

Bridges to Excellence

Diabetes Care Analysis – Savings Estimates

December 6, 2005

Today's Discussion

- Background
- DPRP measures
- Overall savings estimates
- Issues for setting physician bonus payments
- Individual savings estimates for each measure
- Issues for discussion
- Appendix
 - Cost and incidence assumptions
 - Bibliography

Background

- Bridges to Excellence is a multi-stakeholder program designed to advance the “pay for performance” concept throughout the U.S. healthcare system
- The **Diabetes Physician Recognition Program (DPRP)** is a voluntary program for individual physicians and physician groups that provide care to people with diabetes. Physicians can achieve recognition by submitting data that demonstrate quality diabetes care
- Cosponsored by the American Diabetes Association and the National Committee for Quality Assurance (NCQA) Diabetes Physician Recognition Program
 - Awards physicians with annual bonus payments
- Bridges to Excellence has asked Towers Perrin to perform an actuarial evaluation of the estimated per patient savings for physicians who achieve recognition through DPRP

Background

- The Program assesses key measures associated with improved care for diabetics
 - Outcomes measures:
 - HbA1c control
 - Blood Pressure control
 - LDL control
 - Process measures:
 - Eye examination
 - Smoking status and cessation advice/treatment
 - Completion of lipid profile
 - Nephropathy assessment
 - Foot examination
- Standards (% of patients in sample needed to meet measure) and a point system are defined for each measure

NCQA DPRP Measures

| Measure | Criteria | Points |
|--|---------------------------------------|--------|
| | % of patients needed to meet standard | |
| HbA1c Control > 9.0% | 20% | 10.0 |
| HbA1c Control < 7.0% | 40% | 5.0 |
| Blood pressure control < 140/90 mm Hg | 65% | 10.0 |
| Blood pressure control < 130/80 mm Hg | 35% | 5.0 |
| Eye Examination | 60% | 10.0 |
| Notation of smoking status and cessation advice or treatment | 80% | 5.0 |
| Completion of Lipid Profile | 85% | 5.0 |
| LDL control < 130 mg/dl | 63% | 7.5 |
| LDL control < 100 mg/dl | 36% | 2.5 |
| Nephropathy Assessment | 80% | 10.0 |
| Foot Examination | 80% | 10.0 |

DPRP Recognition can be achieved by earning 60 out of a possible 80 points

We estimate the following annual savings per patient for each clinical measure

| Clinical Measure | | Annual savings per diabetic patient | Max |
|--|----------------|-------------------------------------|---------|
| HbA1c Control | Poor Control | \$177 | } \$279 |
| | Good Control | \$96 | |
| Blood pressure control | < 140/90 mm Hg | \$166 | } \$494 |
| | < 130/80 mm Hg | \$230 | |
| LDL control | < 130 mg/dl | \$149 | } \$369 |
| | < 100 mg/dl | \$251 | |
| Nephropathy Assessment | | \$77 | |
| Eye Examination | | \$1 | |
| Notation of smoking status and cessation advice or treatment | | \$1 | |
| Completion of Lipid Profile | | \$0 | |
| Foot Examination | | \$0 | |

Savings vary significantly for individual measures

Issues for setting physician bonus payments

- A range of bonus payments may be appropriate to reflect variation in savings estimates depending on which DCL measures are achieved
 - Individual DCL measures have very different savings
 - DPRP recognition can be achieved through varying combinations of many different measures
- Maximum savings estimate is \$1,059 per patient, which occurs when all measures are met
 - Savings are greatest if Blood Pressure, HbA1c and LDL control measures are met
- In contrast, when recognition is achieved with the least cost-saving measures, the savings estimate is \$421
- Aside from 'Nephropathy Assessment,' little or no savings are derived from process measures

Savings Estimates – HbA1c Control

| | Cost per Event | HbA1c Control > 9.0% < 20% of patients | | | | HbA1c Control < 7.0% > 40% of patients | | | |
|-------------|----------------|--|-------------|--------------|--------------------|--|--------------|--------------|--------------------|
| | | Annual incidence per 1,000 | | | Savings per Person | Annual incidence per 1,000 | | | Savings per Person |
| | | <= 9.0 | > 9.0 | Reduction | | < 7.0 | >= 7.0 | Reduction | |
| MI | \$36,256 | 13.59 | 18.35 | 4.76 | \$172 | 11.71 | 16.79 | 5.08 | \$184 |
| Stroke | \$48,012 | 4.83 | 4.82 | -0.01 | -\$1 | 4.31 | 5.43 | 1.12 | \$54 |
| Amputation | \$36,244 | 0.64 | 4.83 | 4.19 | \$152 | 0.41 | 1.81 | 1.40 | \$51 |
| Retinopathy | \$1,004 | 3.42 | 12.56 | 9.14 | \$13 | 2.29 | 6.69 | 4.40 | \$4 |
| ESRD | \$44,206 | 4.22 | 15.52 | 11.30 | <u>\$686</u> | 2.83 | 8.26 | 5.43 | <u>\$240</u> |
| | | | | | \$1,022 | | | | \$534 |
| | | Baseline % poor control | | 27.3% | | Baseline % good control | | 53.5% | |
| | | | <u>Min</u> | <u>Max</u> | | | <u>Min</u> | <u>Max</u> | |
| | | Target control | 20.0% | 0.0% | | 40.0% | 100.0% | | |
| | | % Improvement from baseline | 0.0% | 27.3% | | 0.0% | 46.5% | | |
| | | Savings | \$75 | \$279 | | \$0 | \$248 | | |
| | | Average savings | | \$177 | | | \$96 | | |

Sources: #10, 45 and 37

Note: Savings are not additive;
 Maximum savings (\$279) are achieved with 100% of sample less than <9.0%

Savings Estimates - Blood Pressure Control

| | | BP < 140/90 mm Hg > 65% of patients | | | | BP < 130/80 mm Hg > 35% of patients | | | | | | |
|----------------|----------|---|----------------|-----------|-----------------------------------|---|----------------|------------|--------------------|--------------|--|--|
| | | Annual incidence per 1,000 | | | Savings per Person | Annual incidence per 1,000 | | | Savings per Person | | | |
| Cost per Event | | < 140/90 mm Hg | > 140/90 mm Hg | Reduction | | < 130/80 mm Hg | > 130/80 mm Hg | Reduction | | | | |
| MI | \$36,256 | 12.07 | 23.33 | 11.26 | \$408 | 9.96 | 20.65 | 10.69 | \$388 | | | |
| Stroke | \$48,012 | 1.88 | 7.94 | 6.06 | \$291 | 0.93 | 6.37 | 5.44 | \$261 | | | |
| Amputation | \$36,244 | 0.73 | 1.87 | 1.14 | \$41 | 0.31 | 1.74 | 1.43 | \$52 | | | |
| Retinopathy | \$1,004 | 3.35 | 5.43 | 2.08 | \$2 | 2.90 | 4.97 | 2.07 | \$2 | | | |
| ESRD | \$44,206 | 4.14 | 6.71 | 2.57 | \$114 | 3.58 | 6.14 | 2.56 | \$113 | | | |
| | | | | | \$856 | | | | | | | |
| | | | | | Baseline < 140/90 mm Hg | 61.3% | | | | | | |
| | | | | | <u>Min</u> | <u>Max</u> | | | | | | |
| | | | | | Target < 140/90 mm Hg | 65.0% | 100.0% | | | | | |
| | | | | | % Improvement from baseline | 0.0% | 38.7% | | | | | |
| | | | | | Savings | \$0 | \$331 | | | | | |
| | | | | | | | | \$0 | \$494 | | | |
| | | | | | | | | | | \$230 | | |

Sources: #50

*Note: Savings are not additive;
Maximum savings (\$494) are achieved if 100% of sample < 130/80 mm Hg*

Savings Estimates - LDL Control

| | | LDL < 130 mg/dl > 63% of patients | | | | LDL < 100 mg/dl > 36% of patients | | | | | |
|----------------|-------------|-----------------------------------|-------------|--------------|--------------------------------------|-----------------------------------|------------------------|--------------|--------------------|--|--|
| | | Annual incidence | | | Savings per Person | Annual incidence | | | Savings per Person | | |
| Cost per Event | < 130 mg/dl | >= 130 mg/dl | Reduction | < 100 mg/dl | | >= 100 mg/dl | Reduction | | | | |
| MI | \$36,256 | 1.47% | 2.16% | 0.69% | \$250 | 1.08% | 1.93% | 0.84% | \$306 | | |
| Stroke | \$48,012 | 0.41% | 0.54% | 0.13% | \$63 | 0.37% | 0.50% | 0.13% | \$63 | | |
| | | | | | \$313 | | | | | | |
| | | | | | \$369 | | | | | | |
| | | | | | Baseline % LDL < 130 mg/dl | 33.8% | | | | | |
| | | | | | Baseline % LDL < 100 mg/dl | 0.0% | | | | | |
| | | | <u>Min</u> | <u>Max</u> | | | <u>Min</u> | <u>Max</u> | | | |
| | | Target LDL < 130 mg/dl | 63.0% | 100.0% | | | Target LDL < 100 mg/dl | 36.0% | 100.0% | | |
| | | % Improvement from baseline | 29.2% | 66.2% | | | | 36.0% | 100.0% | | |
| | | Savings | \$92 | \$207 | | | | \$133 | \$369 | | |
| | | | | \$149 | | | | | \$251 | | |

Sources: #20, 23, 51

Note: Savings are not additive;
 Maximum savings (\$369) are achieved if 100% of sample < 100 mg/dl

Savings Estimates – Nephropathy Assessment

Nephropathy Assessment

> 80% of patients

| | Cost per Event* | Annual incidence | | | Savings per Person |
|---|-----------------|------------------|---------|-----------|--------------------------------|
| | | without MA | with MA | Reduction | |
| MI | \$ 36,256 | 2.27% | 2.88% | 0.60% | \$ 219 |
| Stroke | \$ 48,012 | 0.93% | 1.36% | 0.42% | \$ 203 |
| Nephropathy | \$ 44,206 | 1.50% | 1.90% | 0.40% | \$ 176 |
| Dialysis | \$ 44,206 | 0.12% | 0.10% | -0.02% | \$ (10) |
| | | | | | \$ 587 |
| Probability of Microalbuminuria | | | | | 32.6% |
| Probability of Treatment with ACE inhibitor * | | | | | 100.0% |
| Net Savings | | | | | \$ 191 |
| Baseline Nephropathy Assessment rate | | | | | 50% |
| | | | | | <u>Min</u> <u>Max</u> |
| Target Nephropathy Assessment rate | | | | | 80% 100% |
| % Improvement from baseline | | | | | 30% 50% |
| Savings | | | | | \$57 \$96 |
| | | | | | \$77 |

* Savings assume no one on ACE inhibitor at baseline

Sources: 48 and 54

Savings Estimates – Eye Examination

Eye Examination > 60% of patients

| | |
|--|----------|
| Probability of proliferative retinopathy | 5% |
| Probability of treatment | 100% |
| Reduction in severe visual loss | 9.5% |
| Cost of proliferative retinopathy | \$ 1,004 |

Savings per diabetic patient

\$ 5

| | | |
|-----------------------------------|------------|------------|
| Baseline rate of eye examinations | 50% | |
| | <u>Min</u> | <u>Max</u> |
| Target rate of eye examinations | 60% | 100% |
| % Improvement from baseline | 10% | 50% |
| Savings | \$0 | \$2 |
| Average Savings | | \$1 |

Sources: 17, 35 and 56

Savings Estimates - Smoking Cessation Advice and Treatment

Notation of smoking status and cessation advice or treatment > 80% of patients

| | <u>MI</u> | <u>Stroke</u> | <u>Total</u> |
|------------------------------------|---------------------------------|---------------|--------------|
| % of Population who smoke | 24% | 24% | |
| Incremental abstinence rate | 6.0% | 6.0% | |
| Reduction in risk of MI | 0.5% | 0.2% | |
| Cost per event | \$36,256 | \$48,012 | |
| Savings per diabetic patient | \$3 | \$1 | \$4 |
| | Baseline rate of advice to quit | | 71% |
| | | <u>Min</u> | <u>Max</u> |
| Target rate of advice or treatment | | 80% | 100% |
| % Improvement from baseline | | 9% | 29% |
| | Savings | \$0 | \$1 |
| | | | \$1 |

Sources: 40, 44, 47

Savings Estimates - Completion of Lipid Profile

Standard: $\geq 85\%$ of patients in Sample

Savings per patient: No savings are directly attributed to completion of a lipid profile

Savings Estimates – Foot Examination

Standard: $\geq 80\%$ of patients in Sample

Savings per patient: No savings are directly attributed to completion of foot examinations

Discussion: Additivity of savings within the Blood Pressure, LDL, and HbA1C measures

- Within the Blood Pressure, LDL, and HbA1C measures, it is unclear whether achievement of both sub-measures (e.g., <20% HbA1C>9.0 and >40% HbA1C<7.0) would yield savings that are completely additive, partly additive, or non-additive
 - Our savings estimate for the HbA1C>9.0 measure is based on the incidence of complications at a range of HbA1C values around 9.0
 - If a physician achieves both the HbA1C>9.0 and <7.0 submeasures, we would expect the actual complications to be less than if only the HbA1C>9.0 measure is achieved
- With the Blood Pressure, LDL and HbA1c, we picked the submeasure that yields the greater savings and assumed no additivity

Discussion: Additivity of savings between measures

- The results show that the DPRP interventions reduce diabetes complications
- It can be argued that if complications are reduced by one intervention, those same complications may not be “available” to be reduced by another intervention
 - For example, the Steno Study (Art. 46) shows that a program of multiple diabetes interventions similar to DPRP reduced diabetes complications by approximately 50%
 - Beyond the Steno Study there is surprisingly data addressing the rate of reduced complications from a combinatorial intervention approach
- In our study the DPRP interventions *individually* reduce complications by 30% to 50%, but because of the reasons mentioned above, we know that these reductions cannot be completely additive
- Nevertheless, because of the difficulty in determining the appropriate additivity factor, we have presented the savings as completely additive
- **It should be stressed, however, that the actual savings of achieving the 60-point goal with most combinations is largely non-additive**

Appendix: Cost and Incidence Assumptions

- Savings estimates are based on cost and incidence data for Type 2 diabetics:

| | Average annual incidence ⁽¹⁾ | 2006 Projected Cost ⁽²⁾ |
|---------------------------|---|------------------------------------|
| Myocardial infarction | 8.0% | \$36,256 |
| Stroke | 5.1% | \$48,012 |
| Proliferative retinopathy | 2.4% | \$1,004 |
| ESRD | 0.0% | \$44,206 |
| Partial foot amputation | 0.3% | \$36,244 |

⁽¹⁾ Annual incidence based on cumulative incidence after 10 years with Type 2 diabetes

⁽²⁾ All costs are event costs; except ESRD, which is a state cost

Source: #1

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