Lehigh Valley Health Network

Fast Facts

• In Allentown/Bethlehem area, north of Philadelphia
• Recognized by U.S. News & World Report, Fortune, Modern Healthcare, Leapfrog, others
• 5 hospital campuses, 11 Health Centers
• 1,200 physicians (700 network-employed)
• 13,000 employees
• Ancillary Services
• Physician Hospital Organization
• Populytics Health Management Subsidiary
Health System’s Transition to Population Health Management

PATIENT PROTECTION & AFFORDABLE CARE ACT DRIVES HEALTH SYSTEM CHANGE TO OPTIMIZE PERFORMANCE

Value vs. Volume  Payment Innovation  New Care Models

Targeting the “Triple Aim”

Improved Patient Experience—Quality & Satisfaction
Reduced Cost of Health Care
Improved Health of the Population
The Accountable Care Model

**Existing Care Model**
- Diabetic
- High Risk
- High Cost
- Has Claims

Sporadic engagement as individuals have problems and present at the health system for services.

**New Care Model**

Proactive outreach from the health system to assess every member in the population and prevent illness.

Transition
The LVHN Care Continuum

Ambulatory & Community Care

- Specialist Care
- Express CARE
- PCMH & CCT Initiatives
- Primary Care Offices & Clinics
- Ambulatory Procedure Center
- TeleHealth (Primary Care thru Home Health)
- Diagnostics, Imaging, OP Rehab
- Wellness, Fitness & Education
- Preventive Care @ Home

Acute Care

- Tertiary/Quaternary and Community Hospitals
- LVHN OP Rehab
- TSU or External SNF
- OP Rehab *Not LVHN
- LVHN Hospice
- LVHN Home Health Services
- OACIS

Post-Acute Care
Community Care Teams (CCT)

NETWORK SERVICES

CORE TEAM

CC = Care Coordinator
Data analytics are vital in improving population health and are the core of the strategy

- 66% of health systems report their intention to become more adept at analytics (Health Leaders Survey)
- Data-based initiatives top the list of population health management investments for the next three years including integrating clinical care data across the continuum
The Power of Predictive Analytics

• 20% of the membership (5,073) incurred 81% of the total healthcare cost in the past year
  — Only 48% of these members were high cost in the prior year

• When we review the top 20% of members (5,073) with the highest predicted cost for the next year, 42% (2,156) were not in the high cost category previously
Preparing for Accountable Care

Care Continuum Infrastructure

- Community Care Teams
- Patient Centered Medical Homes

Population Health Management and “Risk” infrastructure

- Analytical Tools
- Informatics & Health Plan Mgt
- Leading edge of Risk Capabilities
- Aligned Provider Network
Investment in Population Health Management Infrastructure
AllSpire Partnership

- Affiliation of 7 health systems in PA & NJ
- Goal: identify best practices in care mgt, ACO analytics, health benefit design
- LVHN selected to run analytics for all 7 systems
CLAIMS DATA for 120K Covered Lives

Common Care Management Platform

Analytic Care Cost Evaluation

Employer-Focused Health Plan Offerings
Population Health Analytic Tools

- **Data Warehouse**
  - Predictive Modeling
  - Risk score the entire population
  - Identifies cost/care drivers in populations and paths for improvement

- **Benchmarks**
  - Claims data from millions of commercial and CMS lives
  - Supports care pathway development & improvement.

- **Clinical EMR Data**
  - Individual risk scores identify patients with high probability of future risk & cost

- **Member Centric**
  - Measure patterns of care by physicians
  - Measures quality outcomes and efficiency of treatment patterns

- **Provider Centric**
  - An integrated platform combining data from EMRs and claims enabling a care management workflow application to assist robust management of populations.

- **Workflow Systems**
  - Data from provider’s Electronic Medical Record drives advanced stratification of the entire population.
The Optum Analytics Tool Suite

Optum Insight® Tool Suite

Impact Pro®
- Patient Centric
  - Predicts Risk at Member, Cohort, and Population Level
  - Member Risk Profile
  - Reporting at Cohort or Pop Level
- Prospective Risk
  - Supports Clinical Outreach
  - Clinical & Actuarial Models
  - Predicts Total Cost of Care
  - Predicts Likelihood of Inpatient Admission
  - Predicts Likelihood of ED Visit

Symmetry®
- Analytics Processing Engine
  - Utilizes Medical & Rx Claims
  - ETG - Episode Grouper
  - ERG - Risk Grouper
  - PRG - Rx Risk Grouper
  - EBM - Clinical Guidelines

Impact Intelligence®
- Provider Centric
- Retrospective Risk
  - Compares Risk at Provider Panel Level
  - Reporting at Peer Group Level
  - Allows Risk-Adjusted Comparison
    Quality and Cost Indices
  - Employer Group Reporting
  - Cost, Utilization & Quality Trends
  - Health Plan Performance

Connect Portal®
- Provider View into Impact Pro
- Supports Pay for Performance
- Reconsideration & Reconciliation
Symmetry Episode Treatment Groups®

• Combine claims for related services into a complete episode of care
• Use logical and temporal relationships of office visits, lab services, radiology, and pharmacy services to determine when episodes begin and end
• Cover the entire breadth of medicine
• Severity-adjusted to account for comorbidities, complications, and treatment
• 525 base ETGs, 1400+ severity adjusted ETGs
• Provide the basis for modeling risk
High Cost Compared to Benchmark: Orthopedics & Rheumatology - Example
Member Risk Profile

Risk Marker Category - % of total predicted costs

- Heart Failure/Cardiology: 24.1%
- Pulmonary Heart Disease: 19.6%
- Electrolyte Disorder: 5.6%
- Other Neurology: 5.2%
- Demographics: 3.8%
- Other Cardiology: 3.8%
- Endocrinology: 3.0%
- Kidney Transplant: 2.6%
- Other GI Inflammatory Infection: 2.4%
- Other Ophthalmology: 1.6%
- Other ENT: 1.3%
- Migraine: 1.1%
- Other Ortho: 1.6%
Risk Segmentation

**WELL**
- 47% of Pop
- Avg Age: 21
- Expected PMY: $1,069
- < 2% Chronic
- Low Severity
- 5% Admits
- Low utilization, Healthy mostly acute conditions

**STABLE**
- 24% of Pop
- Avg Age: 35
- Expected PMY: $2,771
- 10% Chronic
- Low Severity
- 5% Admits
- Regular utilization, Healthy mostly acute and preventative conditions

**MODERATE**
- 18% of Pop
- Avg Age: 44
- Expected PMY: $5,646
- 35% Chronic
- 5% High Sev
- 10% Admits
- Moderate utilization, mostly acute, few chronic unlikely to require Inpatient or ER services

**HIGH**
- 10% of Pop
- Avg Age: 48
- Expected PMY: $12,168
- 55% Chronic
- 12% High Sev
- 20% Admits
- High utilization, higher severity acute and chronic w/ increased likely-hood of Inpatient or ER services

**VERY HIGH**
- 1% of Pop
- Avg Age: 50
- Expected PMY: $42,561
- 70% Chronic
- 40% High Sev
- 70% Admits
- Comorbidity
- Heavy utilization, higher severity, multiple chronic w/ strong likely-hood of Inpatient or ER services
LVHN Health Plan Risk Overview

- % Choice Plus Members
- Avg Future Cost Per Member
- % Members-Comparison

<table>
<thead>
<tr>
<th>Category</th>
<th>% Members Enrolled</th>
<th>Avg Future Cost Per Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well</td>
<td>47%</td>
<td>$1,695</td>
</tr>
<tr>
<td>Stable</td>
<td>23%</td>
<td>$4,812</td>
</tr>
<tr>
<td>Moderate Risk</td>
<td>21%</td>
<td>$8,552</td>
</tr>
<tr>
<td>High Risk</td>
<td>12%</td>
<td>$16,756</td>
</tr>
<tr>
<td>Very High Risk</td>
<td>2%</td>
<td>$57,426</td>
</tr>
</tbody>
</table>

Goal
Value-Based Care Model

1. Collect and Aggregate Claims & Clinical Data
2. Process through Toolset and Conduct Analyses
3. Predictive Modeling, Risk Stratification, Care Evaluation, Medical Expense Budget Development
4. Timely Data Flow to Inform Care Continuum, Plan Design and Administration
5. Healthier Employees, Families, Businesses, Community
Population Health Analysis Approach

AllSpire Partner or Payer Partner Data Repository
- Eligibility, Medical & Rx Claims, & Labs Files

- Transfer of Files from Client [SFTP]
- Standard Populytics Form?
  - Yes: Profile and Validate Files [Constraint Checker & IBI DQC Tool]
  - No: Translation of Files to Standard Format [SQL, SSIS]

- Send QA Results Report to Client [Accellion]
- Pass Validation?
  - Yes: Integrate Medical & Rx Claims [SQL Server]
  - No: Generate Files for Analytics [SQL, SSIS]

Generate Files for Analytics [SQL, SSIS]

- Run Analytics Process Locally [Symmetry®]
- Load Output Files for Validation [SQL, SSIS]
- Perform Pre-Analysis Validation [SQL, Server]
- Record Outliers & Discrepancies

- Optum Runs Analytic Process [Impact Pro & Impact Intelligence]
- Optum Updates Hosted Sites
- Optum Transfers IP/II Output Files to Populytics [SFTP]
- Load Output Files to Reporting Datamart [SSIS, SQL]
- Perform Analyses [SQL Server]

- Optum Transfers IP/II Output Files to Populytics [SFTP]
- Load Output Files to Reporting Datamart [SSIS, SQL]
- Perform Analyses [SQL Server]

Populytics Care Managers
- Impact Pro®
- Providers and Practice Centric Care Managers

Connect Portal®

Impact Intelligence®

Impact Pro®

Connect Portal®

Medical Expense Budget

Pop Health Reports
Optum One®

• Latest addition to arsenal is Optum One
• Combines adjudicated claims-based risk analytics from Symmetry/Impact Pro with many new risk models based upon EMR and outgoing claims data
• More complete and more timely data
  – Lab values, smoking status, BP, BMI, PCP
• EMR analytics utilize NLP in addition to discrete data extraction
  – Problem List and Notes-derived data (LVEF, PFT)
• Supports custom queries, reports, dashboards, and registries
• All queries/reports follow a cohort – timeframe – filter approach
Optum One® Reporting Interface
Optum One® Report Building Interface

AAP: AAP: Pts w/High BMI

- Obese (Class III): 40+: 5035 (8.7%)
- Obese (Class II): 35.0-39.9: 7331 (12.7%)
- Overweight: 25.0-29.9: 26638 (40.3%)
- Normal: 18.5-24.9: 16480 (25.6%)

Required fields
Cohort (2 criteria active)

- Patients known to be deceased [Current]
  Value: False
- Pts w Amb Visit in Last 24 Months (Evaluated)
  Value: True

Time Period

- Rolling Time Periods
- Full Month(s)

Last 12 Full Month(s) from end of data.
This time period is dynamic and is always defined relative to the last day of available data. It's current range is: 6/1/2012 - 5/31/2013. You have data available for the duration of this time period.

Filters (2 active)

- Age [Current]
  INCLUDE values 18 to 64
- Last BMI [In Time Period]
  INCLUDE values GREATER THAN OR EQUAL TO

# of patients: 57,484
Data Processing Details

1. Request Client Files
   - AllSpire Partner or Payer Partner Data Repository
   - Eligibility, Medical & Rx Claims, & Provider Files
   - Assemble & If file fragmented
   - SFTP of data

2. Load into ASDB & CDR
   - Apply Normalized Pricing
   - Produce Symmetry Input Files
   - Run Symmetry Locally

3. Optum Runs Analytic Process [Impact Pro & Impact Intelligence]
   - Optum Updates Hosted Sites
   - Optum Transfers iPro/II Output Files to Populytics [SFTP]
   - Load Output Files to Reporting Datasetart

4. Run Post-Symmetry Validation & Record Outliers [SQL]
   - Run with ASDB & Load to Reporting Datasetart

5. Translation of Files to Standard Format [Custom SSIS]
   - Data in Standard Populytics Form

6. Data Quality Evaluation
   - SQL Constraint Check + IBI/DOC Tool
   - QA Report [Active PDF]

7. iPro & II
   - Data Profile Summary Report

8. Load into QA Staging DB
   - QA Staging DB (w/Relaxed Constraints)

9. Integration of Data across Payers [S3IS]
   - Integrate Data

10. Monthly
    - Monthly Integration

11. ONCE
    - ONCE Integration

12. Client Data Repository (Temporary Integration)
    - Analytics Staging DB [w/Full Constraints]

13. Performance Gap Analysis
    - N

14. Files & Columns Match Spec?
    - N

15. Does Standard Populytics Form?
    - N

16. Payer Staging DB
    - Payer Staging DB
• The steps from QA Staging to Analytics Staging constitute the QA Pipeline
• No long term storage
• Analytics Staging is fully constrained with Primary Keys, Foreign Keys, and strict data typing
• Successful load into Analytics Staging indicates data is ready for Analytics Processing
• QA Staging has same tables and columns as Analytics staging but all constraints are relaxed
• We refer to QA Staging as “Relaxed” and Analytics Staging as “Constrained”
• Two different tools are used to qualify the data in Relaxed before loading into Constrained, the DQC and the Constraint Checker
## Information Builders DQC Tool: Mask Example

### Providers

<table>
<thead>
<tr>
<th>Expression</th>
<th>Type</th>
<th>Nulls</th>
<th>Not nulls</th>
<th>Distinct</th>
<th>Unique</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProviderID</td>
<td>STRING</td>
<td>2</td>
<td>422,544</td>
<td>422,543</td>
<td>422,542</td>
<td>.</td>
<td>XXXXXXXX</td>
</tr>
<tr>
<td>ProviderIDContainsSpecialCharacters</td>
<td>STRING</td>
<td>422,546</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1001042500</td>
<td>JENNIFERRODRIGUEZ</td>
</tr>
<tr>
<td>NationalProviderIdentifierNPI</td>
<td>STRING</td>
<td>240,251</td>
<td>182,295</td>
<td>121,315</td>
<td>85,294</td>
<td>1184521286</td>
<td>JENNIFERRODRIGUEZ</td>
</tr>
<tr>
<td>Invalid NPI</td>
<td>STRING</td>
<td>422,535</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>1184521286</td>
<td>JENNIFERRODRIGUEZ</td>
</tr>
<tr>
<td>ProviderIDWithInvalidNPI</td>
<td>STRING</td>
<td>422,536</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>1184521286</td>
<td>1184521286</td>
</tr>
</tbody>
</table>

### Mask Analysis

<table>
<thead>
<tr>
<th>Value</th>
<th>Count</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>DDDDDDDDDD-DDD</td>
<td>35975</td>
<td>85.19%</td>
</tr>
<tr>
<td>DDDDDDDDDD</td>
<td>27265</td>
<td>6.45%</td>
</tr>
<tr>
<td>DDDDDDDD</td>
<td>22722</td>
<td>5.30%</td>
</tr>
<tr>
<td>DDDDDDDD-DDD</td>
<td>5750</td>
<td>1.36%</td>
</tr>
<tr>
<td>LL-DD-DDDDDDDDDDDD</td>
<td>5149</td>
<td>1.22%</td>
</tr>
<tr>
<td>DDDDDDDDDDDDD</td>
<td>546</td>
<td>0.13%</td>
</tr>
<tr>
<td>DDDDDDDDD</td>
<td>294</td>
<td>0.07%</td>
</tr>
<tr>
<td>DDDDDDDDD-LDD</td>
<td>216</td>
<td>0.05%</td>
</tr>
<tr>
<td>DDDDDDDDD-DD</td>
<td>145</td>
<td>0.03%</td>
</tr>
<tr>
<td>DDDDDDDDD-DDD</td>
<td>111</td>
<td>0.03%</td>
</tr>
<tr>
<td>DDDDDDDDD-LL</td>
<td>79</td>
<td>0.02%</td>
</tr>
<tr>
<td>DDDDDDDDD-LL</td>
<td>88</td>
<td>0.01%</td>
</tr>
<tr>
<td>DD-DDDDDDDD-DDD</td>
<td>15</td>
<td>0.00%</td>
</tr>
<tr>
<td>LLLLLLLLL-DDD</td>
<td>15</td>
<td>0.00%</td>
</tr>
</tbody>
</table>
Information Builders DQC Tool: FK Example

**Name:** ProviderSpecialty1

**Expression:** upper(ProviderSpecialtyCode) ? UPPER(ProviderSpecialtyCode)

![Venn diagram showing matched and not matched records]
SQL Constraint Checker

• Uses metadata for the Constrained tables to see if values in Relaxed will be able to be inserted into Constrained
  – Sys.Tables, Sys.Columns, Sys.Types tables used for type checking
• Each check is implemented in two steps.
  – Dynamically create query using Constrained table schema to inform what needs to be checked in Relaxed tables.
  – Use the dynamic query to identify any values in the Relaxed tables that fail the given test generated from the Constrained table schema.
• If we edit primary keys, foreign keys, or change column lengths or types, the System tables instantly reflect those changes.
• Constraint checks based on dynamic SQL do not need to be rewritten when the schema for the Constrained tables changes.
Normalized Pricing

• The same healthcare service can be priced very differently in different healthcare systems.

• Even within one health plan, there can be significant differences in negotiated rates of providers.

• Normalized pricing allows us to separate variations in utilization of services from differences in fee schedules and contracts.

• The methodology for normalized pricing varies by Type of Service (TOS).
Normalized Pricing Methodology by TOS

- Inpatient Facility Services – driven by the average per diem cost of an Inpatient hospital stay and the expected length of stay based on diagnosis and treatment.
- Outpatient Facility Services – match claims to a benchmark average cost table using revenue code, procedure code, and modifier.
- Professional & Ancillary Services – use a resource-based relative value scale (RBRVS) approach driven by procedure code and modifier.

<table>
<thead>
<tr>
<th>PROCEDURE CODE</th>
<th>MODIFIER</th>
<th>PROCEDURE CODE DESCRIPTION</th>
<th>RELATIVE VALUE UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>76090</td>
<td></td>
<td>MAMMOGRAPY UNI</td>
<td>1.88</td>
</tr>
<tr>
<td>76090</td>
<td>26</td>
<td>MAMMOGRAPY UNI</td>
<td>0.87</td>
</tr>
<tr>
<td>76090</td>
<td>TC</td>
<td>MAMMOGRAPY UNI</td>
<td>1.01</td>
</tr>
</tbody>
</table>

- Pharmacy Services – use First Data Bank average prices adjusted for therapeutic category and generic status.
Very High Risk Members – 3%

- These 703 members can benefit from intensive care management & need immediate attention to manage their already high severity illnesses
- 18% have not engaged in a medical management program, 18% have not visited a PCP & 84% of the members have a chronic condition
- Key conditions include Hypertension, Diabetes, & Back/Joint pain

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Members w/ Risk</th>
<th># Episodes</th>
<th>Total Allowed</th>
<th>Avg By Episode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>276</td>
<td>462</td>
<td>$371,612</td>
<td>$804</td>
</tr>
<tr>
<td>Mood disorder, depressed</td>
<td>210</td>
<td>365</td>
<td>$318,576</td>
<td>$873</td>
</tr>
<tr>
<td>Diabetes</td>
<td>199</td>
<td>342</td>
<td>$1,003,952</td>
<td>$2,936</td>
</tr>
<tr>
<td>Inflammation of esophagus</td>
<td>160</td>
<td>197</td>
<td>$230,891</td>
<td>$1,172</td>
</tr>
<tr>
<td>Hypo-functioning thyroid gland</td>
<td>153</td>
<td>285</td>
<td>$178,282</td>
<td>$626</td>
</tr>
<tr>
<td>Hyperlipidemia, other</td>
<td>129</td>
<td>227</td>
<td>$77,738</td>
<td>$342</td>
</tr>
<tr>
<td>Obesity</td>
<td>119</td>
<td>167</td>
<td>$313,852</td>
<td>$1,879</td>
</tr>
<tr>
<td>Asthma</td>
<td>116</td>
<td>174</td>
<td>$249,729</td>
<td>$1,435</td>
</tr>
<tr>
<td>Joint degeneration, localized - back</td>
<td>112</td>
<td>160</td>
<td>$472,114</td>
<td>$2,951</td>
</tr>
<tr>
<td>Joint degeneration, localized - knee &amp; lower leg</td>
<td>93</td>
<td>133</td>
<td>$624,363</td>
<td>$4,694</td>
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<tr>
<td>Chronic sinusitis</td>
<td>91</td>
<td>143</td>
<td>$56,158</td>
<td>$393</td>
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<tr>
<td>Other metabolic disorders</td>
<td>87</td>
<td>134</td>
<td>$283,831</td>
<td>$2,118</td>
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<tr>
<td>Chronic renal failure</td>
<td>75</td>
<td>116</td>
<td>$1,205,856</td>
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<tr>
<td>Other inflammation of skin</td>
<td>70</td>
<td>87</td>
<td>$18,080</td>
<td>$208</td>
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<tr>
<td>Malignant neoplasm of breast</td>
<td>68</td>
<td>118</td>
<td>$1,056,747</td>
<td>$8,955</td>
</tr>
</tbody>
</table>
Data Visualization Analytics – Admissions

Inpatient Overview

<table>
<thead>
<tr>
<th>Filtered</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>17</td>
</tr>
<tr>
<td>Admits</td>
<td>135</td>
</tr>
<tr>
<td>Days</td>
<td>890</td>
</tr>
<tr>
<td>Allowed</td>
<td>3,872,416</td>
</tr>
<tr>
<td>$/Admit</td>
<td>28,685</td>
</tr>
<tr>
<td>$/Day</td>
<td>4,351</td>
</tr>
<tr>
<td>ALOS</td>
<td>6.59</td>
</tr>
<tr>
<td>Admits/K</td>
<td>5.88</td>
</tr>
<tr>
<td>Days/K</td>
<td>38.74</td>
</tr>
<tr>
<td>No PCP</td>
<td>7</td>
</tr>
<tr>
<td>Chronic Cond.</td>
<td>14</td>
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</table>

<table>
<thead>
<tr>
<th>Filtered</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAMPM</td>
<td>14.04</td>
</tr>
<tr>
<td>High Cost Utilizers</td>
<td>13.96</td>
</tr>
<tr>
<td>Impactable Medical</td>
<td>8.01</td>
</tr>
<tr>
<td>Impactable Surgical</td>
<td>1.65</td>
</tr>
<tr>
<td>ACSC</td>
<td>0.85</td>
</tr>
</tbody>
</table>

6 or more Admissions

Risk Profile - Members with Admissions

<table>
<thead>
<tr>
<th>% of Total Admissions</th>
<th>% of Members w/ an Admit</th>
<th>% of Chronic Members w/ an Admit</th>
<th>% of No PCP Members w/ an Admit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>95%</td>
<td>94%</td>
<td>93%</td>
</tr>
<tr>
<td>N/A</td>
<td>5%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14%</td>
</tr>
</tbody>
</table>

Admits by Risk Strat Trend

<table>
<thead>
<tr>
<th>Risk Strat Trend</th>
<th>Very High</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>Feb</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>Mar</td>
<td>85%</td>
<td>15%</td>
</tr>
<tr>
<td>Apr</td>
<td>88%</td>
<td>12%</td>
</tr>
<tr>
<td>May</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Jun</td>
<td>100%</td>
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6 or More Admissions
Future Direction of Populytics Informatics

• Move from dedicated servers to virtual servers on a private cloud to build in flexibility and support pace of growth

• Further engineer our QA Pipeline to increase our ability to simultaneously process multiple data sets

• Consider “big data” alternatives to traditional relational data base approach

• Leverage the powerful analytics built upon the combination of EMR and claims data available thru Optum One® acquisition
Future Direction of Health Care

• Following Medicare’s lead, health care insurance companies will continue to shift financial risk to health systems through accountable care models

• Health systems are expected to hit the “tipping point” within 2-3 years where payment-for-value outweighs fee-for-service

• In order to survive, health systems need to continue to make investments in data-driven population health management (no margin-no mission)

• Health IT/Informatics has never been more important
Integrating Analytics and Technology as Core Enablers for a Value Based Model

Discussion