Digital Health - Leveraging Predictive Analytics to transform care @ scale with Intelligent Service Platforms
Keeping up with changing technology is vital, but it’s just as important to evolve the consumer experience, care delivery methods and career development opportunities for the healthcare workforce.

The Accenture Digital Health Technology Vision 2016 reveals five trends that prove winning in the digital age hinges on people – the patients and the healthcare workforce.

Transforming care pathways at scale requires Intelligent Patient Platforms designed as services into people’s lives.
5 Trends put People Digital Health

1. Intelligent Automation
   People do things differently and adopt new services

2. The Liquid Workforce
   People learn highly agile healthcare skillsets

3. Platform Economy
   People Connect at scale across transformed ecosystems

4. Digital Trust
   People confront risks and place premium value on trust.

5. Predictable Disruption
   People assume new roles and incentives in new care models
Data can help clinicians make informed decisions through computer-assisted algorithms, and it can get the right supply to the right place at the right time.

Apps can help patients navigate their choices in healthcare and wellbeing services, enabled by analytical insights based on their profile.

Health plans can use data to help guide consumers in making a decision about the best plan for them.
This emergent fluidity requires some fundamental shifts in how the enterprise is structured, how people are trained and **how the culture adapts to new technology-enabled ways of working**. But these changes come with benefits.

Organizations can launch innovations faster. Health plans can use crowdsourcing to hear from innovators and entrepreneurs. And, virtual care provides greater accessibility and flexibility for patients.
Imagine a future when healthcare consumers will go to one central place to book an appointment, check their electronic medical record or pay an out-of-pocket expense.

Providers will track a patient’s activity from hospital to home.

Health plans will connect with consumers through engagement platforms, collecting data from wearables and offering rewards or premium discounts for progress.
Disruption can be a game changer if a business can predict it.

Healthcare organizations must link up with those outside of the industry to seize new disruptive opportunities.

If the banking industry has mastered mobile payments, health plans should explore mobile apps that can make out-of-pocket payments pain-free for consumers.

If companies like Spotify can successfully deliver music as a service, healthcare providers should also look at how care can be delivered as a service.
Intelligent Patient Platforms @ scale - e.g. avoid Heart Failure readmissions

- Consistent inpatient coordination
- Remote Care Coordination
- Coordinated remote care
- Inpatient
- Remote
- Digital Care Coordinator & Patient Engagement
- Data Integration & Advanced Analytics
- Lower Avoidable Readmissions and costs
- People Centric Care
- Remote Care Coordination
Case Study – Valencia La Fe
Analytics driven case management
Analytics Driven Case Management

• La Fe Health Department

210,000 inhabitants
10% of the Chronic Population in Valencia

Integrated Health Department
  ○ University Hospital La Fe (+1,000 beds)
  ○ 5 Outpatients Centers
  ○ 6 Primary Care Centers
  ○ 1 center for addictions

Per Capita reimbursement model

○ 500,000 Outpatients visits
○ 385,000 Hospital Stays
○ 50,000 Admission
○ 6,000 Births
Analytics Driven Case Management

Our Approach

1. Focus on Most Expensive Multi-Chronic Patients
2. Predicting Which Patients Will Drive These Costs
3. Coordinating Care Levels to Keep Patients at Home
4. Managing Individual Cases, Not Just a Disease
On average, 20% of patients drive around 60% of the total system health expenditure.
Analytics Driven Case Management

PREDICTING WHICH PATIENTS WILL DRIVE THESE COSTS

- By anticipating which patients are evolving to their ‘Intense Years’, we can maximize potential healthcare savings.
## Analytics Driven Case Management

### ANALYTICS

<table>
<thead>
<tr>
<th>CUMMUNITY ASSESSMENT RISK SCREEN (CARS)</th>
<th>ACCENTURE PREDICTION MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prediction Model</strong></td>
<td>Tries to predict Inpatient and E&amp;A visit risk in the next 12 month.</td>
</tr>
<tr>
<td><strong>Main Characteristics</strong></td>
<td>Tries to predict unplanned admissions risk with more than three days length in the next 12 month.</td>
</tr>
<tr>
<td><strong>Predictive variables</strong></td>
<td></td>
</tr>
<tr>
<td>Number of Comorbidities</td>
<td>Defines risk profile per patient.</td>
</tr>
<tr>
<td>Number of Pharmacology</td>
<td>More than 20 key different variable.</td>
</tr>
<tr>
<td>Number of E&amp;A visits</td>
<td>• Age</td>
</tr>
<tr>
<td>Number of Hospital Admissions</td>
<td>• Gender (only for some disease)</td>
</tr>
<tr>
<td></td>
<td>• Number of Hospital admissions (unplanned): recent (last 1-2-3 months)</td>
</tr>
<tr>
<td></td>
<td>• Number of visits to ER</td>
</tr>
<tr>
<td></td>
<td>• Number of visits to Specialties NEW!</td>
</tr>
<tr>
<td></td>
<td>• Chronic Diseases Flags based on historical diagnoses (using ICD Coding)</td>
</tr>
<tr>
<td></td>
<td>• Comorbidity Indexes (for instance, Elixhauser and Charlson), based on</td>
</tr>
<tr>
<td></td>
<td>historical diagnoses NEW!</td>
</tr>
</tbody>
</table>

### TRUE POSITIVES

- **45%** True Positives and among predicted patients
- **75%** True Positives and among predicted patients
Real data from our experience in La Fe, Valencia

- This Patient Profile requires multidisciplinary coordination and a holistic approach applied to each case

**Patient Profile**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men(%)</td>
<td>60%</td>
</tr>
<tr>
<td>Average Age</td>
<td>79</td>
</tr>
<tr>
<td>% &gt; 70 years old</td>
<td>75%</td>
</tr>
<tr>
<td>Systems Affected</td>
<td>4</td>
</tr>
<tr>
<td># of Pathologies</td>
<td>7</td>
</tr>
<tr>
<td>- Cardiovascular Pathology</td>
<td>69%</td>
</tr>
<tr>
<td>- Diabetes Pathology</td>
<td>34%</td>
</tr>
<tr>
<td>- COPD Pathology</td>
<td>32%</td>
</tr>
<tr>
<td>- Cancer</td>
<td>41%</td>
</tr>
<tr>
<td>Active Ingredients</td>
<td>10</td>
</tr>
<tr>
<td>% Palliative care(*)</td>
<td>59%</td>
</tr>
<tr>
<td>% At home deaths(*)</td>
<td>70%</td>
</tr>
</tbody>
</table>

- Integrated approach vs. aggregation of treatments by disease
- Avoid redundancies and inefficiencies (test, visits, analysis,…)
- Save patient and caregiver time
- Rationalize drugs prescription
Our Case Management Model is a NEW capability that coordinates health service provisioning and helps patients better navigate the system.
Analytics Driven Case Management

TRADITIONAL ORGANIZATION

Hospital Consultant/Nurse
- Hospitalization
- A&E
- Specialists

Primary Care Centre
General Practitioner
- Visits
- Nurse
  - Deliver Care
  - Home Visits

NEW ORGANIZATION

Home Care Unit
Consultant/Nurse
- Home Care

Case Management Center
Case Manager (Nurse)
- Manage patient (remotely)
- Manage relationship with Home Care and Primary Care

Patient Navigation
Proactive coordination between levels of care and barrier removal
Analytics Driven Case Management

SOME PRELIMINARY RESULTS AND ITS POTENTIAL IMPACT

- Reduction 9% unplanned admissions and 16% unplanned stays → equivalent 21 beds daily
- Clinical study on quality of life impact conducted – to be published shortly
Based on initial savings estimated with provisional real data in La Fe. 2.8% Direct Costs – 3.2% Indirect Costs

Accenture estimate assuming that savings with this cohort are 50% of those achieved with the first cohort of patients
Virtual health: The untapped opportunity to get the most out of healthcare

Losing patience: Why healthcare providers must up their mobile game

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