



Predictive Modeling in the Context of Healthcare Reform: Issues and Opportunities

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The Goals of this Session

- To describe the likely “contours” of US healthcare reform and the potential intersections with the predictive modeling (PM) / risk adjustment (RA) domains.
- To suggest how PM / RA could (and should) play key roles within the various streams of reform.
- To explore potential implications of health care reform for the PM / RA fields.
- To identify possible future issues and challenges facing the field.

Some Frames of Reference


- As of September 2009, healthcare reform may take various alternative directions.
- The intersection matrix between all facets of reform and PM/RA is huge. Of necessity I will need to focus on a subset of key issues.
- This talk will be relevant to all PM / RA approaches, but I will present a few examples based on the Johns Hopkins ACG suite of tools.

Working Definitions

- **Case mix / risk adjustment** is the process by which the health status of a population is taken into consideration when setting budgets or capitation rates, evaluating provider performance, or assessing outcomes of care.
- **Predictive risk modeling** is the prospective (or concurrent) application of risk adjustment measures and statistical forecasting to identify individuals with high medical need who would likely benefit from care management interventions.

Underlying Goals of US Healthcare Reform

- Cover the Uninsured
 - Contain Costs (“Bending the Curve”)
 - Improve Quality / Equity
 - Digitize & Modernize
- These four goals often intersect



What might be included in a
US healthcare reform
package?

Health Reform Contours -1: The Uninsured

- Medicaid / SCHIP Expansion
- Health insurance “exchanges” (for individuals and small groups)
- Private insurance reform (e.g., limits on medical underwriting)
- Paying for insurance
 - Subsidies for lower income families
 - Employer pay or play ?
 - Individual consumer mandates?
 - Tax increases (e.g. “Cadillac” plan tax and tax on wealthy)
- A “public option” government plan (or “cooperatives”)?
- Facilitating state level reform

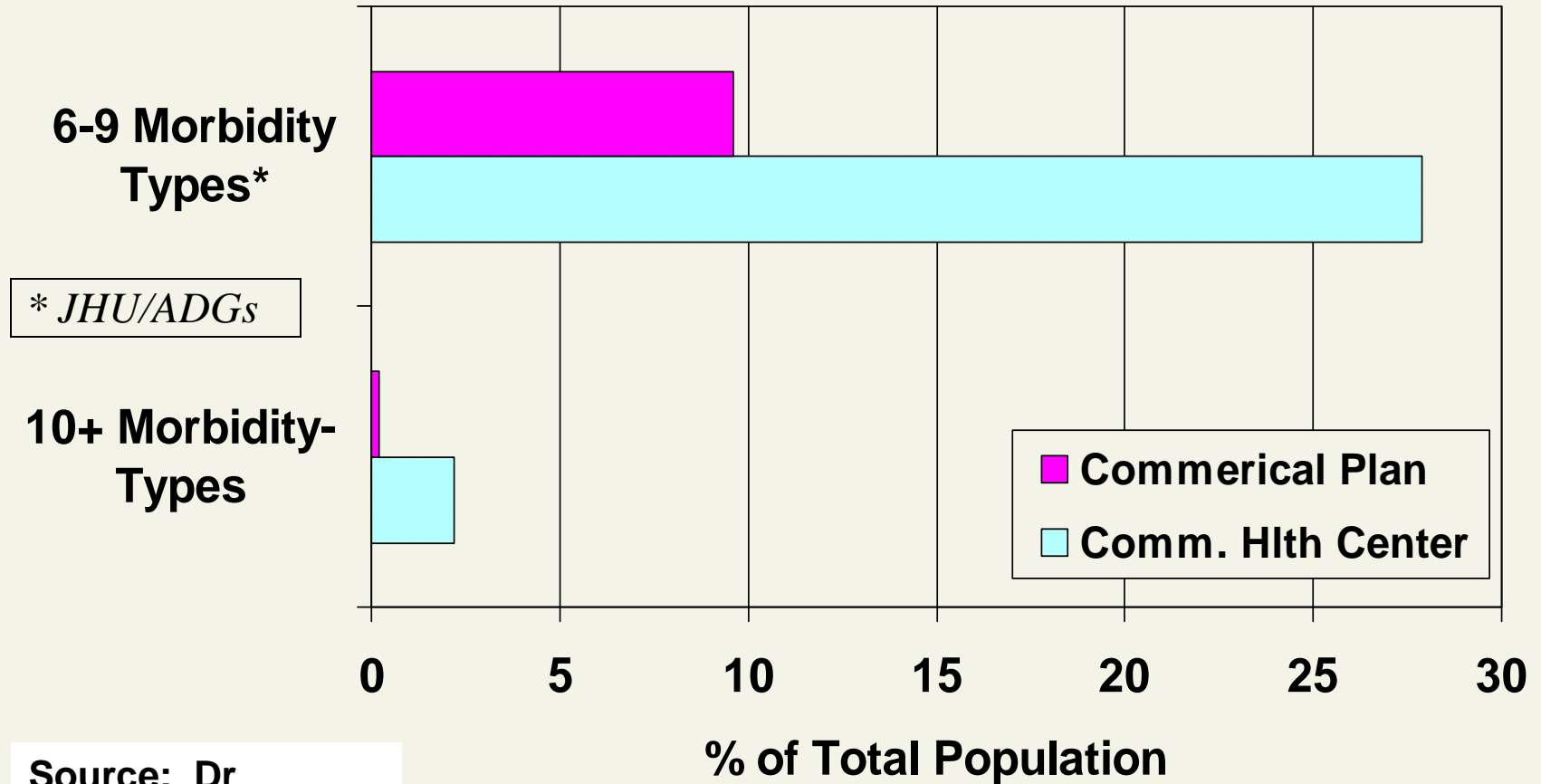
Why risk adjustment is key for any financial exchange between government and health plans

Distribution of Expenditures for US Medicare Enrollees (65+)

% of Enrollees	% of Medical Costs		% of Rx Costs for M+A (MCOs)
	(FFS)	(MCO)	
2%	24%	32%	11%
10%	60%	68%	36%
50%	96%	97%	91%

Sources of Data: FFS - CMS 5% file. MCO- sample of 180,000 enrollees from several Medicare Advantage plans .

Morbidity burdens of uninsured likely to be different from insured



Source: Dr
Barbara Starfield
JHU

Health Reform Contours - 2: Cost Containment

- Decreasing Medicare inflation
 - Medicare Advantage capitation cuts
 - Decreasing payments to FFS providers
 - Giving MedPac advisory committee real “teeth”
- “Value Based” coverage (paying for what works)?
- Payment reforms (as demo projects?)
 - Pay for performance (P4P)
 - Move from FFS towards various bundled payment

Why understanding risk is key to “bending the curve”

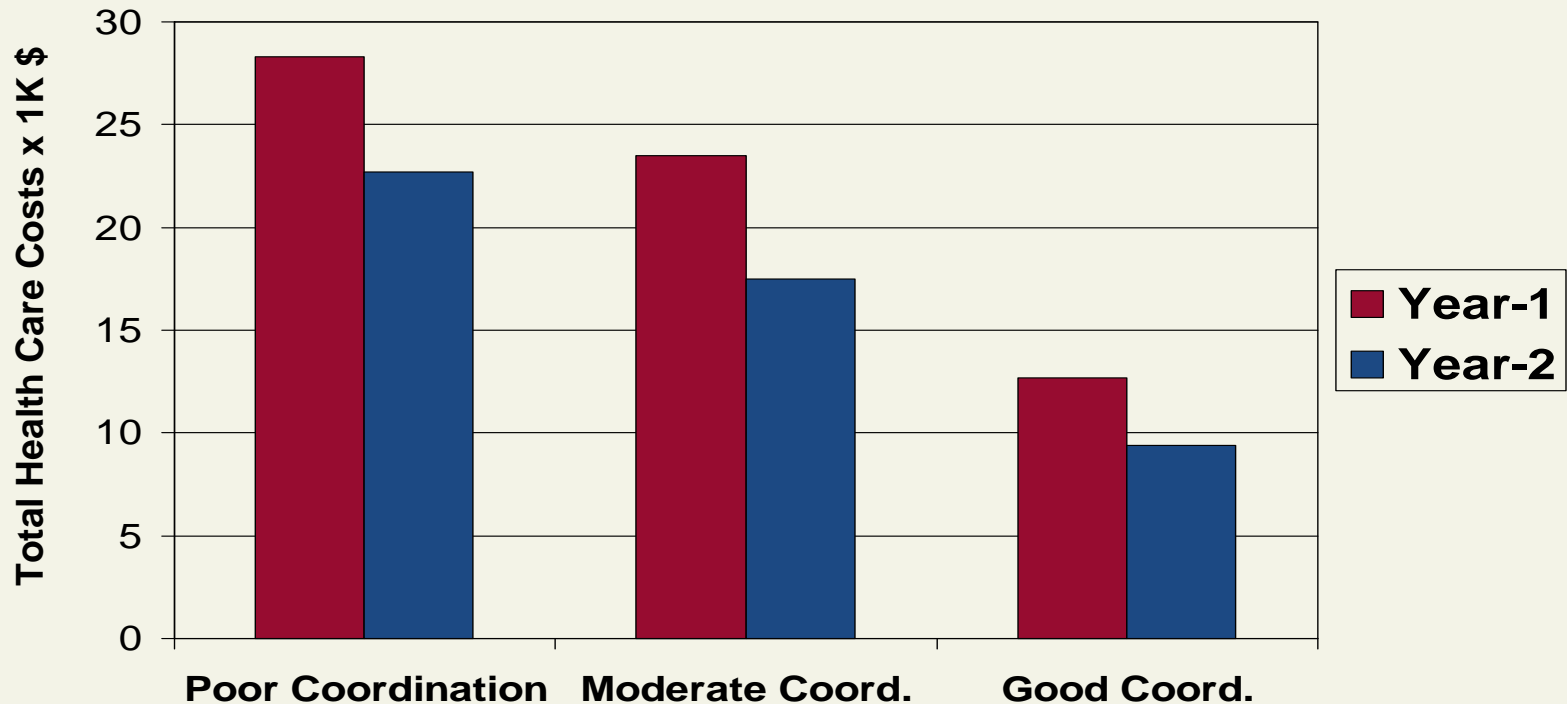
# Chronic Co-morbidities	% Pop.	Relative Cost (Per Pt.)	Est. % of Total Medicare Costs	Avg. # Unique MDs/Yr.	Avg. # Filled Rx / Yr.
5+	20%	3.2	66%	13.8	49
3-4	27%	.9	23%	7.3	26
0-2	53%	.1	11%	3.0	11

Data Source: G. Anderson et. al., Johns Hopkins Univ. (Derived from Medicare claims and beneficiary surveys.)

Health Reform Contours - 3: Quality / Equity

- Research into what works - “Comparative Effectiveness Research” (CER)
- Demo projects or incentives related to:
 - Decreasing variation due to geography / disparities
 - Integrated care / coordinated care
 - Primary care / medical homes
 - Prevention / wellness / population incentives
 - Improving end-of-life care
- Health workforce training subsidies / incentives


Improving Coordination is Key: Costs of care stratified by markers of ambulatory care coordination



Coordination levels measured by ACG Version 9.0. Year-1 coordination markers include: count of unique MDs, presence of PCP, presence of “majority source.” Analysis based on 418,000 commercial health plan enrollees including M+A for 2005/06. This analysis is case-mix adjusted and includes only persons identified in (Yr-1) as being “high morbidity” based on ACG–Resource Utilization Bands (RUB).

Health Reform Contours- 4: Digitize and Modernize

- Huge investment in electronic health records (EHRs) / Health IT (HIT) for doctors and hospitals
- Accountable Care Organizations (ACOs) and Health Innovation Zones (HIZs)
- “Modernizing” Medicare (including Part D)
- Standardize administrative structure across public and private sector
- Greater transparency and accountability



How might predictive modeling / risk adjustment be applied within various components of US healthcare reform?

How PM / RA could be applied - 1: Expanding Coverage

- Premium adjustments to account for varying risk within plans comprising health insurance exchange (HIE) or Cooperatives.
- As part of Medicaid expansion (Most Medicaid states use risk adjusted capitation.)
- To help private plan actuaries better manage within the new rating environment.
- By regulators to monitor private health plans

A reminder -- there are other tools for controlling adverse risk selection

- In addition to risk adjusters like HCCs, ACGs or CDPS, there are other mechanisms that will should be in place to address risk selection:
 - Stop loss / reinsurance
 - Retrospective adjustment - settlement
 - Regulation / Monitoring
 - Carve outs (both services and people)

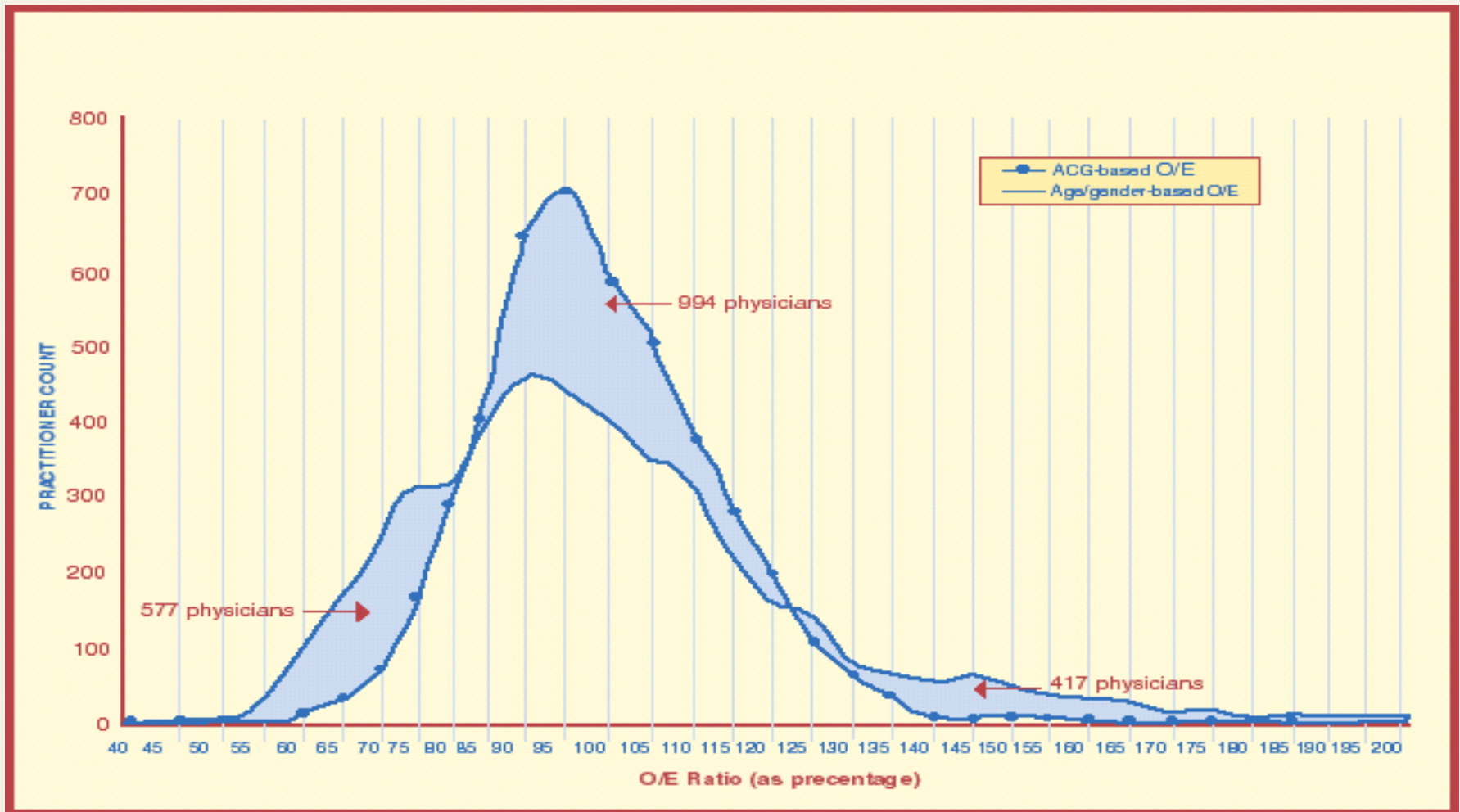
There are some models for how exchanges can apply risk adjustment methods

- Massachusetts Connector
- Minnesota BHCAG / Smart Buy Alliance
- Pacific Business Group on Health
- Various State Medicaid Programs (e.g., Maryland, Minnesota, Tennessee)

How PM / RA could be applied - 2: Paying Providers

- Paying Medicare, Medicaid, or public option plans
- More accurate adjusted payment of Part D Rx plans (PDPs)
- Adjusting various P4P performance measures
 - Efficiency
 - Outcomes
- Adjusting payments to individual doctors / groups, as we move away from FFS;
 - Episode / bundles
 - Global budgets / FFS adjustment

Canadian Single Payer (in BC) dramatically decreased case identification of "efficiency outliers" through risk adjusted performance profiles of PCPs



If episodes are used to pay (or assess) providers, we need to account for overall morbidity burden

(Analysis of internist PCPs)

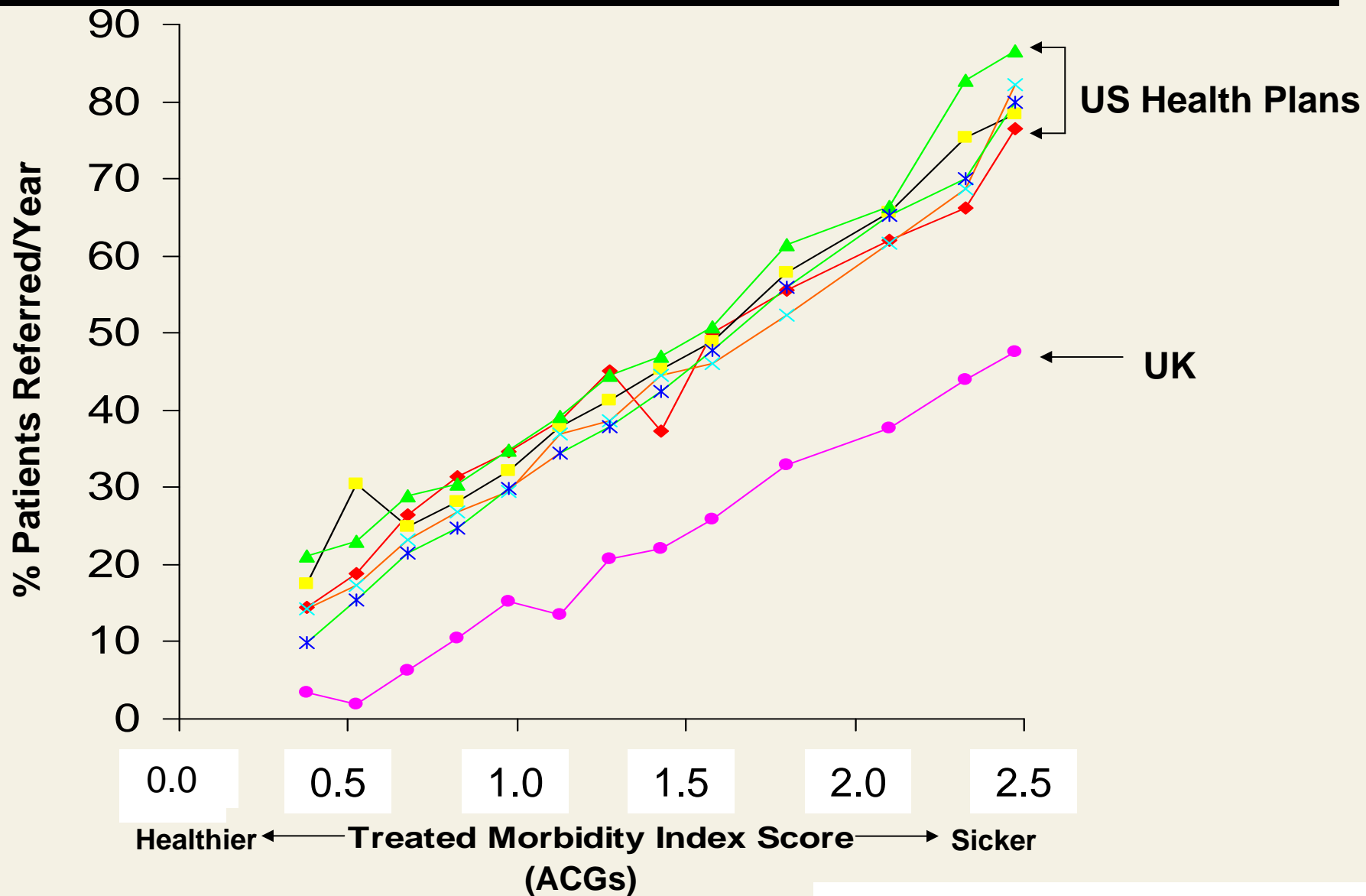
		Episode (ETG) Performance Efficiency			
		<u>Poor</u>	<u>Avg.</u>	<u>Good</u>	Total
Morbidity Burden (ACGs) for Patient Panel *	<u>Sick</u>	28	19	10	57
	<u>Avg</u>	20	16	21	57
	<u>Healthy</u>	9	22	26	57
	Total	57	57	57	171

Source: commercial health plan ; 171 internal medicine IM PCPs with at least 30 episodes. * ACG morbidity weights based only on in-scope ETG patients.

How PM / RA could be applied - 3: Improving Quality

- Many potential demos could apply innovative PM applications:
 - Medical homes (improving primary care)
 - Disparities – identifying persons in need of more care
 - Identifying individuals for improved end-of-life counseling
- Population / integrated care initiatives could apply PM in many ways, for example ACO's and HIZ's
- Propensity scores and other higher order statistical applications for “CER” research

Informing Primary Care Reform: US / UK Patterns of Specialist use by Pt. Risk Categories



Source: Forrest et al, BMJ .

How PM / RA could be applied - 4: Private sector innovations / responses

- Individual / small group health plan premium setting within new federal “safe harbors”
- A wide series of care management innovations for newly insured persons with special needs.
- Improved internal fiscal and operational management and strategic planning within the risk adjusted payment environment.

Using PM risk stratification derived only from several months of Rx experience to target and stratify disease management program participation

Condition of Interest	% Enrollees in ACG Rx-MG Risk Category			Resource Use of Cohort Relative to Total Population		
	Low	Med.	High	Low	Med.	High
Diabetes	44.97	42.1	11.9	1.34	4.90	7.44
Congestive Heart Failure	19.75	53.5	26.75	1.14	6.02	7.93



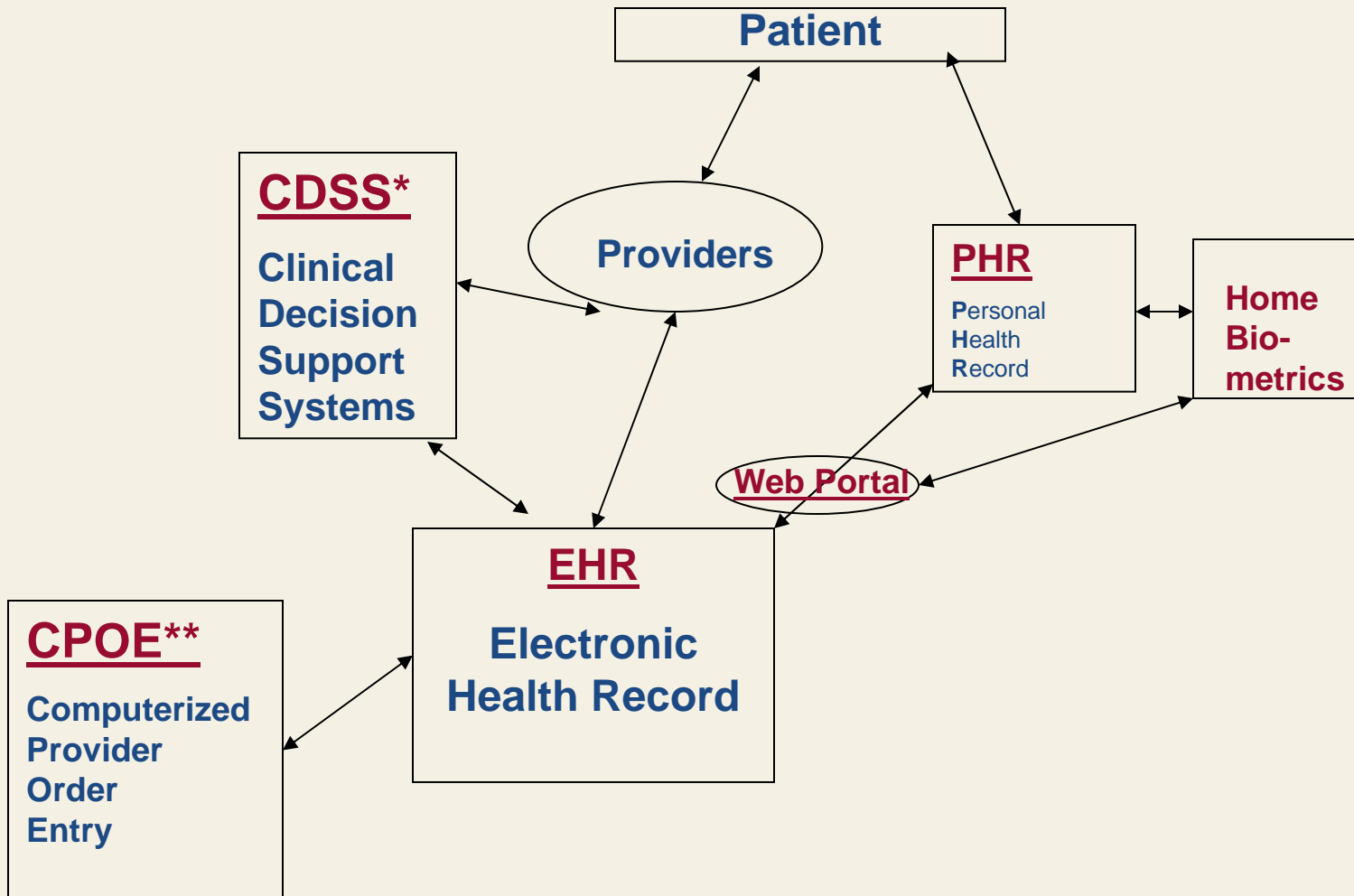
Tier 1 **Tier 2** **Tier 3**

How PM / RA could be applied - 5: Digitizing health care

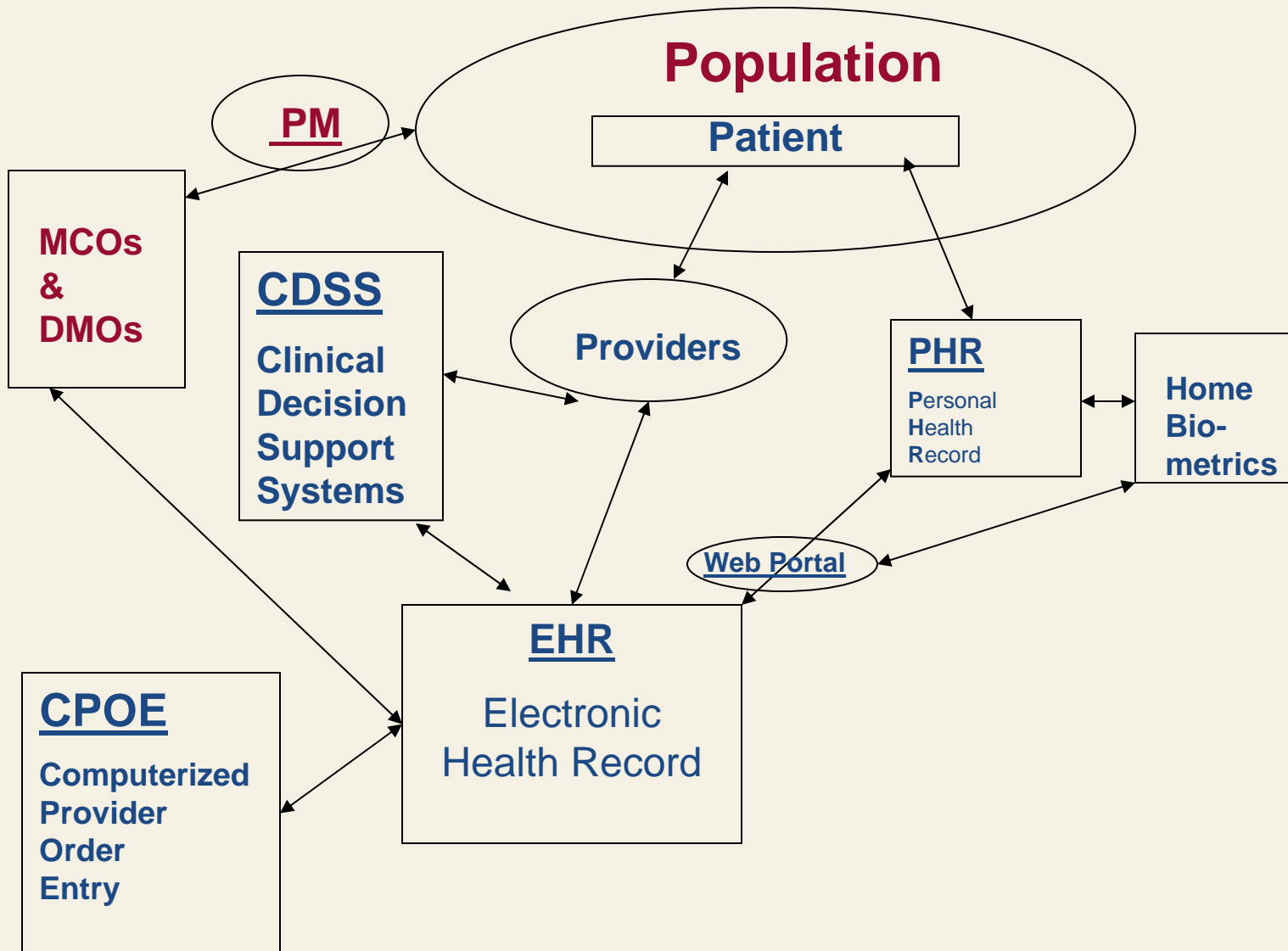
- As reform leads to eventual adoption of EHR / HIT, there will be numerous opportunities for care supported by electronic PM/RA techniques.
 - Integration of population level PM with patient level “clinical decision support systems” (CDSS). What I term “e-PM”
 - Next generation of PM tools will be able to use information derived from EHRs and patient-centered personal health records (PHRs)



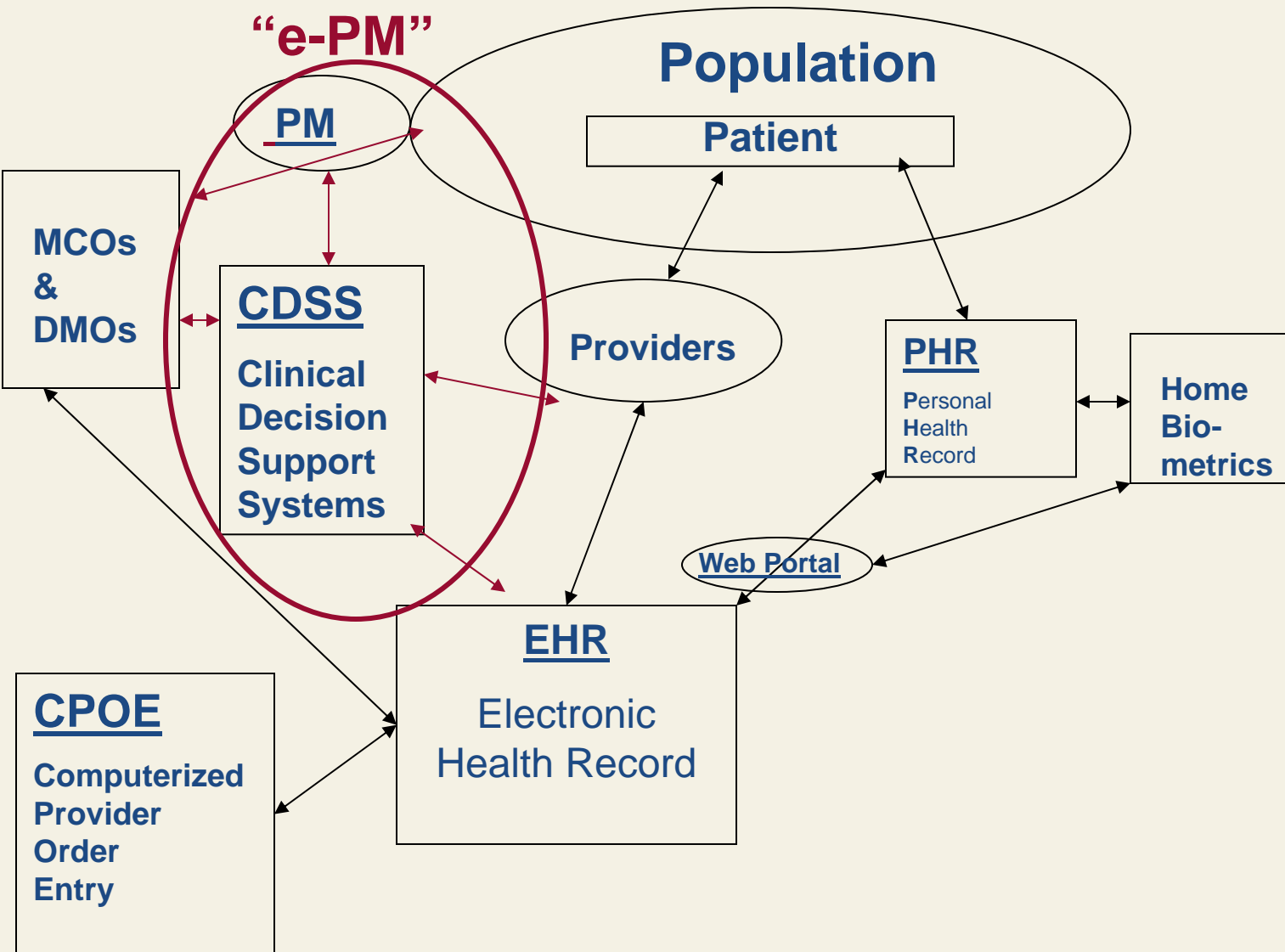
Electronic Health Records Health IT and the New “e- PM” context



HIT Enabled Healthcare – Clinical HIT support - 1



HIT Enabled Healthcare – Population Based PM - 2




“e-PM” = the Integration of current CDSS / PM

An early example of an e-PM tool: Electronic monitoring of Rx "gaps in care" and its potential impact on cost

Type of Cost (Annual)	No Rx Gap	< 60 days gap	>90 days Gap
Medical Cost	\$3358 (1.0)	\$4052 (1.21)	\$5127 (1.53)
Rx Cost	2024	1845	1419
Total Cost	5382	5897	6546

Notes: For 14,185 persons on ACE/ARB Hypertension Meds. Gaps reflect Rx possession gaps >14 days. Based on 2007 sample of enrollees in commercial health plans. Logic based on Johns Hopkins ACG-PM V.9.0, Gaps in Rx care methodology.



Some Next Steps, Implications and Challenges.

Some future areas of reform-related PM / RA research and development

- Application of PM / RA tools to improving care among previously uninsured
- Enhancement of CMS' first generation M+A and PDP risk adjusters
- Increasing PM's impact on clinician practices and patient outcomes in order to bend the curve
- Integration of PM with EHRs / PHRs.

Some future challenges for the PM / RA field related to health reform

- Need to continue to fully integrate PM / RA into potentially reformed clinical and fiscal operations
- New paradigms will likely be needed for the way actuaries / health plans manage risk
- PM and RA may be use more frequently for equity / quality enhancement to increase service use.
- Transparency and interoperability of PM / RA methods will likely need to increase

To discuss all this and more, you are invited to the Johns Hopkins University's 2010 ACG International Risk Adjustment / Predictive Modeling Conference

Keep informed of the latest developments in risk adjustment and predictive modeling

Loews Ventana Canyon Resort

Tucson, AZ

May 10-12, 2010

More information at www.acg.jhsph.edu



More Information

- **ACG Web Site:**

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