



# Removing Barriers To Adherence: Harvard Colloquium

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# ■ Better Pharmacy Care, Better Client Results

 <p><b>Get the medicine right</b></p> <p>The most advanced approach to clinical and cost management</p>	 <p><b>Get the behavior right</b></p> <p>Members achieve better health outcomes and help reduce cost</p>
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**Both are needed to improve health and reduce total cost.**

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# ■ Major Barriers to Adherence

- Lack of knowledge about medication
- Failure to understand importance of adherence for better health in the future (discounting)
- Inertia
- Inconvenience
- Forgetfulness
- Cost

We are trying to design programs that address all of these

# ■ How Do We Present Adherence Issues to Our Clients?

- **Pharmacy Calculator** summarized the impact of the various programs that we have to address poor adherence
- **Pharmacy Care Economic Model** allows the clients to understand the benefits of better adherence
- The combination allows much better utilization of programs
  - Clear ROI for health plans
  - Allows ACO's to understand risk under capitation

# ■ Adherence Calculator: Introduction

- The Adherence Calculator is our proprietary, flexible and client specific tool used to project the financial value of improved adherence and closing gaps in care
- Estimates the compounding effect of clinical programs; additional adjustments for client specific characteristics such as baseline programs, clients' average age/gender mix and disease prevalence are included
- The Adherence Calculator also leverages findings from Pharmacy Care Economic Model where we studied 13 chronic conditions and assessed savings from disease specific medical, productivity, generic substitution and gaps in care

# ■ Steps to Building the Adherence Calculator

- Step 1: Obtained individual impact of 8 programs from internal studies
- Step 2: Assessed the compounding effect of all possible combinations such as Pharmacy Advisor and Maintenance Choice
- Step 3: Extracted clients' baseline information
- Step 4: Adjusted compounding impact of programs by clients' specific baseline demographics
- Step 5: Converted increased MPR to percent shift to optimal adherence
- Step 6: Leveraged PCEM to derive savings associated with the shift to optimal adherence

# ■ Guiding principals for study inclusion in the adherence calculator

## 1: Scientific Rigor / Validity

- Strong study design, including case-control and cross-sectional studies
- Large sample size and adequate statistical power

## 2: Relevant Impact

- Studied outcome relates directly to the question
- Size of effect is clinically meaningful
- Significant (statistical) difference is large

## 3: Consistency

- Findings consistent among results from different studies

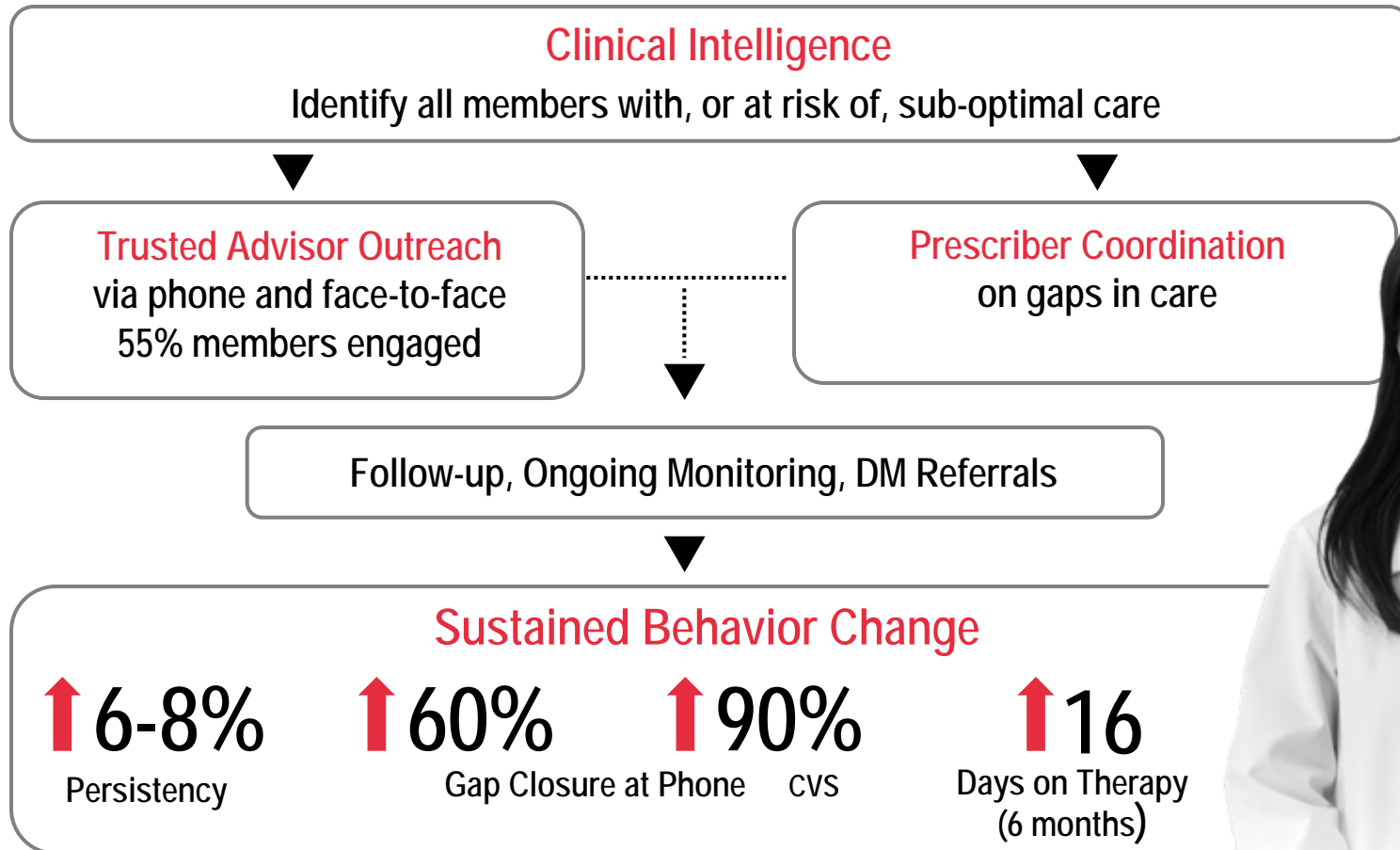
## 4: Generalizability

- Studied population, intervention, and outcomes are free from doubts about generalizability

# Studies Included in the Adherence Calculator

Study	Member-level Impact	Client-level Impact	Reference/Comments
Ready Fill at Mail	13.9%	1.39%	Enterprise Analytics (2010) ReadyFill at Mail Program Impact on Adherence. Results based on post MPR comparison between cases and controls. Attributable impact reported in pre-post MPR comparisons is smaller (15.7%)
Pharmacy Advisor Pilot	14.4%	.22%	Enterprise Analytics (2010) MPR impact presented is at the condition-level using ATC logic and based on one year of claims data through October 2009
Mandatory Mail	10%	1.00%	Data source from December 2010 Adherence Dashboard. Comparison group is Retail Pharmacy Channel. Liberman et al (AJMC 2011) Adherence to medication under mandatory mail and voluntary mail benefit designs
Maintenance Choice	10.6%	1.06%	Enterprise Analytics (2011) Maintenance Choice: Follow-up Evaluation on Medication Adherence. Results from MChoice therapy initiators only. Comparison group is Mandatory/Incentivized Mail
Value Based Insurance Design	6.9%	.67%	Chang et al (AJPB 2010) Value-Based Insurance Design and Antidiabetic Medication Adherence; Results from VBID therapy initiators only
Consumer Directed Health Plan	1.7%	.15%	Enterprise Analytics (2007, 2008, 2009) AT&T Consumer-Directed Health Plan: Adherence and Medical Services Utilization. Results reflect the experience of one client only
Compliance & Persistency	0.2%	.2%	Enterprise Analytics (2011) Results based on Book of Business analysis

# Pharmacy Advisor™



**Multi-channel intervention closes gaps, improves adherence, and so lowers health care costs.**

# ■ Steps to quantifying programs overlap

Step 1: Calculated client level impact by multiplying member level impact by uptake rate and prevalence of the conditions

Step 2: Identified four categories of overlap

- Population
- Days of Supply targeted
- Intervention Type
- Channel targeted

Step 3: Assigned weights to overlap factors

Step 4: Applied hierarchical approach to calculate combined impact of programs by deducting overlap from the least impactful program and adding to the most impactful

# Determining Factors and assigning weights

	Member Population (Opportunity Identification)	Intervention Type	Days Supply of Rx	Channel
Compliance & Persistency	all	Clinical	30 & 90	Retail and Mail
Incentivized/Mandatory Mail	all	Financial	90	Mail
Ready Fill at Mail	all	Financial	90	Mail
Maintenance Choice	all	Financial	90	Retail
Pharmacy Advisor	diabetic (10%)	Clinical	30 & 90	Retail
Value-Based Insurance Design	diabetic & other chronic conditions (50%)	Financial	30 & 90	Retail and Mail
Consumer-Driven Health Plan	all	Financial	30 & 90	Mail

Weights	55%	25%	10%	10%
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**Population overlap--  
highest weight  
among all factors**

# ■ CVS Caremark Pharmacy Care Economic Model<sup>SM</sup>

- Calculates financial value of adherence, gap closure and improved productivity
- Uses comprehensive data from the literature on clinical outcomes from adherence and effectiveness, the monetizes the costs of those outcomes
- Performed at condition-specific level
- Corroborates with our incidence related analyses
- Demonstrates the savings in the context of overall medical and drug spend— makes the point that better pharmacy care leads to higher quality care (reduce avoidable outcomes) and lower costs
- Helps target and prioritize high-value opportunities

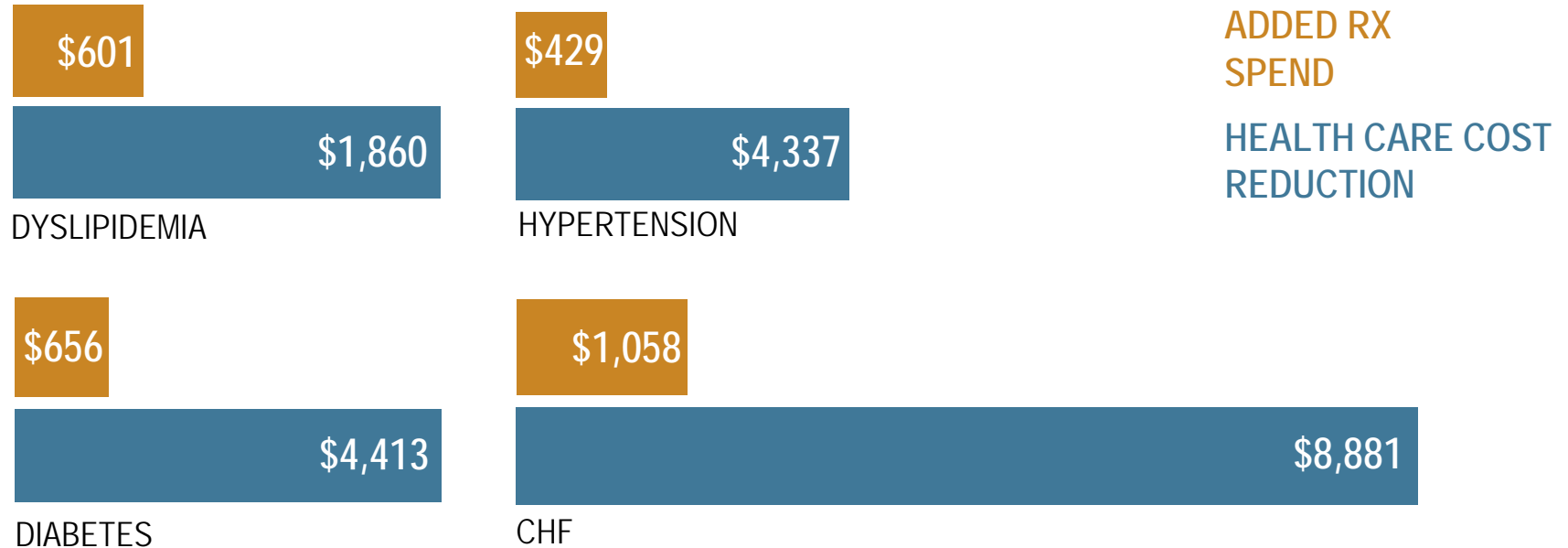
# PCEM Corroborates Our Recent Value of Adherence Study



Cited by:  
 New York Times  
 LA Times  
 Chicago Tribune  
 Hartford Courant  
 Baltimore Sun  
 Orlando Sentinel  
 Drug Store News  
 Chain Drug Review

# Value of Adherence Study Results

Health Care Cost Savings: Adherent vs. Non-Adherent (\$PMPY): All Individuals



**New literature definitively shows that additional drug spend will result in lower health care costs.**

# Thomson Reuters Collaboration Validates and Enhances PCEM on Functional Status Improvements

## Objective:

Estimate effect of medication adherence on high-prevalence, high-cost conditions



THOMSON REUTERS

## Methodology:

Large average sample size: 1M+ patients across conditions

- Claims generated 1/1/05-12/31/08
- Controlled for individual adherence behaviors (endogeneity)
- Claims analysis on diabetes, hypertension, CHF, dyslipidemia, asthma/COPD
- Validates effect of medication adherence on
  - Total health care costs
  - Health services utilization
- Estimates effect of medication adherence on
  - Productivity (absenteeism and disability)

# Thomson Reuters Study Results—Publication Pending

## Disability Costs

ADHERENT

NON-ADHERENT

DIFFERENCE  
- \$1,987



DIABETES

DIFFERENCE  
\$585<sup>NS</sup>



CHF

DIFFERENCE  
- \$1,499



HYPERTENSION

DIFFERENCE  
- \$1,923



DYSLIPIDEMIA

DIFFERENCE  
- \$2,491



ASTHMA/COPD

# Projecting Coronary Artery Disease Savings for 100K Member Group

Condition	CAD
# Members w/ Condition	3,566
% Non-Adherent	34%
Adherence Savings PMPY	\$1,019
% w/ Gap	4%
Gaps in Care Savings PMPY	\$590
Productivity (Absenteeism / ST Disability)	\$1,789
<b>Total Savings Opportunity</b>	<b>\$2,404,162</b>

**Outcomes  
Avoided:  
16 Heart Attacks,  
5 Strokes,  
7 Deaths**

# PCEM Findings For 100k Lives

Conditions	N with Condition	% Suboptimal Adherence	Med Adherence HC Savings PMPY	Generic Savings Component PMPY	% of Population with a Gap	Effectiveness (Gaps in Care)	Productivity (Absenteeism / ST Disability)	Total Savings Opportunity for 100K Lives
CAD	3600	35%	\$1,020	\$330	4%	\$ 600.00	\$1,800	\$2,505,600
Heart Failure	750	30%	\$5,640	\$280	40%	\$ 2,160.00	\$1,000	\$2,029,500
Hyperlipidemia	12200	35%	\$960	\$360			\$1,950	\$8,262,450
Hypertension	16900	35%	\$1,170	\$250			\$1,500	\$11,356,800
Diabetes	4700	40%	\$2,780	\$960	66%	\$ 550.00	\$2,000	\$8,812,500
CKD	5000	25%	\$900	\$4,300	0.20%	\$ 600.00	\$1,800	\$2,256,000
Osteoarthritis	8500	40%	\$300	\$0			\$1,800	\$4,080,000
Osteoporosis	4000	50%	\$900	\$460			\$1,800	\$3,600,000
Asthma	6400	35%	(\$240)	\$550			\$2,500	\$2,262,400
Depression	9600	60%	\$625	\$310			\$1,100	\$6,768,000
Bipolar	3300	35%	\$20	\$0			\$900	\$542,850
Schizophrenia	50	60%	\$2,180	\$0			\$1,020	\$80,700
Seizure Disorder	1100	40%	\$2,380	\$650			\$1,800	\$1,443,200
<b>Total Opportunity</b>			\$26,943,450			\$2,446,500	\$24,610,050	<b>\$54,000,000</b>

PCEM shows maximum opportunity while the adherence calculator is conservative in terms of switching to generics and closing gaps

# Pharmacy Care in the Context of Overall Spend

Cost Avoidance Opportunity in 100K Member Population-- \$300M Overall Spend

13 CHRONIC DISEASES  
BETTER PHARMACY CARE

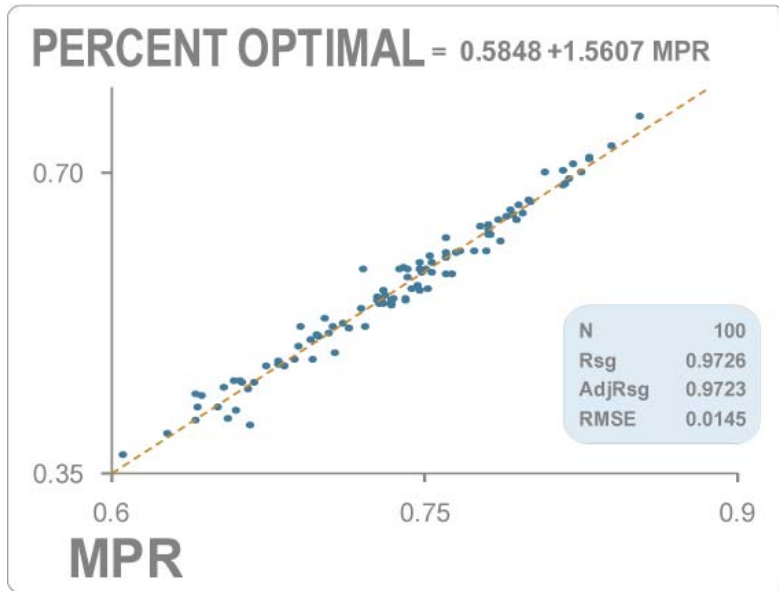
INCREASE ADHERENCE  
using low-cost therapies  
\$26.8 Million

INCREASE GAP  
CLOSURE  
\$2.4 Million

INCREASE  
PRODUCTIVITY  
\$24.3 Million

\$53.6 M HEALTH CARE  
COST AVOIDED

# Translating into Savings via PCEM



Condition	$\Delta \text{ MPR} = \mathbf{X} \Delta \text{ Increase in \% Optimal}$
Hyperlipidemia	1.64
Hypertension	1.66
Diabetes	1.69
Depression	1.52
Osteoporosis	1.47
Overall	1.54

- Lift in MPR is needed to estimate THC savings
- All savings components from PCEM are based on shift from sub-optimally adherent to optimally adherent
- The conversion from MPR to percent optimal was done using a simple linear regression model by condition

# Applying the Adherence Calculator tool: Client adopted Six programs

### Client Profile

Select Client: MARRIOTT INTERNATIONAL, INC.

**MARRIOTT INTERNATIONAL, INC.**

Projection Year: Jan-Dec 2011

Gross Cost: \$68,479,517

Eligible Members: 108,594

Number of Employees: 52,973

### Demographic Profile

	Current	Expected in Jan-Dec 2011 *		
		Low	Mid	High
Percent Male	M	●	●	●
Average Age	M	●	●	●
GDR	M	●	●	●
MDR	L	●	●	●
Member Share	L	●	●	●

### Adherence Results

#### MPR Change

#### Gaps Prevalence

#### Savings Types to Include In Projection

- Reduced Medical Cost
- Increased Generic Utilization
- Reduced Gaps in Care
- Increased Productivity

#### Total Savings

	Current Programs	Programs Expected in Projection Period
Adherence to Drug Therapy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance Choice	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pharmacy Advisor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CDHP	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evidence-Based Plan Design	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mail:		MAIL
None	<input checked="" type="radio"/>	<input type="radio"/>
Incentivized Mail	<input type="radio"/>	<input checked="" type="radio"/>
Mandatory Mail	<input type="radio"/>	<input type="radio"/>
ReadyFill at Mail	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.3% increase in MPR**

**\$5.3M in THC Savings for XYZ Corp**

Adoption of six programs for XYZ Corp lead to 3.3% increase in MPR and \$5.3M in savings which is 9% of total opportunity