

Health Information Technology- A Key for Safe Effective, Efficient and Compassionate Health Care

JASP

MONTREAL

26 OCTOBER 2006



Robert Lynch M.D.
Director South Central VA Healthcare Network

VA – 1995

- Paper Chart (available 60%)
- Hospitals Operated
“Independently”
- Veterans Integrated Service
Networks (VISNs) introduced
 - 173 Med Centers, 218 Outpatient
Clinics
- No Performance Measures
 - Baseline Performance Assessed
1996

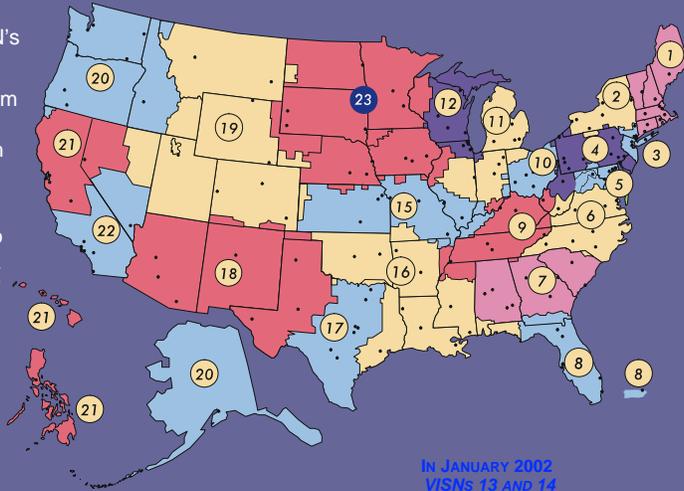


Cette présentation a été effectuée le 26 octobre 2006, au cours du Symposium "Nouvelles technologies de l'information en santé publique : implications sur le terrain" dans le cadre des Journées annuelles de santé publique (JASP) 2006. L'ensemble des présentations est disponible sur le site Web des JASP, à l'adresse <http://www.inspq.qc.ca/jasp>.

21 Veterans Integrated Service Networks

VISNs are the Funding & Accountability Unit in VA

- 1995: Creating VISN's
- Objective to transform from a "Hospital System" to a "Health System"
- From "Safety Net" to "Health Promotion & Disease Prevention"



IN JANUARY 2002
VISNs 13 AND 14
WERE INTEGRATED AND
RENAMED VISN 23

VA Performance 1995

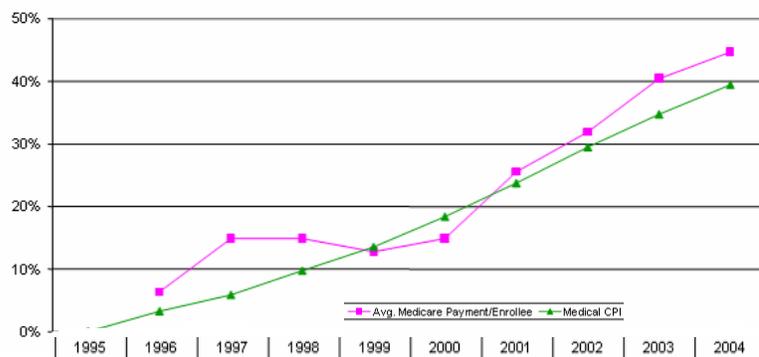
CLINICAL PERFORMANCE INDICATOR	VHA - Earliest Date Measures	Date Measured (earliest recorded measurement period)
Colorectal cancer screening	34%	FY 96 Qtr 5
LDL Cholesterol < 100 after AMI, PTCA, CABG	42%	FY 99(after AMI Only)
LDL Cholesterol < 130 after AMI, PTCA, CABG	76%	FY 98 (after AMI Only)
Beta blocker on discharge after AMI	70%	FY 96 Qtr 4
Diabetes: HgbA1c done past year	51%	FY 96 Qtr 4
Diabetes: Poor control HbA1c > 9.0% (lower is better)	24%	FY 01 (FY 99 was <9.5 = 77%)
Diabetes: Cholesterol (LDL-C) Screening	47%	FY 97 Qtr 4
Diabetes: Cholesterol (LDL-C) controlled (<100)	36%	FY 01 New Baseline
Diabetes: Cholesterol (LDL-C) controlled (<130)	68%	FY 98 Qtr4
Diabetes: Eye Exam	46%	FY 96 Qtr 4
Diabetes: Renal Exam	23%	FY 97 Qtr 4
Hypertension: BP <= 140/90 most recent visit	45%	FY 98
Follow-up after Hospitalization for Mental Illness (30 days)	81%	FY 99
Immunizations: influenza, (note patients age groups)	27%	FY 96 Qtr 4 (includes high risk < 65)
Immunizations: pneumococcal, patients 65 and older	26%	FY 96 Qtr 4 (includes high risk < 65)
Tobacco Cessation Counseling	33%	FY1996

Trends: The Past Decade . . .

1995 – 2005

Health Care is: More Expensive . . .

Ten Year Cumulative Percent Change in Costs



More Medications

Table 87 (page 2 of 3). Selected prescription and nonprescription drugs recorded during physician office visits and hospital outpatient department visits, by age and sex: United States, 1995-96 and 2001-02
[Data are based on a sample of visit records from physician offices and hospital outpatient departments]

[Click here for spreadsheet version](#)

Age group and National Drug Code (NDC) therapeutic class ^a (common reasons for use)	Total		Male		Female	
	1995-96	2001-02	1995-96	2001-02	1995-96	2001-02
Age 45-54 years						
Drug visits ^b	222.4	264.8	185.0	215.7	257.4	310.6
Visits with at least one drug per 100 population ^c						
Total number of drugs ^d	+33% 605.1	667.6	403.2	533.5	600.4	793.7
Number of drugs per 100 population ^e						
NSAID ^f (pain relief)	30.3	32.2	23.9	33.9	36.4	44.2
Antidepressants (depression and related disorders)	23.5	37.7	14.9	24.7	31.5	49.9
Blood glucose/sugar regulators (diabetes)	17.7	30.4	16.7	30.3	18.7	30.5
Hypertension (high cholesterol)	10.4	30.4	12.0	34.0	8.8	27.0
Hypertension control drugs, not otherwise specified (high blood pressure)	8.4	27.1	7.0	25.1	11.7	29.0
Acid-peptic disorders (gastrointestinal reflux, ulcers)	19.8	25.2	18.3	20.0	21.3	30.0
ACE inhibitors (high blood pressure, heart disease)	16.8	25.1	17.6	26.3	16.0	24.0
Antihistamines (allergies)	13.5	23.9	9.1	16.7	17.7	30.6
Narcotic analgesics (pain relief)	17.5	22.5	17.0	19.2	18.0	25.5
Nonnarcotic analgesics (pain relief)	16.3	21.4	15.6	21.3	17.0	21.5
Antiasthmatic/bronchodilators (asthma, breathing)	14.4	20.5	11.4	13.9	17.1	26.7
Beta blockers (high blood pressure, heart disease)	10.6	19.1	10.0	16.8	11.2	21.3
Calcium channel blockers (high blood pressure, heart disease)	19.0	17.5	19.9	18.2	18.8	17.1
Diuretics (high blood pressure, heart disease)	13.5	16.8	11.2	14.6	15.7	18.8
Anxiolytic agents (anxiety and related disorders)	12.6	14.2	9.4	10.7	17.6	17.5
Estrogens/progestins (menopause, hot flashes)	...	...	...	...	...	53.9
Age 65 years and over						
Drug visits ^b	399.4	470.8	378.1	439.2	414.7	493.6
Visits with at least one drug per 100 population ^c						
Total number of drugs ^d	+40% 1,047.4	1,422.9	856.9	1,309.5	1,112.5	1,505.4
Number of drugs per 100 population ^e						
Hypertension (high cholesterol)	24.9	34.8	25.1	79.5	24.5	65.3
Hypertension control drugs, not otherwise specified (high blood pressure)	29.1	69.8	22.7	62.3	33.8	75.2
Nonnarcotic analgesics (pain relief)	44.9	60.7	49.0	69.4	42.0	64.7
Diuretics (high blood pressure, heart disease)	55.2	65.6	48.5	61.7	60.0	68.4
ACE inhibitors (high blood pressure, heart disease)	42.6	64.7	41.2	65.5	43.6	63.4
NSAID ^f (pain relief)	41.8	62.2	31.9	47.5	49.0	72.9
Blood glucose/sugar regulators (diabetes)	37.5	62.0	38.0	69.9	37.1	56.3
Calcium channel blockers (high blood pressure, heart disease)	57.3	59.6	52.2	52.3	60.9	64.9
Beta blockers (high blood pressure, heart disease)	25.5	54.2	23.5	54.0	26.8	54.4
Acid-peptic disorders (gastrointestinal reflux, ulcers)	42.2	53.3	36.0	48.2	45.6	56.9
Antiasthmatic/bronchodilators (asthma, breathing)	31.3	45.9	37.1	52.1	27.0	41.5
Thyroid/thyroid (hyper- and hypothyroidism)	22.2	30.4	10.0	12.1	31.0	43.7
Antidepressants (depression and related disorders)	23.5	39.0	16.7	35.2	25.2	45.3
Estrogens/progestins (menopause, hot flashes)	...	...	...	...	...	37.1

Patient Safety & Quality Gaps Acknowledged



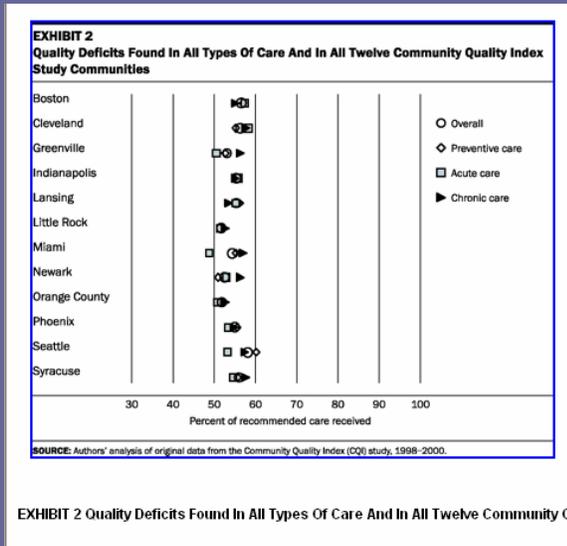
- “98,000 Hospital Patients Die Yearly Because of Adverse Events”
– (IOM, 1999)



- “Virtually Every Patient Experiences a Gap Between the Best Evidence and the Care They Receive”
– (IOM, 2001)

Gaps (Opportunities) Remain

McGlynn *et al*, *Health Affairs*



2006: Who is “VHA” . . . Veterans Health Administration

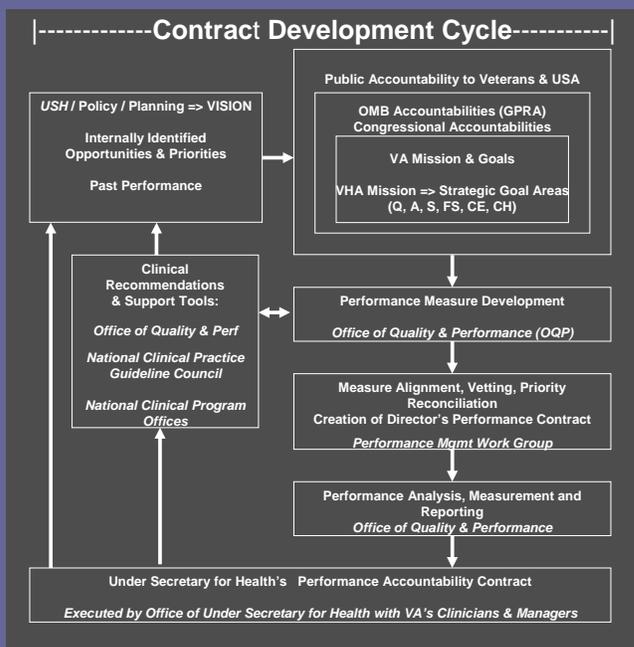
- VHA Today is . . .
 - 5.3 million patients, ~ 7.6 million enrollees
 - Increased from 2.5 million patients / enrollees in 1995 (+104%)
 - ~ 1,400 Sites-of-Care, including 171 medical centers or hospitals, ~ 870 clinics, 207 counseling centers, & long-term care programs
 - > \$30 Billion budget
 - ~ 198,500 Employees (~14,500 MD , 58,000 Nurses, 33,000 AHP)
 - ~ 10,000 *fewer* employees than 1995
 - Affiliations with 107 Academic Health Systems
 - Additional 25,000 affiliated MD's and 35,000 residents & fellows in 14,000 slots
 - ~ 90,000 trainees in all disciplines & 1,500 Health Professions Training Affiliations
 - Nearly half US health professionals (>65% MDs) have some training in VA
 - ~ 150,000 volunteers
 - ~ \$1.7B Research: Rehab, Health Services, Clinical, Basic

Who Are VA Patients ?

- Older
 - 49 % over age 65 (increasing population > 85)
- Sicker
 - Compared to Age-Matched Americans
 - 3 Additional Non-Mental Health Diagnoses
 - 1 Additional Mental Health Diagnosis
- Poorer
 - ~ 70% with annual incomes < \$26,000
 - ~ 40% with annual incomes < \$16,000
- Changing Demographics
 - 4.5% female overall
 - Females: 22.5% of outpatients less than 50 years of age

VHA's Performance Contract

- Formally Executed between Under Secretary for Health and Administrative & Clinical Leadership
- Development Involves Clinicians & Managers, HQ & Field
- Supports Strategic Plan (Links Mission, Strategy, Tactics)
- Explicit accountability for performance
- Supported by Information & Advanced Technologies



3. SATISFACTION:

- 2000: 79 of 100 on external American Customer Satisfaction Index (Univ. of Michigan) Outpt Care
- 2001: 82/100 Inpatient & 83/100 Pharmacy
 - Significantly better than private health sector average of 68
 - Loyalty Score of 90 and Customer Service Score of 87 were healthcare benchmarks!
- 2002: Repeat Performance – Healthcare Benchmark
- 2003: Repeat Performance – Healthcare Benchmark
- 2004: Repeat Performance – Healthcare Benchmark
- 2005: Repeat Performance – Healthcare Benchmark

1. QUALITY: RAND Study - Asch, McGlynn *et al* *Annals of Internal Medicine* 2004;141:938-945

IMPROVING PATIENT CARE | Quality of Care in the Veterans Health Administration **“VHA scored significantly higher... on 294 quality metrics”**

Table 4. Adjusted Adherence to Indicators by Category*

Indicator Category	VHA Sample				National Sample				Difference (95% CI), percentage points
	Indicators, n†	Patients, n	Eligible Events, n‡	Mean Score, %	Indicators, n†	Patients, n	Eligible Events, n‡	Mean Score, %	
Overall	294	596	11 449	67	330	992	18 961	51	16 (14 to 18)
Chronic care	202	561	5924	72	222	824	7396	59	13 (10 to 17)
COPD	17	103	465	69	19	62	668	59	10 (–2 to 23)
Coronary artery disease	31	93	557	73	37	179	1117	70	3 (–3 to 16)
Depression	14	96	266	80	14	131	497	62	18 (11 to 26)
Diabetes	13	232	1309	70	13	186	1683	57	13 (8 to 18)
Hyperlipidemia	7	169	256	64	7	204	346	53	11 (1 to 21)
Hypertension	24	405	1147	78	24	468	1681	65	13 (8 to 20)
Osteoarthritis	3	173	216	65	3	154	236	57	8 (–1 to 18)
Preventive care	27	596	4721	64	32	991	9169	44	20 (12 to 28)
Acute care	60	153	804	53	76	334	2396	55	–2 (–9 to 4)
Screening	15	597	2254	68	16	991	5598	46	22 (20 to 26)
Diagnosis	145	594	3762	73	139	992	6502	61	12 (8 to 16)
Treatment	103	596	3155	56	126	992	4845	41	15 (12 to 18)
Follow-up	37	477	2016	72	43	524	2278	58	14 (10 to 18)
VHA performance measures	26	596	3976	67	26	992	6699	43	24 (21 to 26)
VHA performance conditions	144	596	5875	70	152	992	8590	58	12 (10 to 15)
Non-VHA performance conditions	124	394	1598	55	152	579	3672	50	5 (0 to 10)

* Adjusted for age, number of chronic conditions, number of acute conditions, and number of outpatient visits. COPD = chronic obstructive pulmonary disease; VHA = Veterans Health Administration.

† Number of unique indicators in category with at least 1 eligible patient.

‡ The number of eligible events is the number of times indicators in the category were triggered.

VA Today

- Preventive Health / Disease Management:
 - Flu Vax: Yes (81%), Pneumo: Yes (94%)
 - HTN (74% \leq 140/90)
 - DM
 - A1c > 9 or not checked (<13%)
 - Retinal Exam (73%)
 - Monofilament Sensory Test Foot (83%)
 - LDL < 120 (81%)
 - CAD
 - Tobacco Screening (>99% x1; 82% x3)
 - 3x national rate cessation
 - Current use 27% VA - vs 33% Military*, 22.5% US
 - * Varies by service & rank
 - Other
 - CRC CA Screening (74%), Prostate CA Counseling



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IMPROVING PATIENT CARE

Improving Patient Care is a special section within Annals supported in part by the U.S. Department of Health and Human Services (HHS) Agency for Healthcare Research and Quality (AHRQ). The opinions expressed in this article are those of the authors and do not represent the position or endorsement of AHRQ or HHS.

Comparison of Quality of Care for Patients in the Veterans Health Administration and Patients in a National Sample

Steven M. Asch, MD, MPH; Elizabeth A. McGlynn, PhD; Mary M. Hagan, PhD; Rodney A. Hayward, MD; Paul Shekelle, MD, MPH; Lisa Rubenstein, MD; Joan Kessay, BA; John Adams, PhD; and Ewe A. Kerr, MD, MPH

21 December 2004 | Volume 141 Issue 12 | Pages 938-945

Background: The Veterans Health Administration (VHA) has introduced an integrated electronic medical record, performance measurement, and other system changes directed at improving care. Recent comparisons with other delivery systems have been limited to a small set of indicators.

Objective: To compare the quality of VHA care with that of care in a national sample by using a comprehensive quality-of-care measure.

Design: Cross-sectional comparison.

Setting: 12 VHA health care systems and 12 communities.

Patients: 596 VHA patients and 992 patients identified through random-digit dialing. All were men.

Measurements: Between 1997 and 2000, quality was measured by using a chart-based quality index that was adjusted for clustering, age, number of visits, and medical conditions.

Results: Patients from the VHA scored significantly higher for adjusted overall quality (67% vs. 51% for chronic disease care [72% vs. 58%, difference, 13 percentage points [CI, 10 to 17 percentage points], 12 to 20 percentage points], but not for acute care. The VHA advantage was most prominent for chronic disease care.

Conclusion: For decades, fairly or unfairly, the Department of Veterans Affairs (VA) health care system had a suboptimal image in the quality of care it provided and in the evaluation of its care. About 10 years ago, the VA health care system began to change. This study shows that the VA health care system has improved its quality of care for chronic disease care, diabetes severity, and other comorbid conditions uniformly across systems and used these measures to adjust for differences other than sex between the VA and commercial managed care organizations, nor have studies focused in depth on care comparisons for chronic, outpatient conditions.

Results: Patients in the VA system had better scores than patients in commercial managed care on all process measures (for example, 93% vs. 83% for annual hemoglobin A_{1c}; P = 0.006; 91% vs. 75% for annual eye examination; P < 0.001). Blood

EDITORIAL

Creating a Culture of Quality: The Remarkable Transformation of the Department of Veterans Affairs Health Care System

For decades, fairly or unfairly, the Department of Veterans Affairs (VA) health care system had a suboptimal image in the quality of care it provided and in the evaluation of its care. About 10 years ago, the VA health care system began to change. This study shows that the VA health care system has improved its quality of care for chronic disease care, diabetes severity, and other comorbid conditions uniformly across systems and used these measures to adjust for differences other than sex between the VA and commercial managed care organizations, nor have studies focused in depth on care comparisons for chronic, outpatient conditions.

IMPROVING PATIENT CARE

Diabetes Care Quality in the Veterans Affairs Health Care System and Commercial Managed Care: The TRIAD Study

Ewe A. Kerr, MD, MPH; Robert B. Gerstoft, MS; Sarah L. Kwon, PhD, RN; Joseph V. Selby, MD, MPH; John D. Piette, PhD; J. David Curb, MD, MPH; William H. Herman, MD, MPH; David C. Marrero, PhD; K.M. Venkat Narayan, MD, MSc, MBA; Monika M. Safford, MD; Theodore Thompson, MS; and Carol M. Mangione, MD, MSPH

Background: No studies have compared care in the Department of Veterans Affairs (VA) with that delivered in commercial managed care organizations, nor have studies focused in depth on care comparisons for chronic, outpatient conditions.

Results: Patients in the VA system had better scores than patients in commercial managed care on all process measures (for example, 93% vs. 83% for annual hemoglobin A_{1c}; P = 0.006; 91% vs. 75% for annual eye examination; P < 0.001). Blood

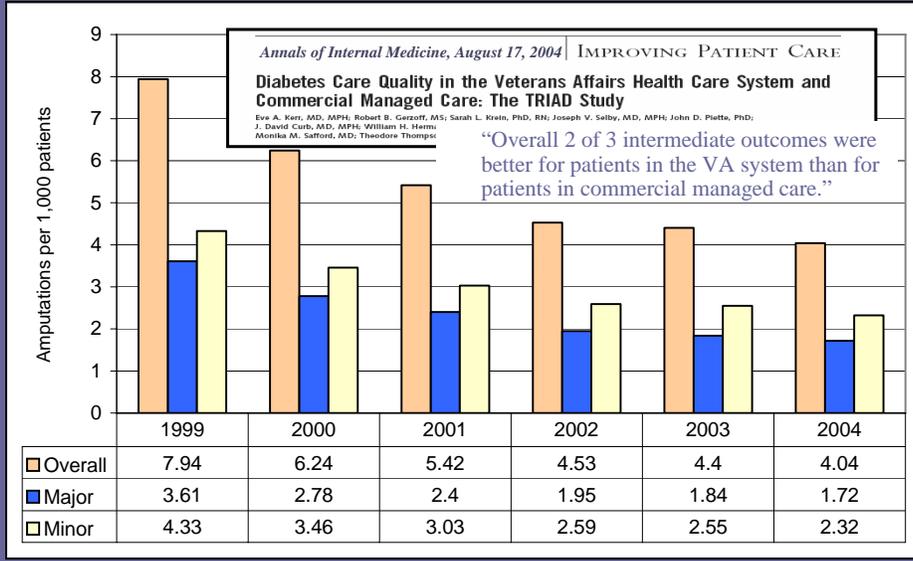
The Veterans Health Administration: Quality, Value, Accountability, and Informing Transforming Strategies for Patient-Centered Care

Jonathan B. Perlin, MD, PhD, MSHA; Robert M. Kolodny and Robert H. Roswell, MD

LEADERSHIP BY EXAMPLE
Transforming Veterans Affairs Systems in Improving Health Care Quality

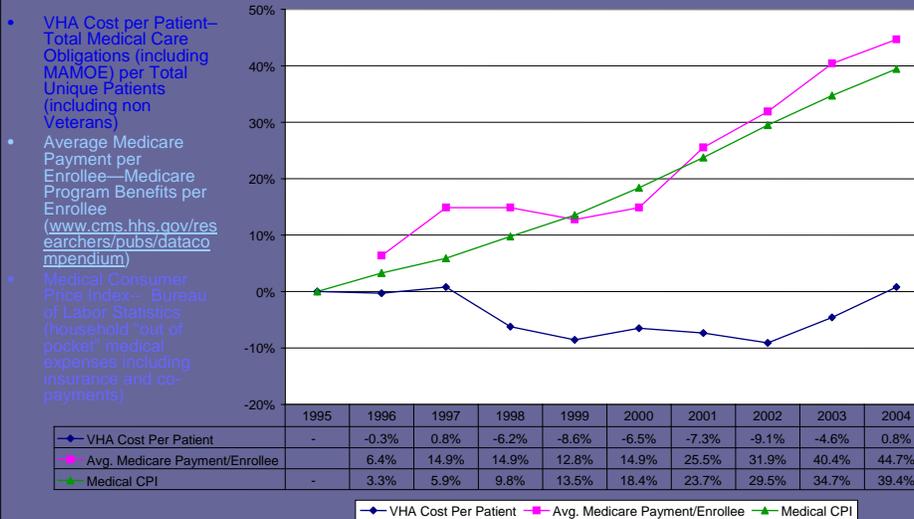
Overall, VHA patients receive better care than patients in other settings"

4. FUNCTION: Reduced Age-Adjusted Amputation Rates in Diabetics



6. COST-EFFECTIVENESS:

Ten Year Cumulative Percent Change in Costs



The Lay Press Notices



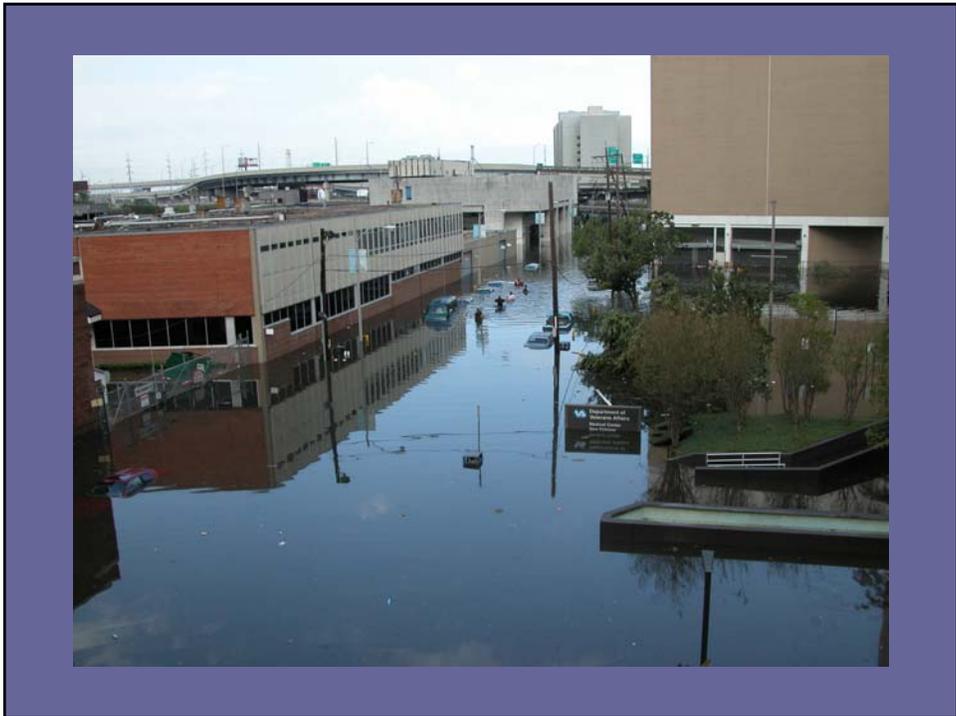
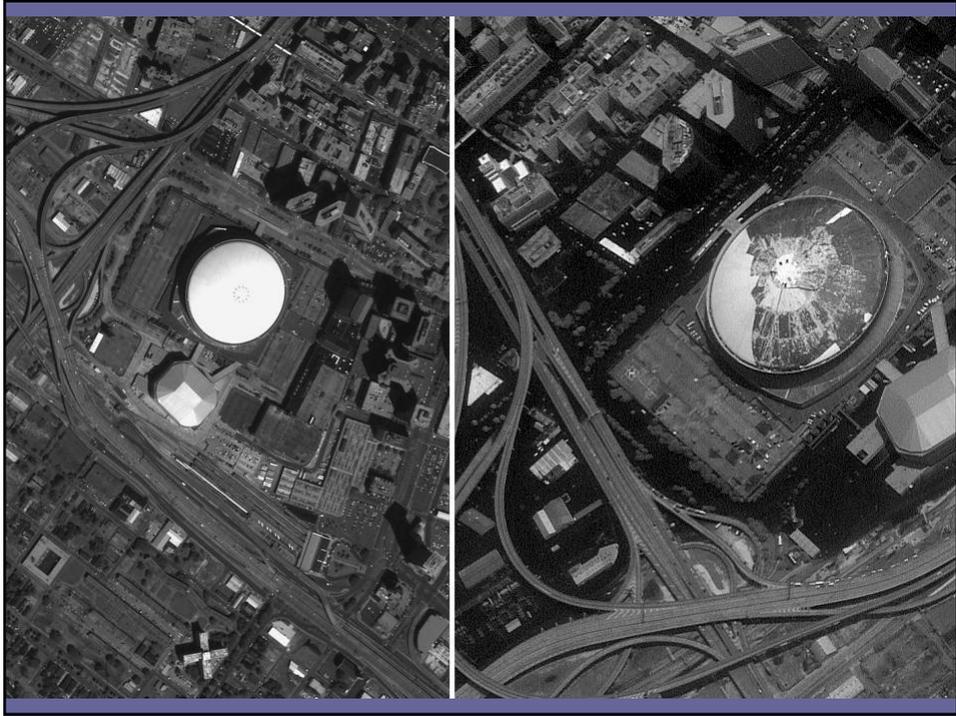
- “The Best Medical Care In The U.S.”, Business Week, July 17, 2006
- “What’s behind the VA hospital turnaround?”, NBC, March 15, 2006
- “Veterans' Care Praised, Finally”, The National Journal (DC), February 11, 2006
- “A New Kind of Care in a New Era of Casualties”, The New York Times, January 31, 2006
- “VA Care Is Rated Superior to That in Private Hospitals”, Washington Post, January 20, 2006
- “Revamped Veterans' Health Care Now a Model”, Washington Post, Monday, August 22, 2005.
- “The Best Care Anywhere”, Washington Monthly, January/February 2005

VA Receives 2006 Innovations in Government Award

- WASHINGTON – The Department of Veterans Affairs' (VA) model system of electronic health records, developed with extensive involvement of front-line health-care providers, has won the prestigious "Innovations in American Government Award." The annual award, sponsored by Harvard University's Ash Institute for Democratic Governance and Innovation at the Kennedy School of Government and administered in partnership with the Council for Excellence in Government, honors excellence and creativity in the public sector.

VistA (Veterans Health Information Systems & Technology Architecture)

- Records are available
- Continuity is real across the system
- Reduced errors, provider order entry with reminders and alerts
- Images are available (not just X-rays)
- Records are complete
- Cost effective (\$80/patient/year)
- Clinical data available for analysis and performance management





VA's Electronic Health Record

INSIDE POLITICS
Bush calls for electronic medical records
 President: 'We're kind of still in the buggy era'

Wednesday, April 28, 2004 Post@ 9:15 AM EDT (13:15 GMT)

BALTIMORE, Maryland (AP) -- When it comes to patients' health records, the United States hasn't left the "buggy era," President Bush said Tuesday at a veterans hospital.

"On the research side, we're the best," Bush told about 120 guests, including veterans, health care professionals, doctors from Johns Hopkins Hospital and the staff from the Veterans Affairs Medical Center in Baltimore. "We're coming up with more innovative ways to save lives. ... On the providers' side, we're kind of still in the buggy era."

The president has set a goal of assuring that most Americans have electronic health records within the next

Every medical center has the Computerized Patient Record System . . .

Bar Coded Medication Administration

- 5.85 Sigma Performance
- Helped hold per prescription costs virtually constant for 5 years (~2½% / year)

Why is IT a Central Strategy ?

Healthcare in the U.S., presents Multiple Challenges

- Information:
 - 1 in 7 hospital admissions occurs because care providers do not have access to previous medical records.*
 - 12% of physician orders are not executed as written*
 - 20% of laboratory tests are requested because previous studies are not accessible.*
 - 1 in 6.5 hospitalizations complicated by drug error
 - 1 in 20 outpatient prescriptions
- Effectiveness:
 - Safety Gap: 98,000 Americans die each year from medical errors
 - Quality Gap: Virtually every patient experiences a gap in care from best evidence
 - Compassion Gap: Not Patient-Focused
- Efficiency:
 - Value Gap: Health care inflation
 - Inferior outcomes per dollar
 - 31% Waste Estimated (Woolhandler)
 - Un-insurance / Under-insurance
 - American health care is reactive, not preventive, predictive
 - Patients / Payers (Govt) / Providers increasingly concerned about Value
 - Competitiveness

* PITAC (President's Information Technology Advisory Committee, 2004)

Reliability Challenges Remain

- Immunization: 55 – 94% (VA 94%)
- B-Blocker p MI: 70 – 98% (VA 98%)
- Airline Baggage Handling: > 99.9999
- Airline Safety: > 99.999999



10^{-1}

10^{-2}

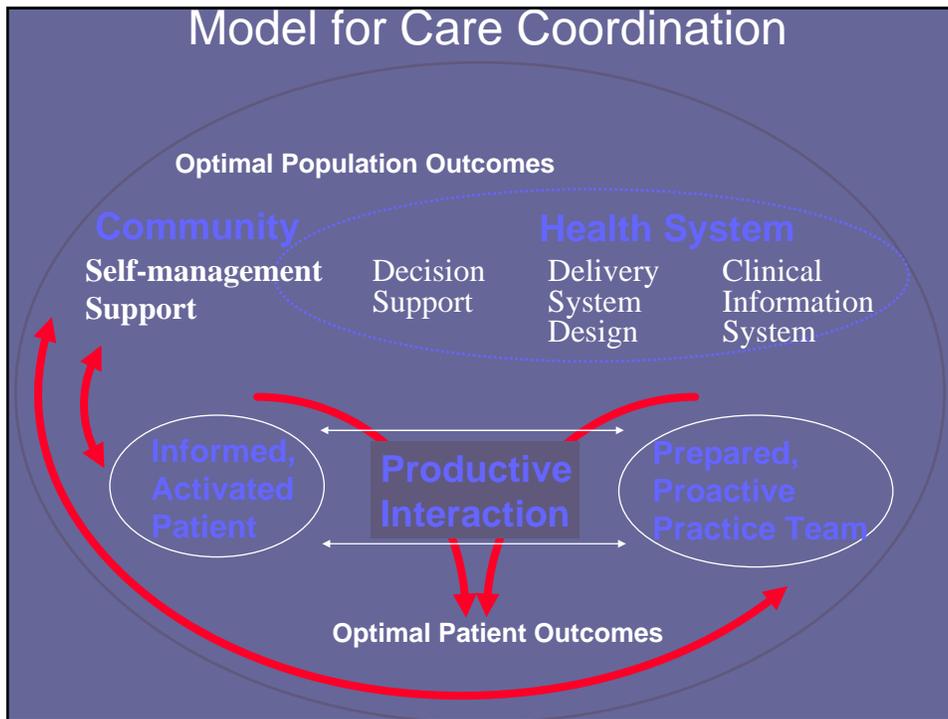
10^{-3}

10^{-4}

10^{-5}

10^{-6}

Frequency of Failures Occurring



My Health eVet
Your Personal Health Journal

You are in the personal health journal of DEMOUSERB

Date	Weight	Breathing	Swelling		
April 22, 2004	154	OK	OK	Exit	Done
April 25, 2004	156	OK	Mild	Exit	Done
April 26, 2004	160	Fair	Moderate	Exit	Done
April 27, 2004	155	OK	OK	Exit	Done

CARE COORDINATION

Care Coordinator Becomes Aware that the Patient Is Beginning to "Get Into Trouble,"

Proactively, The Patient Is Called To Come Into Clinic . . .

Or Visited at Home!

Before S/He "Crashes"

Health Hero Network - Microsoft Internet Explorer

Address: https://service.healthhero.com/cgi-bin/WebObjects/CMD.woa/wo/LH5000DM500w10061/1.0.9.0.1.1.1

Find Patient: Jill Walton
Tues, Sept 5, 2000

Home Patient Reports Enrollment Schedule Tools Setup

Work List Profile Results Trends Notes

Use these options to change the work list below.

1. Show patients from which program? 2. For which session date? 3. For which care manager?

All Programs [09/11/2000] Jill Walton

Create Work List

You are viewing sessions for Sep 11, 2000 in the "All Programs" Program

Responders' Risk Summary					Patient Summary	
Symptoms	Behavior	Knowledge	General	Responders	Non-Responders	Total Patients
High Risk	2	0	0	10	3	16
Medium Risk	1	3	5	1	1	29
Low Risk	7	7	5	1	1	
None	0	0	0	8		

Responders						
Patient	Response Date	S	B	K	G	D.O.B.
Map, Marie	09/11/2000	high	low	low	none	08/23/1929
Messing, Mel	09/11/2000	high	low	low	none	08/25/1922
Hoff, Jane	09/11/2000	medium	low	medium	none	10/12/1926
Taipen, Angela	09/11/2000	low	medium	medium	medium	12/26/1929
Woo, Dave J.	09/11/2000	low	medium	medium	low	11/12/1932
Chac, John	09/11/2000	low	medium	low	none	08/12/1925
Coll, Laurie	09/11/2000	low	low	medium	none	04/15/1933
Mart, Ric	09/11/2000	low	low	medium	none	03/23/1934
Cherry, Julie	09/11/2000	low	low	low	none	05/04/1930
Klapp, Amy	09/11/2000	low	low	low	none	11/21/1932

Back to top

Non-Responders						
Patient	Status	Home Phone	Last Response Date	Days Since Last Response	D.O.B.	
Siegel, Frederic S.	Active	(516) 536-8950	07/06/2000	69	01/01/1950	
McD, Jim.	Active	4084661234	03/05/2000	6	07/10/1944	
Lang, Nancy	Active	309-123-1234	09/07/2000	5	10/11/1932	

Back to top

Remote Physiological Monitoring

Flexible Sensor Connectivity

- Thermometer
- Blood pressure
- Digital Scale
- Camera
- ECG
- Blood sugar
- Stethoscope
- Pulse O₂

Hello Mrs. Jones, how are you feeling today?
Great Fine Poor Worse

The Future

- Care is patient centered
- Patients are informed partners
- New venues for care
- Customized care in the age of Genomics
- Need for decision support systems
- Technology will support interoperability of EMRs akin to the internet
- Will we be ready?

