

Quality and Hospital Medicine: An overview

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Hospital Medicine Conference

9/21/07

Sponsorship: Dr. Dorr is primarily funded by the John A. Hartford Foundation and does research in complex chronic illness care for older adults (www.caremanagementplus.org); he reports no conflict of interest.

Quality issues

- Why and how do we consider medical quality?
- Role of Quality Improvement
 - In diagnosing and treating processes in medicine
 - In applying evidence (translation)
 - In policy (reimbursement, regulations)

Note: definitions of micro and macro vary from those in economics

Issue: Community Acquired Pneumonia

How might we standardize pneumonia treatment?

Core issues

- Admit or no? ICU?
- Antibiotic choice
- Antibiotic timing
- Exceptions

Approach

- Algorithm / score
- Order sets
- Processes + order set
- Flexibility / clarity

How do we know there is an improvement?



Community Acquired Pneumonia

PNEUMONIA giving ceftriaxone to pneumococcus if received betalactam within the prior 3

Allergies _____

DOB _____

A. RISK FACTOR

Y	N	
<input type="checkbox"/>	<input type="checkbox"/>	Age ≥65 or older
<input type="checkbox"/>	<input type="checkbox"/>	Suspicion of CHF
<input type="checkbox"/>	<input type="checkbox"/>	CHF
<input type="checkbox"/>	<input type="checkbox"/>	COPD/bronch
<input type="checkbox"/>	<input type="checkbox"/>	Diabetes
<input type="checkbox"/>	<input type="checkbox"/>	ETOH abuse
<input type="checkbox"/>	<input type="checkbox"/>	Chronic renal
<input type="checkbox"/>	<input type="checkbox"/>	Chronic liver
<input type="checkbox"/>	<input type="checkbox"/>	Postsplenect
<input type="checkbox"/>	<input type="checkbox"/>	Systemic act
<input type="checkbox"/>	<input type="checkbox"/>	patient is imm

B. RISK FACTOR

Y	N	
<input type="checkbox"/>	<input type="checkbox"/>	Temp. ≥101
<input type="checkbox"/>	<input type="checkbox"/>	RR ≥30
<input type="checkbox"/>	<input type="checkbox"/>	B/P <90/60
<input type="checkbox"/>	<input type="checkbox"/>	SaO ₂ <85%
<input type="checkbox"/>	<input type="checkbox"/>	Acute alterec
<input type="checkbox"/>	<input type="checkbox"/>	Physical exam or decreased

C. RISK FACTOR

Y	N	
<input type="checkbox"/>	<input type="checkbox"/>	WBC <4,000
<input type="checkbox"/>	<input type="checkbox"/>	Hgb <9 OR H
<input type="checkbox"/>	<input type="checkbox"/>	CXR findings:
<input type="checkbox"/>	<input type="checkbox"/>	Multilobar
<input type="checkbox"/>	<input type="checkbox"/>	Effusion

If no risk factors present

If risk factors present

Consider: K, Na, glt

3 OR MORE

142-3821

If cavitation, exit proto, and to replace

If no infiltrate on CXR, exit protocol

BUN ≥20 or C

Glucose ≥250

Sun

Assess for ICU admission

- Sustained RR ≥30 or needs mechanical ventilation
- Sustained BP < 90/60 or on vasopressors
- O₂ supplement >50% (PaO₂/FiO₂ <210 mm Hg)
- Acute renal failure

If any present, draw two blood cultures and give first dose of antibiotics. Admit to ICU.

Assess for admission

- Sat <85%
- Coexisting illness requiring admission
- Acute altered mental status
- Patient dependent and no caregiver available
- Pleural effusion with > 1 cm on decubitus chest film

If any present, draw two blood cultures and give first dose of antibiotics. Admit to hospital.

If none present, consider treatment as outpatient* parenteral and oral

Parenteral Outpatient Therapy

- Ceftriaxone 1 gram every 24 hours for _____ days.

(PLUS)

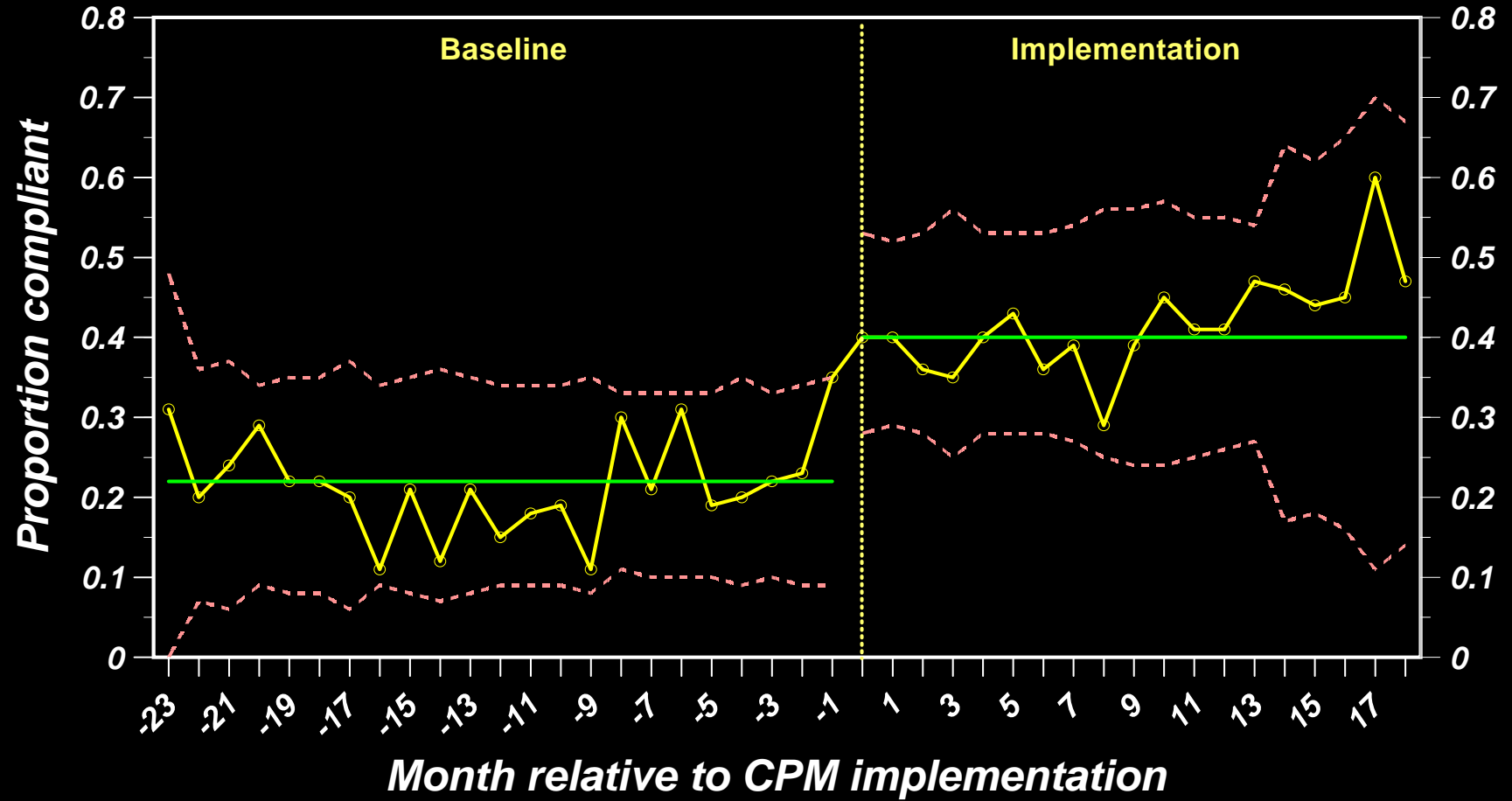
- Doxycycline 100 mg bid x 10 days
- Zithromax ZPAK as directed

OR

- newer quinolone

CAP protocol compliance

Implementation Group -- Loose Abx Compliance



P chart - 0.01 control limits

Community acquired pneumonia

	<u>without guideline</u>
% patients admitted	39%
Average LOS	6.4 days
Time to antibiotic	2.1 hours
Average cost / case	\$2752

Community acquired pneumonia

	<u>without protocol</u>
"Outlier" (complication) DRG at discharge	15.3%
In-hospital mortality	7.2%
Relative resource units (RRUs) per case	55.9
Cost per case	\$5211

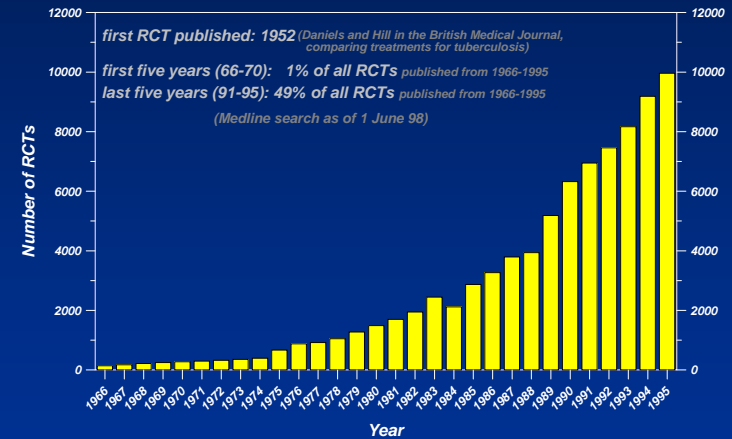
Why consider medical quality?

- Information / knowledge overload
- Variation
- Team-based, multisetting, complex nature of patient care
- Policy



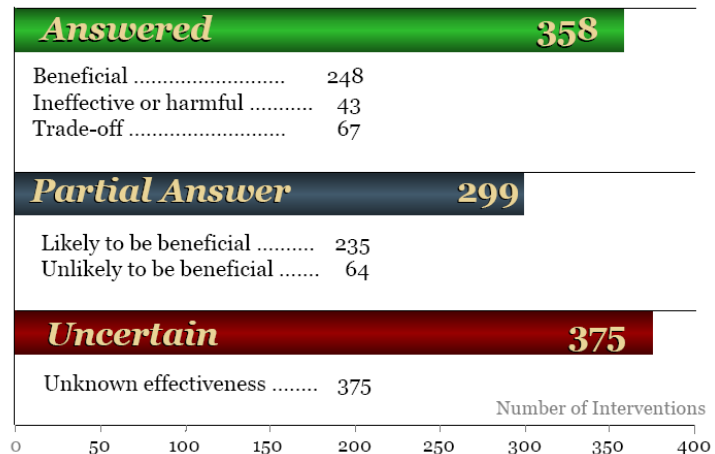
Some root causes, therefore, are information, knowledge, and cognition based.

- Information/knowledge needed is
 - Enormous
 - Challenging to find
 - Lacking
 - In the wrong form
 - Difficult to communicate



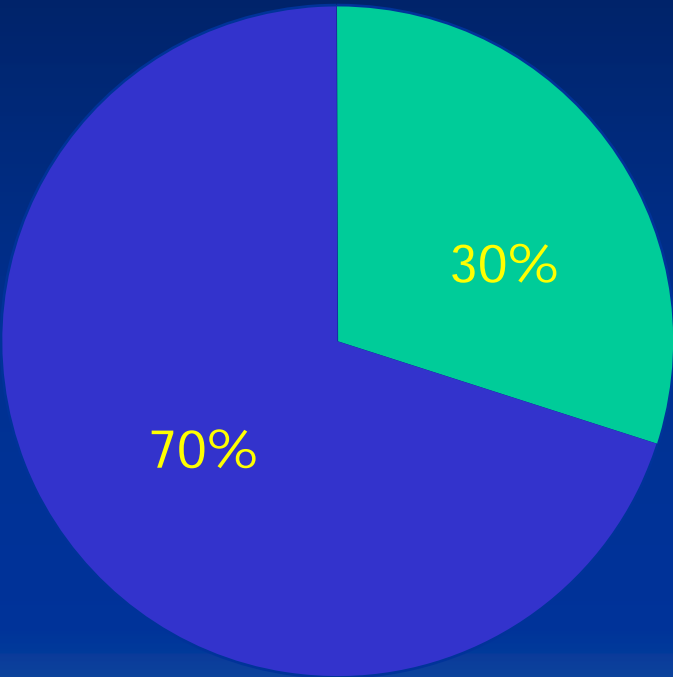
Chassin, Mark R. Is health care ready for six sigma quality? *Milbank Quarterly* 1998; 76(4)

How many questions have any evidence? (BMJ 2000)



Is variation important?

Practice Variation



Project Hope, Wennberg et.al., 2003/HealthAlliant

**Annual U.S. health care expenditures:
\$1.7 trillion x 30% = ~ \$500 billion**

"...risk-adjusted cost varied almost 3-fold..."
Duke Clinical Research Institute 2002

"...cost of poor quality was...nearly 30% of the expense base...core medical processes that comprise the majority of what we do"
Mayo Clinic

"...72% drop in mean respiratory costs..."
APAM 2000

"...27% difference in cost of treating otitis media..."
Ozcan 1998

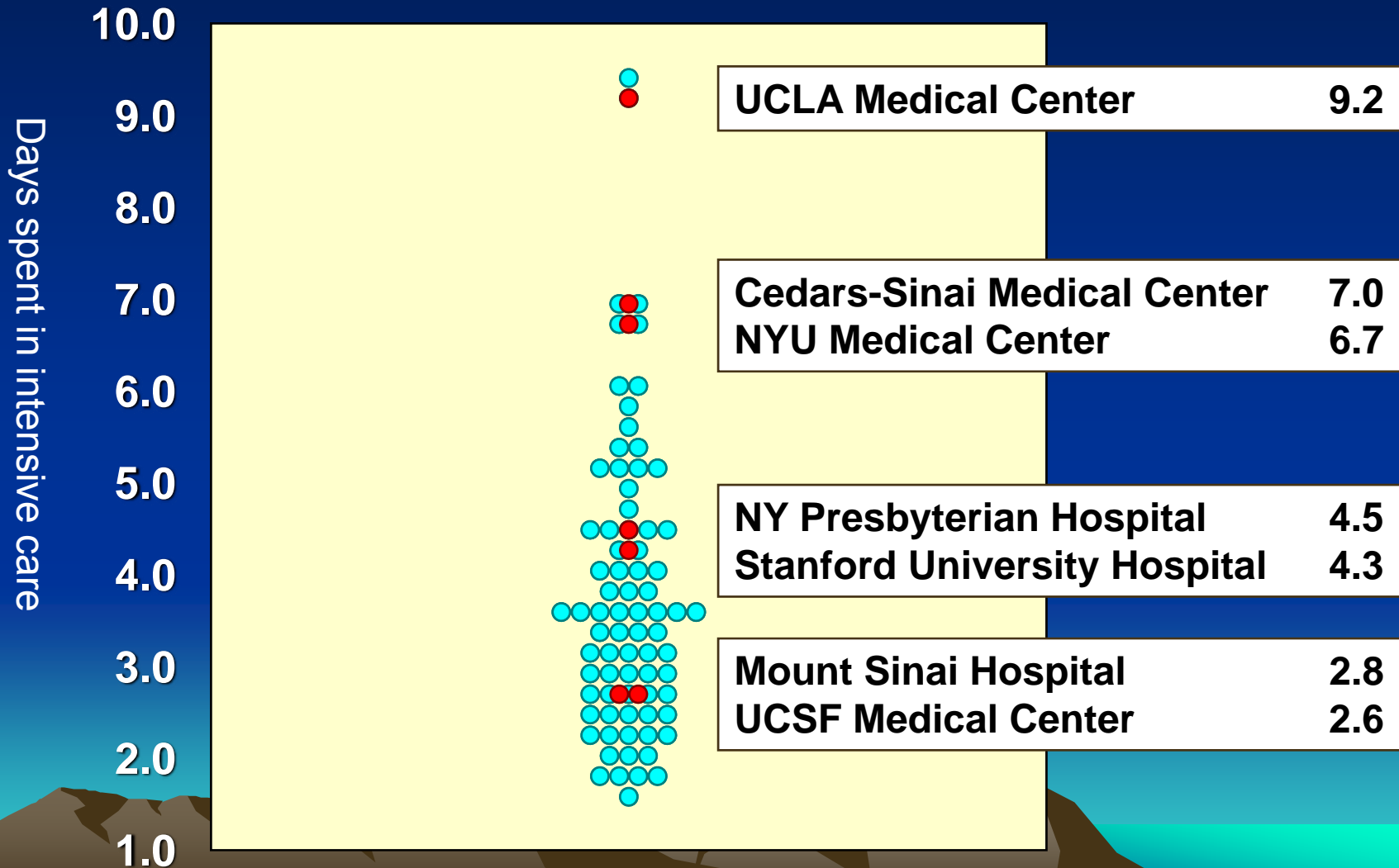
"...20 to 30% of the acute and chronic care that is provided today is not clinically necessary..."
Becher, Chause 2001

"...The cost of poor quality in health care is as much as 60% of costs..."
Brent James, M.D., IHC.

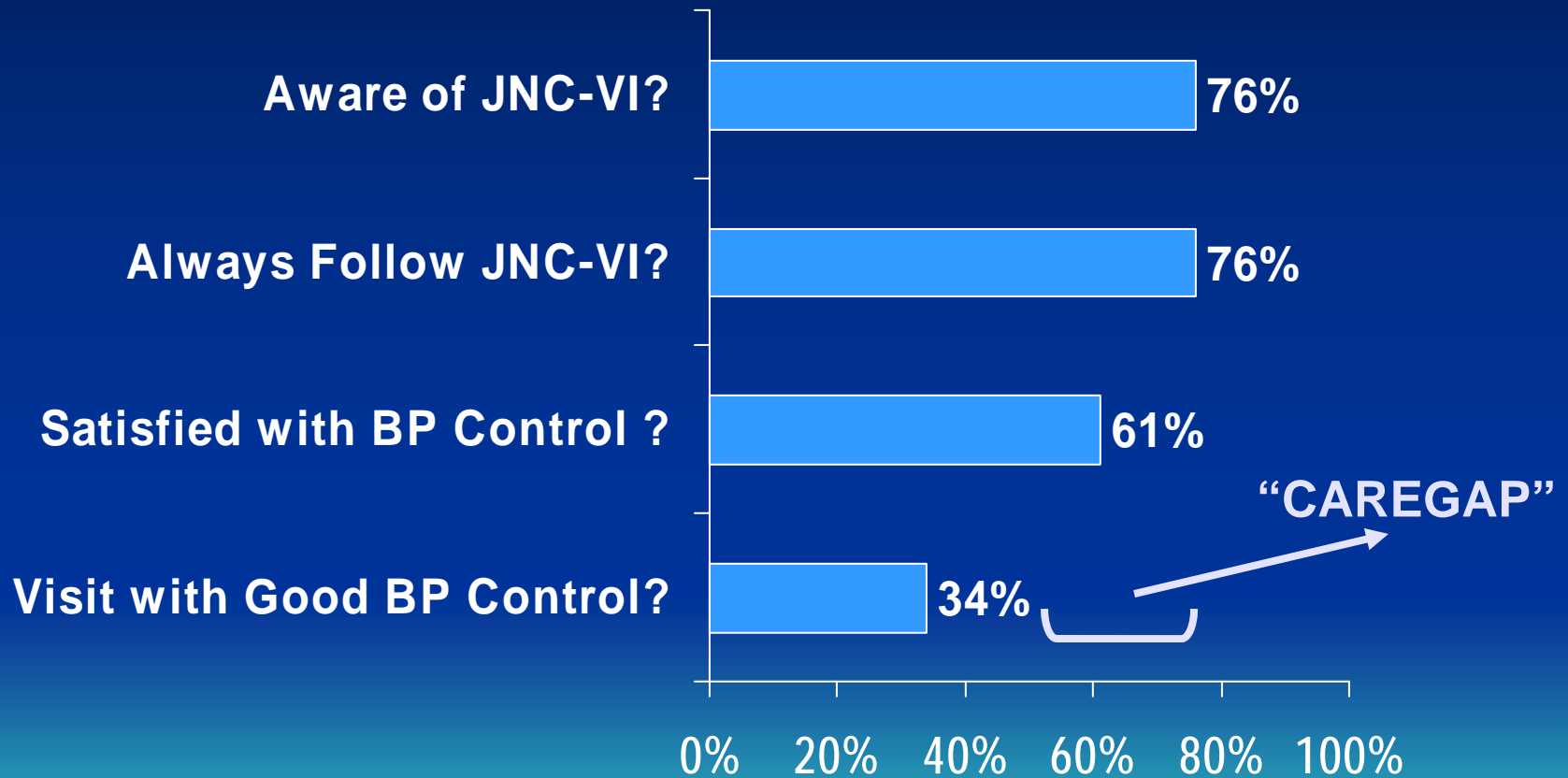
"...30% of direct health care outlays are the result of poor-quality care..."
MBGH, Juran, et al 2002

Variation in care plagues the US system.

End of life days spent in intensive care



Care Gaps



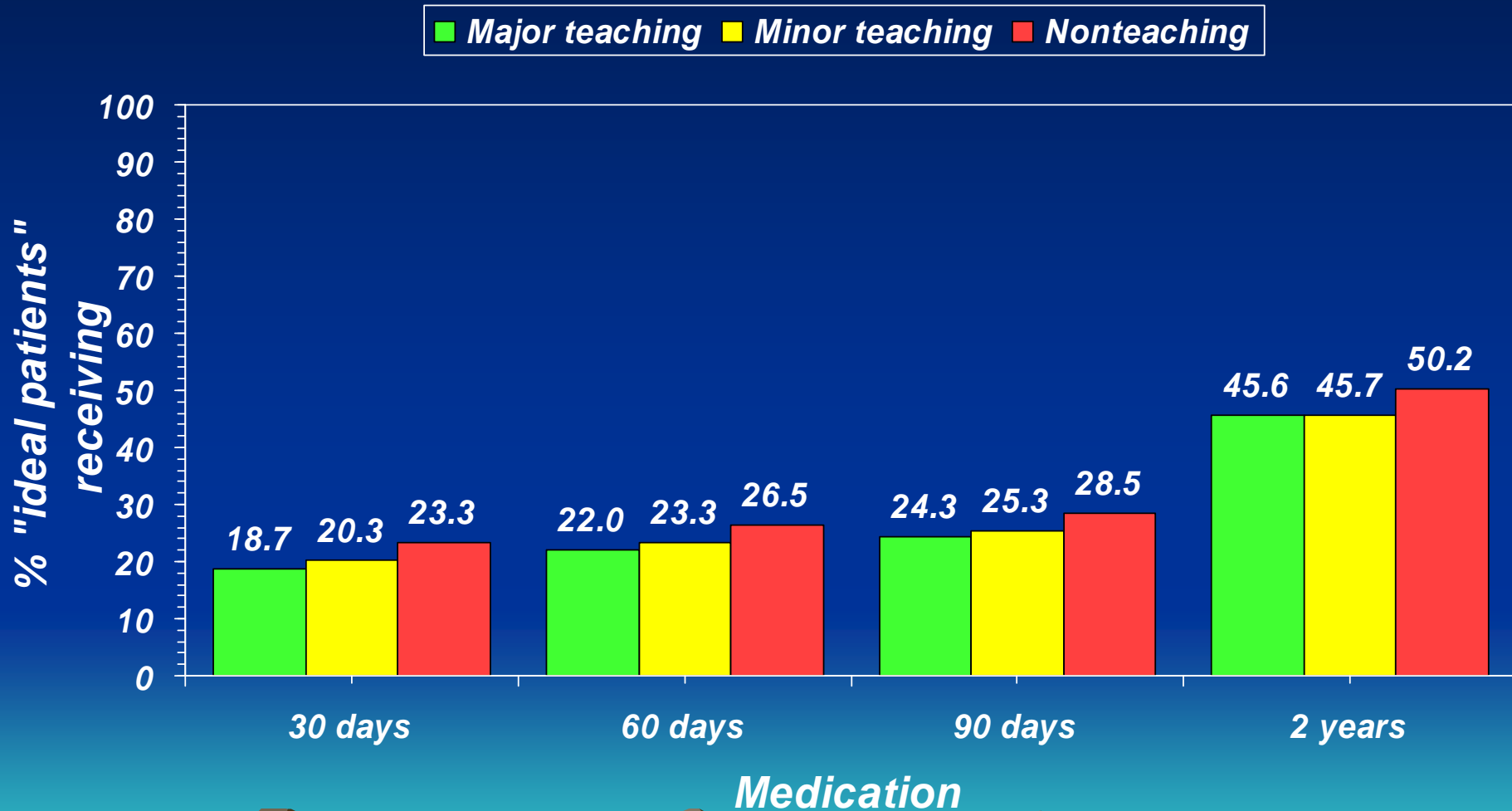
(Oliveria et al. Arch Intern Med. 2002;162)

Complicated, team-based: heart attacks

- During and after heart attack and heart failure, providing key medications prolongs life.

Disease/Medication	Study (e.g.)	Relative Risk Reduction in Mortality
Heart Failure	CONSENSUS(8)	31%
ACE Inhibitors	MERIT-HF(9)	34%
B-blockers	CIBIS II(10)	34%
	MOCHA(11)	73%
Spironolactone	RALES(12)	30%
Secondary Prevention after Heart Attack.		
ASA	Lewis et al(13)	50%
Statins	4S(14)	30%
ACE Inhibitors	GISSI(8)	30-50%
B-blockers	Gottlieb et al(15)	40%
Atrial Fibrillation	AFASAK(16)	64%
Warfarin		

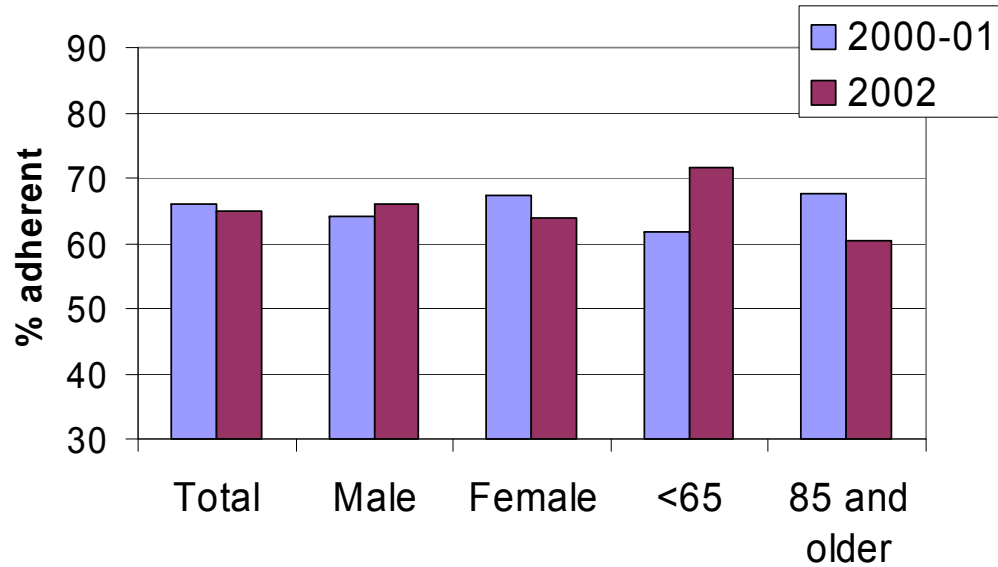
So, everyone should do this, right?



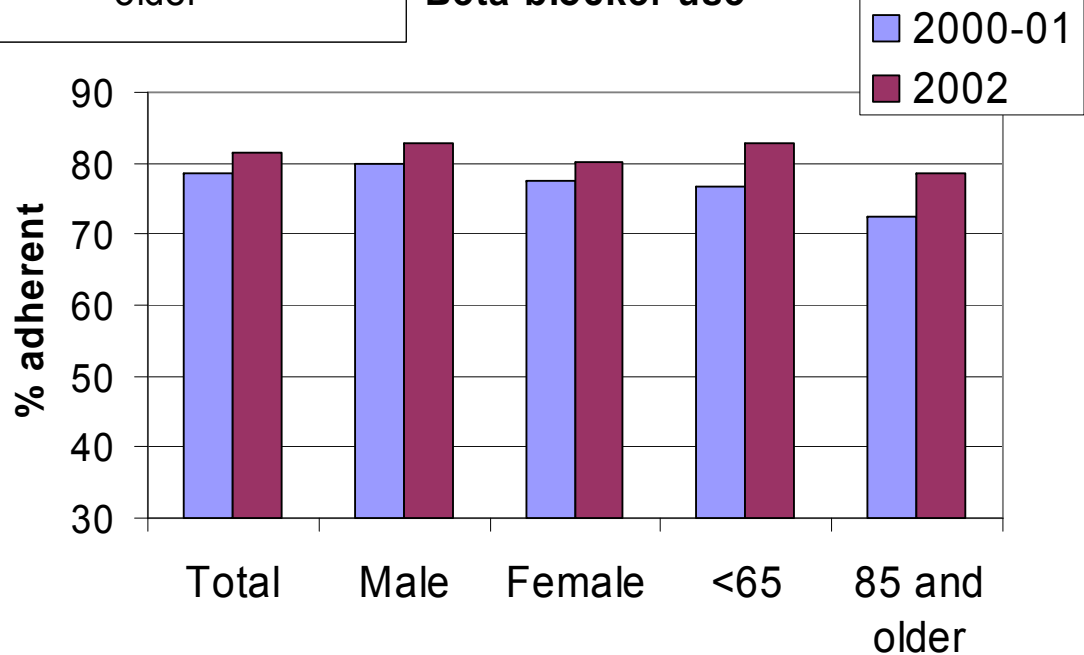
Allison JJ *et al.* Relationship of hospital teaching with quality of care and mortality for Medicare patients with acute MI. *JAMA* 2000; 284(10):1256-62 (Sep 13).

Post-MI care is improving.

Ace inhibitor use



Beta-blocker use



Policy

- Physician Quality Reporting Initiative (PQRI) – 1.5% Medicare bonus
 - Hospital measures: Pneumonia, Myocardial Infarction, Congestive Heart Failure
- Premier Hospital Measures initiative and pay for performance
- Aligning forces for quality
- Medicare ‘no payment for errors’ policy



What is Quality improvement?

- A over-riding structure and process to
 - ... translate research into practice.
 - ... foster system improvements, not create blame.
 - ... document critical appraisals of processes, structures, and outcomes.
 - ... facilitate a transformation in medicine
 - From reactive to proactive
 - Data-driven, not data-shy
 - Population care *and* individualized care



Fundamental improvement questions

- ◆ ***What are we trying to accomplish?***

A clear outcome target is essential to assign resources, garner collaboration, etc.

- ◆ ***How will we know that a change is an improvement?***

Without this step, innovation is impossible ... "Truth is found more often from mistakes than from confusion" -- Francis Bacon, 1561-1626

- ◆ ***What changes can we make that will result in improvement?***

A hypothesis generation step ...

QI process

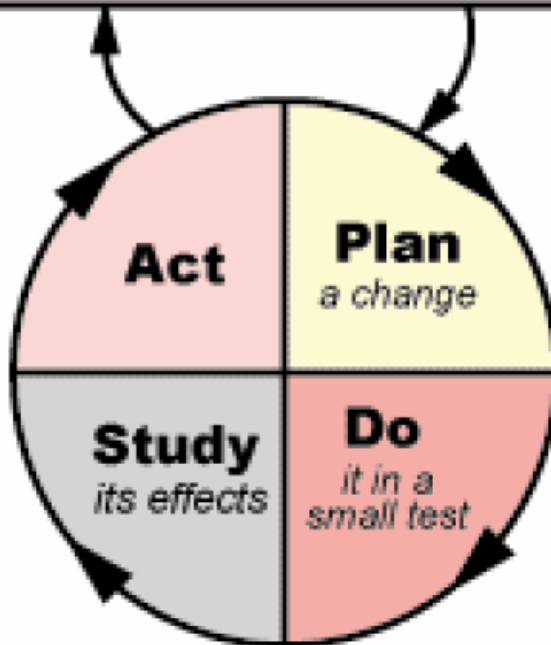
1. Aim statement
2. Team members
3. Build conceptual model
4. What will I measure?
5. List of change hypotheses – multiple !
6. Test these in remedial journey. (*start over*)

From the Diagnostic journey, by Juran



PDSA cycle: a problem solving tool

*What are we trying to accomplish?
What changes can we make that will result in improvement?
How will we know that the change is an improvement?*



- **guidelines may contain too many changes; therefore, select one or two to focus on at a time**

Quality Assurance vs. Quality improvement

Quality Assurance

Focus on the "outlier"
- Who?

"Bad Apple"
- Get rid of him/her?

Am I good enough
to avoid punishment?

Cycle of Fear

Attempt to
Eliminate the tail ...
Not fix the situation

Propagates a
"Cycle of fear"

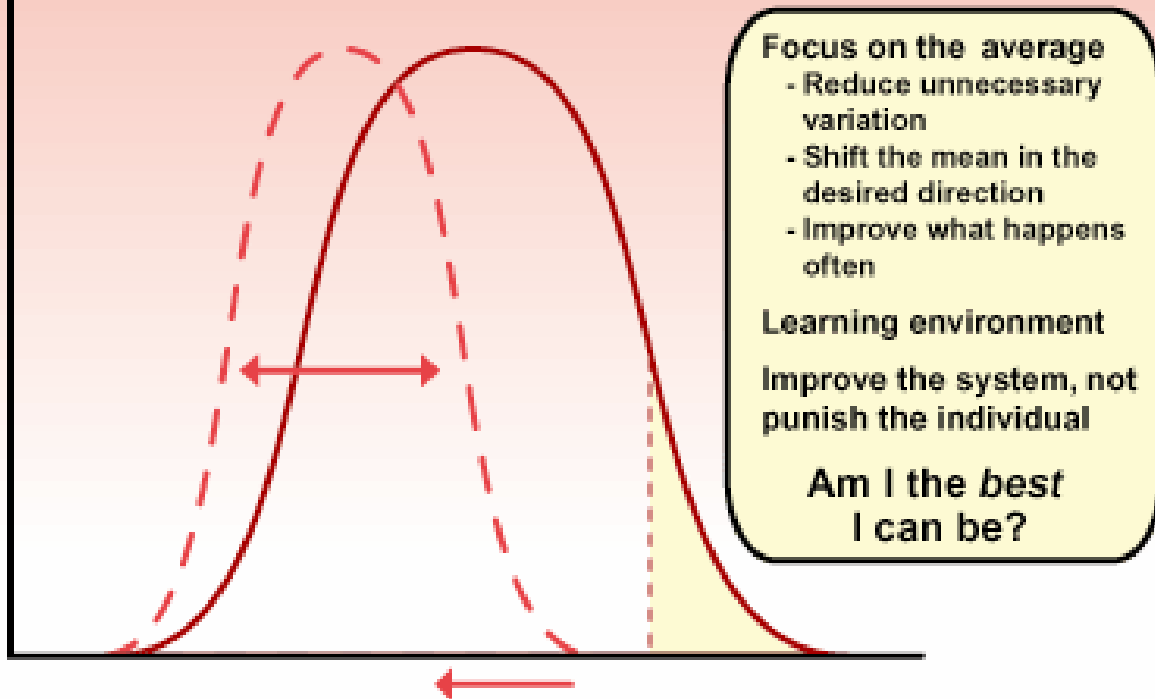
If tail is quite small,
can be productive.

QA vs. QI (2)

Attempts to

1. Reduce variation
2. Improve process
3. Create a culture of learning and safety
4. Improve the system

Quality Improvement



MEASURES
and talk about
ENACTING CHANGE

Solutions and Challenges

Re-engineering-based

- Quality improvement processes / strategies
- Collaboratives (Tsai, AJMC & Landon)
- Technology

Accountability-based

- Process and outcome (Werner, 2006)
- Pay for performance (Lindenauer, 2007)



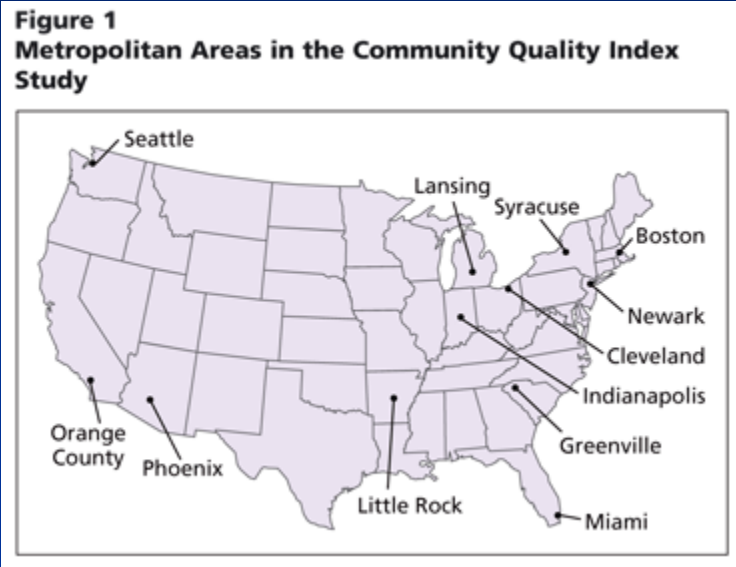
Specific strategies to improve quality

Strategy	Example	Effectiveness
Provider education	Conferences; 1-1 academic detailing	↑ provider knowledge, not outcomes
Decision support	Reminders, alerts, ticklers	Reminders can be effective
Audit/feedback	Provider profile of diabetic patients	Some effect
Patient education	Group sessions with care manager	Mod to large effect
Organization change	Change team or org.; care manager	Positive for care/dis. management
Financial incentives	Pay for performance	May help ↑ goals, but other issues

How do you study quality?

McGlynn

- 419 Quality indicators chosen from
 - Expert panels and
 - Literature review
- Study design
 - 12 cities
 - 13,000 patients
 - Called, asked questions
 - Review medical charts



Quality was found to be subpar with only 54.9% receiving recommended care.

Hypertension (27 indicators)					
Indicator 16	Lifestyle modification for patients with mild hypertension	For chronic condition	Treatment	Counseling or education	Underuse
Indicator 18	Pharmacotherapy for uncontrolled mild hypertension	For chronic condition	Treatment	Medication	Underuse
Indicator 27	Change in treatment when blood pressure is persistently uncontrolled	For chronic condition	Follow-up	Medication	Underuse

<http://www.rand.org/health/tools/qualist.html>

Results:

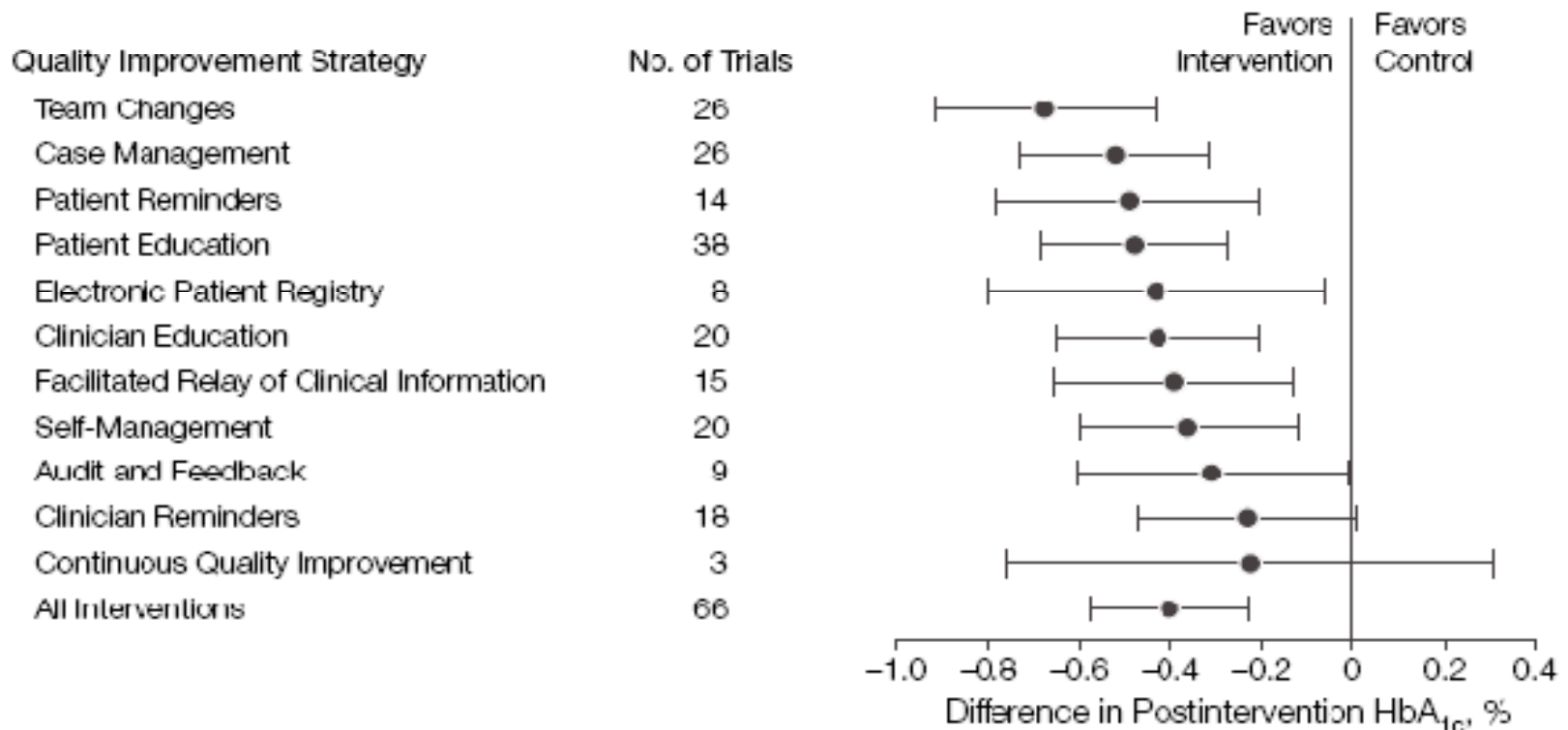
Participants received **54.9%** (95 percent confidence interval, 54.3 to 55.5) of recommended care.

- Preventive care: 54.9%
- Acute care: 53.5%
- Chronic care: 56.1%

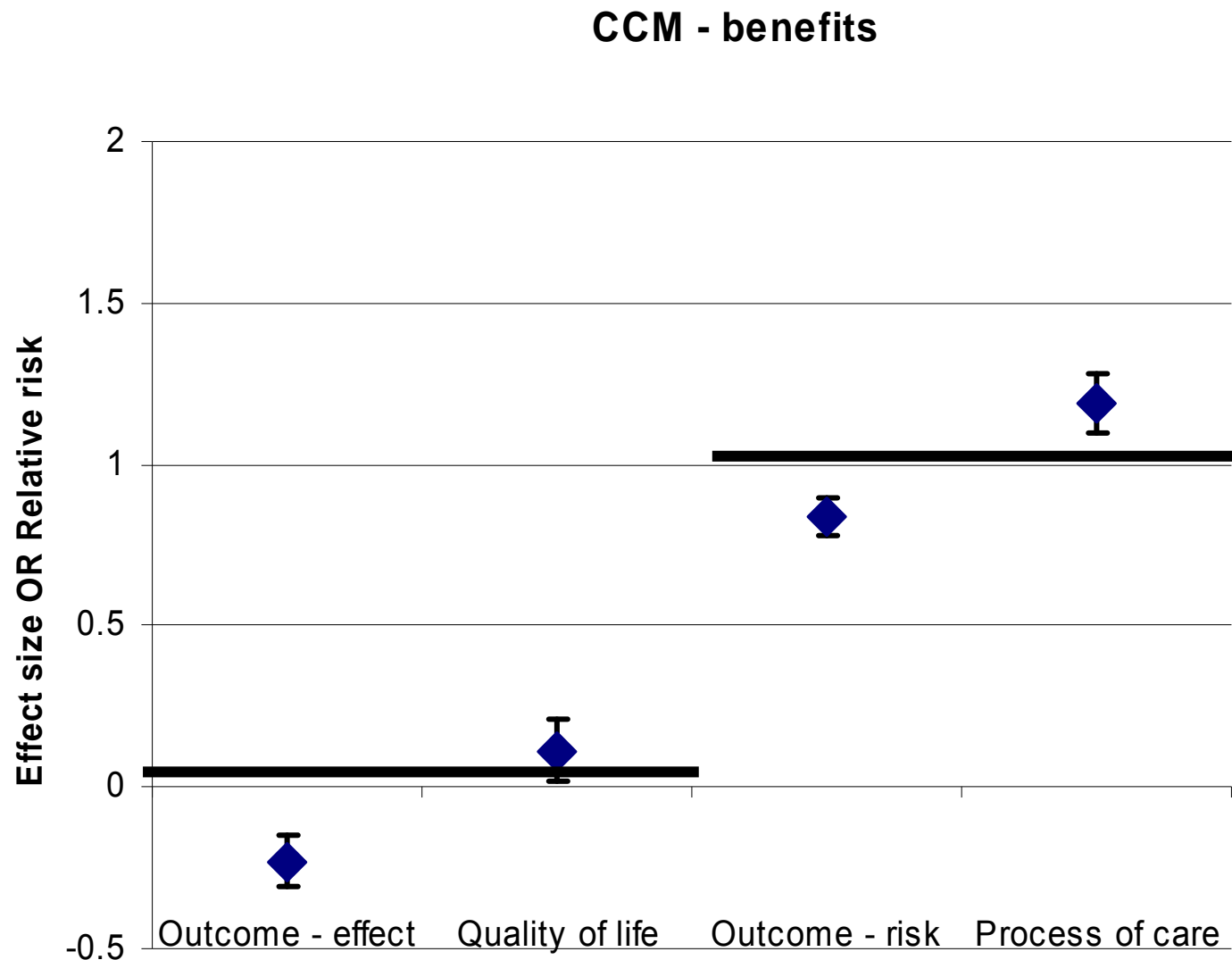
Meta-analysis of QI

66 trials of HbA1c reduction in Diabetes

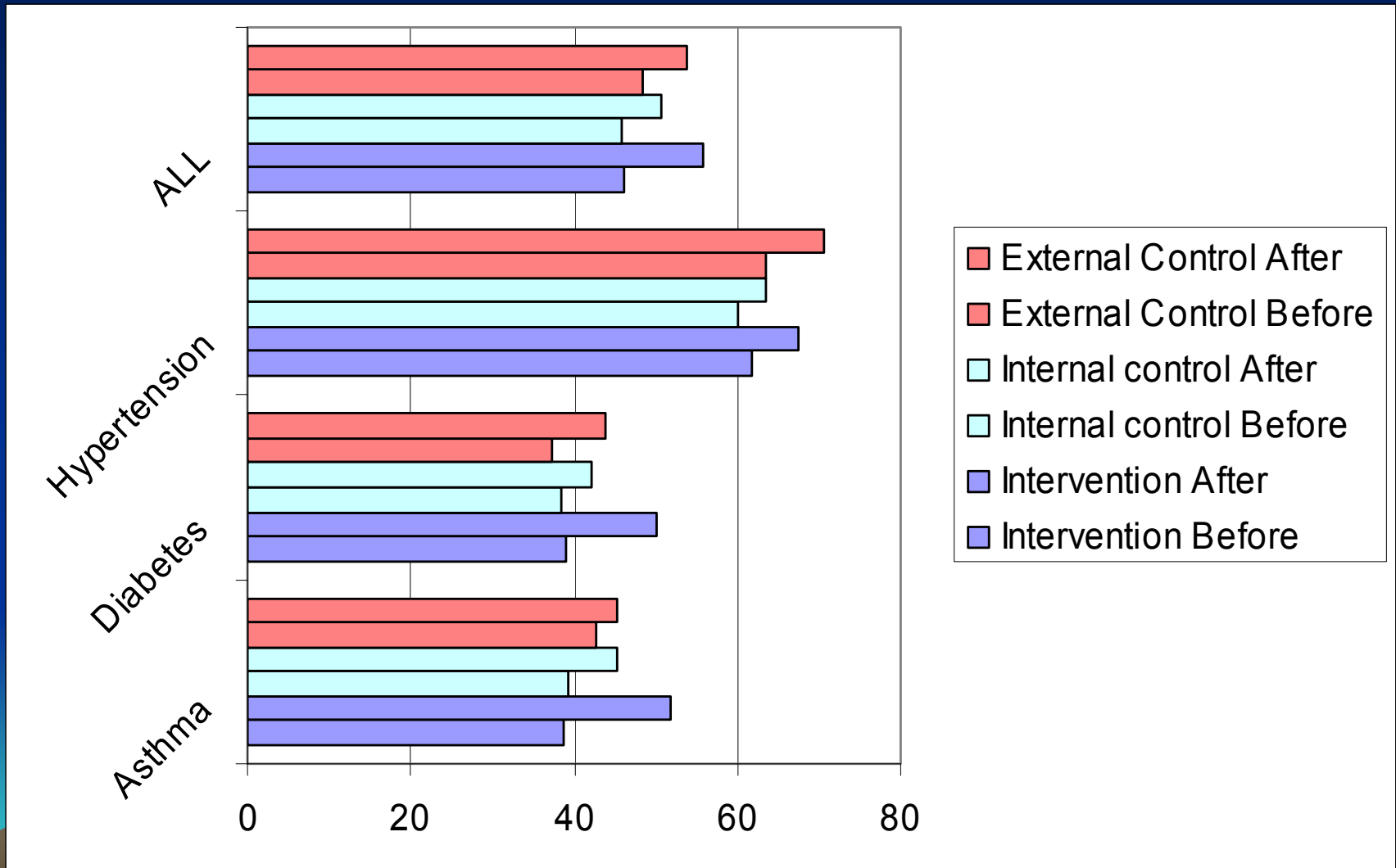
Figure 2. Postintervention Differences in Serum HbA_{1c} Values After Adjustment for Study Bias and Baseline HbA_{1c} Values



Chronic care model: results



Health Disparities Collaboratives: Chronic Care Model



My Medications are:

Medication

Dose

Reason

Personal Health Record

The Personal Health Record of:
Josephine Patient

Personal Information:

Address:

Home Phone#:

Birth Date:

Patient ID#

PCP Name:

Advanced Directives?:

Hospitalization Information:

Admitted: __/__/__ Discharge Date: __/__/__

Reason for Hospitalization:

Caregiver Information:

Name:

Phone #:

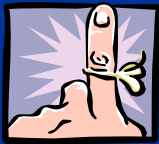
Relation to Patient:

Personal History

Please check any illnesses or health problems listed below that you have ever experienced.

- Arthritis
- Abnormal Heart Rhythm

Remember to take this Record with you to all of your doctor visits.



Before I leave the hospital....

- I have the instructions I need to keep my health condition from becoming worse.
- I know what symptoms to watch out for.
- I know the name and phone number of who to call if I see any of these symptoms.
- My family or someone close to me knows what I will need once I leave the hospital.
- I know what medications to take, how to take them, and possible side effects.
- I will schedule a follow up appointment with my primary care doctor.
- I will have a clear and complete copy of my discharge instructions.

After I leave the hospital...

1. I will write down questions I have about my condition.
2. I will take all bottles of medicine I am using to each doctor visit.
3. I will call _____ immediately at (XXX) XXX-XXX if I experience any of the following:
 - Temperature above 101° F
 - Uncontrollable pain
 - Increased confusion
 - Increased redness or drainage around wound
 - Questions about which medications to take

Variable	Intervention	Control	Adjusted P-value
Readmit for Same Dx w/in 30 days	3 %	5 %	0.04
Readmit for Same Dx w/in 90 days	5 %	10 %	<0.01
Readmit for Same Dx w/in 180 days	9 %	14 %	<0.01

Hospital Medicine and Transitions

Hartford Foundation Grants Society of Hospital Medicine \$1.4 Million

(PHILADELPHIA – April 11, 2007) – The Society of Hospital Medicine (SHM) has received a \$1.4 million grant from the John A. Hartford Foundation to develop interventions to improve care transitions for older adults at the time of hospital discharge.

“Patients who receive coordinated discharge care are more satisfied with their care and less likely to be readmitted,” said Larry Wellikson, M.D., Chief Executive Officer for SHM. “We want to provide both the tools and mentors to help hospitals coordinate staff and with community health care providers to improve this critical process.”

As part of this three-year project SHM will partner with national leaders in care coordination, such as the Institute for Healthcare Improvement (IHI) and the Agency for Healthcare, Research and Quality (AHRQ). SHM and its partners will form a National Advisory Board, create clinical tools, implementation guidelines, and provide technical support and training tools to hospitals across the U.S. The project aims to build capacity in at least 200 hospital sites to improve the discharge process, and ultimately health outcomes, for older adults.

“One of the core values of SHM and hospital medicine is to implement changes that improve the quality of health care that older Americans receive. With this grant support from the Hartford Foundation, SHM can help define the best practices in discharge and provide a continuum of training opportunities. We are excited and grateful for the continued support of the Hartford Foundation,” said Larry Wellikson, M.D., Chief Executive Officer for SHM.

Founded in 1929, The John A. Hartford Foundation is a committed champion of training, research, and service system innovations that promote the health and independence of America’s older adults. Through its grant-making, the Foundation seeks to strengthen the nation’s capacity to provide effective, affordable care to our rapidly increasing older population by educating health professionals, and developing innovations that improve and better

Medication Reconciliation

- Medication errors are the most common type of healthcare error
- At least 46% of medication errors are related to transitions of care
- Erroneous medication histories can contribute to inappropriate or interrupted drug therapy
- Implementation of simple standardized reconciliation forms can have a five-fold reduction in errors
- Novel use of information technology can improve the accuracy of patient-provided medication lists

Rogers et al, Jt Comm Qual Safe, 2006

Cornish et al, Arch Int Med, 2005

Medication Reconciliation

Please Review Your Medications.

Medication # 23(of 33) ACTIVE Med:

GUAIFENESIN 200MG TAB

TAKE 1 TO 2 TABLETS BY MOUTH EVERY SIX HOURS AS
NEEDED



Taking this medication?

< Last Med

Yes

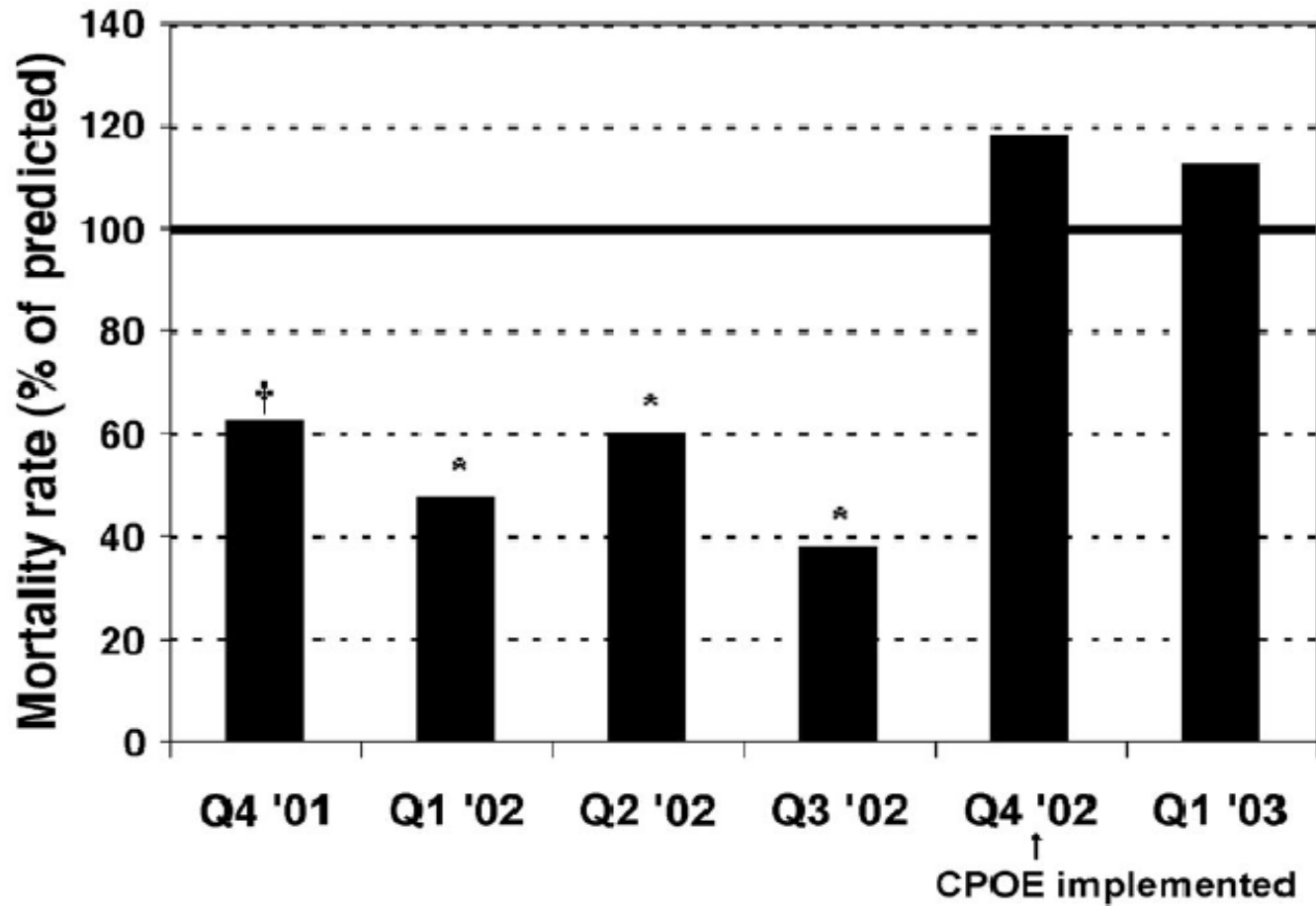
Next Med >

No

not sure

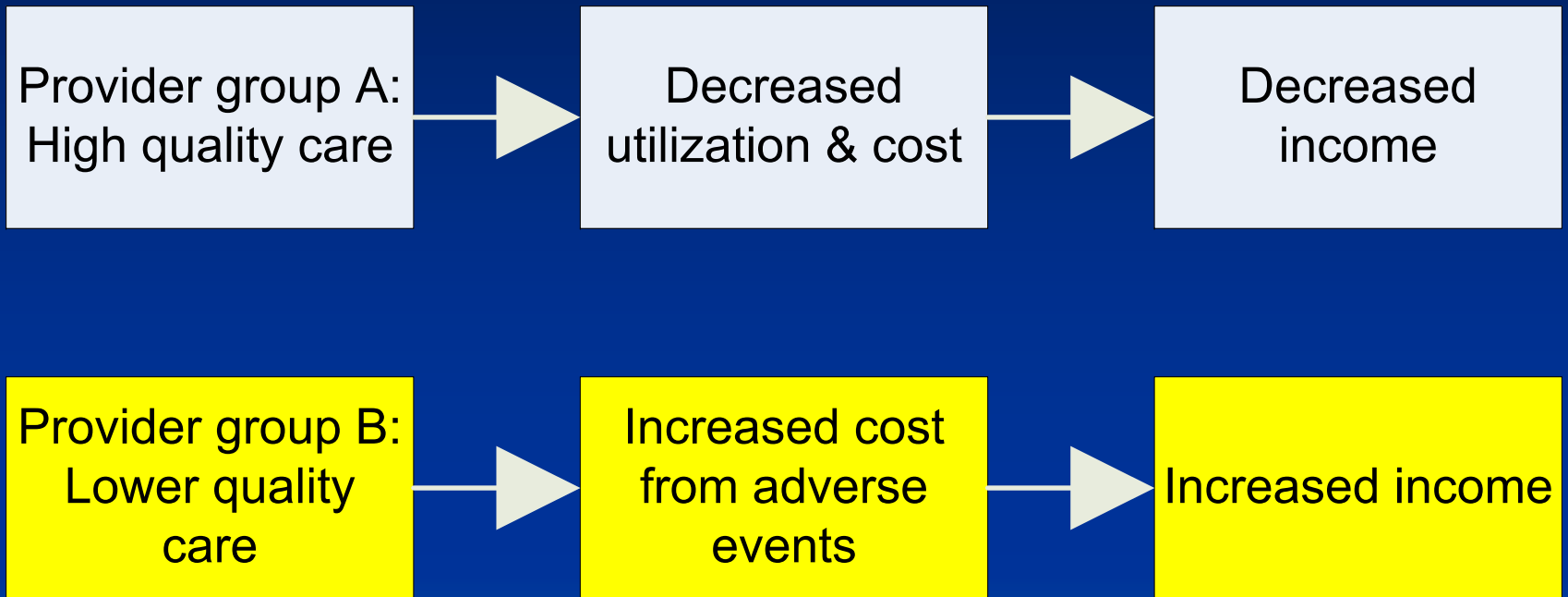
Comments about this drug:

Technology is not a panacea.



Han Pediatrics
2005

Efficiency and payment might conflict and lead to **worse** quality.



[back](#)

Concept from Larry Casalino, 2003.

Removing the more error, more pay issues

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POLITICS **WASHINGTON** EDUCATION

Medicare Says It Won't Cover Hospital Errors

By ROBERT PEAR
Published: August 19, 2007

WASHINGTON, Aug. 18 — In a significant policy change, Bush administration officials say that Medicare will no longer pay the extra costs of treating preventable errors, injuries and infections that occur in hospitals, a move they say could save lives and millions of dollars.



Private insurers are considering similar changes, which they said could multiply the savings and benefits for patients.

Under the new rules, to be published next week. Medicare will not pay hospitals for the costs of

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REPRINTS

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Medicare will not pay for in-hospital complications related to:

- Urinary Tract infections
- Other in-hospital infections
- left surgical devices
- Surgical infections
- Pressure ulcers

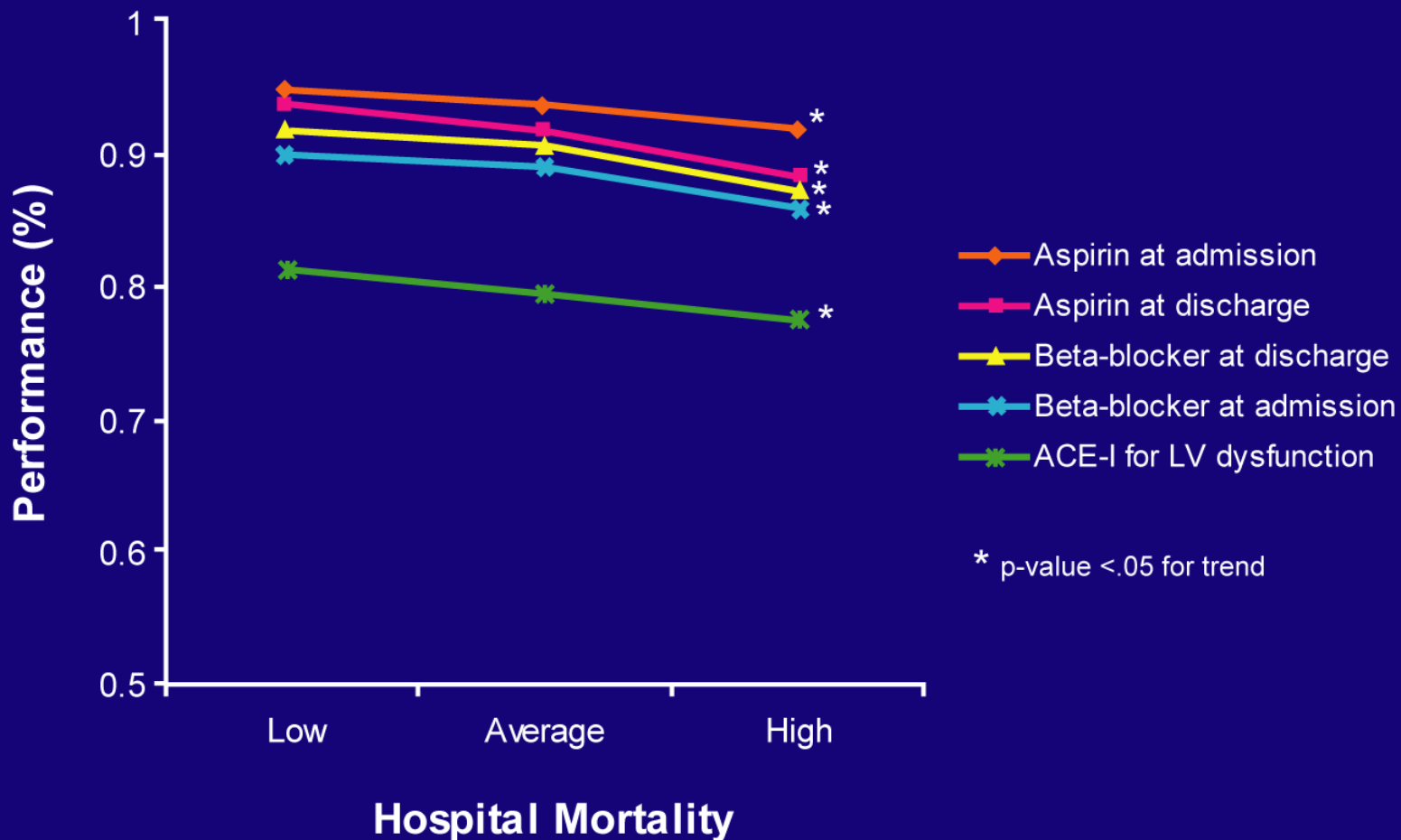
And others
As of 2008

Basic premise: pay for performance



Performance	Data source / collection	Reimbursement
>80% of patients with BP < 140/90	Electronic system with BP, diagnoses, timing	If in top 10%, +2% increase in pay

Process vs. Outcomes

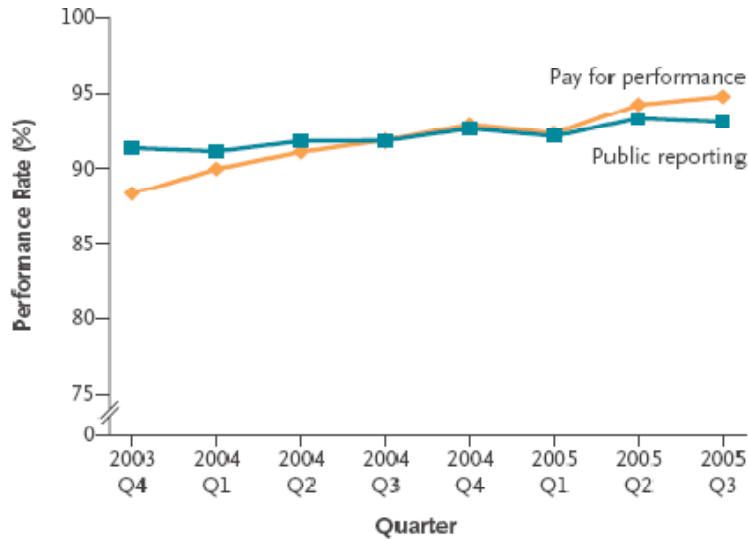


Pay for Performance - Lindenauer

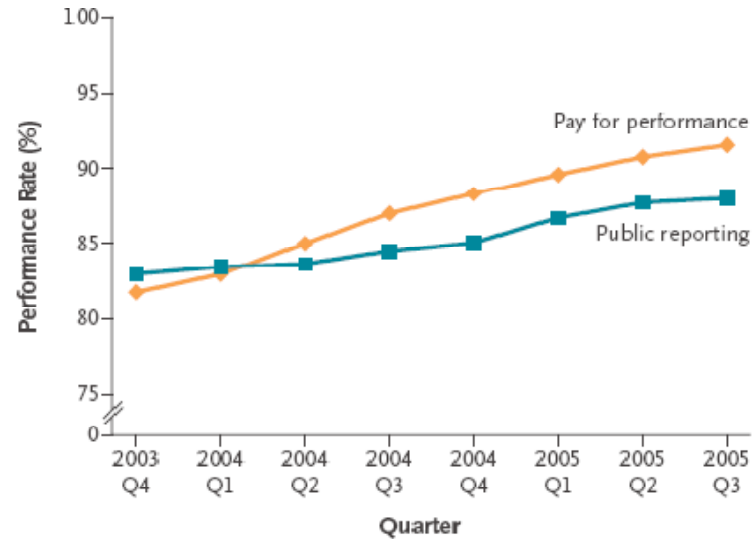
+ 2.6-4.1% greater increase in P4P hospitals vs. public reporting;

NEJM, 2007

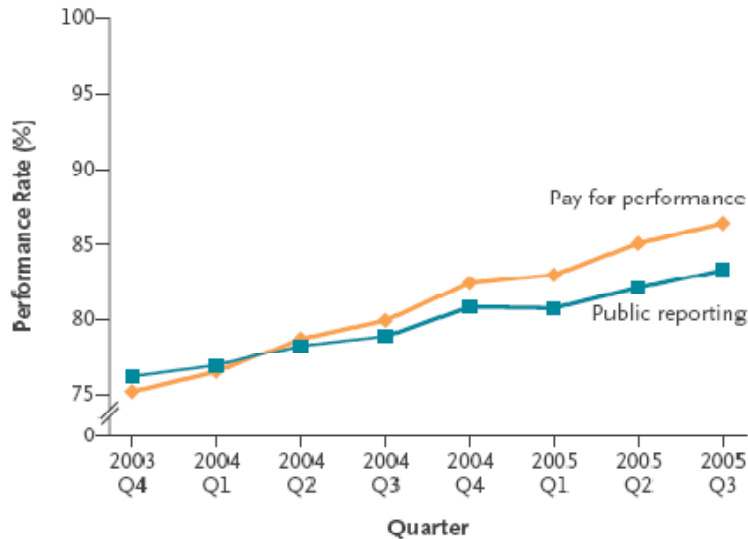
A Acute Myocardial Infarction



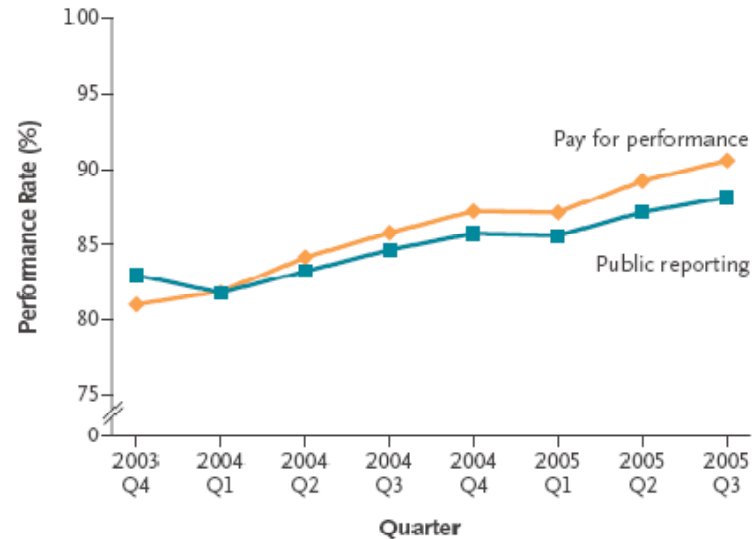
B Heart Failure



C Pneumonia



D Composite of 10 Measures



Could this be the distant future?

NHS generalist
P4P plan

Majority of payments based on

- Guideline adherence
- Organizational Characteristics
- Patient feedback
- External goals

Indicators	Total Points
Clinical	550
Organisational	184
Additional Services	36
Patient Experience	100
Holistic Care Points	100
Quality Care Points	30
Access Bonus	50
TOTAL	1050

Most practices altered within 1 year.



Thank you & Questions?

- Dorrd@ohsu.edu

