Optimizing the P4P ROI Equation

IHA Conference

February 27th, 2008
Presenters

- Francois de Brantes, MS, MBA, Chief Executive Officer, Bridges to Excellence
- Michael Hagan, PhD, Senior Economist, Agency for Healthcare Research and Quality
- R. Adams Dudley, MD, Associate Professor of Medicine and Health Policy, Institute for Health Policy Studies, University of California, San Francisco
- Harold S. Luft, PhD, Caldwell B Esselstyn Professor and Director, Institute for Health Policy Studies, University of California, San Francisco
- Amita Rastogi, MD, MH, Chief Medical Officer, PROMETHEUS Payment, Bridges to Excellence
- Michael Miltenberger, BTE Program Analyst – Intern, Bridges to Excellence
- Guy D’Andrea, MBA, Founder and President, Discern Consulting
Agenda

8:30-8:40: Introduction
- Francois de Brantes

8:40-9:30: Optimizing ROI: the “R” in ROI
Panel 1: New Findings from AHRQ: Understanding the Impact and Unintended Consequences of Incentives for Quality – Michael Hagan, PhD (moderator)
- R. Adams Dudley, MD
- Harold S. Luft, PhD

9:30-10:00: Optimizing ROI: the “R” in ROI
Panel 2: Findings from BTE: The Direct and Indirect Benefits of BTE’s Rewards Programs – Francois de Brantes (moderator)
- Amita Rastogi, MD, MH
- Michael Miltenberger

10:00-10:10: BREAK

10:10-10:20: The ROI Equation: An Overview
- Francois de Brantes

10:20-11:10: The Number of Patients Receiving High Quality Care: BTE’s Critical Mass Analysis
- Guy D’Andrea

11:10-11:40: Optimizing the ROI Equation
- Francois de Brantes

11:40-12:00: Q and A
The P4P “ROI” Equation

\[
NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i}
\]

DBP + IDP = Direct and Indirect Benefits per patient, e.g. direct medical costs, productivity – We’ll focus mostly on DBP

NP = The incremental number of patients getting good care

P = The number of patients getting “good care” in the status quo

R = Rewards or incentives per patient

VC + FC = Variable and fixed costs of the program
Panel 1 will focus on “NP”

Everything else being equal, you maximize your return on a P4P effort by getting as many patients as possible to seek care at high-performing physicians—by increasing the pool of high-performers, or by moving patients to high-performers

- Dr. Luft looks at how incentives in multi-specialty group practices motivate performance improvement
- Dr. Dudley looks, in part, at how certain benefit designs and other consumer-focused tactics can encourage a consumer to seek a better quality provider

\[
NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i}
\]
Panel 2 will focus on the Benefits

The indirect benefits are difficult to gauge accurately and vary by employer (and are mostly irrelevant to plans), however, they exist. So if the NPV is positive on the basis of DBP, it will be even more so when accounting for IDP.

- Dr. Rastogi will review the average savings for physicians that met the criteria for delivering good care to patients with Diabetes
- Mr. Miltenberger will review the evidence of more systematic practice transformation that impacts all patients in the practice
Panel 1 – Findings from AHRQ-sponsored research

Moderator: Mike Hagan, AHRQ

Dr. Adams Dudley

Dr. Hal Luft
Incentives for Consumers: Can They Improve Health and Health Care?

R. Adams Dudley, MD, MBA
Associate Professor of Medicine and Health Policy, University of California, San Francisco

Supported by the Agency for Healthcare Research and Quality
What consumer decisions can financial incentives be used to influence?

What is tiering, and how is it used to create incentives?

Do consumer financial incentives work?

How can consumer financial incentives be aligned with public reporting, P4P, and other payment reform initiatives?
What consumer decisions can financial incentives be used to influence?

- Possible Goals: Create an Incentive to...
  - 1: Select a high value health plan or network
  - 2: Select a high value provider
  - 3: Choose the highest value treatment option
  - 4: Reduce health risk by seeking care
  - 5: Reduce health risk by changing lifestyle
What is a “Tiered” Health Plan?

- Tiered health plans offer provider lists sorted into tiers based on quality, cost, or some combination of these.
- Patients are offered lower out-of-pocket costs to use providers in the preferred tier.
- If the incentive is a lower insurance premium, it’s a “premium-tiered” plan; if it’s a lower copayment for each visit, it’s a “point-of-care” tiered plan.
One Possible Approach to Tiering

Hospital Cost per Discharge and Mortality Rate

Data source: Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 10 states (over 1300 hospitals). Agency for Healthcare Research and Quality.
Patient Choice (premium tiering in Minn and the Dakotas)

- Direct contracting between employers and provider networks
- Provider networks rated on quality and cost/patient/year, then sorted into tiers
  - Quality is measured for both the physicians (e.g., Bridges to Excellence participation) and hospitals (e.g., Leapfrog performance) in each network
  - Quality and cost measures summarized--->3 tiers
Patient Choice (premium tiering in Minn and the Dakotas)

- Consumers choose a provider network and pay lower annual premiums for choosing higher tier networks
- 2006 prices:
  - Choosing Tier 1 network --> lowest premium
  - Tier 2 premium = Tier 1 plus 16% of total costs
  - Tier 3 premium = Tier 1 plus 38% of total costs
Tufts Navigator PPO (point-of-care tiering in Massachusetts)

- Hospitals rated on:
  - **Cost**: plan $ per standardized admission
  - **Quality**: national standard quality measures already being reported (JCAHO, Leapfrog)

- Separate rating for pediatric, obstetrical, and general med/surg

- Good/better/best = $500/$300/$150 copayment
Value-based Benefit Design*

- Concept: signal “high-value” vs. “low-value” care through cost-sharing
- Employer example: Pitney Bowes has reduced copayments for diabetes, asthma and hypertension medications
- Could add first $ coverage for care any non-discretionary care (e.g., for treatment for a new dx of breast cancer)

Pushing the Envelope in Asheville, NC

- The Asheville Project: A program to get city employees with diabetes better care
- Free diabetic supplies, low cost meds, education
- Despite all the free/low cost care, saved more than $1,200/diabetic/year!
Enhanced Benefits in Florida Medicaid

- Many recent innovations in FL Medicaid program, including allowing beneficiaries to “Opt Out” into employer-sponsored plan with full state support.

- Also: “Healthy Behavior Credits” (e.g., $25 for alcohol tx program participation) to a health spending account the beneficiary controls.
What Do We Know About Consumer Responses to Incentives?
 Consumers are Responsive to Incentives to Use Preventive or Chronic Care: % of Studies Finding that Incentives Worked

<table>
<thead>
<tr>
<th>Incentive Type</th>
<th>Lottery</th>
<th>Gift</th>
<th>Cash</th>
<th>Coupon</th>
<th>Free Medical</th>
<th>Punishment</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple</td>
<td>2 of 5  (40%)</td>
<td>2 of 5  (40%)</td>
<td>5 of 5  (100%)</td>
<td>10 of 12  (83%)</td>
<td>3 of 4  (75%)</td>
<td>3 of 3  (100%)</td>
<td>25 of 34  (74%)</td>
</tr>
<tr>
<td>Complex</td>
<td>4 of 5  (80%)</td>
<td>2 of 2  (100%)</td>
<td>3 of 6  (50%)</td>
<td>2 of 3  (67%)</td>
<td>1 of 2  (50%)</td>
<td>6 of 7  (86%)</td>
<td>18 of 25  (72%)</td>
</tr>
<tr>
<td>Totals</td>
<td>6 of 10  (60%)</td>
<td>4 of 7  (57%)</td>
<td>8 of 11  (73%)</td>
<td>12 of 15  (80%)</td>
<td>4 of 6  (67%)</td>
<td>9 of 10  (90%)</td>
<td>43 of 59  (73%)</td>
</tr>
</tbody>
</table>

Consumers are NOT Responsive to Incentives to Change Lifestyle

- The large majority of studies of incentives to quit smoking or lose weight suggest incentives are ineffective.
- This is not surprising:
  - Patients spending anything on tobacco and too much on food already have large financial incentives, before any incentive offered by a purchaser.
  - Most already want to stop, but addiction > incentive.
- Failure of incentives does NOT mean that stop smoking and weight-loss programs do not work, just that additional incentives don’t increase their effect.

Cost-Sharing without Clinical Guidance Leads to Undesirable Outcomes

- **Study question:**
  - Does cost-sharing cause patients to reduce their use of wasteful care?

- **Intervention:**
  - Randomize patients to free care and drugs or cost-sharing
  - Measure blood pressure treatment and results

- **What happened?** Keeler et al. JAMA 1985; 254(14):1926
Percentage of Low Income Hypertensives Receiving High Quality Care: Processes and Outcomes by Plan

- Follows Diet
- On a Drug
- Saw MD After Drug
- Systolic BP Control

Parameters:
- Free Plan
- Cost-Sharing Plans
Cost-Sharing without Clinical Guidance Leads to Undesirable Outcomes

- And the risk of death was 10% higher…
  - Brook et al. NEJM 1983; 309(23):1426

- CRUCIAL NOTE: This was in an environment completely bereft of provider report cards and patient education materials. Today we should be able to do better.
What We Don’t Know (1)

- How clinical outcomes and cost compare for different strategies:
  - Incentives to choose the right provider (premium-tiered or point-of-care tiered health plans) vs.
  - High deductible plan with a savings account option vs.
  - Incentives focused on choosing the right treatment option when you are sick (e.g., medical therapy for angina vs. a coronary stent)
What We Don’t Know (2)

- Whether providing *education and information* makes cost-sharing safer
  - That is, if we try to teach patients about what necessary care or the best treatment options are, will that fix the poor outcomes seen with cost-sharing alone
What We Don’t Know (3)

- In terms of educating patients, what is the best:
  - source for information about provider performance
  - source for information about the outcomes of various treatment options or the need to keep up with preventive or chronic care
  - method for delivering this information
Conclusion

- Consumer incentives can improve preventive and chronic care
- Tiered plans are new and have not been studied much, but potentially promising, as long as quality is a major component of tiering designations
- High deductible plans also new, could be accompanied by education/information for patients with chronic disease
AHRQ commissioned:

**Consumer Financial Incentives:**
* A Decision Guide for Purchasers*

AHRQ commissioned:

**Pay for Performance:**
* A Decision Guide for Purchasers*

A panel of 10-15 purchasers and consumers identified series of questions which became outline for each Guide

*Available in October 2007. Email Peggy.McNamara@ahrq.hhs.gov to request a copy.*
Experience from a Physician P4P Experiment in Outpatient Settings in Northern California

Harold Luft, PhD
Sukyung Chung, PhD
Palo Alto Medical Foundation Research Institute
and
Institute for Health Policy Studies, UCSF
Research Objective

- Examine physician performance with the adoption of a physician-incentive program
  - Learning effect over the first three quarters of program implementation
  - Assess with regard to various quality measures tied to incentives
  - Impact of frequency of payment on physicians’ responsiveness
Study Setting

- Palo Alto Medical Foundation
  - Non-profit organization contracting with 3 multi-specialty physician groups in Northern California
  - Physician-specific P4P was implemented at one of 3 groups, Palo Alto Medical Clinic (PAMC)

- PAMC
  - Covering 3 counties with 5 sites
  - 750,000 patient visits/year
P4P Design

- Physician-specific P4P
- Primary care physicians
  - Family Medicine, Internal Medicine, or Pediatrics
- Development of incentive scheme
  - PAMF stakeholders participated in the process of determining performance measures and incentive formula
- Frequency of payment and performance reporting:
  - Physicians were randomly assigned to either quarterly bonus (max. $1,250) or year-end bonus (max. $5000)
  - Quarterly report of performance scores provided to both groups via email
# Quality Measures

<table>
<thead>
<tr>
<th>Quality metrics</th>
<th>Description</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For Adults</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes glyco ctrl</td>
<td>HgBA1C &lt; 7 (diabetes patients)</td>
<td>Outcome</td>
</tr>
<tr>
<td>Diabetes BP ctrl</td>
<td>blood pressure &lt;130/80 (diabetes patients)</td>
<td>Outcome</td>
</tr>
<tr>
<td>Diabetes LDL ctrl</td>
<td>LDL &lt;100 (diabetes patients)</td>
<td>Outcome</td>
</tr>
<tr>
<td>Asthma Rx</td>
<td>Long-term controller prescribed (asthma patients)</td>
<td>Process</td>
</tr>
<tr>
<td>BMI measured</td>
<td>Height and weight measured</td>
<td>Process</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>Chlamydia testing done (eligible women)</td>
<td>Process</td>
</tr>
<tr>
<td>Colon cancer screen</td>
<td>Colon cancer screening complete (adults age 50+)</td>
<td>Process</td>
</tr>
<tr>
<td>PAP</td>
<td>Cervical cancer screening (eligible women)</td>
<td>Process</td>
</tr>
<tr>
<td><strong>For children or adolescents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision check 3yo</td>
<td>Vision checked (within 3 months of 3rd birthday)</td>
<td>Process</td>
</tr>
<tr>
<td>BP check 3yo</td>
<td>Blood pressure check (within 3 months of 3rd birthday)</td>
<td>Process</td>
</tr>
<tr>
<td>Tobacco history</td>
<td>Tobacco use history recorded (adolescents)</td>
<td>Process</td>
</tr>
<tr>
<td>Newborn seen</td>
<td>Newborns seen (within 8 days of birth)</td>
<td>Process</td>
</tr>
<tr>
<td>Varicella</td>
<td>Varicella immunization complete (2 year olds)</td>
<td>Process</td>
</tr>
<tr>
<td>Ritalin user BP check</td>
<td>Current BP checked for patients on Ritalin-like drugs</td>
<td>Process</td>
</tr>
<tr>
<td>LDL check for high BMI</td>
<td>LDL checked for adolescents with high BMI</td>
<td>Process</td>
</tr>
</tbody>
</table>
Incentive Formula

- Incentive payment = \[ \text{percentage score} \times \text{maximum amount} \]
- Percentage score = \[ \frac{\text{sum of achieved points}}{\text{maximum possible points}} \]
- Maximum possible points = \[ 3 \times \text{number of qualifying metrics} \]
  - Points (max 3) are based on a step function:
    - 1: minimum performance goal; 3: stretch goal; 2: in between; Goals were set by consensus with Department Chairs based on the previous year’s performance.
  - Measures with 5 or fewer eligible patients for a
Results
## Participating Physicians

### Number of physicians with any qualifying metrics

<table>
<thead>
<tr>
<th>By payment frequency</th>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarterly bonus</td>
<td>77</td>
<td>76</td>
<td>75</td>
</tr>
<tr>
<td>Year-end bonus</td>
<td>88</td>
<td>88</td>
<td>85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>By department</th>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAMP</td>
<td>68</td>
<td>66</td>
<td>62</td>
</tr>
<tr>
<td>GMED</td>
<td>56</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>PEDS</td>
<td>41</td>
<td>42</td>
<td>43</td>
</tr>
</tbody>
</table>
## Percentage Scores

<table>
<thead>
<tr>
<th>Quality metric (adults)</th>
<th>Average</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes glyco ctrl</td>
<td>61</td>
<td>60</td>
<td>60</td>
<td>63*</td>
</tr>
<tr>
<td>Diabetes BP ctrl</td>
<td>53</td>
<td>51</td>
<td>53</td>
<td>55*</td>
</tr>
<tr>
<td>Diabetes LDL ctrl</td>
<td>60</td>
<td>57</td>
<td>61</td>
<td>62*</td>
</tr>
<tr>
<td>Asthma Rx</td>
<td>92</td>
<td>92</td>
<td>92</td>
<td>93</td>
</tr>
<tr>
<td>BMI measured</td>
<td>72</td>
<td>71</td>
<td>72</td>
<td>74</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>37</td>
<td>36</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Colon cancer screen</td>
<td>47</td>
<td>45</td>
<td>47</td>
<td>48*</td>
</tr>
<tr>
<td>PAP</td>
<td>78</td>
<td>77</td>
<td>79</td>
<td>80</td>
</tr>
<tr>
<td>Percentage score †</td>
<td>52</td>
<td>50</td>
<td>53</td>
<td>52</td>
</tr>
</tbody>
</table>

* p<0.05 of the difference between Q1 score and Q3 score
† based on all qualifying metrics including pediatric metrics
## Comparison of Quarter/year Group

<table>
<thead>
<tr>
<th>Quality metrics (adults)</th>
<th>Quarter 1</th>
<th></th>
<th>Quarter 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qtr</td>
<td>Yr</td>
<td>Qtr</td>
<td>Yr</td>
</tr>
<tr>
<td>Diabetes glyco ctrl</td>
<td>61</td>
<td>60</td>
<td>64</td>
<td>63</td>
</tr>
<tr>
<td>Diabetes BP ctrl</td>
<td>49</td>
<td>51</td>
<td>55</td>
<td>54</td>
</tr>
<tr>
<td>Diabetes LDL ctrl</td>
<td>58</td>
<td>57</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Asthma Rx</td>
<td>94*</td>
<td>91</td>
<td>93</td>
<td>92</td>
</tr>
<tr>
<td>BMI measured</td>
<td>67*</td>
<td>75</td>
<td>70*</td>
<td>78</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>36</td>
<td>36</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>Colon cancer screen</td>
<td>44</td>
<td>45</td>
<td>48</td>
<td>49</td>
</tr>
<tr>
<td>PAP</td>
<td>76</td>
<td>78</td>
<td>79</td>
<td>80</td>
</tr>
</tbody>
</table>

* p<0.05 of the difference between two groups, based on t-statistics
Summary of Findings

- A steady increase in scores over the 3 quarters
- Improvement in all 3 outcome measures (for diabetic patients) and 1 procedure measure (colon cancer screening)
- No difference in the scores or in the change in scores between quarterly and annually paid groups.
- Anecdotal evidence suggests that
Future Analyses

- Effect of physician-specific P4P as compared to group level P4P with pre-baseline and complete 4 quarters data
- Specific physician and group characteristics related to responsiveness to P4P
- Spillover effect of P4P on quality dimensions that were not incentivized
Conclusion

- Physician-specific P4P incentives, developed with the input from participating physicians, appear to improve indicators of ambulatory care quality, at least for the dimensions tied to the incentives.

- However, the frequency of payment itself, with no difference in the overall amount of being paid or in the frequency of reminder or reporting of performance score, may not make a substantial difference in performance in response to the P4P.
Panel 2 – Findings from BTE research

Recognized physicians deliver better quality care:

- Their submission and scoring of medical record data suggests that, and it has been confirmed looking at their scores on claims-based quality measures.
- The better quality is evident in Diabetes care and overall as per the scores on different preventive care measures.

Recognized physicians deliver lower cost of care:

- The average savings for physicians recognized under the Diabetes Care Link is $400 per patient per year. This has come mostly by looking at “price-neutralized” claims. Some physician groups may be inefficient if their negotiated fee schedules are very high.
- The average savings for physicians recognized under the Physician Office Link is $245 per patient per year.
Three-year study shows POL-recognized physicians are top performers

- POL-recognized physicians have lower ($579 v. $695 -- $116 in savings) average episode costs across all episodes and patients than a comparison group. The average savings per patient is $245 per year (2.11 episodes * $116)

- POL-recognized physicians also show lower variation in total episode costs

- POL-recognized physicians have better quality scores and lower variation in those scores than the comparison group

### Primary Care Providers

<table>
<thead>
<tr>
<th></th>
<th>Recognized</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg episodes/patient</td>
<td>2.11</td>
<td>2.22</td>
</tr>
<tr>
<td>Std deviation</td>
<td>1.74</td>
<td>1.88</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Max</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Avg repriced cost / episode</td>
<td>$579</td>
<td>$695</td>
</tr>
<tr>
<td>Std deviation</td>
<td>$1,967</td>
<td>$2,441</td>
</tr>
</tbody>
</table>

Source: Mercer, 2007

### POL Study Group

<table>
<thead>
<tr>
<th></th>
<th>Recognized</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cervical Cancer Screening</td>
<td>89%</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Std Dev</td>
<td>8%</td>
</tr>
<tr>
<td>- HbA1c testing</td>
<td>87%</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td>Std Dev</td>
<td>11%</td>
</tr>
<tr>
<td>- Lipid panel: CHD 382: CHD_lipid_PQP</td>
<td>90%</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>Std Dev</td>
<td>8%</td>
</tr>
<tr>
<td>- Lipid panel: Hypertension 12: HTN_lipid panel_P</td>
<td>44%</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>Std Dev</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Mercer, 2007

\[
NPV = \sum_{i=1}^{n} \frac{(DBP_i + IDP_i \times (NP_i - P_i) - (R \times NP_i) - (VC_i + FC_i))}{(1 + rate)^i}
\]
Cost - Quality Relationships

BTE-DCL recognized physicians study

Ingenix study - areas of opportunity

• Geographic areas
• Physician types

BTE: Bridges to Excellence
DCL: Diabetes Care Link
First Study: Methodology

- DCL recognized physicians were compared with DCL non-recognized physicians in the Louisville Cincinnati area five years after launch of the BTE program.
- Both PCPs (primary care) and Endocrinologists were evaluated.
- Diabetes related costs were evaluated using ETG® methodology to study the costs of care of diabetic episodes.
- Physicians were attributed an episode of diabetes if they were responsible for >25% of costs of diabetic care for a given patient – therefore more than one physician could be responsible for a given episode.

BTE: Bridges to Excellence
DCL: Diabetes Care Link
ETG®: Episode Treatment Grouper
**ETG Grouping & Physician Attribution**

<table>
<thead>
<tr>
<th>Description</th>
<th>Member Count</th>
<th>Episode Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Members</td>
<td>352,722</td>
<td></td>
</tr>
<tr>
<td>less: Members Without Claims</td>
<td>(18,451)</td>
<td></td>
</tr>
<tr>
<td>less: Members With Signif COB (COB ≥ 20% Allowed)</td>
<td>(45,219)</td>
<td></td>
</tr>
<tr>
<td>Total Members Processed Through ETG Application</td>
<td>289,052</td>
<td>2,153,532</td>
</tr>
<tr>
<td>Total Diabetics/Diab Episodes</td>
<td>14,489</td>
<td>22,681</td>
</tr>
<tr>
<td>less: Low Outlier Episodes (≤ $20 total allowed)</td>
<td>(1,178)</td>
<td>(1,986)</td>
</tr>
<tr>
<td>less: Members without Minimum 9 Months Medical Coverage</td>
<td>(3,276)</td>
<td>(5,685)</td>
</tr>
<tr>
<td>Final Member &amp; Episode Counts--After Physician Attribution &amp; matching providers in Master Physician List</td>
<td>7,305</td>
<td>9,958</td>
</tr>
</tbody>
</table>

- Over 1.7 million claims were studied using UnitedHealthGroup data
- Episodes grouped by ETG® Annual file methodology
- Approx. 50% Members had no Pharmacy Costs - all Pharmacy costs excluded from cost calc.
- Claims Incurred 10/1/02 - 9/30/04; Paid Through 12/31/04
- Diabetes-Related Episodes with ETGs 0027, 0028, 0029, 0030, 0222, 0223 & 0224
### Physician Details

<table>
<thead>
<tr>
<th>Physician Description</th>
<th>Nbr of Physicians</th>
<th>Nbr of Recog Phys</th>
<th>Nbr of Non-Recog Phys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endocrinologists</td>
<td>43</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>PCP (primary care providers)</td>
<td>1,260</td>
<td>50</td>
<td>1,210</td>
</tr>
<tr>
<td>Totals after low outliers (&lt;=$20 total allowed) removed</td>
<td>1,303</td>
<td>66</td>
<td>1,237</td>
</tr>
<tr>
<td>Less: Unmatched Physicians</td>
<td>(142)</td>
<td>(7)</td>
<td>(135)</td>
</tr>
<tr>
<td>less: Phys Without Diabetic Episodes</td>
<td>(149)</td>
<td>(2)</td>
<td>(147)</td>
</tr>
<tr>
<td>Phys With Diabetic Episodes</td>
<td>1,012</td>
<td>57</td>
<td>955</td>
</tr>
<tr>
<td>After Attribution (Using Costs With Inpatient Included):</td>
<td>998</td>
<td>57</td>
<td>941</td>
</tr>
<tr>
<td>Endocrinologists</td>
<td>39</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>PCP (primary care providers)</td>
<td>959</td>
<td>43</td>
<td>916</td>
</tr>
</tbody>
</table>
### Summary Statistics (Total Costs)

**Total Costs By Episode**

<table>
<thead>
<tr>
<th>Specialty Category</th>
<th>DCL Recognized</th>
<th>No. of Episodes</th>
<th>Mean</th>
<th>Std Dev</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENDO NO</td>
<td></td>
<td>653</td>
<td>1,140.34</td>
<td>2,813.54</td>
<td></td>
</tr>
<tr>
<td>ENDO YES</td>
<td></td>
<td>627</td>
<td>768.99</td>
<td>1,114.52</td>
<td>p=0.0018</td>
</tr>
<tr>
<td>PCP NO</td>
<td></td>
<td>8,077</td>
<td>451.30</td>
<td>1,790.17</td>
<td></td>
</tr>
<tr>
<td>PCP YES</td>
<td></td>
<td>601</td>
<td>433.32</td>
<td>600.81</td>
<td>p=0.5692</td>
</tr>
<tr>
<td>Total Episodes</td>
<td></td>
<td>9,958</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Costs/Eps**

<table>
<thead>
<tr>
<th>Specialty Category</th>
<th>DCL Recognized</th>
<th>No. of Physicians</th>
<th>Mean</th>
<th>Std Dev</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENDO NO</td>
<td></td>
<td>25</td>
<td>2,446.18</td>
<td>3,476.96</td>
<td></td>
</tr>
<tr>
<td>ENDO YES</td>
<td></td>
<td>14</td>
<td>840.74</td>
<td>382.68</td>
<td>p=0.0311</td>
</tr>
<tr>
<td>PCP NO</td>
<td></td>
<td>916</td>
<td>529.90</td>
<td>1,430.60</td>
<td></td>
</tr>
<tr>
<td>PCP YES</td>
<td></td>
<td>43</td>
<td>424.63</td>
<td>188.94</td>
<td>p=0.0579</td>
</tr>
<tr>
<td>Total Providers</td>
<td></td>
<td>998</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Costs By Member**

<table>
<thead>
<tr>
<th>Specialty Category</th>
<th>DCL Recognized</th>
<th>No. of Members</th>
<th>Mean</th>
<th>Std Dev</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENDO NO</td>
<td></td>
<td>504</td>
<td>1,450.86</td>
<td>3,193.26</td>
<td></td>
</tr>
<tr>
<td>ENDO YES</td>
<td></td>
<td>484</td>
<td>982.63</td>
<td>1,310.97</td>
<td>p=0.0025</td>
</tr>
<tr>
<td>PCP NO</td>
<td></td>
<td>5,858</td>
<td>573.78</td>
<td>1,780.95</td>
<td></td>
</tr>
<tr>
<td>PCP YES</td>
<td></td>
<td>459</td>
<td>561.72</td>
<td>722.31</td>
<td>p=0.7685</td>
</tr>
<tr>
<td>Total Members</td>
<td></td>
<td>7,305</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Volume of Diabetic Cases Seen by BTE Certified Physicians vs. Non-certified Physicians

There was no difference in ERG risk scores among patients seen by DCL certified vs. non-certified physicians.
Average episode costs by Physician type and BTE recognition status

High outlier costs are lower in BTE certified physicians

Source: Ingenix, 2006-2007
Distribution of Diabetic Episode Costs

Most savings are due to low inpatient costs by BTE certified physicians:
- Less inpatient stays
- Decreased average cost per stay

Distribution of Total Costs by Episodes and Physician Type & BTE status

Distribution of Inpatient Costs by Episodes and Physician Type & BTE status

Distribution of Outpatient Costs by Episodes and Physician Type & BTE status
Conclusions from the BTE-Ingenix Study

Average annualized costs for diabetic care by BTE certified endocrinologists was $370 less than for non-BTE endocrinologists ($770 vs. $1140).

The variance amongst the BTE certified physicians was much lower than amongst the non- BTE certified physicians.

Cost savings were due to decreased inpatient costs amongst BTE certified physicians:
- $3,480 savings for endocrinologists: $8,304 vs., $4,826
- $3,820 savings for PCPs: $9,090 vs. $ 5,280

Most savings are due to:
- Low inpatient costs by BTE certified physicians
- Less inpatient stays
- Decreased average cost per stay

The average outpatient costs were slightly higher in BTE certified physicians:
- $50 more for endocrinologist: $707 vs. $657
- $20 more for PCPs: $407 vs. $382
Second Study: Methodology

We focused on endocrinologists and PCPs caring for Diabetes across USA

Large national commercial claims database: over 260 million medical claims, 17 million covered lives

Claims: Jan 1, 2004 through Dec 31, 2005 paid until March 31, 2006

Annual file methodology to group claims into episodes using the episode treatment grouper (ETGs®)

Episodes attributed to physicians if they cared for >25% of episode clusters or were responsible for >25% of episode professional costs
Second Study: Methodology (contd.)

All episode costs were based on “allowed” amounts (reimbursed + member)

Each episodes costs were risk-adjusted based on specialty type, geographic area and presence or absence of pharmacy claims

Episodes in the bottom 5th percentile and top 95th percentile for episode costs were truncated from the data to exclude outliers

Episodes were passed through EBM connect® software to measure a quality score based on compliance to published guidelines

EBM = Evidence-based-medicine
# Quality EBM Scores: Example of Rules

**Physician:** Dr. Jones  
**MPIN:** 987654

## DIABETES MELLITUS

<table>
<thead>
<tr>
<th>Rule Type</th>
<th>Description of Clinical Measure</th>
<th>Compliant</th>
<th>Eligible</th>
<th>Compliance Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Published Guideline</td>
<td>Patient(s) that had at least 2 hemoglobin A1C tests in last 12 reported months.</td>
<td>80</td>
<td>100</td>
<td>80%</td>
</tr>
<tr>
<td>Published Guideline</td>
<td>Patient(s) that had an annual screening test for diabetic nephropathy.</td>
<td>70</td>
<td>100</td>
<td>70%</td>
</tr>
<tr>
<td>Published Guideline</td>
<td>Patient(s) that had an annual screening test for diabetic retinopathy.</td>
<td>40</td>
<td>100</td>
<td>40%</td>
</tr>
<tr>
<td>Published Guideline</td>
<td>Patient(s) with a diagnosis of diabetic nephropathy, proteinuria or chronic renal failure that are prescribed an ACE-inhibitor or angiotensin receptor antagonist.</td>
<td>15</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>Safety</td>
<td>Patient(s) taking an ACE-inhibitor or angiotensin receptor antagonist that had an annual serum potassium (K+) test</td>
<td>15</td>
<td>20</td>
<td>75%</td>
</tr>
<tr>
<td>Safety</td>
<td>Patient(s) taking biguanide (e.g. metformin) containing medications, ACE-inhibitor or angiotensin receptor antagonist that had an annual serum creatinine (Cr) test.</td>
<td>25</td>
<td>40</td>
<td>63%</td>
</tr>
<tr>
<td>Care Pattern</td>
<td>Patient(s) that had an LDL cholesterol in last 12 reported months.</td>
<td>60</td>
<td>100</td>
<td>60%</td>
</tr>
<tr>
<td>Care Pattern</td>
<td>Patient(s) with most recent LDL result &gt;=100mg/dL.</td>
<td>45</td>
<td>100</td>
<td>45%</td>
</tr>
<tr>
<td>Care Pattern</td>
<td>Patient(s) with an HDL cholesterol test in last 12 reported months.</td>
<td>60</td>
<td>100</td>
<td>60%</td>
</tr>
<tr>
<td>Care Pattern</td>
<td>Patient(s) with the most recent HDL result &lt;=40mg/dL.</td>
<td>50</td>
<td>100</td>
<td>50%</td>
</tr>
</tbody>
</table>

**EBM = Evidence-based-medicine**
## Risk-adjusted costs for Diabetes Care (USA)

<table>
<thead>
<tr>
<th>Specialty Category</th>
<th>EBM Score &gt;75</th>
<th>Number of Physicians</th>
<th>Number of Episodes</th>
<th>Eps / MD</th>
<th>TOTAL COSTS</th>
<th>COST SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
<td>Std Dev</td>
</tr>
<tr>
<td>ENDO (USA) NO</td>
<td>968</td>
<td>60,347</td>
<td>62</td>
<td>$1,857</td>
<td>$364</td>
<td>t=4.31</td>
</tr>
<tr>
<td>ENDO (USA) YES</td>
<td>1,146</td>
<td>131,553</td>
<td>115</td>
<td>$1,795</td>
<td>$284</td>
<td>p=0.000</td>
</tr>
<tr>
<td>PCP (USA) NO</td>
<td>21,419</td>
<td>487,157</td>
<td>23</td>
<td>$904</td>
<td>$266</td>
<td>t= -5.451</td>
</tr>
<tr>
<td>PCP (USA) YES</td>
<td>18,904</td>
<td>533,235</td>
<td>28</td>
<td>$918</td>
<td>$237</td>
<td>p=0.000</td>
</tr>
</tbody>
</table>

**EBM = Evidence-based-medicine**
- Dataset had 296,855 physicians caring for 69.6 million episodes
- Diabetic episodes (ETGs 027-030) selected
  - 2,114 Endocrinologists treating 191,900 diabetic episodes
  - 41,283 PCPs treating 1,0744,447 diabetic episodes
Trend Analysis helps identify Opportunity in various states

Endocrinologists in Texas – Diabetes Care

<table>
<thead>
<tr>
<th>EBM Score</th>
<th>≤ 75</th>
<th>&gt;75</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Annual Cost</td>
<td>$1,912</td>
<td>$1,710</td>
<td>$202</td>
</tr>
<tr>
<td>Number (%) of physicians</td>
<td>46 (26.7%)</td>
<td>126 (73.3%)</td>
<td></td>
</tr>
<tr>
<td>Number (%) of episodes</td>
<td>3,488 (11.4%)</td>
<td>27,180 (88.6%)</td>
<td>$704,576</td>
</tr>
</tbody>
</table>
Program opportunity comparison

Cost-Quality Relationship amongst Endocrinologists treating Diabetes in Ohio

Cost-Quality Relationship amongst Endocrinologists treating Diabetes in NY
## Risk Adjusted Cost of Diabetes Care (States)

<table>
<thead>
<tr>
<th>Specialty Category</th>
<th>EBM Score &gt;75</th>
<th>Number of Physicians</th>
<th>Number of Episodes</th>
<th>Eps / MD</th>
<th>TOTAL COSTS</th>
<th>COST SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENDI (TX)</td>
<td>NO</td>
<td>48</td>
<td>3,496</td>
<td>73</td>
<td>$1,913</td>
<td>Average = $203 / eps</td>
</tr>
<tr>
<td>ENDI (TX)</td>
<td>YES</td>
<td>130</td>
<td>27,192</td>
<td>209</td>
<td>$1,710</td>
<td>Total = $709,513</td>
</tr>
<tr>
<td>ENDI (OH)</td>
<td>NO</td>
<td>80</td>
<td>6,403</td>
<td>80</td>
<td>$2,180</td>
<td>Average = $130 / eps</td>
</tr>
<tr>
<td>ENDI (OH)</td>
<td>YES</td>
<td>35</td>
<td>6,016</td>
<td>172</td>
<td>$2,051</td>
<td>Total = $831,558</td>
</tr>
<tr>
<td>ENDI (NY)</td>
<td>NO</td>
<td>52</td>
<td>1,814</td>
<td>35</td>
<td>$1,595</td>
<td>Average = $74 / eps</td>
</tr>
<tr>
<td>ENDI (NY)</td>
<td>YES</td>
<td>132</td>
<td>6,938</td>
<td>53</td>
<td>$1,521</td>
<td>Total = $133,928</td>
</tr>
</tbody>
</table>
Opportunity for Cost Savings

<table>
<thead>
<tr>
<th></th>
<th># (%) Physicians with EBM &lt; 75</th>
<th># (%) Episodes at Risk</th>
<th>COST SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>TEXAS</td>
<td>48 (27%)</td>
<td>3,496 (11%)</td>
<td>$203</td>
</tr>
<tr>
<td>OHIO</td>
<td>80 (70%)</td>
<td>6,403 (52%)</td>
<td>$130</td>
</tr>
<tr>
<td>NEW YORK</td>
<td>35 (28%)</td>
<td>1,814 (21%)</td>
<td>$74</td>
</tr>
<tr>
<td>ALL OF USA</td>
<td>968 (46%)</td>
<td>60,347 (31%)</td>
<td>$62</td>
</tr>
</tbody>
</table>

The total potential cost savings is a function of the average cost savings and the number of episodes treated by low performing physicians.
Conclusion: ROI varies based on average cost savings and episodes at risk
Practice Re-engineering

Evidence from the field

MA, NY
Study Objectives

- Explore BTE programs’ impact on the relationship between care transformation, improved patient care, and decreased health expenditures

- Goals:
  - Investigate the link between BTE program participation and subsequent practice transformation
  - Investigate the role BTE incentives play in the practice re-engineering process
Practice Transformation survey results

- Participation process catalyzed improvement
- It drives a “chain reaction” of care process change and quality improvement effort

Obstacles Remain:
- Effort required for change is not always appreciated by staff
- Differences in participants interpretation of the standards/benchmarks
- Sustaining positive changes is difficult
Physician Remarks

- Many physicians began the long processes required for meaningful practice transformation:
  - “We are making constant incremental changes”

- Many practices also noted the positive impacts of these transformations:
  - “EHR is better for the staff -- less falls through the cracks; helps with follow-ups, better than memory”

- Most physicians noted the costs of transformation, but acknowledged that BTE was an important step:
  - “Someone ultimately has to pay, and I support BTE”
Lessons Learned

Financial incentives are a strong motivator: but must remain consistent to promote sustainable change.

Rewards provide a strong catalyst for transforming care processes: when rewards are high enough.

Practices actively make process improvements in what they perceive to be a P4P environment.

Transformation process is financially difficult for practices: and while rewards help, they were sometimes perceived to be too small to sustain most practice improvements by themselves.

P4P is one piece of the puzzle: in most cases practice staff recognize BTE as one of many motivators driving their practice transformation.

P4P quality goals set the standard so keep them high: it promotes a culture of progress and continuous improvement.

Costs (financial and personnel) limit participation: the application process is cumbersome and is expensive on face value and to execute.
Next Steps for Analysis

- **Cost structure of practice transformation:**
  - What practice characteristics impact the cost of transformation, and how large are these factors?

- **Timeline of practice transformation:**
  - How long do practice transformations take for completion, and how quickly do these changes yield clinical impacts?

- **Alignment of other payors:**
  - When will other payors form a critical mass of incentives, and how might Medicare change the landscape?
Stretch Break – Ten Minutes
Optimizing the ROI – Summary of what we’ve learned to this point

The greater the benefits, the faster the equation becomes positive – Understand the value dividends available in your community

The greater the number of patients going to high-performers, the faster the equation becomes positive – (1) create a big enough pool of high-performers to care for your plan members, and (2) manage incentives to move market share

Physicians respond to incentives, but they have to be meaningful.
**Meaningful….some concepts**

Physicians perform “ROI” calculations as well – if you had to invest $25,000 to get $5,000, would you make the investment?

- The benefits have to be at least within reach of the expenses
- The benefits have to be predictable or they will be discounted
- The benefits have to be achievable or they will be ignored

It takes $2,000 per physician to get 20% of the physicians recognized for delivering good care to diabetics.

It takes ten times as much to get 20% of the physicians to get recognized for adopting and using good systems and processes of care on all patients.
How much is enough? It depends....

“Critical Mass” Analysis

Based on BTE data

11,102 total physicians
- 9,368 primary care physicians
- 1,734 specialists

Boston, Capital Region of NY, Louisville, Cincinnati

Year 2 of P4P Program...the “good guys” are already in.

\[
NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i}
\]
Averages may mean little . . .

How can we predict the number of doctors who will respond to P4P rewards?

Hypothetical:

- Physicians require an average reward of $2,000 to improve care and seek P4P recognition
- The average reward offered is $1,000
- How many doctors will get recognized?

\[
NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i}
\]
Distribution of Patients/Rewards

\[ NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
Probability of Physician Recognition – Diabetes Care Link

Response to DCL Rewards

\[ y = 7E-05x + 0.014 \]
\[ R^2 = 0.990 \]

\[ NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
We can match the two curves...

\[ NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
And multiply to get a prediction.

\[ NPV = \sum_{i=1}^{N} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
Now we can solve for NP – the number of patients benefiting from P4P

\[ NPV = \sum_{i=1}^{N} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
The Physician Office Link response shows a different pattern

Response to POL Rewards - Individual Physicians

\[ y = -1E-06x + 0.037 \]

\[ R^2 = 0.012 \]
And the pattern changes depending on the unit of analysis (group-level)
Are we simply rewarding the “already good”?

Yes in Year 1, no in subsequent years:

- The relationship between total rewards potential and recognition is weak in Year 1, stronger in Years 2 and beyond

- High reward practices don’t all get recognized in Year 1, quite the contrary

- In MN, where everyone is above the national average, only 10% of the practices were able to meet the “defect-free” quality criteria in Year 1
Defining incentives and rewards

BTE’s regional implementations fixes an amount per patient as a standard reward.

- Provides simplicity in total rewards calculation for each doctor – predictable and quantifiable

Network-wide plan-based implementations use mostly fee-schedule formulae – sliding scale of increases based on sliding scale of performance scores

- Provides plans with more flexibility in contracting and rewarding providers

\[ NPV = \sum_{i=1}^{N} \frac{(DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
Variable costs of program implementation

Coalition or regional efforts:
- Data aggregation fees
- Communication expenses
- Public reporting expenses
- Organizational expenses

Plan-based efforts:
- P4P fees

Leverage existing efforts:
- Aligning Forces for Quality – already funded by RWJF
- Better Quality Information for Medicare Program – supported by CMS

Focus on sourcing specifications in your RFI
Fixed costs of programs

Plan member/employee communications and activation

Organizational commitment and resources to maximize the R – get more physicians engaged, get more patients to recognized physicians
Arriving at a discount rate…

Important to recognize that P4P programs play out over time

The discount rate could be the same as the company-wide discount rate, the plan/employer’s rate of healthcare cost increases, or the “risk-free” rate.

The discount rate should also be increased to reflect any risk inherent to the program – benefits difficult to quantify because of healthy population, network already high-performing, etc.

\[
NPV = \sum_{i=1}^{n} \frac{((DBP + IDP) \times (NP_i - P_i)) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i}
\]
Optimizing the ROI Equation

Minimizing program costs . . .

Incorporating Rewards as a core component of physician compensation . . .

Building programs that send a consistent message to the physician community . . .

Working together . . .
Once we have our equation and model, we can solve for the rewards amount that optimizes program ROI. In this example $175 is large enough to attract physician participation, but not so large to destroy ROI.

\[ NPV = \sum_{i=1}^{n} \frac{(DBP + IDP) \times (NP_i - P_i) - (R \times NP_i) - (VC_i + FC_i)}{(1 + rate)^i} \]
Optimizing the ROI Equation

Total benefit *accelerates* as more covered lives are added to the program. This makes a powerful argument for purchasers to collaborate in implementing P4P.
Summary – it’s all about signal strength

1. Make sure the signal is the right one:
   - Measures that matter – intermediate/full outcomes
   - Measures that lead to fundamental practice transformation
   - Measures that reduce the potential for negative consequences

2. Make sure the signal is strong enough:
   - Enough dollars to grab attention
   - Enough dollars to balance the costs
   - Engage employees/plan members
   - Engage employers/payers
General Question & Answer