A New Era in Medicine: The Transformation to Value-Based, Personalized Healthcare

Discussion and Overview
August 2011
Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Transformation to Value Based, Personalized Healthcare Requires Systematic Collaboration

Initial customer investment focused on transactional capabilities (EMR, Claims, EDC, Trial Management, etc.)

These systems supported individual silos across the health science ecosystem, but must now provide data for an integrated view

The new healthcare delivery paradigm requires collaboration

Investment is shifting towards R&D and clinical collaboration, personalized / translational medicine and care management

Increasing demand and capabilities for personalized medicine will drive new business models, including more value-based healthcare
EMRs and other core clinical systems will not be enough

Enabling the transformation to value based, personalized healthcare

Impact on HC Transformation / Value to Healthcare System

Automating “Today’s” Healthcare Enterprise

Enterprise Quality Standards

Performance Management

Clinical Effectiveness

Comparative Effectiveness

Accountable Care Organizations

The Learning Healthcare Organization

Need for Secure, Interoperable Healthcare Data and Analytics

Core Systems Requirements:

- Core Transactional Systems
- Clinical & Enterprise Integration
- Enterprise Data Warehouse
- Context Specific Analytics and Applications
Examples of Provider Analytic Applications
Same Platform – Different Contexts

Clinical Analytics
- Clinician Performance Management
- Quality Reporting & Analytics
- Present on Admission Analytics
- Adverse Event Analytics
  - Hospital Acquired Infection
  - Pharmacovigilance
  - Other Adverse Events
- High Risk Patient Identification

Departmental Analytics
- OR Analytics
- ED Analytics
- ICU Analytics

Research Analytics
- Cohort Identification
- Biomarker Identification
- Patient Registries
- Clinical Trial Analytics
- Comparative Effectiveness Research

Administrative & Financial Analytics
- Revenue Cycle Analytics
- Utilization Analysis
- Supply Chain Analytics
- HR / Staffing Analytics

Executive Analytics
- Executive Dashboard
- Enterprise Planning & Budgeting
- Enterprise Balanced Scorecard
The IT infrastructure supporting an ACO will vary significantly depending on how the ACO is organized (e.g. Closed IDN vs. virtual Provider network formed around an IPA).

That said, the general IT functions of an ACO are illustrated in this graphic.

An ACO will require many of the IT systems most Providers are already deploying (e.g. EMRs, Analytics, HIEs).

ACOs will ultimately require systems that are new to most Providers (e.g. Care Coordination, Team Collaboration, and ACO Administration).

What will almost certainly be new to most Providers is the ACO Core. Most of the key tenets of an ACO (e.g. patient-centeredness, care coordination) can only be achieved if data can be freely exchanged across the ACO. Not only must these data be accessible but they need to be integrated and tied to workflows that support the ACO’s distributed business processes.
What Matters in ACO Analytics?

The Four Constituencies

- Individual
  - Clinical
- Patient
- Population
- ACO Team

The Triple Aim*

- Care Quality
- Patient Sat.
- Cost

What Matters in ACO Analytics?

The Four Constituencies * The Triple Aim = Lots of Game-changing Analytics

Another Dimension: retrospective vs. near “real time” vs. predictive analytics.
New Healthcare Platforms are Needed
Supporting Primary and Secondary Uses of Data for Innovation

Enterprise Healthcare Analytics (Hospitals)
- Quality
- Safety
- Clinical analytics
- Revenue Cycle
- Clinician performance
- Decision support

Care Management (Hospitals, Payers)
- Care and Disease management
- Utilization management
- Performance measurement

Translational Medicine (AMC & Pharma)
- Patient Cohort Identification and Selection
- Statistical & Scientific Analysis
- Biomarker Research

Clinical R&D (Pharma)
- Clinical Trial Optimization – Protocol Validation, Recruitment, Late Phase monitoring
- Safety & Pharmacovigilance
- Biomarker Discovery
- Comparative Effectiveness Research
Interoperability and analytics create the foundation for an ACO

Building the ACO Engine

Inova spells out the challenges with breaking down information silos
March 8, 2011 | Jennifer Prestigiacomo

The Northern Virginia-based Inova Health System with a total of 1,753 licensed beds, one of many healthcare organizations on a path to meaningful use, is in the process of liberating the data silos of its six community hospitals to inch its way toward becoming an accountable care organization (ACO). Inova enlisted the help of the Redwood Shores, Calif.-based Oracle Health Sciences, whose suite of interoperability and analytics products formed the informatics foundation of a data services hub within Inova to cull patient information for clinical care and research purposes.
Inova Informatics and Intelligence Engine (i3E)

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Inova Health System
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• Northern Virginia’s leading not-for-profit healthcare provider
• 5 hospitals + urgent care + ambulatory practices
• 1M+ patients each year
• 16,000 employees
• GECE 4 sites, McKesson 1 site → Epic by 2013
• Inova Institute for Translational Research (ITMI)
• Partnership with Oracle for genomic-phenotypic data
Quality measurement …

- is “secondary” use of clinical data
- depends on report writers
- is different from clinical decision support and clinical research cohort identification
- of populations is different from patient level
- will be solved by EHRs
Initial Patient Population =
  AND:
    ■ AND: "Diagnosis active: Delivery Live Births-Diagnosis"
    ■ AND: "Procedure performed: Delivery Live Births-Procedure"
    ■ AND: "Patient characteristic: Gender Female"
    ■ during "Measurement period"

Denominator =
  AND: "Initial Patient Population"
  AND: "Encounter: Prenatal Visit" starts after start of ("Patient characteristic: Estimated date of conception" <= 10 month starts before or during ("Procedure performed: Delivery Live Births-Procedure" during "Measurement period")))

Numerator =
  AND: "Laboratory test performed: HIV Screening" starts after start of (FIRST : "Encounter: Prenatal Visit" starts after start of ("Patient characteristic: Estimated date of conception" <= 10 month starts before or during ("Procedure performed: Delivery Live Births-Procedure" during "Measurement period")))
  AND: "Laboratory test performed: HIV Screening" starts after start of (SECOND : "Encounter: Prenatal Visit" starts after start of ("Patient characteristic: Estimated date of conception" <= 10 month starts before or during ("Procedure performed: Delivery Live Births-Procedure" during "Measurement period")))

Exclusions =
  OR:
    ■ OR:
      ■ OR: "Laboratory test performed not done: Medical reason" for "HIV Screening Code List GROUPING"
      ■ OR: "Laboratory test performed not done: Patient reason" for "HIV Screening Code List GROUPING"
      ■ <= 30 day starts after start of (FIRST:"Encounter: Prenatal Visit" starts after start of ("Patient characteristic: Estimated date of conception" <= 10 month starts before or during ("Procedure performed: Delivery Live Births-Procedure" during "Measurement period")))
    ■ OR:
      ■ OR: "Laboratory test performed not done: Medical reason" for "HIV Screening Code List GROUPING"
      ■ OR: "Laboratory test performed not done: Patient reason" for "HIV Screening Code List GROUPING"
      ■ <= 30 day starts after start of (SECOND:"Encounter: Prenatal Visit" starts after start of ("Patient characteristic: Estimated date of conception" <= 10 month starts before or during ("Procedure performed: Delivery Live Births-Procedure" during "Measurement period")))
    ■ OR:
      ■ OR: "Diagnosis active: HIV"
      ■ OR: "Diagnosis inactive: HIV"
      ■ starts before or during ("Encounter: Prenatal Visit" starts after start of ("Patient characteristic: Estimated date of conception" <= 10 month starts before or during ("Procedure performed: Delivery Live Births-Procedure" during "Measurement period")))
**Purpose:** Aggregate, analyze and share disparate patient, provider and facility information to empower decision-making.

**Steps:** 1) aggregate, 2) analyze, 3) disseminate

**Levels:** populations, providers, patients

**Audiences:** providers, researchers, quality, administrators, patients

**Initial Pilots:**
1) Quality Measurement
2) Predictive Modeling
3) Aggregated “Facesheet”
4) Syndromic Surveillance
5) Genotype-Phenotype Discovery
6) Clinical Research
7) Comparative Effectiveness
i3e Requirements

- Scale
- Volume
- Flexibility
- Standards
- Close the loop