HBI Solutions Overview to Alaska HIE

November 3, 2016
Agenda

- Global Healthcare Opportunities
- HBI Solutions Background
- HBI Case Study
- Questions and Answers
The Changing US Environment

The US market is in flux, and organizations are not prepared for balancing multiple payment structures, as they move from volume to value based care.

- Status Quo: Fee for Service
- Pay for Performance
- Episode Bundle Payments
- ACO Shared Savings
- Global Payment Capitation

ACOs
Population Management

Market laggards will concentrate and remain here

Tomorrow’s leaders require new tools to manage

Reactive, deterministic solutions

Proactive, probabilistic intelligent solutions

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Chronic diseases are major drivers of mortality and cost across the globe.

Precision health solutions have worldwide applicability to prevent premature disease, death, and associated costs.

The graph shows the probability of dying before age 70 from non-communicable diseases.
Company Background

- Precision health and analytics company founded in 2011
- Based in Palo Alto, CA
- Leader in real-time patient risk and precision health solutions
- Solutions are used by providers, payers, ACOs and HIEs

Unique talent and experience:
- Stanford researchers, data scientists
- Frontline physicians
- Performance improvement practitioners
- Healthcare IT executives

Mission:
Improve population health using data science to predict and prevent disease and utilization
Precision Health

Traditional Care Model

One Doctor

One EHR

One Patient

Precision Health Care Model

Care Team

Precision Health Solution

Millions of Patients
Return on Investment – Precision Health Care Models

$1 Invested

Precision Health Care Model
- Precision health technology
- Population and episode risk stratification
- Risk based patient registries
- Proactive primary care
- Proactive risk factor and care gap management
- Proactive admission and discharge care coordination

$2* Saved

- 10-40% reduction in inpatient admissions, re-admissions and patient days
- 10-40% reduction in emergency visits and re-visits

HBI offers the Spotlight Data Solution, a world class, precision health solution designed to predict and prevent disease, mortality, and cost.
Our Proprietary Risk Models

Patient History

1000s of Patient Features
- Age
- Gender
- Geography
- Income
- Education
- Race
- Diagnoses
- Procedures
- Chronic conditions
- Visit and admission history
- Outpatient medications
- Vital signs
- Lab orders and results
- Radiology orders
- Social characteristics
- Behavioral characteristics

Risk Model Development

Multivariate Statistical Modeling / Machine Learning

Patient Risk of Event or Outcome

Available Risk Models

Population Risk Models (predicts future 12 months)
- Predicted future cost
- Risk of inpatient admission
- Risk of emergency dept (ED) visit
- Risk of acute myocardial infarction (AMI)
- Risk of asthma
- Risk of cerebrovascular accident (CVA)
- Risk of congestive heart failure (CHF)
- Risk of COPD
- Risk of diabetes
- Risk of hypertension
- Risk of mortality

Admission Triggered Risk Models (predicts future 30 days post discharge)
- Risk of 30 day readmission
- Risk of 30 day ED re-visit

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Our Natural Language Processing

The Spotlight Data Solution uses natural language processing (NLP) to augment discrete data. NLP provides deeper patient classification by identifying diseases, risk factors, and social and behavioral characteristics not found in discrete data.
The Spotlight Data Solution uses a vertical search engine to identify clinically meaningful actions based on the patient's individual risk profile.
The Spotlight Data Solution uses machine and deep learning methods to model future patient risks and outcomes.
Our Customers

Today: Large scale data experience. Live in production on over 20 million patients.

Maine 1.4 mn  Massachusetts 6.6 mn  NYC / Long Island 16.0 mn

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Today:
Live in production with hospital systems, accountable care organizations (ACOs), payers, physician practices, federally qualified health centers (FQHCs), health information exchanges (HIEs) and healthcare data service organizations
Precision Health Client Case Study
HealthInfoNet is a Maine-based health information services organization that operates Maine's only statewide health information exchange (HIE)

- Provides a secure, standardized electronic system, where healthcare providers can share important patient health information for treatment purposes
- Real-time data from provider electronic health record systems
  - 36 hospitals and over 400 ambulatory sites
  - 1.4 million patients (EMPIs)
  - 6,000,000+ annual encounters (admissions and visits)
HealthInfoNet and its member hospitals market the value of HBI’s predictive analytics to improve results.

“One of the biggest uses of the analytics software for St. Joseph has been to reduce readmissions, [Dr. William] Wood said, which have dropped below 10 percent - about 5 percent below the state average. That includes a 15 percent drop in emergency department readmissions in a six-month period.

St. Joseph became the first healthcare institution in the state to use analytics across the state’s health information exchange for its daily operations...

HealthInfoNet, was established in 2006 and launched its analytics business in partnership with Palo-Alto, California-based HBI Solutions...”
St. Joseph Healthcare System, Bangor, Maine
• 112 bed acute care community hospital
• Primary care and specialty physician practices
• 24,000 covered lives
• Partner with local health centers
• Part of Maine HIE, using HBI risk solutions

ACO Participation
• Medicare shared savings
• Medicaid
• Commercial Insurers

Using real-time predictive risk scores to manage patients daily
St. Joseph Healthcare Population Management

- 3 RN care managers responsible for 24,000 patients
- Ambulatory based care managers assess **real-time risk HBI scores**, including risk for readmission, ED visit, disease, high cost and mortality
- Practice sets **thresholds** for each risk category to flag high-risk patients
- Care managers **proactively** reach out to high-risk patients to provide education and manage care gaps
- **Interventions** are identified and ordered based on patient’s risk profile; designed to **prevent** future utilization and disease onset
Population Health Dashboard / Patient List
- Understand patients at risk for ED visits, IP admissions, disease and cost
Selecting a patient from the patient list, user can see the risk and visit history of the patient. In this instance, the patient’s ED risk (red line) has risen significantly over the last 3 months.
Selecting a patient from the patient list, users can view interventions for specific patient risks including polypharmacy, chronic diseases, and emergency and inpatient utilization.

### Care Interventions

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<tr>
<th>Patient Risk</th>
<th>Data</th>
<th>Intervention</th>
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| Polypharmacy | 1.0  | - Medication specific education and strategies to mitigate adverse drug events  
- Eliminate unnecessary medications  
- Simplify medication scheduling  
- Assess adherence and complications 72 hours after an inpatient discharge |
| Multiple chronic diseases | 0.2 | - Discuss goals of care and chronic illness model discussed with patient/caregiver  
- Disease specific education with patient/caregiver  
- Action plan reviewed with patient/caregivers regarding what to do and who to contact in the event of worsening or new symptoms |
| Problem chronic diseases | 0.3 | - Discuss goals of care and chronic illness model discussed with patient/caregiver  
- Disease specific education with patient/caregiver  
- Action plan reviewed with patient/caregivers regarding what to do and who to contact in the event of worsening or new symptoms |
| Two or more hospitalizations in last 6 or 12 months | 0.4 | - Review reasons for re-hospitalizations  
- Post discharge, follow-up phone call at 72 hours to assess condition, adherence and complications  
- Post discharge, follow-up appointment with medical provider within 7 days of hospital discharge  
- Post discharge, engage a transition coach |
| Two or more emergency visit(s) in last 6 or 12 months | 0.5 | - Review reasons for multiple emergency visits  
- Post discharge, follow-up phone call at 72 hours to assess condition, adherence and complications  
- Post discharge, follow-up appointment with medical provider within 7 days of hospital discharge  
- Post discharge, engage a transition coach |
St. Joseph Healthcare Population Management Results:

30-Day Readmission Rate

Actual Results 14% below target
St. Joseph Healthcare Population Management Results:
**ED Visits / 1000 / Month**

Actual Results 13% below target
LIVE DEMO: MAINE HIE
The Spotlight Data Solution is a world class intelligent digital health solution designed to improve health outcomes and lower costs.

- Proven platform, proven results
- Real time risk prediction algorithms
- Actionable clinical interventions
- Advanced population health analytics
- Advanced patient care coordination
- In production in two of the most advanced health information exchanges in the U.S.