Health Care: Wearable + Big Data

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Hypothesis

Preventive healthcare
- actionable data for individuals
- population health

Significant tech opportunity
- big-data SaaS for healthcare
- cloud connected wearables
Health Care Market: $3T in US

Source: Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group
Source: Healthcare data from world bank
Healthcare Ecosystem

- **Healthcare provider**
  - doctors
  - clinical trials
  - alert processing

- **Regulatory**
  - Affordable Care Act
  - FDA
  - CLIA

- **Insurance**
  - ACA economics
  - preventive care subsidy

- **Wearable**
  - sensors
  - transmitters
  - cloud connected

- **Big data tech**
  - storage
  - preventive alerts
  - advanced analytics
  - (personal and population)

- **Diagnostic Lab**
  - bio-samples
  - domain specialists
  - cloud, device connected

- **Existing players**
- **Potential disruption**

- **Market size**
- **Reduce cost**
- **Approve**
- **Subsidy**
- **Health data**
- **Samples/health data**
## Wearable Devices

<table>
<thead>
<tr>
<th>Company</th>
<th>Monitoring</th>
<th>Type</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>9Solutions</td>
<td>Location/Active</td>
<td>Medical</td>
<td>Device/Soft/DB</td>
</tr>
<tr>
<td>AiQ, NUUBO</td>
<td>ECG</td>
<td>Fitness</td>
<td>Device/Soft</td>
</tr>
<tr>
<td>Preventice</td>
<td>ECG</td>
<td>Medical (FDA)</td>
<td>Device/Soft/DB</td>
</tr>
<tr>
<td>Imec</td>
<td>ECG, EEG</td>
<td>Medical</td>
<td>Sensor/Device</td>
</tr>
<tr>
<td>UCSD</td>
<td>Blood Glucose</td>
<td>Medical</td>
<td>Device (R&amp;D)</td>
</tr>
</tbody>
</table>

Micro-needle Sensor (Back side) Microneedles sensor array devices for detailed diagnostics under the skin.

Source: UCSD
Case: Oscar Insurance

- New insurance provider in NY launched in 2013
  - 3 free physician visits, unlimited generic drugs
  - 17,000 members in 2014 open enrollment
  - 10% market share for NY health care exchange
  - Expanding to NJ, CA & TX

- Free wearable device for fitness tracking
  - Earn up to $240 each year for being active
Case: Kaiser Permanente

- Largest private integrated healthcare system in US
- **60+ telehealth pilots or implementations** in multiple specialties currently

- Remote patient monitoring
  - Near-real-time monitoring in their homes
    - ex. blood pressure, glucose, wearable “bracelet” monitor
  - Integrate with analytics program in hospitals/clinics
Case: IMS Health

● Healthcare big-data (revenue: $2.6B)
  ○ 10+PB of health care data (57%)
    ■ 90% of US prescription and drug sales
    ■ ⅔ of US medical claims
    ■ 33M records for de-identified patients
  ○ Analytic tools (43%)
    ■ ex. Clinical trial optimization, Targeting

● Ecosystem
  ○ 100,000 suppliers: pharmaceutical manufacturer, pharmacy outlets, hospitals, health plans etc.
  ○ 5,000 clients: pharmaceutical, medical device manufacturers/distributors, government, policymakers, financial community etc.

● Limited competition
  ○ Optum (United Health Group), etc.
Case: Theranos

- RESULTS IN HOURS, NOT DAYS
- THERANOS RATES ARE ALWAYS LESS THAN 50% OF MEDICARE RATES
- COEFFICIENT OF VARIATION <10%

<table>
<thead>
<tr>
<th>Service</th>
<th>Original Price</th>
<th>Theranos Price</th>
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</thead>
<tbody>
<tr>
<td>Cholesterol</td>
<td>$85</td>
<td>$3</td>
</tr>
<tr>
<td>Fertility</td>
<td>~$200</td>
<td>$35</td>
</tr>
</tbody>
</table>

Source: theranos.com womenbusiness.org
Opportunity - Company X

- Cloud store and access for patient data
- SDK for devices and wearables
- Advanced analytical capabilities in collaboration with medical experts
- Tieup with health care providers for monitoring and alerting
- Caters to individuals and healthcare providers
Conclusion

- An era of preventive healthcare will be ushered in by a combination of technology players in wearable devices, cheap and fast diagnostics and advanced big data analytics driving down healthcare costs.