

EHR-based Disease Management *Success & Challenges* *Geisinger Health System*

The Disease Management Colloquium
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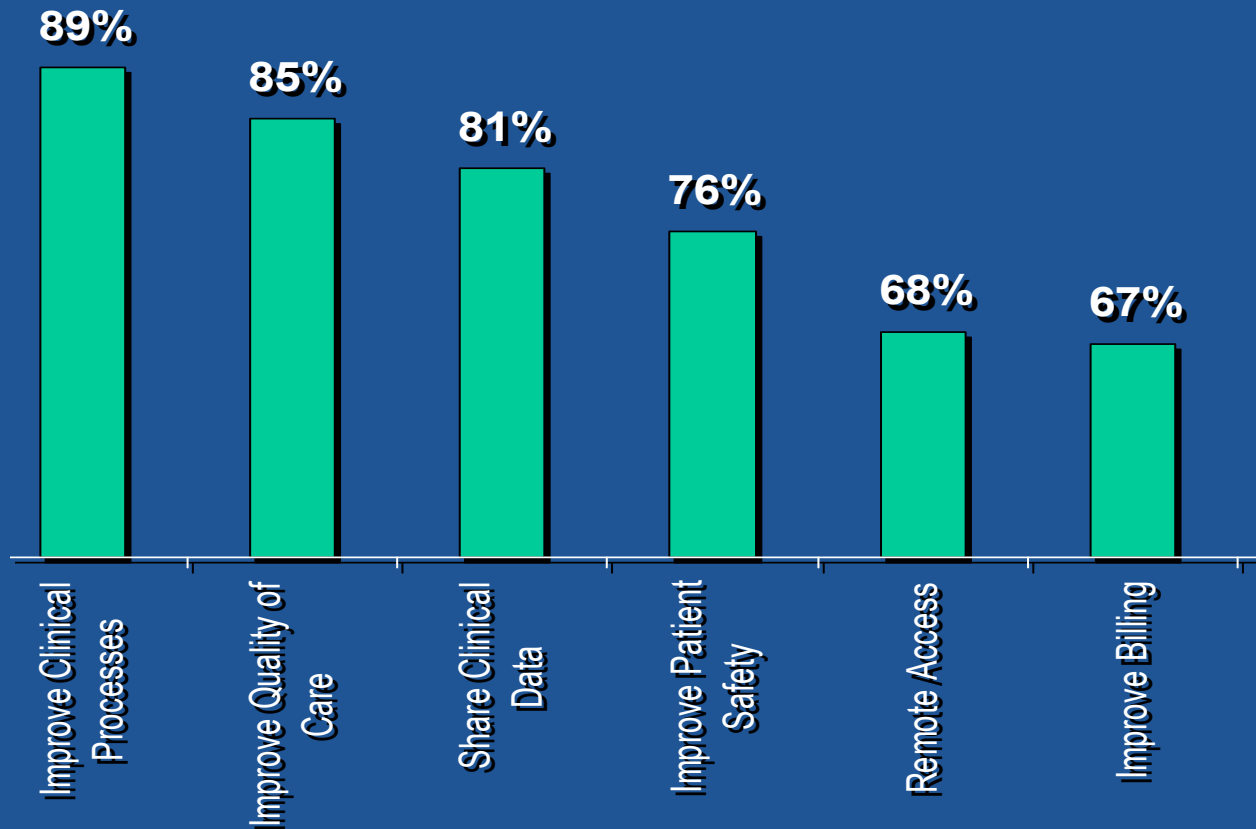
Discussion Topics

- *Background context* : EHR use & adoption
- *Background context* : Geisinger Health System
- EHR-based process redesign (operational, clinical)
- Operational registries
- “All or none” process reliability
- *Example* : CMS Physician Group Practice Demonstration Project

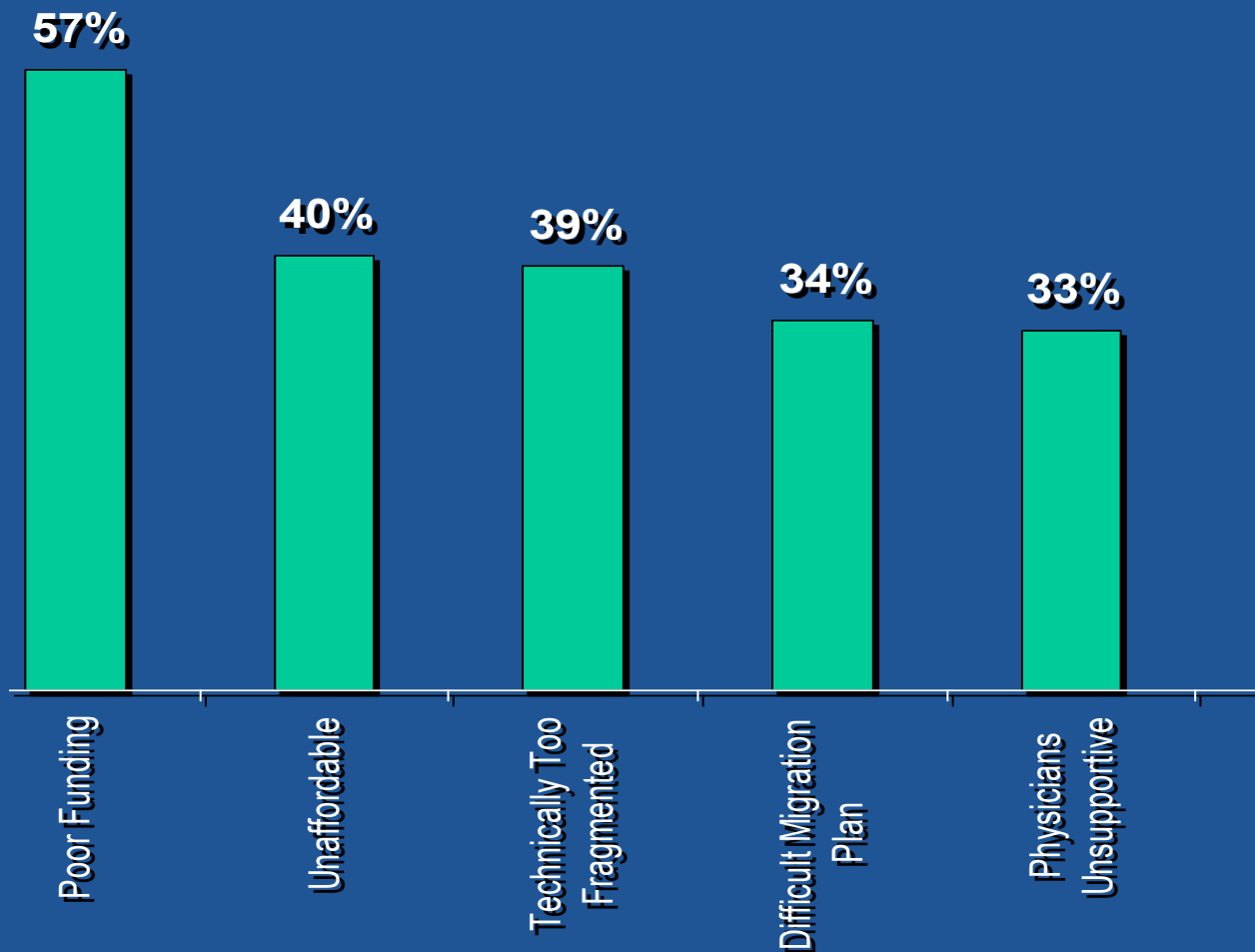
Guiding Principles

- *Objectives should dictate the measures, not vice-versa*
- *Actual performance is less than presumed performance*
- Transformation requires:
 - *Vision*
 - *“Intelligence”*
 - *Automation*
 - *Accountability*
 - *Leadership*

Major Motivators to Implement an EHR



Major Barriers to Implementing an EHR



Geisinger Health System (GHS)

- Integrated health care delivery system
 - 670 physician multi-specialty group practice in 42 sites in 41 of 67 PA counties, many rural
 - 3 hospital-based medical centers; Children's Hospital, Level 1 trauma center
 - >2 million in the service area; >350K active primary care patients
 - 250K member health plan
- A national HIT leader
 - Long-standing EHR installation (Epic)
 - AHRQ-awarded RHIO implementation (w/ 2 community hospitals)
 - *Modern Healthcare Magazine* / HIMSS CEO IT Achievement Award (2006)
- *Clinical translation* (i.e., putting knowledge into practice)
 - Center for Health Research & rural Advocacy
 - Growing clinical trials organization
 - Limited basic science research (Weis Center)
- *Technology transfer and commercialization (Geisinger Ventures)*

EHR use (annual) – *GHS Providers*

- Encounters
 - ✓ >1 million office visits
 - ✓ >1 million telephone encounters
- >7 million orders
- >1 million injections and treatments
- >200,000 digital radiology studies (w/ remote access)
- >5,000 concurrent users

EHR use - *Referring Physicians*

- *Same-day consult reports*
 - 188,000 annualized (vs. 152,000 transcribed)
 - E-mail, Fax, U.S. mail
 - Feedback - 85% strongly positive
- *Outreach EHR (to non-GHS providers)*
 - >500 physicians, 154 practices, 586 users
 - 10,000 patient's records linked

“MyGeisinger” (Patient EHR)

- Adding >2,000 new users per month
- Primary drivers
 - Information access (esp. lab results)
 - Immunization record printing
 - Prescription renewals
 - Secure messaging
- >40,000 patient phone calls avoided (per year)
 - Referral requests
 - Prescription renewals
 - Medical advice
- Self-scheduling
 - 2.5% no-show (versus 5%)

Clinical Quality – *redesign process*

Performance Objectives (clinical, operational, financial)

Necessary Interventions

Operational Flows (human, data)

Accountabilities & Alignment

Performance Measures (quantitative)



Design & Business Principles



Primary considerations:

- Efficient (better outcomes for less cost)
- Adaptable (complements existing care processes)
- Reduces administrative burden
- Scalable and exportable
- Satisfying to the customer (patient)

CMS

Physician Group Practice (PGP) Demonstration Project

- Authorized by the Benefits Improvement and Protection Act (BIPA; 2000)
- Three year project (4/05 – 3/08)
- Seeks to determine if a financial incentive provided to large physician group practices (10) will result in improved efficiency and health outcomes
- 15 Quality Measures (screening, prevention & management)
- PGPs will continue to be paid on a FFS basis but must bear the cost of all associated infrastructure and/or staffing
- PGPs are eligible to receive a “gain share” (80% of the “net savings”); 30% of the “gain share” will be paid based upon having generated the savings; 70% based upon the quality measures

CMS Performance Objectives

Financial

To decrease the per-beneficiary total medical expense (Parts A, B & D) by more than 2% (as compared to a CMS-determined comparison group)

~ **AND** ~

Clinical Quality

To improve the process compliance and/or outcomes for specific chronic diseases (Type 2 Diabetes, CHF, CAD, HTN, Colon CA, Breast CA)

Clinical Quality Measures

Diabetes (applicable in performance years 1 - 3)

- Glycemic testing & avoidance of poor control (HgbA1c >9)
- Hypertension control (BP <130/80)
- Hyperlipidemia testing & control (LDL <100)
- Nephropathy screening (urine microalbumin)
- Retinopathy screening (eye exam)
- Extremity neurovascular screening (foot exam)
- Infection prevention (influenza & pneumonia vaccinations)

CHF (applicable in performance years 2 - 3)

- Left ventricular functional assessment (ejection fraction)
- Weight monitoring
- Hypertension screening
- Patient Education
- Rx compliance (Beta-blocker, ACE-inhibitor, Warfarin)
- Infection prevention (influenza & pneumonia vaccinations)

Clinical Quality Measures

CAD (applicable in performance years 2 - 3)

- Hyperlipidemia testing, treatment & control (LDL <100)
- Hypertension screening
- Rx compliance (lipid-lowering, beta-blocker, ACE-inhibitor, anti-platelet)

Hypertension (applicable in performance year 3)

- Hypertension screening & control (BP <140/90)
- Care planning

Colon Cancer (applicable in performance year 3)

- Colorectal Cancer screening
(FOBT q 1yr or Flex Sig q 5yr or DCBE q 5yr or colonoscopy q 10yr)

Breast Cancer (applicable in performance year 3)

- Breast Cancer screening (mammogram)

GHS “Assigned” Medicare Beneficiaries

Baseline Characteristics

Demographics

- ~26,000 Assigned Beneficiaries; 59% Female, 41% Male

Utilization

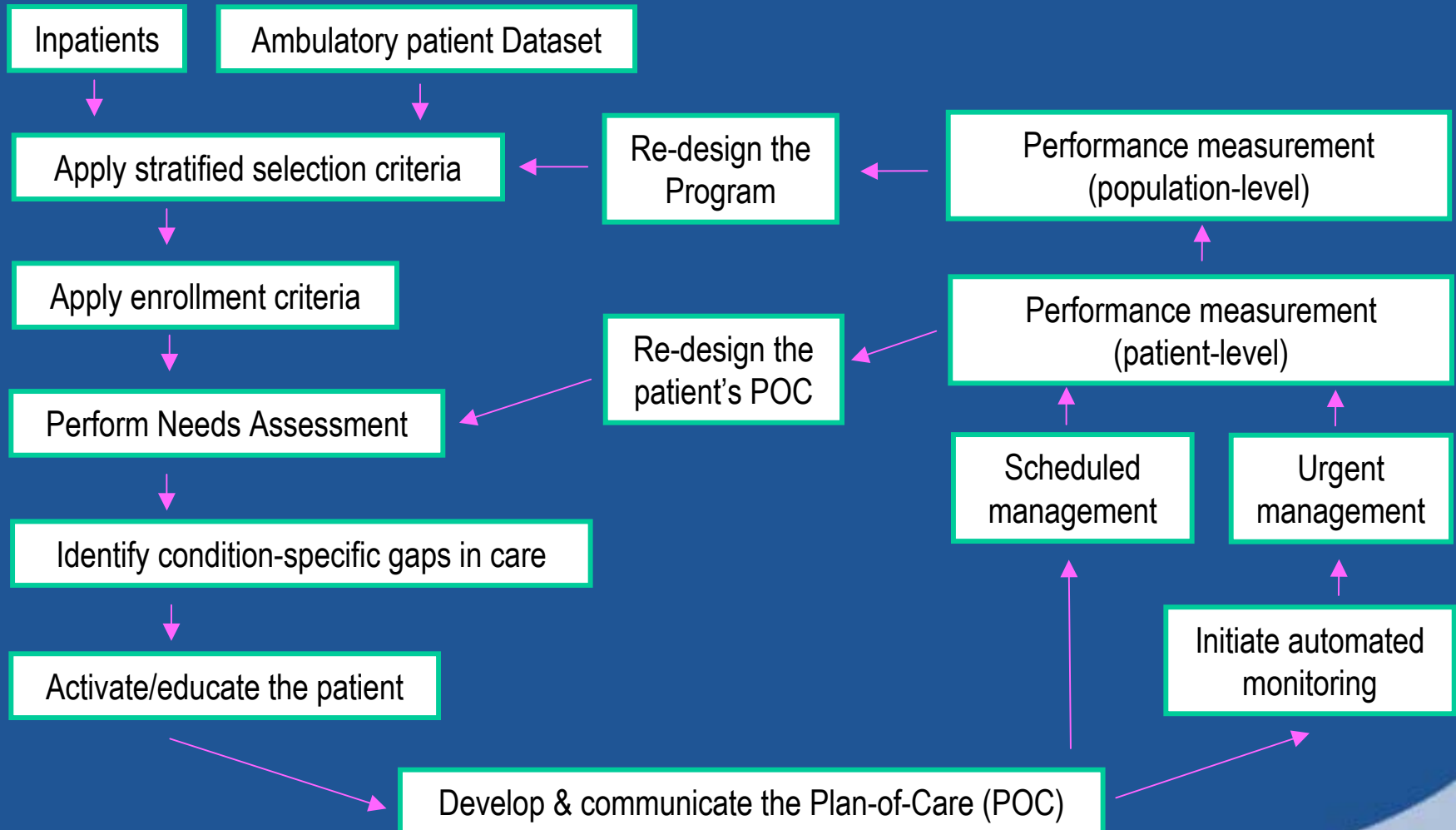
- 17% of the beneficiaries generated 73% of the aggregate medical expense
- 26% had ≥ 3 chronic conditions
- 22% were hospitalized during the year (9% more than once); 27% of those admissions were for CHF, COPD, CardioResp Failure, Diabetes, and/or Renal Failure
- inpatient facility costs represented 50% of aggregate medical expense
- 21% are "disabled-only" (i.e. under 65yo)

Co-morbidity is the norm

- 45% of Medicare patients have ≥ 2 chronic conditions (the top 1/5 of which cost $> \$25K$ each per year)
- Example: the co-morbidity profile for patients with ≥ 2 congestive heart failure (CHF) admissions includes hypertension (84%), coronary artery disease (75%), diabetes (52%) and COPD (23%)
- Depression, a commonly under-diagnosed/untreated condition, is co-morbid in 27% of diabetics, 27% of stroke patients and 40-65% of heart attack patients

Case Stratification & Management

Clinical/Operational Improvement Cycle



Operational Registries...

- are not static retrospective profile reports
- are pre-defined, programmatically-generated lists of patients who are deficient (or will soon be deficient) in any aspect of standards-based care
- are used to programmatically initiate various interventions (e.g., lab orders, referrals, letters, secure e-mails, etc.)
- are used to ensure that patients who forget to seek care and/or forget to follow-through don't fall through the cracks

Operational Registry

[*example: Chronic Disease Return Visits*]

Objective: to automatically identify/contact patients with specific high-risk conditions who have not received accountable periodic follow-up care

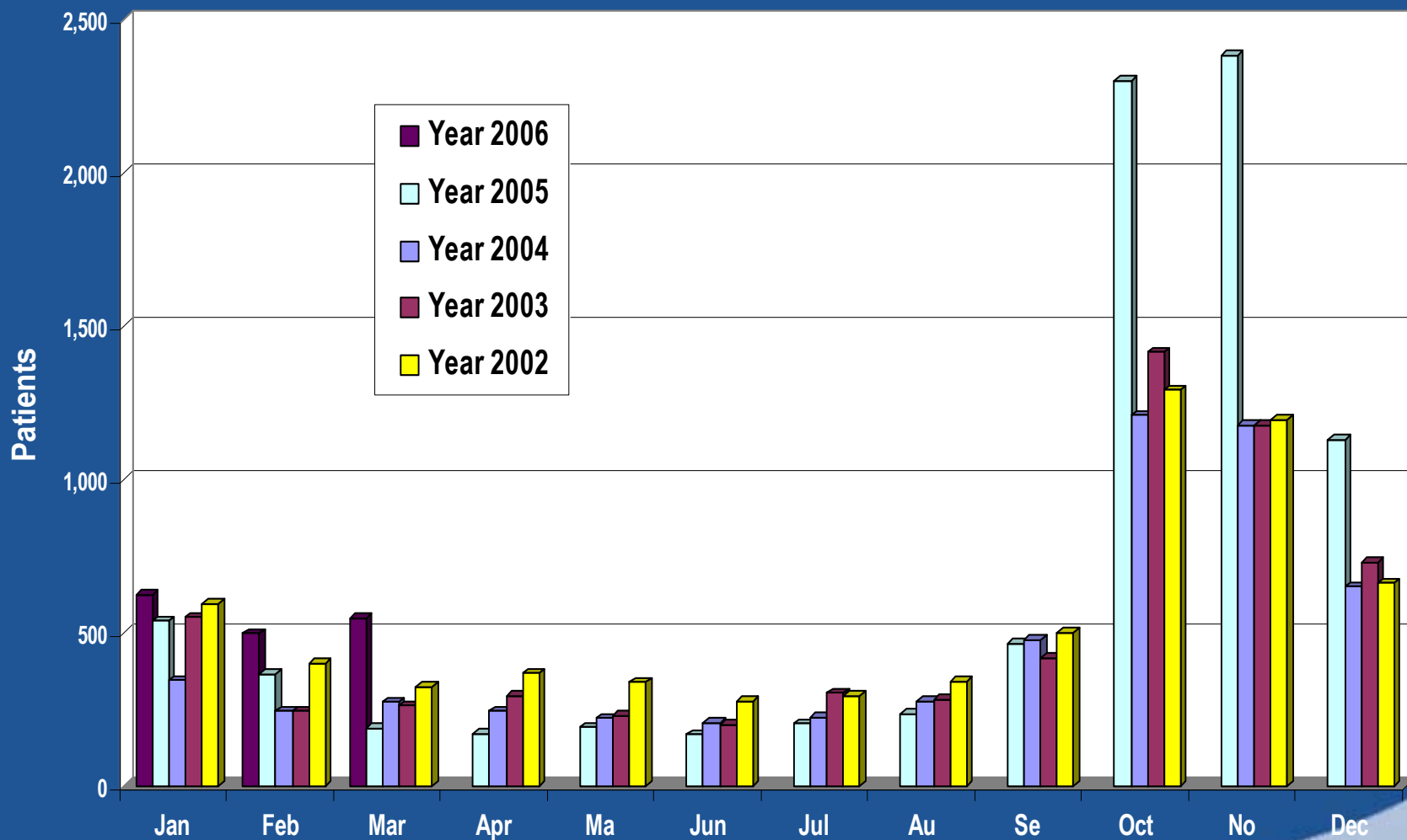
Monthly Process

1. **Automatically identify patients** with CHF, COPD or DM who had not had the necessary disease-specific office visit within the last 7 months
2. **Automatically generate and mail** condition/intervention-specific letters to the identified target population
3. If no response within 2 weeks, perform outbound call to the patient
4. At point-of-scheduling and at point-of-care (primary care sites), utilize **standardized reason prompts, documentation templates and structured code sets** at all sites of care

Results: 50% yield (i.e., appointment rate)

Operational Registry

[*example: Pneumococcal vaccination*]

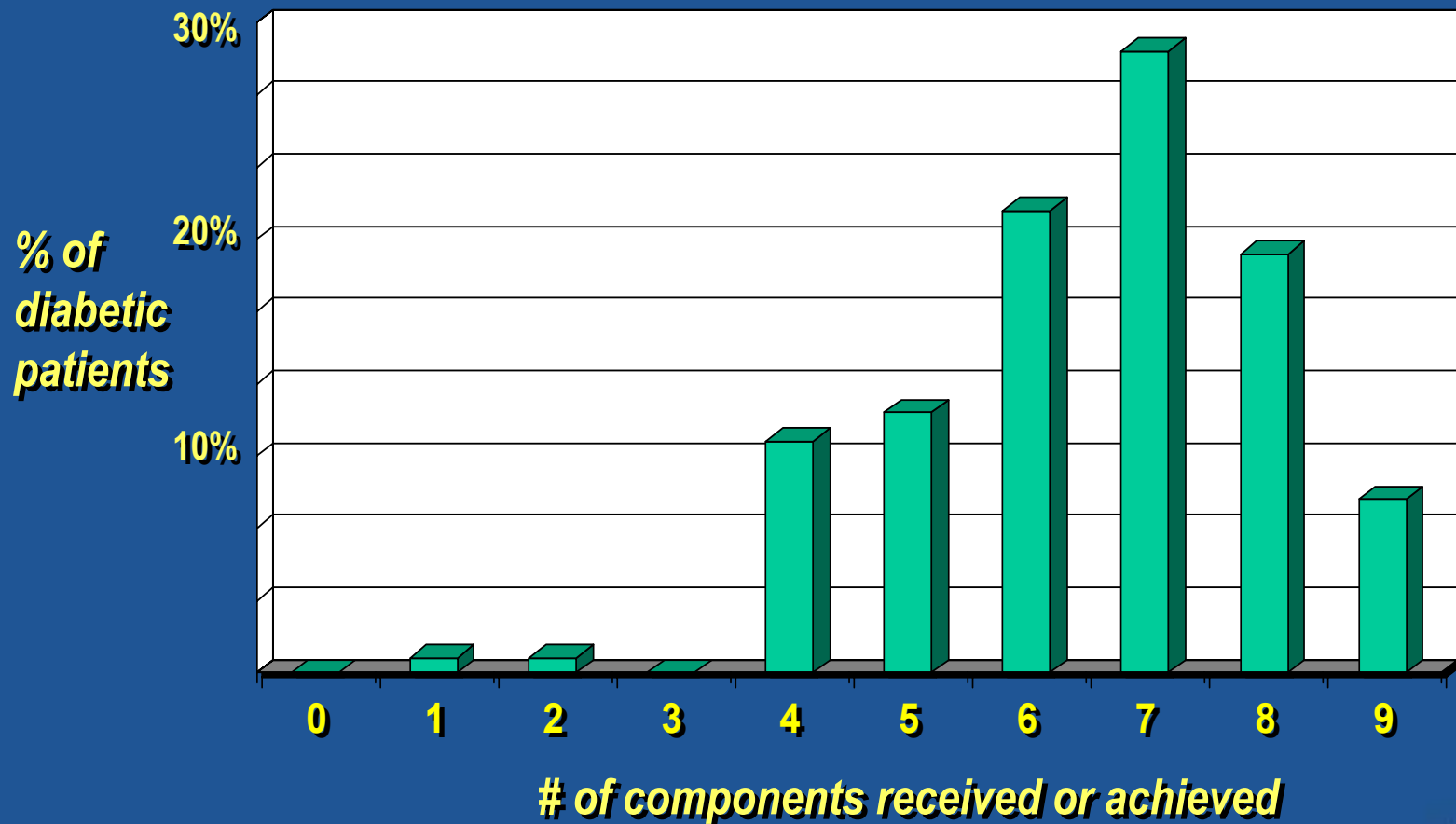


“All or none” Process Reliability

Diabetes “bundle”

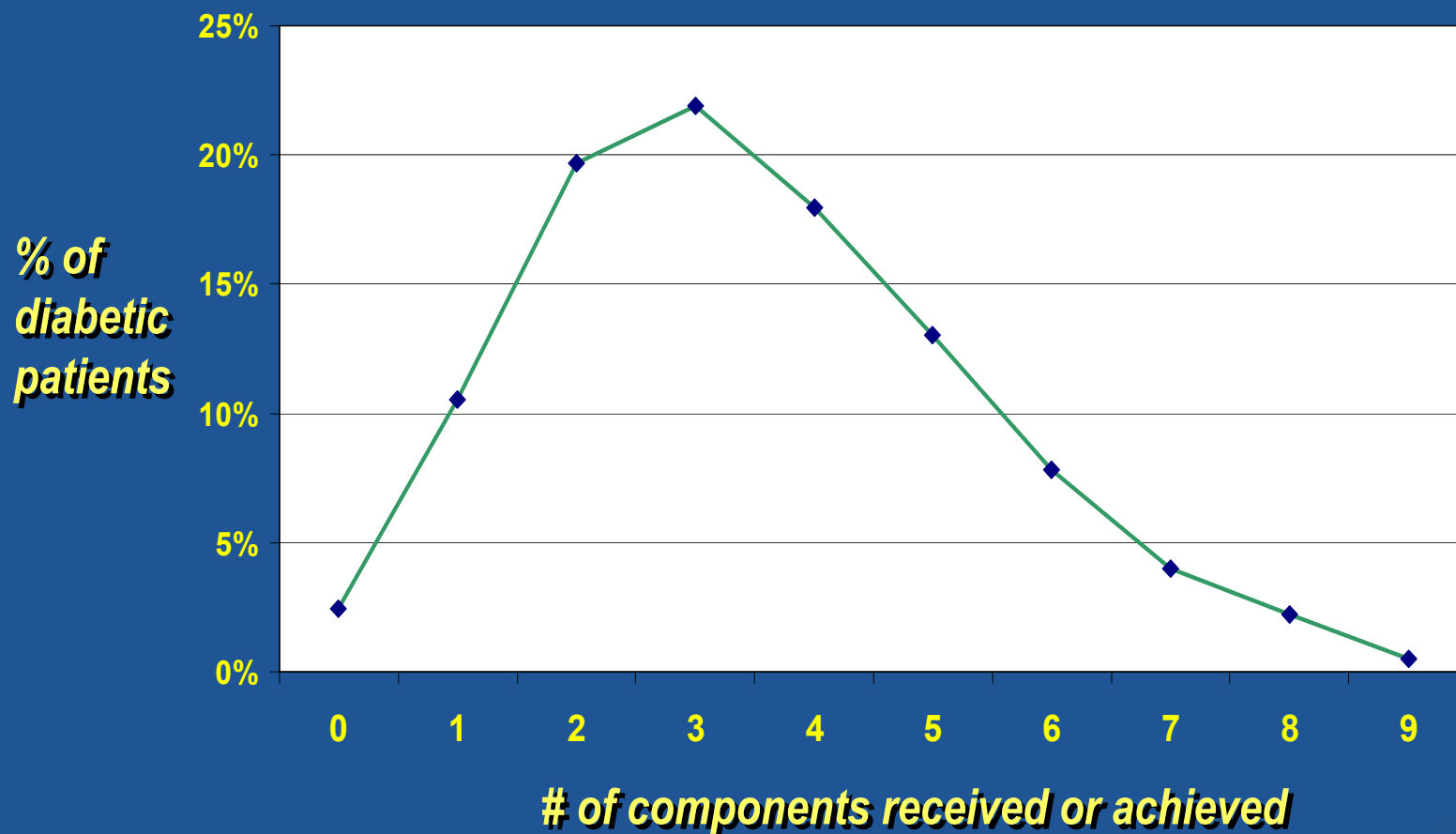
Measures	Quality Standard	FY07
HgbA1C measurement	Every 6 months	X
HgbA1C control	< 7	X
LDL measurement	Yearly	X
LDL control	< 100	X
Blood pressure control	< 130/80	X
Retinal exam	Yearly	
Urine (protein) exam	Yearly	X
Foot exam	Yearly	
Influenza immunization	Yearly	X
Pneumococcal immunization	Once	X
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

Diabetes management (*high performing provider*)



Diabetes management

(average performing provider)



Point-of-Care Decision Support

Best Practice Alerts

The screenshot displays the 'Workbench' application window. At the top, there is a menu bar with 'Desktop', 'Action', 'Options', 'Reports', 'Tools', and 'Help'. Below the menu bar is a navigation bar with buttons for 'Back', 'Forward', 'Home', 'Sched', 'In Basket', 'Review', 'Encounter', 'Tel Enc', 'Pt Lists', 'Secure/Stay', 'Print', and 'Secure'. The main window title is 'Workbench' and it shows 'Workspaces' in the top right corner.

The central area is titled 'SmartSet' and shows the following details:

- Name: CPSL LAB DM CDM
- ID: 2832
- Version Num: 1
- Version Date: 11/11/2005

Below these details are tabs for 'Properties', 'Configuration', 'LookupTools', and 'Restrictions'. The 'Configuration' tab is active, showing a list of items with buttons for 'Edit', 'Add Section', 'Add Subsection', 'Add Data Row', and 'Delete Row'. The list is structured as follows:

- START OF SMARTSET
- LABS at GHS Site
 - lab
 - DRAWING BLOOD, ROUTINE [36415]
 - HEMOGLOBIN, A1C [83036]
 - LDL (DIRECT MEASURE) [83721]
 - LIPID PANEL [80061] (Provider Preference—Schedule Labs Fasting)
 - MICROALBUMIN, RD UR [82043.01]
- LABS at NON - GHS Site
 - lab
 - HEMOGLOBIN, A1C (Remind Pt to pick up orders at clinic prior than having labs dr
 - LDL (DIRECT MEASURE) (Remind Pt to pick up orders at clinic prior than having le
 - LIPID PANEL [80061] (Provider Preference—Schedule Labs Fasting) (Remind Pt to
 - MICROALBUMIN, RD UR (Remind Pt to pick up orders at clinic prior than having lal
- DIAGNOSIS
 - diagnosis
 - Diabetes
- END OF SMARTSET

On the right side of the configuration area, there are legend items: a green dot for 'Standing', a purple dot for 'Future', and a crossed-out circle for 'Associations'. Below the legend is a 'Save As...' button. At the bottom right, there are 'Cancel' and 'Accept' buttons. A note at the bottom of the window reads: 'Note: Use drag and drop to reorder the display. Right click to edit.'

Challenges

- generating **data sets** that are robust, standardized, accurate, structured and accessible
- developing **data capture** processes that are efficient, accountable and value-added
- creating real time **decision support** that fits the clinical process flow; for providers, care teams and patients
- Redesigning workflows and data flows to be optimized for full-continuum care (specifically focused on **patient-centric home-based care**)

Health Care in the 21st Century

“During the next decade, the practice of medicine will change dramatically, through genetically based diagnostic tests and personalized, targeted pharmacologic treatments that will enable a move beyond prevention to pre-emptive strategies.”

Senate Majority Leader, Bill Frist, MD

“Health Care in the 21st Century”

New England Journal of Medicine, Jan. 2005

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