IBM Healthcare & Life Sciences

Innovation that Matters

Patient Centric Healthcare
The Transformation to Personalized, Predictive, Preventive Medicine

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IBM Point of View 2015 ……..

Healthcare in Crisis: Win-Win or Lose-Lose Transformation?

Transforming Value

Transforming Patient Responsibility

Transforming Care Delivery
Healthcare in Crisis: Win-Win or Lose-Lose Transformation?

**Systems must adopt an accountability framework, supported by aligned incentives and a unified perspective on value**

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**Accountability**
- Many healthcare systems lack a clear accountability framework
- Accountability must span key stakeholders

**Aligned Incentives**
- A sustainable accountability framework is not possible without aligned incentives across the various stakeholders

**Perceptions of Value**
- Key stakeholders must be willing to reconcile their different perspectives on value in order to align incentives

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An accountability framework, supported by aligned incentives and reconciled perspectives, is needed in an increasingly global environment
Four areas of simultaneous, inter-related change are required for healthcare transformation
Transformation requires answers to critical questions

<table>
<thead>
<tr>
<th>Category</th>
<th>Questions</th>
<th>Sample Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Funding</strong></td>
<td>• Will enough be available?</td>
<td>• % Public/private spending</td>
</tr>
<tr>
<td></td>
<td>• Will it be prioritized and spent well?</td>
<td>• % of GDP</td>
</tr>
<tr>
<td><strong>Consumers</strong></td>
<td>• What is the overall health status?</td>
<td>• Healthy life expectancy at birth (HALE)</td>
</tr>
<tr>
<td></td>
<td>• What are societal expectations and attitudes?</td>
<td>• Disability adjusted life years (DALYs)</td>
</tr>
<tr>
<td></td>
<td>• What is the willingness to change behaviors?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How many “literate health activists” are there?</td>
<td></td>
</tr>
<tr>
<td><strong>Government</strong></td>
<td>• Does the government have the leadership, political will, and stability to drive significant change?</td>
<td>• Ability to prioritize and follow through</td>
</tr>
<tr>
<td></td>
<td>• Do government policies and regulations enable transformation?</td>
<td>• Emphasis on accountability in funding arrangements</td>
</tr>
<tr>
<td><strong>Healthcare Industry</strong></td>
<td>• Are key stakeholders willing to change?</td>
<td>• Incentives reward a longer term view</td>
</tr>
<tr>
<td></td>
<td>• Is the healthcare infrastructure (e.g. facilities and IT) appropriately robust?</td>
<td>• Ability to share data</td>
</tr>
</tbody>
</table>
In 2015, countries will emerge in one of four scenarios based on how they address the drivers and overcome the inhibitors.

- **Win-Win Transformation**
  - Alignment
  - Accountability

- **Lose-Lose Transformation**
  - Unintended Consequences
  - HC Industry
  - The Country
  - HC Industry Viewed Negatively

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**Drivers**

- Continued Incremental Reform

- More (or less) of the same

**Willingness and Ability to Change**

- Y

- N
Countries that successfully transform their healthcare systems (i.e., “win-win” scenario) will witness three changes

Focus on value
- Consumers, providers, and payers will increasingly direct healthcare purchasing, delivery of healthcare services, and reimbursement monies based on value

Develop better consumers
- Consumers will make better lifestyle choices and become wiser purchasers of healthcare services, frequently with the help of health infomediaries

Create better options for promoting health and providing care
- Consumers will increasingly seek out more convenient, effective, and efficient means, settings and providers
Perspectives on value from the healthcare system differ among stakeholders but must be balanced and reconciled for a win-win

Value-Based Transformation is Necessary to Align Incentives

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Today</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumers</strong></td>
<td>• Fix me regardless of cost or cause</td>
<td>• Help keep me well</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide appropriate, cost-effective, high quality care when needed</td>
</tr>
<tr>
<td><strong>Societies</strong></td>
<td>• Healthcare is a societal right</td>
<td>• Healthcare is a societal right – but available funds must be well prioritized</td>
</tr>
<tr>
<td><strong>Payers</strong></td>
<td>• Minimize unit costs</td>
<td>• Transparent cost/quality information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Able to accept value-based reimbursement</td>
</tr>
<tr>
<td><strong>Providers</strong></td>
<td>• Financial incentives to treat and to do more, not to prevent</td>
<td>• Wellness and prevention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• High quality, cost-effective acute &amp; chronic care</td>
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</tbody>
</table>
Healthcare systems must balance and resolve these differences by establishing and addressing the needs of stakeholders.

Hierarchy of Healthcare Needs Model

- **Environmental Health Needs**
  - (e.g., clean water, adequate sanitation, and clean air)

- **Basic Healthcare Needs**
  - (e.g., immunizations and preventive screenings)

- **Medically Necessary Needs**
  - (e.g., acute care for sickness or injury)

- **Health Enhancements**
  - (e.g., cosmetic and LASIK surgeries)

- **Optimal Health**
  - (e.g., holistic & personalized health & wellness)

Funding Gap

- **Virtually Infinite Needs**
- **Finite Needs**
- **Finite Needs**
- **Infinite Needs**
- **Market Service**
- **Societal Rights**

Transforming Value
In assuming more responsibility for their healthcare, consumers will make wiser health and wellness decisions as patients and purchasers.

In developed/developing countries, citizens are increasingly assuming greater responsibility for managing and paying for their healthcare services and for their personal health management.

- Keys to this enhanced responsibility include –
  - **Comparison shopping for healthcare** based on readily available, reliable cost and quality information.
  - **Information access** will be achieved in an IT-enabled, connected healthcare market where providers have adopted electronic health records (EHR).
  - **Rise of the “health infomediary”** for both the well and the chronically ill and for a much broader socioeconomic segment of the population.
  - **Better health through better choices** will become a reality through the proliferation of healthy living education and social responsibility programs.
Transforming Care Delivery

By 2015, individualized care will increasingly be delivered at more convenient locations, by more affordable and effective healthcare teams.

In developed and developing countries, healthcare consumers will seek out more convenient, effective, and efficient healthcare means, settings, and providers.

- Payers – governments, third-party health insurers, etc. – will direct its citizens and customers, respectively, to these alternative options.
- Current examples include medical tourism, integrative medicine, and retail healthcare.

The shift in consumer attitudes toward venues of healthcare delivery will be accompanied by a corresponding shift in how, where, and who provides preventive, acute, and chronic care services.

- In general, there will be a shift from episodic and acute care to more patient-centered, value-based, longitudinal care by healthcare teams.
- There will be better management of chronic conditions, especially as more acute diseases evolve into chronic diseases through advancements in detection and treatment.
In 2006 in the developed world, healthcare services are typically acute and provided locally by physicians in outpatient and hospital settings.
By 2015, payers, providers, and suppliers will focus more on market segmentation and channel management.

Consumers Will Seek Out More Healthcare Delivery Channels

<table>
<thead>
<tr>
<th>Patients</th>
<th>Care Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Status</td>
<td>Setting</td>
</tr>
<tr>
<td>Healthy</td>
<td>Rural</td>
</tr>
<tr>
<td>Minor Ailments</td>
<td>Suburban</td>
</tr>
<tr>
<td>At Risk</td>
<td>Urban</td>
</tr>
<tr>
<td>Acutely Ill</td>
<td></td>
</tr>
<tr>
<td>Chronically Ill</td>
<td></td>
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<tr>
<td>Catastrophic-ally Ill</td>
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The Future - Fully Integrated Clinical Decision Intelligence

**Data Access**
- Analysts and Reviewers
- Physicians/Admin

**Access & Collaborative Portal**

**Clinical Intelligence**
- Data access
- Data/text search & mining
- Data/text analysis

**Clinical Decision Support**
- Evidences & Knowledge
  - Guidelines
  - Rules

**Integrated Clinical Data Warehouse**
(HIW, CG, HCN etc.)

**Financial Data**
- Code, Operation, Billing, Fee, Coverage, Risk Factor, Competitor, Customer Background, etc.

**Clinical Data**
- Public data, disease, procedure, provider, treatment plan, lab tests, patient history, etc.

**CDI Solution Portfolio**
- Payer Intelligence & Decision Support
- Data Integration
- Data Acquisition

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IBM’s Role to Lead the Patient Centric Healthcare Era

Deliver Innovative Solutions to our clients based upon IBM’s deep domain and technological expertise

- Healthlink’s clinical and business process assets which optimize workflows
- IBM Software application integration and information access capabilities
- Systems leadership in data analytics and storage solutions that provide critical patient insights

Connect key stakeholders and cultivate the global ecosystem

- Relationships with a critical mass of collaborators
- Ability to develop value nets and new business models
- Leadership in motivating the use of EHR and PHR

Lead and Drive Patient Empowerment

- Demonstrative examples as a best practice employer and corporate innovator
- Valuable Health System advisor
- Experience in working with connected community collaboration and Intelligent Health Access
IBM Healthcare and Life Sciences

Our Solutions Portfolio Addresses These Challenges

Strive for Operational and Clinical Excellence
• Comprehensive clinical and business strategy to support your transformation
• Drive quality through the transformation of clinical and business processes, supported by enterprise clinical systems

Drive Innovation
• Leverage your organizations information assets to drive operational efficiencies and clinical quality
• Shift towards quality transparency and evidence based practices care

Achieve Flexibility and Efficiency in Operations
• Achieve cost efficiencies and unprecedented up time of mission critical systems through an optimized, open information infrastructure
• Leverage legacy systems while preparing for tomorrow’s challenges

Enhance Collaboration and Revenue Opportunities
• Ensure your information infrastructure is open, flexible and interoperable to prepare for tomorrow’s patient centric era

Flexible Delivery & Financial Models
The Methodology

Clinical and Business Optimization
Enabled by operational systems and process improvement

Healthcare Analytics
Enabled by integrated data & advanced analytics

Patient Centric Network
(Interoperability)

Clinical Research, Quality, and Operational Improvement

Provider Connectivity to the Healthcare Ecosystem

Optimized Infrastructure
Clinical Transformation components and underlying principles

Value Realization
- defining metrics, measuring, monitoring and realizing benefits for targeted processes

Clinical Process Optimization
- reducing variation, improving efficiency and optimizing utilization in care delivery and administrative processes

Technology Fusion
- merging of technology and operational processes to achieve value and intelligence for clinical care delivery

Clinical Transformation

Workforce Transformation
- achieving change through communication, governance/leadership, knowledge management while focusing on organizational culture

Physician/Clinician Integration
- engaging physicians and other clinicians in the development, adoption, acceptance and accountability for care delivery processes
We envision a “layered” methodology with linkages between layers to enable an integrated approach to Clinical Transformation.

**Program Management** – Creates overall program goals and manages priorities and resources

**People and Workforce** – transforms skills, organizational design, and incentives to achieve program goals

**Process Optimization** – designs and implements new IT-enabled processes

**Technology and Infrastructure** – architects the technology to support new systems and processes

**Value Realization** – ensures that people, processes and technology deliver desired performance improvements
Health Analytics is about deriving value from disparate, heterogeneous information

Challenges
- Volume and complexity of data
- Integrating massive volumes of disparate data
- Need for sophisticated analytics
- Growing collaboration across ecosystem

Access to Diverse Heterogeneous Distributed Data

1. Patient Information

Hospital events ....admission, surgery, recovery, discharge

X-rays, MRI, mamograms, etc

Clinical Record

Expression Arrays (various tissues)

Personal genomics

Analysis lab notes
The Translational Health Model

CLINICAL Informatics
- Results, Medications
- VS, Ht/Wt, Allergies
- DC Summaries
- Clinical Doc

RESEARCH Informatics
- Proteomics, SNPs,
  Publications
- Clinical Trials
- PubMEd

Health Analytics

ADMINISTRATIVE Informatics
- ADT, Demographics
- Provider, Scheduling
- Diagnosis, CPT, AR,
  Billing, Claims
Vision: Patient Centric Revenue Cycle Management

The Vision
IBM will deliver solutions and services to enable our clients to achieve market leading efficiency and efficacy in the health care ecosystem by optimizing the revenue cycle among stakeholders. To achieve this we will facilitate cross environment process re-engineering and implementation of Health Information Exchanges for clinical and financial data in a secure and private manner among appropriate participants.

The Goals
Define the Future State

Define and document future state RCM scenarios which result in innovative ways to improve RCM and costs, through collaboration between patients, payers, hospitals and doctors on the revenue cycle and claims process.

Align with Industry Leaders to Deliver Innovation

Bring these ideas forward to a select set of clients who are interested in collaborating with others in their regional ecosystem to validate the future state and the benefits to all stakeholders.
Health Information Exchange is a foundation of the strategy
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