Leveraging Lab Data and Predictive Analytics to Improve Clinical Effectiveness & Manage Population Health Risk
Discussion Objectives

*Inform* – on the application value of data in predictive analytics the mission criticality of addressing “Rising Risk”

*Hope* – in our collective ability to improve clinical effectiveness and manage population health

*Inspire* – act on the use of lab and clinical data to succeed in risk adjustment and value-based arrangements
A Tale of Two Causes

Dr. Ignaz Semmelweis

Antisepsis pioneer and advocate for physicians to “wash their hands”!

Predictive analytics pioneers and advocates for interventional health management

BaseHealth Leadership Team

Hossein Fakhrai-Rad, Ph.D.
FOUNDER, PRESIDENT & CHIEF SCIENTIFIC OFFICER

Prakash Menon
CHIEF TECHNOLOGY OFFICER

Dan Hoemke
CHIEF BUSINESS OFFICER
Why so serious?

2018 Milliman Medical Cost Index

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Medical Cost for Family of Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>$23,215</td>
</tr>
<tr>
<td>2015</td>
<td>$24,671</td>
</tr>
<tr>
<td>2016</td>
<td>$25,826</td>
</tr>
<tr>
<td>2017</td>
<td>$26,944</td>
</tr>
<tr>
<td>2018</td>
<td>$28,166</td>
</tr>
</tbody>
</table>
Really why?

Erosion of Population Health

If Prevention Is Not Systematically Approached,
By 2025, 49% Of Americans Will Have Chronic Diseases

118 million (1995)
125 million (2000)
133 million (2005)
141 million (2010)
149 million (2015)
157 million (2020)
164 million (2025)
171 million (2030)
Where’s the good news?

7 out of 10 Americans will experience chronic or acute condition or trauma

Chronic Conditions – 12%
Catastrophic Conditions – 1%

Most conditions can be accurately predicted before expression of disease
When you can do something about it!

But, these patients represent “Unknown” rising risk which is difficult to identify
Relying on legacy analytics and claims data alone, you’ll think...

Disease Risk & Cost

YEAR 1

KNOWN RISK MEMBERS
5%

MEDIUM RISK MEMBERS
20%

LOW RISK MEMBERS
75%

YEAR 2

YOY Migration of Risk

YOY Migration of Intensity Level: N=162,178

Conventional Thinking

5% HIGH RISK MEMBERS
Using lab and other clinical data you’ll know…

YOY Migration of Risk

Single Greatest Determinant of profitability and cost

Disease Risk & Cost

YEAR 1

YEAR 2

KNOWN RISK MEMBERS

5%

HIGH RISK MEMBERS

5%

MEDIUM RISK MEMBERS

20%

MEDIUM RISK MEMBERS

21%

LOW RISK MEMBERS

75%

LOW RISK MEMBERS

74%

1%

2%

2%

9%

2%

9%

63%
Future of leveraging lab and clinical data and evidence-based science is TODAY!

Causality Model

Associative Model

Inputs
- Demographics
- Clinical Data
- Claims
- Genetics
- Lab Data

Risk Factors
- Hypertension
- BMI
- Stress

Intervention Model
- Weight Loss
- Lipids
- Blood Pressure
- Padchek

Outputs
- Stratified Chase List
- Interactive UI
- Reports
- Spreadsheets
- APIs

Analytics/Post-processing

Base Health
Getting ahead of "Rising Risk"?

- Descriptive: What has happened
- Diagnostic: Why things happened
- Predictive: What will happen
- Prescriptive: What should be done
- Personalized: What should each person do
Effective management of “Rising Risk”

Population and Member Level

- Focus on the right conditions and risk factors
- Target the right people
- Use of the most clinically effective interventions
- Avoid cost and maximize ROI
- Optimize risk or value-based revenue where appropriate
Population-level interventional savings

Annual Cost Reduction Opportunity
$33.49M

Estimated Interventional Costs
$9.90M

Annual Net Savings Opportunity
$23.59M
## Member-level interventional savings

### Target Members

<table>
<thead>
<tr>
<th>Member ID</th>
<th>Gender</th>
<th>Age</th>
<th>Clinic Office Name</th>
<th>Clinic Name</th>
<th>Disease With The Highest Impact</th>
<th>Interventions</th>
<th>Cumulative Member Count</th>
<th>Cumulative Intervention Cost</th>
<th>Cumulative PMPY Net Savings Opportunity</th>
<th>Selected Intervention Cost</th>
<th>Net PMPY Savings Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10999</td>
<td>F</td>
<td>83</td>
<td>BSMH Health Center</td>
<td>Bindu Rajan</td>
<td>Coronary Artery Disease</td>
<td>BMI</td>
<td>Blood Pressure</td>
<td>Cholesterol</td>
<td>1</td>
<td>$782</td>
<td>$10,235</td>
</tr>
<tr>
<td>8329</td>
<td>F</td>
<td>90</td>
<td>The Maxwell Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1971096</td>
<td>F</td>
<td>72</td>
<td>Healthy Life Corporation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2475111</td>
<td>F</td>
<td>81</td>
<td>Healthy Life Corporation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2418549</td>
<td>F</td>
<td>85</td>
<td>Consultants In Internal Medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1956873</td>
<td>M</td>
<td>69</td>
<td>Hatfield Medical Group PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2548955</td>
<td>F</td>
<td>71</td>
<td>Whispering Palms Medical Inc</td>
<td>Jeanette Cruz</td>
<td>Type 2 Diabetes</td>
<td>BMI</td>
<td>Blood Pressure</td>
<td>Cholesterol</td>
<td>7</td>
<td>$5,552</td>
<td>$67,094</td>
</tr>
<tr>
<td>2358155</td>
<td>M</td>
<td>70</td>
<td>Consultants In Internal Medicine</td>
<td></td>
<td>Type 2 Diabetes</td>
<td>BMI</td>
<td>Cholesterol</td>
<td></td>
<td>8</td>
<td>$6,520</td>
<td>$75,207</td>
</tr>
<tr>
<td>1978657</td>
<td>M</td>
<td>71</td>
<td>Good Years Family Medicine LLC</td>
<td>Gregory Chrostowski</td>
<td>Type 2 Diabetes</td>
<td>BMI</td>
<td>Cholesterol</td>
<td></td>
<td>9</td>
<td>$6,515</td>
<td>$85,205</td>
</tr>
<tr>
<td>1954775</td>
<td>M</td>
<td>77</td>
<td>JR Medical Group PLC</td>
<td>Rustin Crawford</td>
<td>Type 2 Diabetes</td>
<td>BMI</td>
<td>Cholesterol</td>
<td>Smoking</td>
<td>10</td>
<td>$7,187</td>
<td>$94,209</td>
</tr>
<tr>
<td>1910598</td>
<td>F</td>
<td>78</td>
<td>Allen Family Medicine</td>
<td>Gregory Allen</td>
<td>Coronary Artery Disease</td>
<td>BMI</td>
<td>Blood Pressure</td>
<td></td>
<td>11</td>
<td>$7,669</td>
<td>$108,103</td>
</tr>
</tbody>
</table>

- **Cumulative Intervention Cost:** $782
- **Cumulative PMPY Net Savings Opportunity:** $16,758
- **Selected Intervention Cost:** $782
- **Net PMPY Savings Opportunity:** $16,758
Population-level risk adjusted revenue

Retrospective Revenue Estimate
$410M

Predicted Revenue Increase
$71.1M

Total Predicted Revenue
$481.5M

Predicted Annual Opportunity by Condition

- Hypertension
- Type 2 Diabetes
- Coronary Artery Disease
- Hyperlipidemia
- Hypothyroidism
- Atrial Fibrillation
- Osteoporosis
- Prostate Cancer
- Breast Cancer
- Ischemic Stroke
- Depression
- Peripheral Artery Disease

BaseHealth
## Member-level risk adjusted revenue

### Target Members

<table>
<thead>
<tr>
<th>Member ID</th>
<th>Gender</th>
<th>Age</th>
<th>Clinic Office Name</th>
<th>Clinic Name</th>
<th>RAF Visit Value</th>
<th>Member Retrospective Estimate</th>
<th>Member Prospective Added Value</th>
<th>Member BH Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>24456</td>
<td>Female</td>
<td>64</td>
<td>BSMH Health Center</td>
<td>Parul Agarwal</td>
<td>10</td>
<td>$86,102</td>
<td>$12,024</td>
<td>$98,126</td>
</tr>
<tr>
<td>11223</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$97,353</td>
</tr>
<tr>
<td>24215</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$82,122</td>
</tr>
<tr>
<td>2945408</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$81,932</td>
</tr>
<tr>
<td>2429014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$78,952</td>
</tr>
<tr>
<td>1938473</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$76,352</td>
</tr>
<tr>
<td>2430197</td>
<td>Female</td>
<td>59</td>
<td>Arizona Primary Care Physicians LLC</td>
<td>Hitpreet Sanghera</td>
<td>10</td>
<td>$67,287</td>
<td>$8,648</td>
<td>$75,935</td>
</tr>
<tr>
<td>590921</td>
<td>Male</td>
<td>80</td>
<td>The Maxwell Group</td>
<td>Randall Piette</td>
<td>10</td>
<td>$66,324</td>
<td>$9,279</td>
<td>$75,603</td>
</tr>
<tr>
<td>2945866</td>
<td>Female</td>
<td>76</td>
<td>More MD</td>
<td>Raghav Mohindra</td>
<td>10</td>
<td>$73,037</td>
<td>$2,438</td>
<td>$75,476</td>
</tr>
<tr>
<td>2134504</td>
<td>Female</td>
<td>64</td>
<td>No Clinic specified</td>
<td>NA</td>
<td>10</td>
<td>$65,936</td>
<td>$9,092</td>
<td>$75,028</td>
</tr>
</tbody>
</table>
Missed risk adjusted revenue

2016 Member Population of 24,976

Nearly $13 MILLION in MISSED REVENUE

- Of the 25,000 Medicare Advantage members analyzed, 2,048 predicted with high-risk conditions where full RAF adjustment was not captured.
- Unrealized RAF adjustments for these members resulted in MISSED REVENUE opportunity of $12.69 MILLION.
- 41% of full RAF potential was NOT CAPTURED in the Top 20% of members with high predicted RAF.
Missed risk adjusted revenue (Using Lab Data-Only)

2016 New Member Population of 10,000

Incremental Additional Revenue (Lost Revenue): $3.13M
- 1,320 (top 20%) Target List identified by BaseHealth
- 6,600 have Lab Data available
- 66%
- 507
- 813

Accelerated Revenue (Late Revenue): $1.46 M
- Adjustment based on submission
- $0.21 M
- $0.21 M
- $0.21 M
- $0.21 M
- $0.21 M
- $0.21 M

Developed in Partnership with Sonora Quest Laboratories
A Tale of Two Causes

Dr. Ignaz Semmelweis

Suffered a nervous breakdown and died in a mental hospital at age 47 failing in his mission to get physicians to “wash their hands”!

BaseHealth Leadership Team

Jury is still out

Hossein Fakhrzadeh, Ph.D.
FOUNDER, PRESIDENT & CHIEF SCIENTIFIC OFFICER

Prakash Menon
CHIEF TECHNOLOGY OFFICER

Dan Hoemke
CHIEF BUSINESS OFFICER
Thank You

Dan Hoemke, Chief Business Officer

Hoemke@BaseHealth.com

T 602.568.7974

www.BaseHealth.com