Clinical and Economic Assessment of Disease Management Programs

The Symposium on eHealthcare Strategies

Desert Springs Marriott

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Objectives

• Disease Management: Define the characteristics
• Clinical/Financial Models: How do they work
• “Value”: What are the measures
• Severity Adjusters: Why they are required
• Web: Barriers and Opportunities
Disease Management should contain the following (1):

- Definition of the disease that is managed
- Population Identification process based on actuarial/clinical data
- Risk identification and matching of interventions
- Evidence-based practice guidelines
- Collaborative practice model: physician, support staff other
- Patient self-management: education, prevention, behavior modification/compliance
- Process and outcomes measurement
- Reports: clear, concise, real-time, and understandable: patient, physician, health plan and ancillary providers
- Appropriate use of management information technology
- Web Strategy

(1) Disease Management Association of America (modified)
Patient Identification, Stratification, and Severity

- Identification, stratification and severity, and linked to appropriate guidelines
- Stratification tool is “open” and not a “black box”
- Clinical/actuarial/clinical/behavioral models
- Re-stratification and change in treatment plan
- Documentation of interventions “real time” - improvement can be directly attributable to disease management product
Coordination among Physicians, Case Managers, Health Plan, and Other Disease Management Personnel

- Coordinate among physician, nurse practitioners, case managers and support staff
- Across the continuum of care
- Practice guidelines specific to the disease by severity and associated comorbidities
Definition and Accountability of Responsibilities

- Responsibilities of the disease management organization, health plan, physician and patient are established
- Measures of performance established and monitored
- Documentation of Variances: opportunities for quality improvement
Integration with Health Plan or Sponsoring Organization

- Full integration with the health plan, employer group or other sponsoring organization
- Contract for disease management program documents how the services are coordinated
- Frequent updates and communication of integration plan
Claims Data Analysis Issues

- Limited data – (e.g., small employer group)
- Incomplete data – physician group
- Incurred vs. paid
- Data reasonableness
- Extent of data editing
- Expenditures used (e.g., submitted, allowed or paid)
- Independence of data (development or validation)
- Inclusion or exclusion of nonusers
- Payment proration for deaths
- Nonclinical adjustments (e.g., eligibility status)
- Duration
- Length
- Comprehensiveness
- Age/gender adjustment
- Stop loss and reinsurance
- Prospective versus retrospective
- Substantial change in number, mix of population
- Benefits changes
- Provider network change
- Claims administrative change
- Other
MIS Reports

- Timely, accurate, concise, understandable
- Comparison to peer, benchmarks/best practices
- Methodology is specified and documented
- Meet requirements of third parties
- Measures of customer satisfaction and financial outcomes: independent assessment (performance guarantee)
- Linkage to Data Warehouse
Severity-Adjusted Data Requirements

- Comparison can be made between “baseline” and the “savings” as a result of the product
- Profiles of entities with any stakeholder category (hospital, provider, health plan, different Disease Management programs)
- Without severity adjustment, differences in clinical/financial outcomes may be attributed to variations among the types and intensities of diseases underlying the data (”my patients are sicker”)
Disease Management Measurement Process

- Clinical utilization, actuarial and financial measures reflect all patients with primary targeted diagnosis and comorbidities
- “Baseline” and “study” or “contract” period for the analysis is documented prior to commencement of contract/program
- Real time monitoring of resource consumption and interventions
- Metrics / models precisely defined e.g., “inpatient day”
- Denominators for calculations should be total number of patients with targeted diagnosis e.g., days/1000/targeted lives
- Financial analysis should include total healthcare cost of the entire population of patients diagnosed with the disease
Reports: Outcomes

- Objective, evidence-based, achievable performance measures
- National benchmarks - local “interpretation”
- Contractual requirements for appropriate intervals of performance reports
Patient Interaction

- Patient informed, educated of role of vendor, health plan
- Educational materials are accurate, peer-reviewed
- Informed of clinical practice guidelines
- Self-care, compliance, appropriate use of resources
Provider and Patient Communications

- Timely communication with members, families, caregivers, health plan and disease management organization
- Optimal recovery guideline and care pathways memorialized
- Documentation of communications among healthcare team members
- Web Strategy
Requirements to Manage Risk in Disease Management

Managed Care Mindset

- Customer Service
  - Marketing
  - Contracting/Legal
  - Provider Relations
- Medical Management
  - Clinical
  - Actuarial
- Reporting & Analysis
  - MIS & e-Commerce
- Administration and Other
  - Business/Capital
  - Other

Managed Care Mindset

- Employer
  - Hospitals, IDS, Groups, Vendors
  - Patient
Managing Risk: “Managed Care Mindset”

- Experienced professional management;
- Integrated actuarial/clinical/business models – severity-adjusted;
- Clinical guideline-driven care: physician-friendly; patient-centered; and evidence-based;
- Medical appropriateness and ROI across the continuum of care
- Appropriately structured capitated/risk contracts with aligned incentives;
- “Value” based clinical outcomes.
Disease Management: “Value”

- Directly attributable to the product;
- Comparable to “Best Practices;”
- Objectively quantified over a defined interval (contract);
- Significant; and
- Distinguishable from “environmental factors” i.e., conditions not related to the product, which might independently reduce utilization and costs.
Measures of “Costs”, “Savings” and “Value”

- Prices
- Unit cost
- Published charges
- Total costs
- Cost/charge ratio
- Discount future values to present (3-5%)
- Cost effectiveness
- Quality of adjusted life year (QALY)
- Contingency Valuation (Willingness To Pay)
- Intangible
Degree of Healthcare Management ("DoHM")

- Full Local Cost
- Target Cost

0% -> Loosely Managed
50% -> Moderately Managed
100% -> Well Managed
Degree of Healthcare Management ("DoHM")

- Full Local Cost
- Discounted Cost
- Target Cost

- Required Management

Costs range from $0 to $200 PMPM, with different levels of management:
- Loosely Managed (0%)
- Moderately Managed (50%)
- Well Managed (100%)
Degree of Healthcare Management ("DoHM")

- Full Local Cost
- Discounted Cost
- Target Cost

Loss
Profit

0% 50% 100%

Loosely Managed
Moderately Managed
Well Managed

Required Management
Degree of Healthcare Management (“DoHM”): CHF Case Study California

![Diagram showing the relationship between PMPM costs and degree of management. The graph indicates that in 1998, the cost was $148 for a loosely managed health plan, while in 1999, the cost decreased to -$88 for a well-managed health plan. The target cost line shows the alignment with the cost at different levels of management.](image-url)
Expected “Savings” from Disease Management: Caveats

- Market: immature
- Models: unsophisticated
- Calculation of baseline: imprecise
- Calculation of “costs”: variable
- “Savings”: overstated
  - Multiple regression models
  - Lack of severity-adjustments
  - Reliance on payor claims
  - Catastrophic cases - from” % of charges”
- “Environmental Factors” –
  - Trends
  - Behavior( provider, patient, health plan)
Expected “Savings” Caveats (continued)

- High member turnover
- Long-term consequences of chronic diseases: unknown
- Pharmacy/supplier – subsidies program
- Changing incentives
- “Direct provider model” - reduces provider incentives
Annual Percentage Change in 12-Month Moving Costs Average: Selection of the Appropriate Index

Source: Health Cost Index Database®, Published by Milliman & Robertson, Inc.
$250 deductible, no underwriting/adverse selection factors
Degree of Administrative Management ("DoAM")

- $300 Billion annually: 30 - 50% potentially avoidable
- Benchmark of administrative efficiency: tangible, intangible
- Health plan, Disease Management Vendor vs. benchmark
- Establish baseline FTEs and cost
- Measure criteria for operational improvement
- Demonstrate administrative cost savings
- Reduction in risk based capital requirements
- Integrate with DoHM
- Integrate with "Intangibles"
- Value = DoHM + DoAM + intangibles
Degree of Administrative Management ("DoAM")
Net Savings: DoHM + DoAM

![Graph showing Net Savings for different levels of management and cost]

- **Health Plan**
- **Target Cost**
- **Administration**

Levels of Management:
- **Loosely Managed**
- **Moderately Managed**
- **Well Managed**

Costs:
- $0
- $50
- $100
- $150
- $200

Percentage Levels:
- 0%
- 50%
- 100%
The Clinical/Actuarial Model

- Identify patients by unique risk group
- Stratify by level of severity
- Identify comorbidities, complications
- Determine resource consumption
- Linkage of Practice Guidelines by Severity
- Web strategy
Risk Adjusters Used In Disease Management Models

- APR-DRGs – All Patient Refined – inpatient
- CRGs – Clinical Risk Group – out/inpatient
- CRxG – pharmacy disease management
- APGs – outpatient

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Disease and Utilization Management: Clinical/Actuarial Model Requirements

- Target patients who use most resources and benefit from Disease Management intervention
- Link Disease Management to targeted patients
- Manage comorbid conditions/complications proactively
- Adjust (CRG, APR-DRG) to reflect dynamic changes in patient
- Track real-time online
- Adjust management to the “new” CRG(s) or APR-DRGs.
- Incorporate into Data Warehouse
Role of APR-DRGs to Measure “Value” for Disease Management Customers

- Target customers
- Resource consumption
- Mortality
- Infection rates
- Readmission rates
- Complication rates
- Rates of ambulatory sensitive conditions
Hospital Efficiency Index: Target Disease To Be Managed
# Avoidable Days by Major Diagnostic Category (MDC)

<table>
<thead>
<tr>
<th>MDC</th>
<th>Description</th>
<th>Total Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Rehab/LTC LTC</td>
<td>4,245.19</td>
</tr>
<tr>
<td>05</td>
<td>Medical Circulatory disorders</td>
<td>4,117.40</td>
</tr>
<tr>
<td>19</td>
<td>Mental Mental health</td>
<td>3,741.76</td>
</tr>
<tr>
<td>04</td>
<td>Medical Respiratory</td>
<td>3,678.04</td>
</tr>
<tr>
<td>01</td>
<td>Medical Nervous system</td>
<td>1,741.27</td>
</tr>
<tr>
<td>05</td>
<td>Surgical Circulatory</td>
<td>1,700.81</td>
</tr>
<tr>
<td>08</td>
<td>Surgical Musculoskeletal</td>
<td>1,595.18</td>
</tr>
<tr>
<td>20</td>
<td>Substance Alcohol/Drug</td>
<td>1,459.64</td>
</tr>
<tr>
<td>06</td>
<td>Medical GI</td>
<td>1,291.80</td>
</tr>
<tr>
<td>00</td>
<td>Surgical Special</td>
<td>818.13</td>
</tr>
<tr>
<td>05</td>
<td>Surgical Cardiac</td>
<td>718.48</td>
</tr>
<tr>
<td>06</td>
<td>Surgical GI</td>
<td>607.56</td>
</tr>
<tr>
<td>18</td>
<td>Medical Infectious</td>
<td>543.05</td>
</tr>
<tr>
<td>11</td>
<td>Medical Kidney</td>
<td>511.19</td>
</tr>
<tr>
<td>08</td>
<td>Medical Musculoskeletal</td>
<td>423.06</td>
</tr>
</tbody>
</table>
Case Study Findings: Targeting of Disease Management Opportunities for a Client

Potentially avoidable medical days at client are caused by an increased LENGTH OF STAY.
# APR- DRG 127 Severity Index: CHF

## Table

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>% of Total</th>
<th>Relative Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>No/Minor Severity</td>
<td>86</td>
<td>17.6%</td>
<td>.6674</td>
</tr>
<tr>
<td>Moderate Severity</td>
<td>232</td>
<td>47.4%</td>
<td>.8562</td>
</tr>
<tr>
<td>Major Severity</td>
<td>112</td>
<td>22.9%</td>
<td>1.2167</td>
</tr>
<tr>
<td>Extreme Severity</td>
<td>59</td>
<td>12.1%</td>
<td>2.0645</td>
</tr>
<tr>
<td>Total APR-DRG 127</td>
<td>489</td>
<td>100%</td>
<td>1.0514</td>
</tr>
</tbody>
</table>
APR-DRG: Severity Adjusted Net Income Per Case of CHF_
Total Net Income $54,558

<table>
<thead>
<tr>
<th>Severity Level</th>
<th>Net Income Per Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>No/Minor</td>
<td>$1,291</td>
</tr>
<tr>
<td>Moderate</td>
<td>$988</td>
</tr>
<tr>
<td>Major</td>
<td>-$1,001</td>
</tr>
<tr>
<td>Extreme</td>
<td>-$4,707</td>
</tr>
<tr>
<td>Overall</td>
<td>$59</td>
</tr>
</tbody>
</table>

_{APR-DRG 127}
**Determining Expected “Savings” Outpatient Congestive Heart Failure: APG/APC**

<table>
<thead>
<tr>
<th>APG/APC Category</th>
<th>Description</th>
<th>Type</th>
<th>Count</th>
<th>Paid Amount by Health Plan ($)</th>
<th>Total Cost ($)</th>
<th>Profit or Loss</th>
<th>Percent Profit or loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>Excercise tolerance tests</td>
<td>SP</td>
<td>1,056</td>
<td>160</td>
<td>150</td>
<td>10</td>
<td>6.67</td>
</tr>
<tr>
<td>72</td>
<td>Echocardiography</td>
<td>SP</td>
<td>969</td>
<td>210</td>
<td>224</td>
<td>-14</td>
<td>-6.25</td>
</tr>
<tr>
<td>74</td>
<td>Cardiac electrophysiologic tests</td>
<td>SP</td>
<td>4</td>
<td>1,250</td>
<td>1,524</td>
<td>-274</td>
<td>-17.98</td>
</tr>
<tr>
<td>75</td>
<td>Placement of transvenous catheter</td>
<td>SP</td>
<td>32</td>
<td>780</td>
<td>881</td>
<td>-101</td>
<td>-11.46</td>
</tr>
<tr>
<td>76</td>
<td>Diagnostic cardiac catheter</td>
<td>SP</td>
<td>224</td>
<td>1,310</td>
<td>1,940</td>
<td>-630</td>
<td>-32.47</td>
</tr>
<tr>
<td>77</td>
<td>Angioplasty and transcatheter procedure</td>
<td>SP</td>
<td>7</td>
<td>1,250</td>
<td>1,321</td>
<td>-71</td>
<td>-5.27</td>
</tr>
</tbody>
</table>
Outcome Measures Using APR-DRGs:

- Mortality
- Resource consumption
- Infection rates
- Readmission rates,
- Certain types of complications rates of ambulatory sensitive conditions, and
- Quality indicators
Description of Clinical Risk Groupings (CRGs)

- Categorical clinical model
- Severity adjusted
- Uses claims data to assign each patient to a single mutually exclusive risk category
- Each CRG is clinically meaningful
- Provides the basis for the prediction of future healthcare utilization and cost.
Features of Clinical Risk Grouping (CRGs)

- Based on standard claims data (Dx, procedure, age, site)
- Valid using varying degrees of data completeness
- Prospective methodology
- Retrospective capabilities
- Analyzes all or part of resource expenditures
- Compare "baseline", "contract" period and external populations
- Contrast to Benchmarks
CRGs as a Disease Management Tool

- CRGs facilitate comparative reporting on individual cost and service components.
- Identifies problematic subgroups within the population and opportunities for improvement.
- Disease Management “expected” costs vs. “Savings”
Disease Management using CRGs: Clinical/ Actuarial Model

• Determine Clinical Risk Group (GRG) year 1
• Establish costs by each CRG year 1, 2
• Determine trend and future resource consumption
• Measure inpatient, outpatient, lab, pharmacy, utilization
• “Savings” in year 3 attributable to Disease Management “product”
Diabetes Mellitus CRG: Four levels of severity

- **Level 4**
  - Nephritis 477
  - Atherosclerosis of Peripheral Vascular Disease with Major Complications 247
  - Above the knee amputation 361
- **Level 3**
  - Blindness 83
  - Atherosclerosis of Peripheral Vascular Disease with Major Complications 247
  - Pneumonia – Major 151
- **Level 2**
  - Vision Loss 85
  - Malignant and Other Significant Hypertension 202
  - Diabetes – Juvenile Onset 427
- **Level 1**

_PCD 424 Diabetes (DC)_
Disease Management: Year 1 Diabetes Mellitus
Resource Consumption Level 1 – Year 1-4
<table>
<thead>
<tr>
<th>Level</th>
<th>Cases</th>
<th>Average Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>443</td>
<td>$739</td>
</tr>
<tr>
<td>2</td>
<td>389</td>
<td>$1,643</td>
</tr>
<tr>
<td>3</td>
<td>172</td>
<td>$2,061</td>
</tr>
<tr>
<td>4</td>
<td>94</td>
<td>$3,471</td>
</tr>
</tbody>
</table>
Disease Management
Severity of Illness Trends: CRG Diabetes Mellitus
Cost Savings Attributable to the Product: Diabetes Mellitus
## Two CRGs: Congestive Heart Failure and Diabetes

<table>
<thead>
<tr>
<th>Level</th>
<th>Cases</th>
<th>Average Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>$773</td>
</tr>
<tr>
<td>2</td>
<td>29</td>
<td>$1,892</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>$2,101</td>
</tr>
<tr>
<td>4</td>
<td>27</td>
<td>$5,398</td>
</tr>
<tr>
<td>5</td>
<td>19</td>
<td>$7,062</td>
</tr>
<tr>
<td>6</td>
<td>25</td>
<td>$19,201</td>
</tr>
</tbody>
</table>
### CRG Costs by Severity Level: DM, CHF and COPD (Medicare)

<table>
<thead>
<tr>
<th>CRG</th>
<th>Severity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>DM</td>
<td>0.5953</td>
</tr>
<tr>
<td>CHF</td>
<td>0.8950</td>
</tr>
<tr>
<td>COPD</td>
<td>0.8426</td>
</tr>
<tr>
<td>COPD &amp; DM</td>
<td>0.9925</td>
</tr>
<tr>
<td>DM &amp; CHF</td>
<td>1.0632</td>
</tr>
<tr>
<td>COPD &amp; CHF</td>
<td>1.0956</td>
</tr>
<tr>
<td>DM &amp; COPD &amp; CHF</td>
<td>1.4588</td>
</tr>
</tbody>
</table>

(1) Medicare
### CRGs Determine Costs by Severity Level: Medicare

<table>
<thead>
<tr>
<th>CRG Status</th>
<th>Severity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Healthy</td>
<td>0.2009</td>
</tr>
<tr>
<td>History of Significant Acute Disease</td>
<td>0.4993</td>
</tr>
<tr>
<td>Single Minor Chronic Disease</td>
<td>0.4266</td>
</tr>
<tr>
<td>Minor Chronic Disease in Multiple Organ Systems</td>
<td>0.4666</td>
</tr>
<tr>
<td>Single Dominant or Moderate Chronic Disease</td>
<td>0.5256</td>
</tr>
<tr>
<td>Disease in Chronic Multiple Organ Systems</td>
<td>0.8857</td>
</tr>
<tr>
<td>Dominant Chronic Disease in Three or More Organ Systems</td>
<td>1.3768</td>
</tr>
<tr>
<td>Dominant and Metastatic Malignancies</td>
<td>1.4912</td>
</tr>
<tr>
<td>Catastrophic Conditions</td>
<td>1.5661</td>
</tr>
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</table>
### Average Cost by Aggregated CRG (ACRG3)

<table>
<thead>
<tr>
<th>Status Level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>$258</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant Acute</td>
<td>$1,741</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Chronic</td>
<td>$1,128</td>
<td>$4,483</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mult Min Chronic</td>
<td>$1,534</td>
<td>$2,298</td>
<td>$3,011</td>
<td>$9,117</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dom or Mod Chr</td>
<td>$1,157</td>
<td>$2,796</td>
<td>$6,766</td>
<td>$11,830</td>
<td>$8,339</td>
<td>$8,606</td>
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<tr>
<td>Pairs</td>
<td>$3,098</td>
<td>$6,317</td>
<td>$7,347</td>
<td>$9,059</td>
<td>$19,295</td>
<td>$18,253</td>
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<tr>
<td>Triples</td>
<td>$3,483</td>
<td>$8,065</td>
<td>$8,654</td>
<td>$19,459</td>
<td>$40,735</td>
<td>$31,138</td>
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<tr>
<td>Malignancies</td>
<td>$4,297</td>
<td>$11,371</td>
<td>$17,154</td>
<td>$17,887</td>
<td>$26,842</td>
<td></td>
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<tr>
<td>Catastrophic</td>
<td>$5,386</td>
<td>$3,033</td>
<td>$14,349</td>
<td>$27,857</td>
<td>$20,570</td>
<td>$45,846</td>
</tr>
</tbody>
</table>
PCP Performance Profile by CRG: Asthma

![Graph showing actual to expected ratio for PCP 100338 and PCP 100358 across severity levels from 1 to 4. The graph indicates varying levels of performance.](image-url)
## Hospital Profile by CRG and APR-DRG

<table>
<thead>
<tr>
<th>CRG DM</th>
<th>Outpatient Laboratory</th>
<th>Complications</th>
<th>Avg. APR-DRG Charges</th>
<th>Hospitalization Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actl/Expt</td>
<td>Actl/Expt</td>
<td>Actl</td>
<td>Expt</td>
</tr>
<tr>
<td>Level 1</td>
<td>0.39 0.25</td>
<td>EDC 4.....7</td>
<td>3,700</td>
<td>4,106</td>
</tr>
<tr>
<td>Level 2</td>
<td>0.47 0.39</td>
<td>EDC 2.....9</td>
<td>4,700</td>
<td>5,757</td>
</tr>
<tr>
<td>Level 3</td>
<td>0.40 0.59</td>
<td>EDC 6.....12</td>
<td>12,537</td>
<td>9,085</td>
</tr>
<tr>
<td>Level 4</td>
<td>0.30 0.75</td>
<td>EDC 12.....18</td>
<td>33,445</td>
<td>21,695</td>
</tr>
</tbody>
</table>
Disease Management Web Barriers: Lack of Systems Investment and Incentives

Physician Office Investment in Systems

Limited Hardware, Staff and Knowledge

Limited % of Offices use Internet Access

Requirement: Provide system at little cost; provide incentives
Barriers: Workflow Integration of Multiple Partners

Eligibility Check
Pre-Authorizations Requests
Scheduling Appointments
Billing & Receivables
Materials Management
Orders and Results
Formulary management
Script writing & fulfillment
Prescription Refills
Patient Management
Electronic Patient Support

Managed Care Organizations
Pharma - PBM - Retail Drug
Care Delivery Enterprises
e-Commerce Retailers
Banks
Medical Supply

Requirement: incorporate web product in the office workflow
Web Enabled Disease Management: Barriers

- Variation
  - Paper
  - Partners, multiple
  - Practices
  - Payors
  - Payment
  - Protocols

- Requirements: Incentives
  - Physician
  - Office Staff
  - Others
Implementation of Web Enabled Disease Management

- Standard Disease Management Clinical/Financial Definition (model)
  - Severity Adjusted
- Linkage of Transactions
  - Eligibility
  - Referral, precertification, etc.
  - Diagnostic test results
  - Medical history
- Linkage to Process Automation
  - Scheduling, registration
  - Clinical documentation
  - Guidelines
  - Adjudication, payment, EOB
Implementation (contd)

- Technical
  - Thin client “codeless” and component-based subscriptions
  - Universal practice information management systems
  - other
Web Solution can Provide Incentives: Intangible Value

1. Customer Loyalty
2. E-Health
3. Clinical Outcomes
4. Community Health Leadership
Leverage Assets to Create Value in the Information Economy

<table>
<thead>
<tr>
<th>Strategic Focus</th>
<th>Assets Leveraged Through Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Customer/Employee Loyalty</td>
<td>Consumers</td>
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<td></td>
<td>Employees</td>
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<tr>
<td></td>
<td>Physician Partners</td>
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<td>4. Community Health Leadership</td>
<td>Leadership</td>
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<td></td>
<td>Market Alliances</td>
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<td></td>
<td>Channels</td>
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</tbody>
</table>
Enterprise Value Leads to Intangible Value

A. Market

- Estimate Market Value using traditional valuation techniques

B. Book

- Determine Book Value from financial statements

C. Market Intangible

- Calculate Total Intangible Asset Value using Market less Book Value
Valuing The Intangible Assets: MARKET ALLIANCES

VALUE DRIVERS: MARKET ALLIANCES

• Value of additional consumer volume or business
• Value of additional leverage/advantage provided with Channel Partnerships
Valuing The Intangible Assets: SUPPLY CHAIN PARTNERSHIPS

VALUE DRIVERS: SUPPLY CHAIN PARTNERSHIPS

• Partner selection which provides competitive advantage
• Financial benefits from pricing or cost differentials
• Opportunity to leverage other intangible strengths due to synergistic partnering (shared human or process capital)
• Potential to capture “fair share” of value created \( (Obligations \ & \ Rewards) \)
Valuing The Intangible Assets: PROCESS CAPITAL

VALUE DRIVERS: PROCESS CAPITAL

- (Best practice comparison)
- Comprehensive Medical Management (defining process)
  - Clinical effectiveness (outcomes)
  - Clinical process cost management (resource utilization, skill mix, supply/equipment standardization)
- Hospitality service management
  - Plant management systems (materials, maintenance)
  - Business management systems (AR, AP, budgeting, benefits)
  - Customer management systems
- CQI/TQM Culture (renewal & upgrading of all process capital)
  - Pervasiveness and intensity
  - Proof of results
- Value-creating information technology
## VALUATION METHODOLOGY

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost</th>
<th>Market</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>Costs of development and maintenance of customer relationships</td>
<td>Market transactions for sale of customer relationships</td>
<td>Present value of future income from customer relationship</td>
</tr>
<tr>
<td>Brand</td>
<td>Costs to develop and maintain a brand of similar stature</td>
<td>Market sales for similar brand strengths</td>
<td>Present value of future income attributed to brand over its remaining life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capitalized Royalty Income &amp; Income methods</td>
<td></td>
</tr>
<tr>
<td>Channel</td>
<td>Cost to develop and maintain alliance</td>
<td>Cost to develop and maintain alliance</td>
<td>Present value of future income from Channel relationships</td>
</tr>
<tr>
<td>Alliances</td>
<td>Cost to develop and maintain alliance</td>
<td>Cost to develop and maintain alliance</td>
<td>Present value of future income for alliance</td>
</tr>
<tr>
<td>Human Capital</td>
<td>Costs to reproduce or replace the current work force</td>
<td>Market transactions for the sale of work force</td>
<td>Present value of future income for a single employee for their remaining tenure</td>
</tr>
<tr>
<td>Physician</td>
<td>Costs to develop and maintain a specific level of physician partnership</td>
<td>Comparable market transactions</td>
<td>Present value of future income for a physician relationship</td>
</tr>
<tr>
<td>Partners</td>
<td>Costs to develop and maintain supply chain partnerships</td>
<td>Comparable market transaction</td>
<td>Present value of future income associated with Partnership</td>
</tr>
<tr>
<td>Process</td>
<td>Costs to develop and implement processes</td>
<td>Comparable market transactions</td>
<td>Present value of future income that process generates</td>
</tr>
</tbody>
</table>
## VALUATION METHODOLOGY DESIRABILITY

<table>
<thead>
<tr>
<th></th>
<th><strong>Cost</strong></th>
<th><strong>Market</strong></th>
<th><strong>Income</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumer</strong></td>
<td><em>Difficult to find cost data</em></td>
<td>Need comparable transaction – difficult for hospitals</td>
<td>Most Commonly Used</td>
</tr>
<tr>
<td><strong>Brand</strong></td>
<td><em>Difficult to find data</em></td>
<td>Either method is good; most commonly used is combination of the two: Capitalized Royalty Income Method</td>
<td></td>
</tr>
<tr>
<td><strong>Channel</strong></td>
<td><em>Difficult to find data</em></td>
<td>Contracts are Individual Based – May be difficult to find market comparison</td>
<td>Most preferable - easiest to find data</td>
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<td><strong>Alliances</strong></td>
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<td>Most preferable - easiest to find data</td>
</tr>
<tr>
<td><strong>Human Capital</strong></td>
<td>Most Commonly Used</td>
<td>No real market comparison</td>
<td>Difficult to estimate expected income from single worker</td>
</tr>
<tr>
<td><strong>Physician Partners</strong></td>
<td><em>May be difficult to find data</em></td>
<td>No real market comparison</td>
<td>Most preferable - easiest to find data</td>
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<tr>
<td><strong>Supply Chain Partners</strong></td>
<td><em>Difficult to find data</em></td>
<td>Contracts are Individual Based – No real market comparison</td>
<td>Most preferable - easiest to find data</td>
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<tr>
<td><strong>Process</strong></td>
<td>Any of these methods is equally good; depends upon availability of data needed for valuation</td>
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Web Management of the Continuum of Care