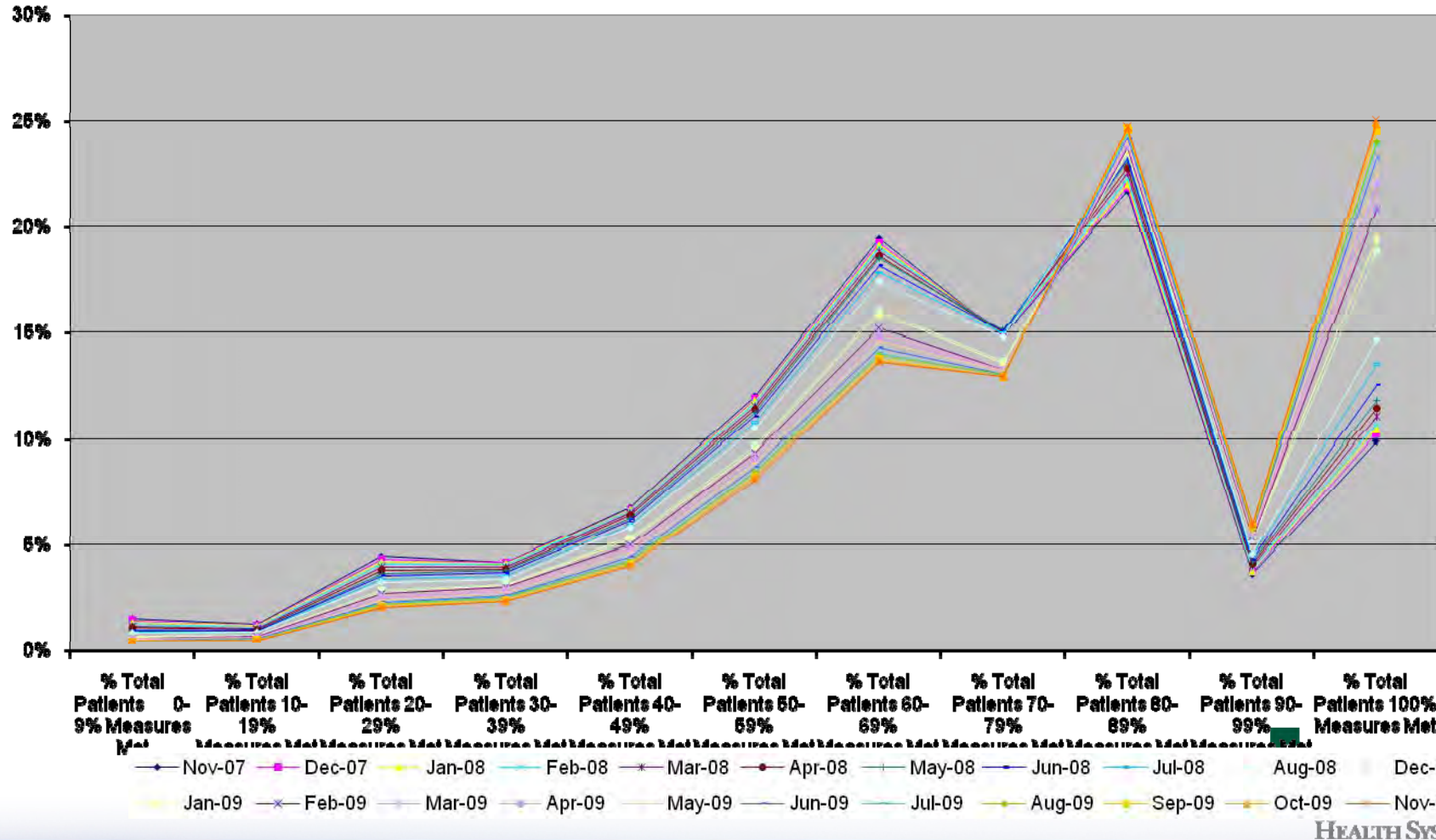
HEALTH SYSTEM

# CAD Bundle Primary Care Results Average (n=14,714)

Primary Care Average CAD Bundle 12/06-12/09



# Adult Prevention Bundle



# Population Health Optimization: Inpatient

## CABG Example



## “ProvenCare<sup>SM</sup>”

### *A Provider-Driven Pay-for-Performance Program for Acute Episodic Cardiac Surgical Care*

*Alfred S. Casale, MD, Ronald A. Paulus, MD, Mark J. Selna, MD, Michael C. Doll, PA-C, Albert E. Bothe, Jr., MD, Karen E. McKinley, RN, Scott A. Berry, MS, Duane E. Davis, MD, Richard J. Gilfillan, MD, Bruce H. Hamory, MD, and Glenn D. Steele, Jr., MD*

**Objective:** To test whether an integrated delivery system could successfully implement an evidence-based pay-for-performance program for coronary artery bypass graft (CABG) surgery.

**Methods:** The program consisted of 3 components: (1) establishing implementable best practices; (2) developing risk-based pricing; (3) establishing a mechanism for patient engagement. Surgeons reviewed all class I and IIa “2004 American Heart Association/American College of Cardiology Guidelines for CABG Surgery” and translated them into 40 verifiable behaviors. These were imbedded within a new ProvenCare<sup>SM</sup> program and “hardwired” within the electronic health record system, including order sets, templates, and “time outs”. Concurrently preoperative, inpatient, and postoperative care within 90 days was packaged into a fixed price. A Patient Compact was developed to highlight the importance of patient activation. All elective CABG patients treated between February 2, 2006 and February 2, 2007 were included (ProvenCare<sup>SM</sup> Group) and compared with 137 patients treated in 2005 (Conventional Care Group).

**Results:** Initially, only 59% of patients received all 40 best practice components. At 3 months, program compliance reached 100%, but fell transiently to 86% over the next 3 months. Reliability subsequently increased to 100% and was sustained for the remainder of the study period. The overall trend in reliability was significant at  $P = 0.001$ . Thirty-day clinical outcomes showed improved trends (Table 1) but only the likelihood of discharge to home reached statistical significance. Length of stay decreased by 16% and mean hospital charges fell 5.2%.

Healthcare delivery in the United States faces significant quality and cost problems. Medical care is often inappropriate when judged against accepted standards with numerous examples of excess utilization and conversely, appropriately indicated care is frequently not provided.<sup>1</sup> This inconsistency leads to wide, unexplained variation in rates of procedures, expenditures, and outcomes.<sup>2</sup> Landmark publications by the Institute of Medicine and the Rand Corporation<sup>3–5</sup> have focused increased professional and public attention on these issues. Nevertheless, healthcare providers continue to be paid for units of care delivered independent of quality or results achieved. Poor outcomes, such as postoperative complications that require reoperation, often result in more payment.

Care reliability is inconsistent. Best practice guidelines are sometimes based on equivocal evidence, and are often ignored or poorly applied.<sup>6</sup> Translation of even the best guidelines into actual behavior is difficult and slow-paced. The fragmentation of our delivery systems<sup>7</sup> and the influence of diverse and often opposing economic factors can overwhelm the influence of science and well-meaning intentions in determining acceptance and dissemination of best practices.<sup>8</sup>

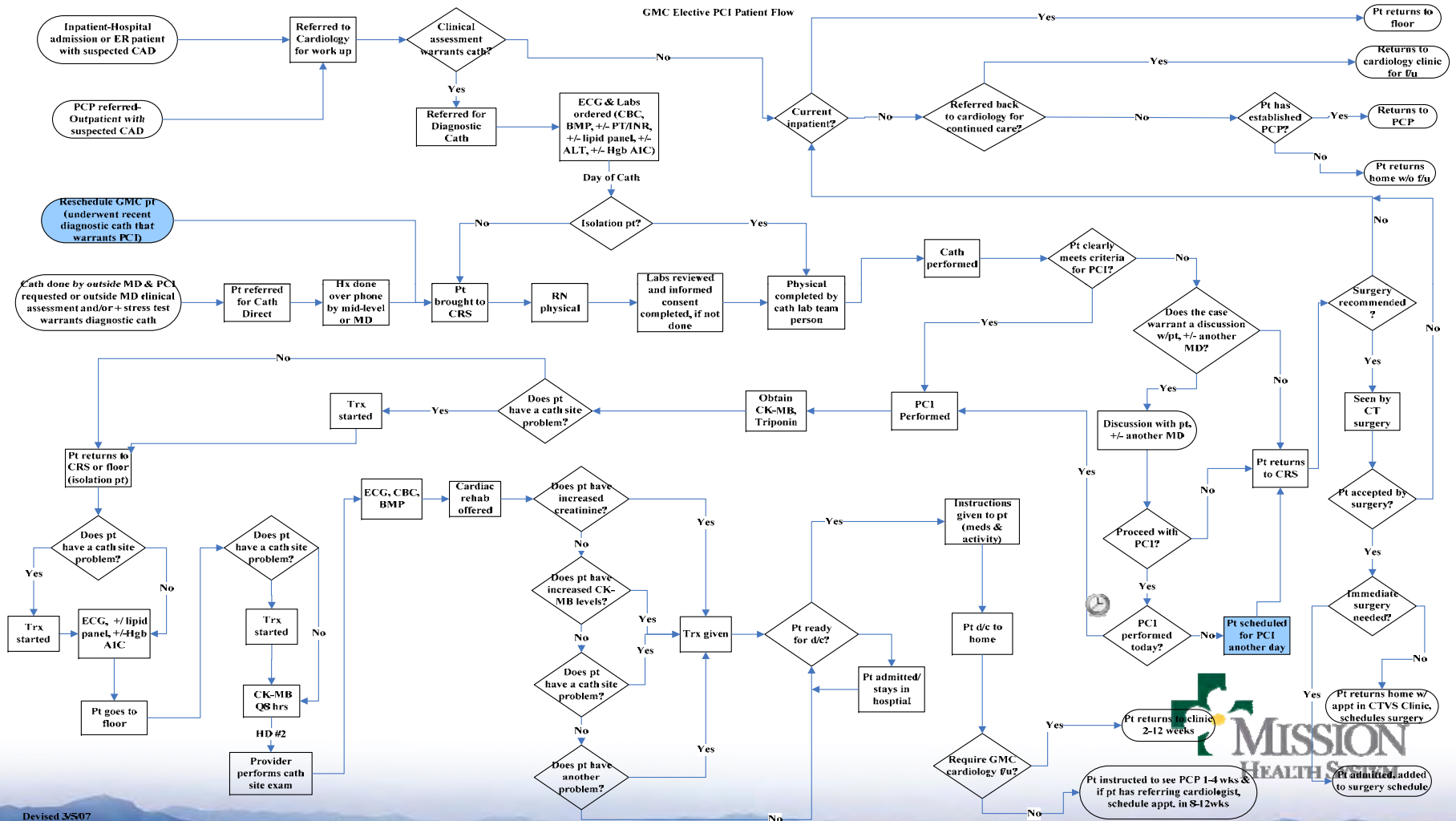
Strategies to improve this system have included mandates from regulators, federal and state agencies, and payers. Public reports of outcome measures are often derived from administrative databases and have typically had only modest

# GHS Receives “All In” Global Fee

- One fee for the ENTIRE 90-day period including all surgery-related care:
  - ALL surgery-related pre-admission care
  - ALL inpatient physician and hospital services, including cardiologists, cardiac surgeons, anesthesia, consultants, etc
  - ALL surgery-related post-operative care
  - ALL care for any related complications or readmissions
- Aligns incentives across provider, patient and payor/purchaser



# Process Redesign: Work Flow



Devised 3/5/07  
Revised 5/3/07



# Process Redesign: Hardwiring

**Visit Navigator (3/18/2008 visit with DOLL)**

SmartSets Open Orders SmartForms Images Questionnaires Graphs Scans Admin Benefits Print AVS Adv Dir

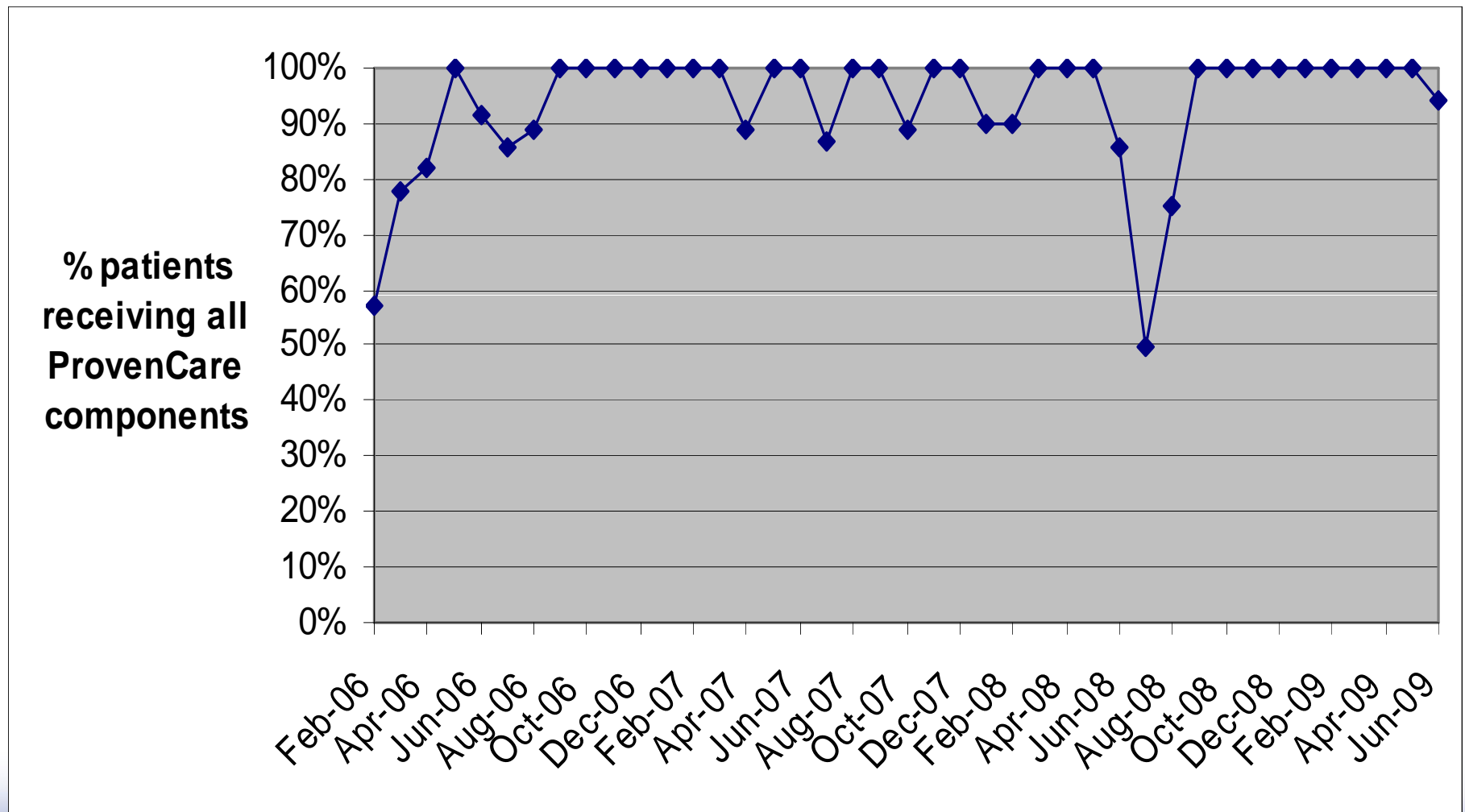
**Allergies** Latex, Sulfa Drugs, Chocobase, Strawberries, Bee, Tora, Orajel, Shellfish, Benadryl Allergy, Promethazine Hcl, Nuts, Lasi\* Reviewed on 3/7/2008  
 MRN: Z70000021 ZEPICARE,INPATIENT PLEASANT Sex: F DOB: 1/1/1982 Age: 26 \*DOLL  
 Primary Payor: GHP COPAY PLA\* PCP: [Not avail.] Practice: [Not avail.]

Category	Question	Response	Action
<b>Nurse</b> BestPractice Chief Complaint Episodes Vitals Med. List Nursing Notes <b>Specialty Info</b> Filtered Results Filtered Enc <b>Provider</b> Progress Notes <b>Cardiac Pre</b> Cardiac Post 30-Day Post Diagnoses Orders Med. Reconciliation Pt. Instructions LOS & Follow-up AVS Communication Close Encounter	<b>History and Physical</b>		
	Is patient 75 years of age or older & SBP >180mm/hg?	Yes - Needs Epia ... <b>No</b>	[Icon]
	Pre-OP LV EF <25%?	Yes - Needs IABP ... <b>No</b> Ballon Pump not ... No	[Icon]
	Is patient on a Beta-Blocker?	Yes <b>No - Order Beta- ...</b> No - Beta Blocke ... No - Order Bet ...	[Icon]
	Is patient on a Statin?	<b>Yes</b> No Other (See Comment)	[Icon]
	Does patient have dx of PVD; h/o TIA/CVA; Carotid Bruit on exam?	<b>Yes</b> No	[Icon]
	Has Carotid Doppler been done within the last 6 months?	N/A Yes <b>No - Order Carot ...</b> Pending	[Icon]
	Are Carotid Doppler Results available in EPIC?	N/A Yes - No action ... No - Scan report ... <b>Pending</b>	[Icon]
	Patient has Carotid Doppler requiring Vascular consult?	N/A Yes No <b>Pending</b>	[Icon]
	Vascular Consult completed and report in EPIC?	<b>N/A</b> Yes No	[Icon]
	Has the patient had an Anterior Wall MI within the past 7 days?	N/A Yes <b>No</b>	[Icon]
	Has the patient had an Inferior Wall MI with RV involvement within the past 7 days?	<b>N/A</b> Yes No	[Icon]
	If yes to the previous question, has a consult with another Cardiac Surgeon and a Cardiologist taken		

[View Hotkeys](#)



# ProvenCare<sup>®</sup> CABG: Reliability



# Clinical Change

	<i>Before ProvenCare<sup>®</sup></i> (n=132)	<i>ProvenCare<sup>®</sup></i> (n=321)	<i>% Improvement</i>
In-hospital mortality	1.5 %	0.3 %	<b>80 %</b>
Patients with <u>any</u> complication (STS)	38 %	33 %	<b>13 %</b>
Patients with >1 complication	8.4 %	5.9 %	<b>30 %</b>
<u>Atrial</u> fibrillation	24 %	21 %	<b>13 %</b>
Neurologic complication	1.5 %	0.9 %	<b>40 %</b>
Any pulmonary complication	7 %	5 %	<b>29 %</b>
Re-intubation	2.3 %	0.9 %	<b>61 %</b>
Blood products used	24 %	22 %	<b>8 %</b>
Re-operation for bleeding	3.8 %	2.8 %	<b>26 %</b>
Deep <u>sternal</u> wound infection	0.8 %	0.3 %	<b>63 %</b>
Readmission within 30 days	6.9 %	5.6 %	<b>20 %</b>



# Financial Outcomes

- Hospital:
  - Net revenue +12.3% (with expenses only +5.6%)
  - Contribution margin +17.6%
  - Total inpatient profit per case improved +\$1,946
- Health Plan:
  - Paid out 4.8% less/case for CAB with ProvenCare® *to Geisinger*
  - Paid out 28-36% less for CAB at Geisinger *vs. other providers*



# Population Health Optimization: Patient/Consumer Engagement



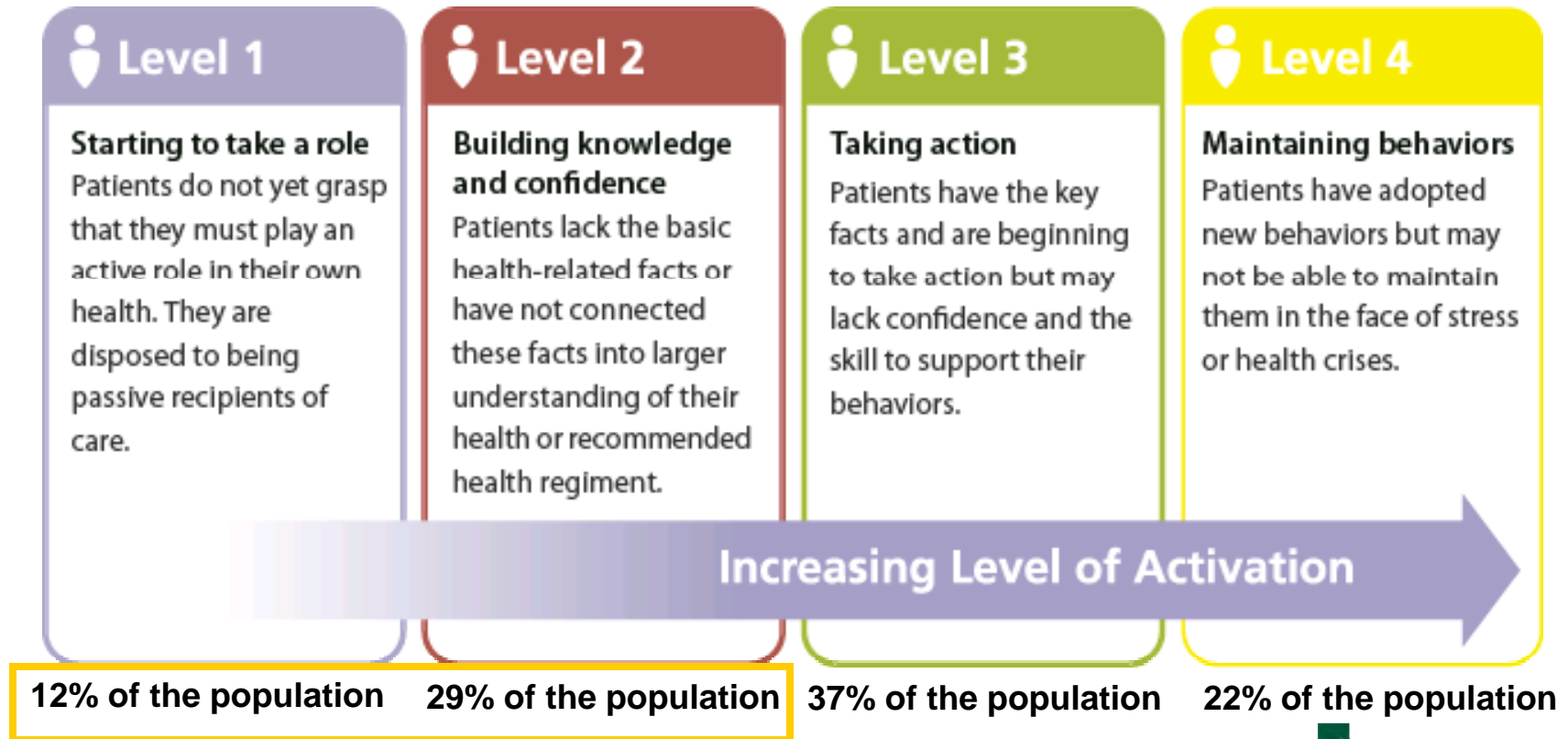
# Patients Make the “Real Decisions”



*Figure 2* Nearly all healthcare decisions are already made by patients.

Source: CSC (data from Clayton Christensen et al, *The Innovator's Prescription: A Disruptive Solution for Health Care*, 2009)

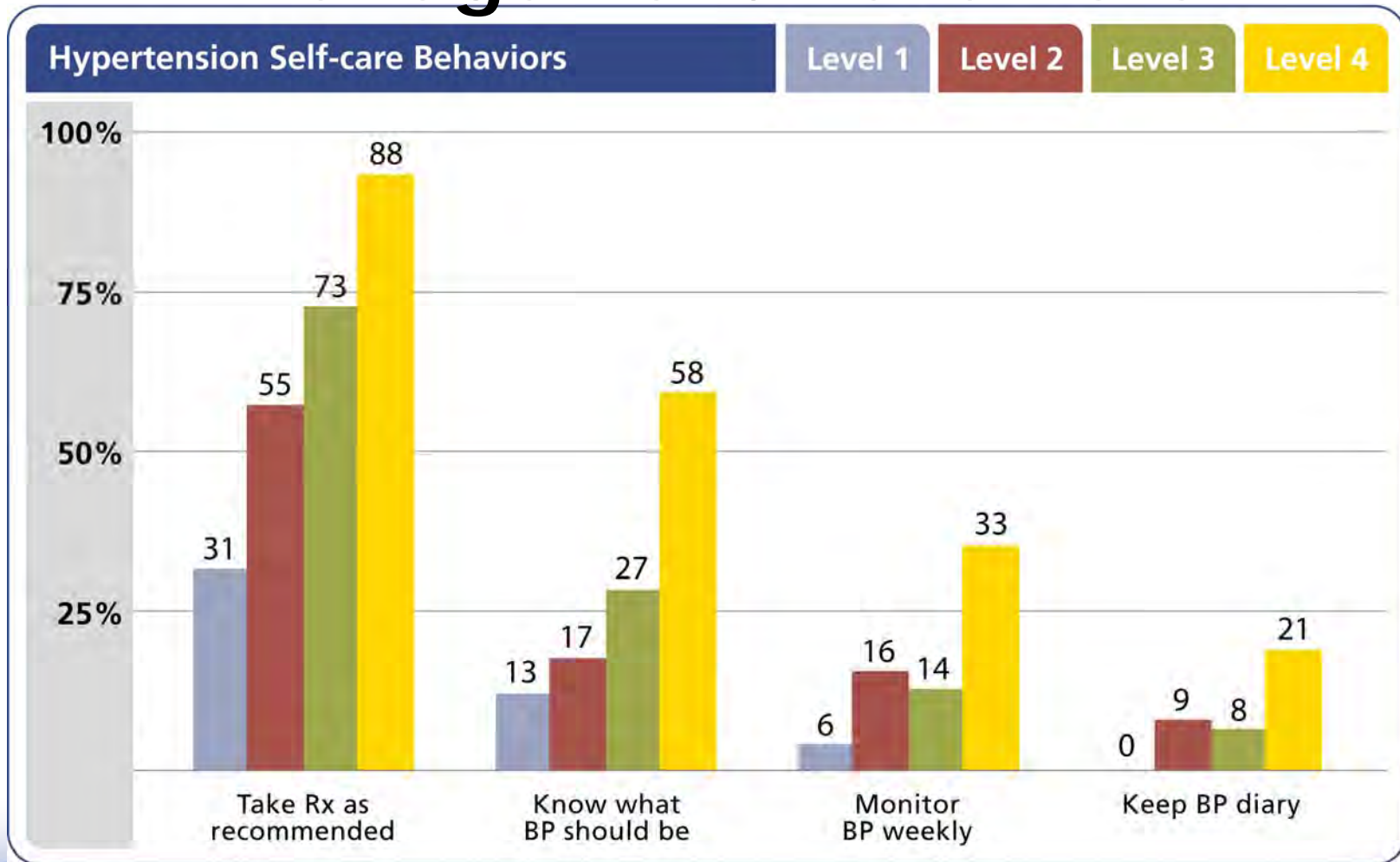
# Population by Activation Level



Source: J.Hibbard, University of Oregon



# HTN Patients Who Engage in Self-management Behaviors



Source: J.Hibbard, University of Oregon

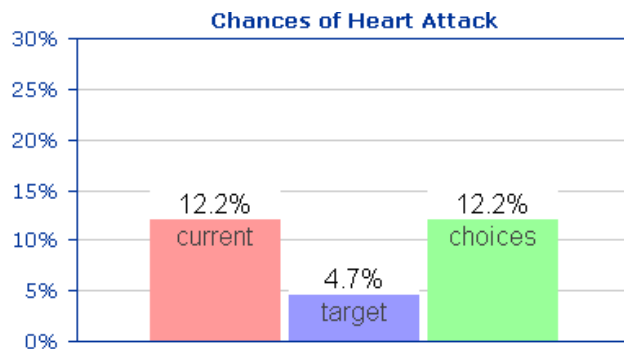
N  
EM

## How do you want to lower your blood pressure ?

Patient: 2

Your blood pressure may be higher than normal. Lower your blood pressure and improve your health by reducing your salt intake and increasing physical activity.

Choose up to 3 ways to lower your blood pressure. As you choose, the green bar will show you the benefit.



You currently have a **1 in 8** chance of a heart attack in the next 10 years.

The good news is, you could get your risk down to **1 in 21**

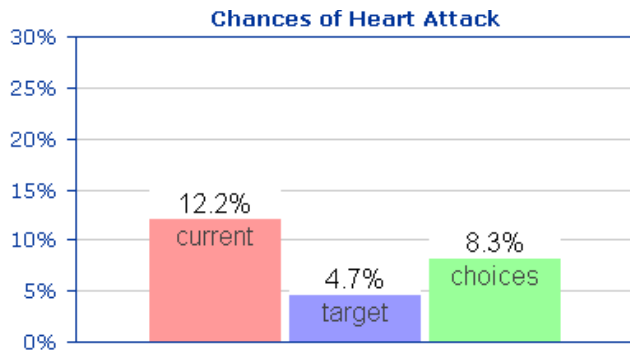
- I want to take medication (one or more) to lower my blood pressure.
- I would like to see a dietician to help me lower my blood pressure.
- I want to lower my blood pressure with a low fat diet that is high in fruits and vegetables.
- I want to lower my blood pressure with a low salt diet.
- I would like to exercise to lower my blood pressure.
- I want to use one-on-one counseling to lower my blood pressure.
- I want to monitor my blood pressure at home.
- I want to use one-on-one Internet coaching.
- I do not want to do anything.

How do you want to lower your blood pressure ?

Patient: 2

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<input checked="" type="checkbox"/>	I want to take medication (one or more) to lower my blood pressure.
<input type="checkbox"/>	I would like to see a dietician to help me lower my blood pressure.
<input type="checkbox"/>	I want to lower my blood pressure with a low fat diet that is high in fruits and vegetables.
<input type="checkbox"/>	I want to lower my blood pressure with a low salt diet.
<input type="checkbox"/>	I would like to exercise to lower my blood pressure.
<input type="checkbox"/>	I want to use one-on-one counseling to lower my blood pressure.
<input type="checkbox"/>	I want to monitor my blood pressure at home.
<input type="checkbox"/>	I want to use one-on-one Internet coaching.
<input type="checkbox"/>	I do not want to do anything.

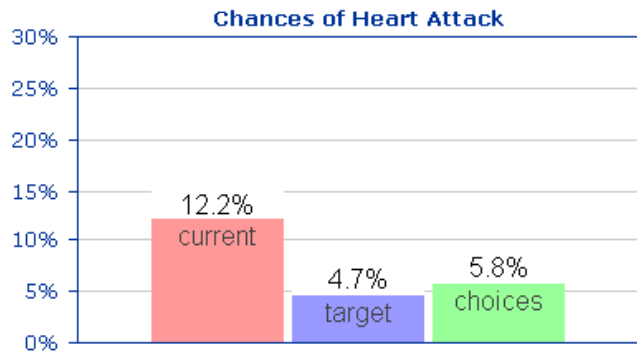


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- I do not want to do anything.

Submit for Review

Reset

Clear



**Review the choices you have made to reduce your risk of a heart attack.**

Patient: 2

Choices at the top of the menu will help you more than choices at the bottom.  
You will be more successful by starting with one or two choices and then adding others later.  
**Please check what you want to do first.**

<input type="checkbox"/>	I want to take medication (one or more) to lower my blood pressure.
<input type="checkbox"/>	I want to take medication to lower my bad cholesterol.
<input checked="" type="checkbox"/>	I would like to see a dietician to help me 1) lose weight, 2) lower my blood pressure and 3) lower my bad cholesterol.
<input type="checkbox"/>	I would like to exercise to help me 1) lose weight, 2) lower my blood pressure and 3) reduce my bad cholesterol.
<input checked="" type="checkbox"/>	I want to take nicotine replacement (gum, lozenges, or patch) to help me stop smoking.
<input type="checkbox"/>	I want group counseling to help me smoke less.
<input type="checkbox"/>	I want to use one-on-one Internet coaching.
<input type="checkbox"/>	I want to take medication to help me smoke less (only effective w/nicotine replacement).



# Conclusion



# Take-Home Messages

- Practice redesign, absent appropriate incentive structures is likely to be ineffective
  - When combined, results can be remarkable
- A strong underlying IT infrastructure is very helpful, though change can be seen without it
  - Both IT and increasing patient engagement is likely to be required for long run sustainability
- It takes a partnership: practice, payor, hospital
- None of these activities is rewarded in most systems today...

