

Leveraging Predictive Modeling Across the Care Continuum to Address Current Economic Initiatives

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Presenter

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About MEDai

- Subsidiary of Reed Elsevier
 - One of the world's largest providers of business, professional, scientific/health information
- Two Key Software Solutions
 - Payor decision support/ predictive analytics/ payor profiling
 - Hospital outcomes profiling/ reporting
- Unique Core Competencies
 - MITCH data mining and prediction engine
 - Intelligent data clean-up logic
 - Healthcare expertise

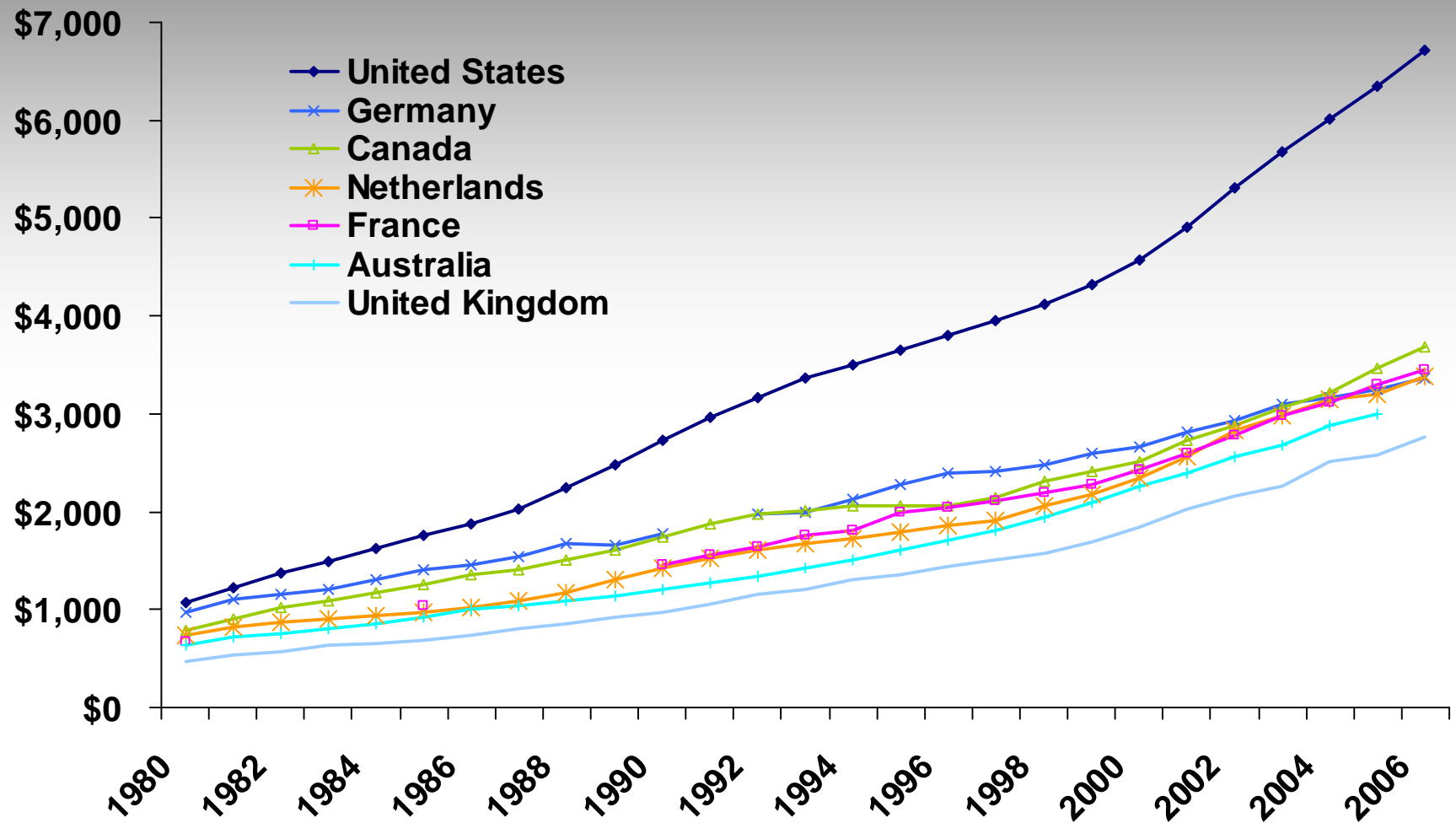
The State of Healthcare

- Healthcare Cost Rising
 - United States spends **more than twice** as much on each person for health care as most other industrialized countries. But it has fallen to last place among those countries in preventing deaths through use of timely and effective medical care.¹
- Healthcare Quality is Not Improving
 - The World Health Organization's ranking of the world's health systems places US at #37
- Patient Safety Clearly Remains a Concern
- Fragmentation Continues to Plague the System

1. Source: *The Path to a High Performance U.S. Health System: A 2020 Vision and the Policies to Pave the Way*, February 2009

International Comparison of Spending on Health, 1980–2006

Average spending on health per capita (\$US PPP*)

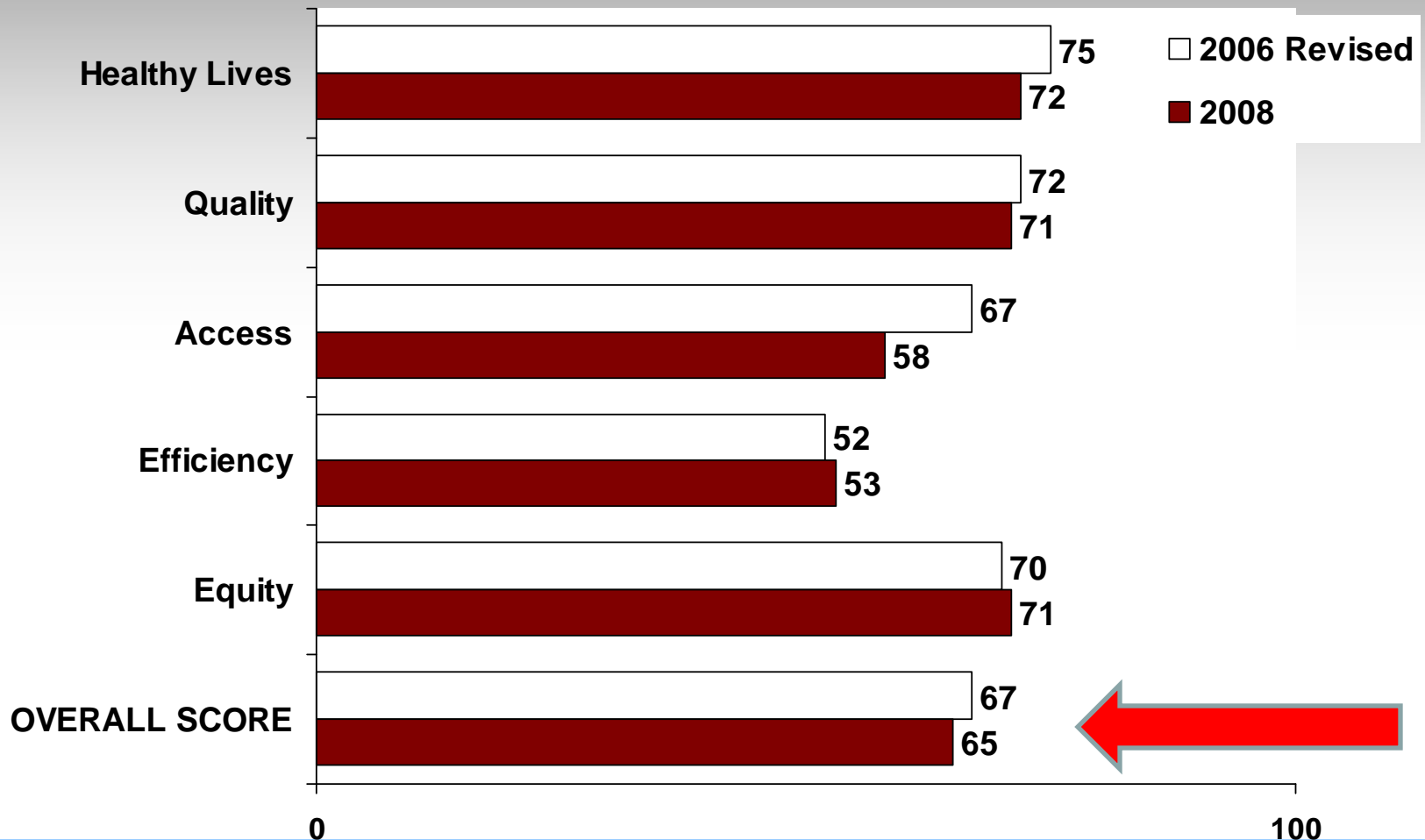


* PPP = Purchasing Power Parity.

Data: OECD Health Data 2008, June 2008 version.

Healthcare Quality is Not Improving

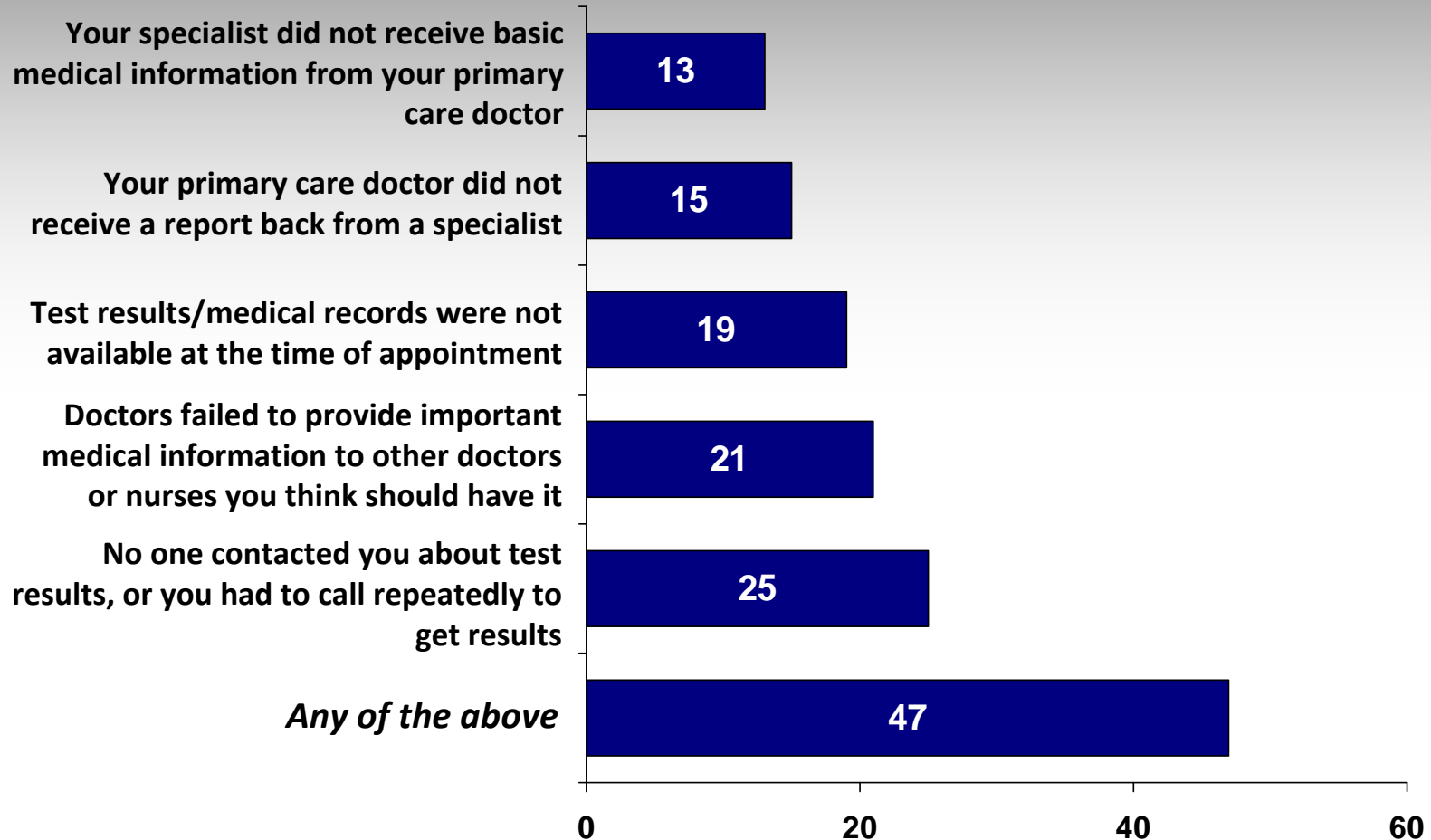
Dimensions of a High-Performance Health System



Source: Commonwealth Fund National Scorecard on U.S. Health System Performance, 2008

Poor Coordination: Nearly Half Report Failures to Coordinate Care

Percent U.S. adults reported in past two years:



Source: Commonwealth Fund Survey of Public Views of the U.S. Health Care System, 2008.

Potential Impact on Patients if the United States Improved National Performance to Benchmark Levels

	Current national average	2020 target*	Impact on number of people
Percent of adults (ages 19–64) insured, not underinsured	58%	99%	73 million increase
Percent of adults (age 18 and older) receiving all recommended preventive care	50%	80%	68 million increase
Percent of adults (ages 19–64) with an accessible primary care provider	65%	85%	37 million increase
Percent of children (ages 0–17) with a medical home	46%	60%	10 million increase
Percent of adult hospital stays (age 18 and older) in which hospital staff always explained medicines and side effects	58%	70%	5 million increase
Percent of Medicare beneficiaries (age 65 and older) readmitted to hospital within 30 days	18%	14%	180,000 decrease
Admissions to hospital for diabetes complications, per 100,000 adults (age 18 and older)	240	126	250,000 decrease
Pediatric admissions to hospital for asthma, per 100,000 children (ages 2–17)	156	49	70,000 decrease
Medicare admissions to hospital for ambulatory care–sensitive conditions, per 100,000 beneficiaries (age 65 and older)	700	465	640,000 decrease
Deaths before age 75 from conditions amenable to health care, per 100,000 population	110	69	100,000 decrease
Percent of primary care doctors with electronic medical records	28%	98%	180,000 increase

* Targets are benchmarks of top 10% performance within the U.S. or top countries.

Source: Commonwealth Fund Commission on a High Performance Health System, *Why Not the Best? Results from the National Scorecard on U.S. Health System Performance, 2008* (New York: The Commonwealth Fund, July 2008).

Where Do We Go From Here?

- Where?
 - To an environment of accelerated use adoption and use of effective HIT
- Why?
 - To improve care outcomes, safety and value
 - Reduce medical errors
 - Facilitate information exchange across care sites emphasizing patient-centered care and reducing unnecessary tests
 - Reduce duplication and enhance coordination
- How?
 - Accelerate Adoption and Use
 - Require electronic reporting of clinical information—use payment incentives
 - Initial funding to support spread to safety net and set up exchange

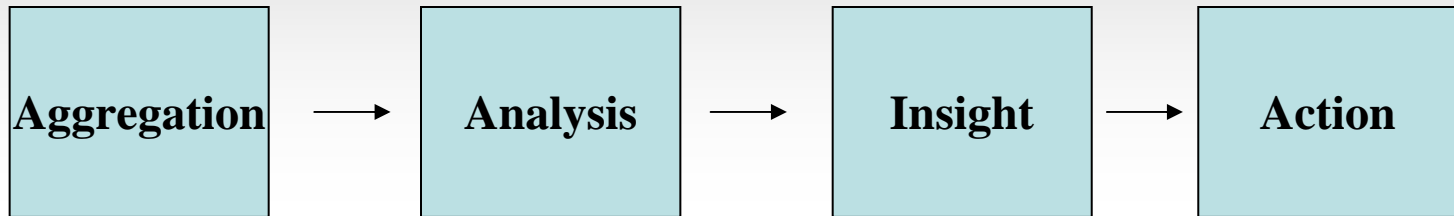
Source: *The Path to a High Performance U.S. Health System: A 2020 Vision and the Policies to Pave the Way*, February 2009.

Current Economic Initiatives

- Pay for Performance
- CMS Mandates of non payment for:
 - Never Events
 - Hospital acquired infections
- Emphasis on Population Management
 - Medication Therapy Management
 - Disease Management
- Stimulus Package (ARRA)
 - EHR adoption
 - Prevention & Wellness
 - HIE initiatives addressing fragmentation of care

Predictive Modeling Provides:

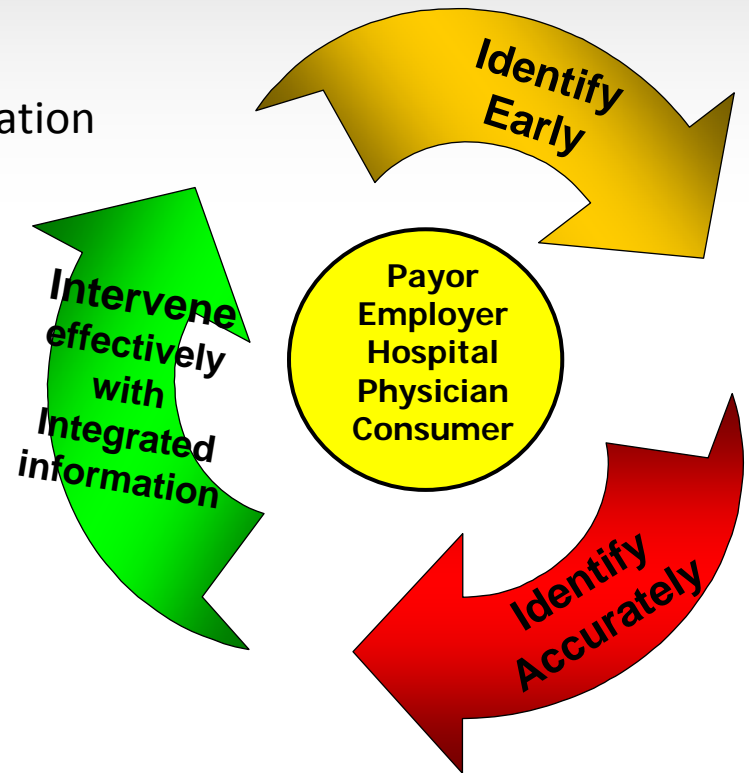
Patient-centric Content, an Intelligence Engine and a Point-of-Care Presence



Predictive Modeling

Leveraging Predictive Modeling Across the Care Continuum

- Address the fragmentation in healthcare
- Utilize patient-centric databases
- Leverage retrospective and prospective information
- Facilitate the aggregation of data
- Provide stakeholders with what they need to know when they need to know it
- Facilitate physician engagement
- Improve quality
- Better resource utilization



Predictive Modeling for Payors

“Facilitate Quality Improvement & Contain Costs”

- Identify & Stratify high-risk/high-impact members who are motivated in order to provide appropriate care
- Multiple risk projections (i.e., inpatient, ER, pharmacy) help focus appropriate care interventions
- Addresses Prevention & Wellness initiatives
- Promotes effective disease management initiatives

Predictive Modeling for Physicians

“Engage Physicians”

- Meaningful use of HIT
- Risk stratification for all patients
- Access to Current Data around compliance for their patients
- Identify patients with gaps in care for various diseases
- Access to complete patient history
- Real-time compliance and outpatient/inpatient visit history
- Single point of access that fits into the physicians workflow
- Interface with disease management/care management

Predictive Modeling for Consumers

“Empower Consumers”

- Consumers need accurate and Timely Data to better manage their care
- Provide effective and efficient targeted programs based on disease, risk and motivation

Predictive Modeling for Hospitals

“Enhanced Decision Support at Point of Care”

- Provides insight into the status of patients admitted whose condition is at risk for rapid decline
- Drives proactive intervention and avoidance of hospital-acquired complications
- Enhances use of healthcare HIT by addressing meaningful use criteria

How Can Predictive Modeling Be Leveraged within the Current Economic Initiatives?

- Provides multiple risk projections (i.e., inpatient, ER, pharmacy) to help focus appropriate care interventions
- Facilitates prevention and wellness via evidence-based medicine guideline analysis to minimize or reduce chronic disease progression
- Engage consumers in managing their health
- Assists physicians in meeting pay-for-performance requirements
- Addresses fragmentation of care

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ARRA EHR Adoption

- Program Purpose:

The goal of the Medicare and Medicaid Health IT provisions in the Recovery Act is to promote and provide incentives for the adoption of certified electronic health records (EHRs). To achieve this goal, the Recovery Act authorized bonus payments for eligible professionals (EPs) and hospitals participating in Medicare and Medicaid as an incentive to become meaningful users of certified EHRs.

- Kinds and Scope of Program Activities:

Must meet the definition of “Meaningful Use” of a certified EHR

- Total of \$19.2 Billion

- Responsible Organization:

Individual States & CMS

Funding Distribution Channels

Distributed 2 Ways

Individual Physicians

Ambulatory

The Recovery Act authorizes bonus payments for eligible professionals and hospitals participating in Medicare or Medicaid if they become meaningful users of certified EHRs.

Establishes 100 percent Federal Financial Participation (FFP) for States to provide incentive payments to eligible Medicaid providers to purchase, implement and operate (including support services and training for staff) certified EHR technology. It also establishes 90 percent FFP for State administrative expenses related to carrying out this provision.

Hospital

Inpatient

Acute care hospitals with at least 10 percent Medicaid patient volume would also be eligible for payments

Incentives paid out over the next 5 years

CMS is overseeing and administering the incentive program and is coordinating with the Office of the National Coordinator for Health Information Technology (ONC)

EHR Adoption

Predictive Modeling Value Proposition for Physicians

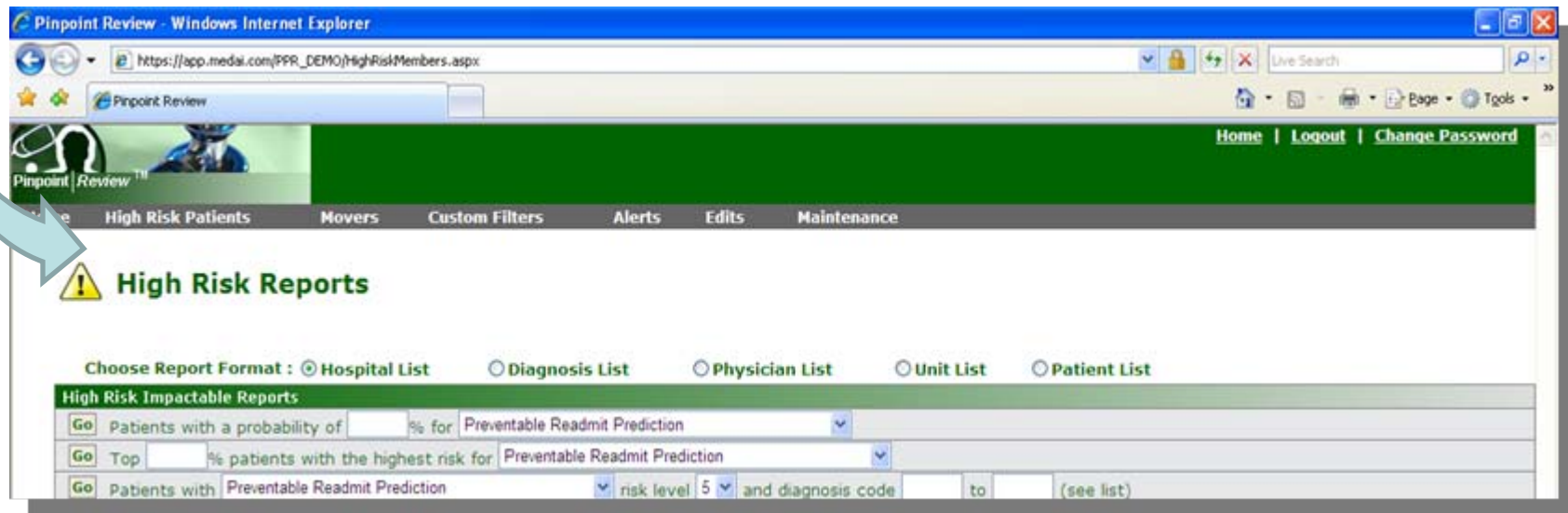
- Single Point of Access that Fits the Physician Workflow
 - Electronic access to lab and Rx data
 - Access to complete patient histories
 - Access to evidence-based guidelines
 - Data Entry Capability for Forced Compliance/Exclusion
 - Near Real-time Update to Guideline Compliance
- All Patient View for Emergency Room Physicians

Predictive Modeling Value Proposition for Hospitals

- Predict patients at risk for preventable readmissions
- Proactively identify which patients might develop a hospital acquired infection
- Identify events and conditions that affect both the operational and financial health of a hospital before they happen
- Mitigate non-reimbursable conditions or complications

Predictions Make it Easy to Identify and Respond to High-Risk Patients in hospitals

- Aggregates real-time data from EHR
- Develops patient-specific predictions in the in-patient setting
- Monitors the high-risk patient throughout the entire hospital stay
- Creates clinical alerts based on information gathered
- Delivers the alert to the appropriate caregiver



The screenshot displays the Pinpoint Review web application in a Windows Internet Explorer browser window. The address bar shows the URL https://app.medai.com/PPR_DEMO/HighRiskMembers.aspx. The application has a green header with the Pinpoint Review logo and navigation links: Home, Logout, and Change Password. Below the header is a dark grey menu bar with options: High Risk Patients, Movers, Custom Filters, Alerts, Edits, and Maintenance. The main content area is titled "High Risk Reports" with a yellow warning icon. Underneath, there's a section for "Choose Report Format" with radio buttons for Hospital List (selected), Diagnosis List, Physician List, Unit List, and Patient List. Below this is a section for "High Risk Impactable Reports" with three rows of filters. The first row is "Go Patients with a probability of [] % for Preventable Readmit Prediction". The second row is "Go Top [] % patients with the highest risk for Preventable Readmit Prediction". The third row is "Go Patients with Preventable Readmit Prediction [] risk level 5 [] and diagnosis code [] to [] (see list)".

ARRA Prevention & Wellness

- Program Purpose:

The overarching goal of the initiative is to reduce risk factors and prevent/delay chronic disease, promote wellness, and better manage chronic conditions. This program will spend appropriated funds to execute evidence-based clinical and community-based prevention and wellness strategies that the Public Health Service Act authorizes. This program will deliver specific, measurable health outcomes that address chronic disease rates.

- Kinds and Scope of Program Activities:

HHS is currently developing a plan that specifies the kind and scope of activities that HHS will fund to achieve the program's objectives. HHS is considering various approaches for this program.

- Total of \$1.0 Billion Split Into 2 Categories:

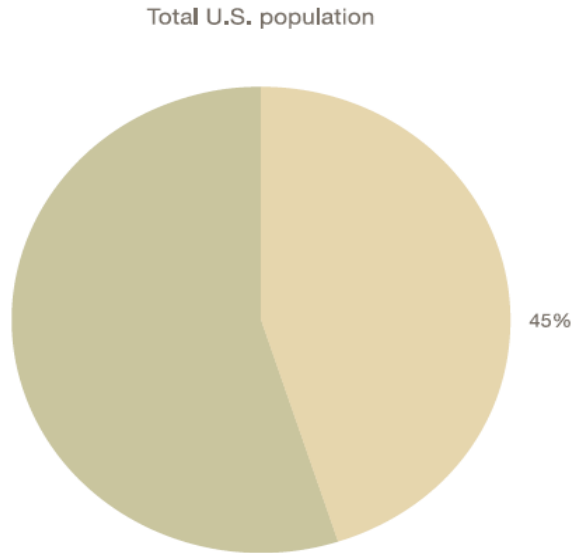
- \$300 Million for Immunization
- \$650 Million to carry out evidence-based clinical and community-based prevention and wellness strategies

- Responsible Organization:

Department of Health and Human Services

The Chronic Care Dilemma

NEARLY HALF OF AMERICANS HAVE ONE
OR MORE CHRONIC DISEASES

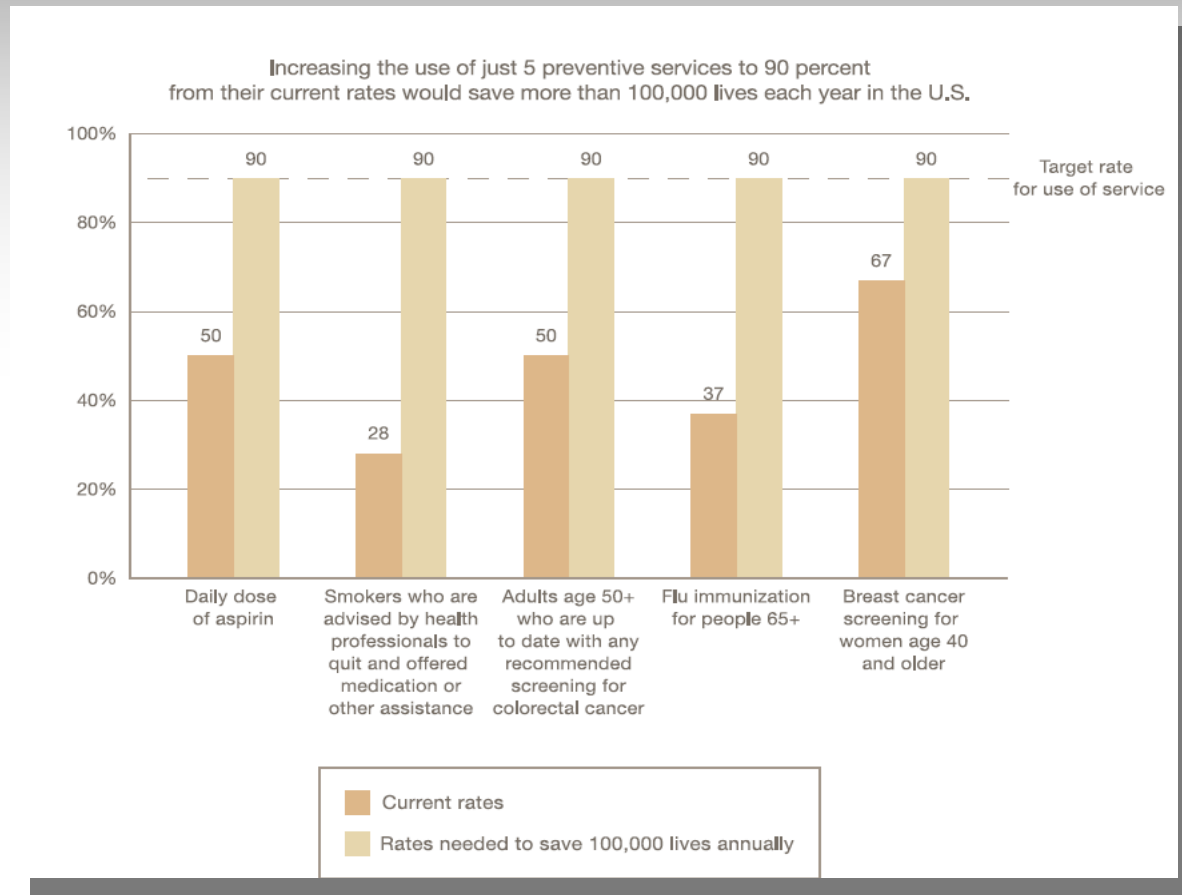


45% – 133 million Americans – have one or more chronic diseases

Seventy-five cents of every healthcare dollar we spend is on treatment of chronic disease, most of which is preventable.

Source: Almanac of Chronic Disease 2008

Using Preventative Care Makes a Difference



Source: Partnership for Prevention. Preventive Care: A National Profile on Use, Disparities, and Health Benefits. August 2007. Accessed at: <http://www.prevent.org/content/view/129/72>

Predictive Modeling Value Proposition

- Proactively Identify Patients Not Following Evidence-based Treatment Protocols
 - Reduce risk factors
 - Prevent/delay chronic disease
 - Promote wellness
- Provide Timely Feedback to Providers
 - Did the patient follow through with testing?
 - Is the patient filling/refilling medications?
- Consolidate and Deliver Comprehensive Patient Histories to Deliver Better Chronic Care Management
 - Does the patient see other physicians?
 - Are there poly pharmacy issues?

ARRA Health Information Exchange (HIE)

- **Program Purpose:**

The Health Information Technology for Economic and Clinical Health (HITECH) Act provisions of the Recovery Act of 2009 create a historic opportunity to improve the health of Americans and the performance of the nation's health system through an unprecedented investment in health information technology (HIT).

- **Kinds and Scope of Program Activities:**

1. Inform Health Care Professionals: Provide critical information to healthcare professionals to improve the quality of care delivery, reduce errors and decrease costs.

2. Improve Population Health: Simplify collection, aggregation and analysis of anonymized health information for use to improve public health and safety.

- **Total of \$300M *specifically for health information exchange (HIE)***

- **Responsible Organization:** Health & Human Services/ Office of the National Coordinator for Health Information Technology

Predictive Modeling Value Proposition

- Provide a variety of Analysis and Reporting solutions used to analyze the integrated data about patients, their conditions, the services and treatments they've received and the results of those treatments.
- Solutions include statistical analysis, data mining and pattern recognition, among others.
- Solutions can be linked to a Web-based access capability that will provide ad hoc and standard report access capabilities as well as personalized dashboards that provide score-card presentation of key metrics important to each user.

Innovation

In some cases, the cost with complications could be more than 2x higher than without complications.

Year 1 Disease	Count	Year 2 Complication		Year 2 Costs	
		Description	%	Without Complications	With Complications
Diabetes	35,855	Myocardial Infarction	1%	\$ 7,621.00	\$ 17,621.00
Diabetes	35,855	CVA, TIA	4%	\$ 7,327.00	\$ 16,039.00
Diabetes	35,855	Chronic & Acute Renal Failure	2.8%	\$ 7,369.00	\$ 20,028.00
Asthma	24,115	Pneumonia	5.2%	\$ 5,667.00	\$ 11,507.00
Chronic Renal Failure	1,443	Acute Renal Failure	14%	\$ 19,593.00	\$ 27,790.00
CHF	4,320	CVA, TIA	10.7%	\$ 19,088.00	\$ 30,709.00