Digital Health: Charting Information Management Transformation

Massimiliano Claps, Associate Vice President
IDC EMEA Health Insights
Key Digital Health Drivers

- **Precision Medicine**
- **Innovation Accelerators** (IoT, Cognitive Systems, Robotics, etc...)
- **Patient Expectations**
- **Health System Reforms** (to Cope with Demographic and Epidemiologic Change)
- **Data Security Requirements**
Enabling Innovative Digital Health Paradigms

1. Re-inventing the Patient Experience
2. New care delivery models
3. Health Information Management
The adoption of an omni-channel approach is enhancing patient experience through more active engagement.

Omni-channel patient interactions

NOW

<table>
<thead>
<tr>
<th>Patient portal</th>
<th>Mobile App</th>
<th>Social media</th>
<th>Telemedicine device</th>
<th>Wearable app</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>61%</td>
<td>39%</td>
<td>31%</td>
<td>12%</td>
</tr>
</tbody>
</table>

IN TWO YEARS

<table>
<thead>
<tr>
<th>Patient portal</th>
<th>Mobile App</th>
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<th>Wearable app</th>
</tr>
</thead>
<tbody>
<tr>
<td>93%</td>
<td>85%</td>
<td>73%</td>
<td>64%</td>
<td>61%</td>
</tr>
</tbody>
</table>

Mental health providers are increasing the use of telemedicine and wearables as they ensure a more controlled environment to interact with the patient and the family.

N = 137 primary and secondary care providers and public health authorities in UK and the Nordics

Healthcare providers give patients increasing control over their data to engage them in care pathways and information sharing workflows.

Data ownership approach

- Providers' ownership only for internal use: 6% now, 4% in two years
- Providers' ownership also for bilateral sharing: 31% now, 11% in two years
- Providers' ownership for sharing across the health system: 43% now, 37% in two years
- Providers' ownership & patients' consent needed to share data: 19% now, 45% in two years
- Patient's sole ownership: 1% now, 2% in two years

N = 137 primary and secondary care providers and public health authorities in UK and the Nordics
Healthcare providers are progressively adopting integrated and personalized care models

**Mental Health**

- Growth of mental health diseases

**INTEGRATED CARE**

**General Health**

- Increase in comorbidity

**Current adoption and plans to adopt an integrated and personalized care model**

- Siloed, reactive care: 7%, 3%
- Safe and compliant care: 18%, 7%
- Efficient care: 26%, 14%
- Appropriate care: 39%, 31%
- Integrated and personalized care: 10%, 45%

N = 137 primary and secondary care providers and public health authorities in UK and the Nordics

The convergence of care objectives and processes along the patient journey is improving information sharing across the ecosystem, but a 360° view of the patient is still a distant vision.

Integration of patient data across the health ecosystem

<table>
<thead>
<tr>
<th>Now</th>
<th>In two years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient data is managed only within the organization</td>
<td>Patient data is managed only within the organization</td>
</tr>
<tr>
<td>Sharing patient data with other healthcare organizations on a case-by-case basis</td>
<td>Sharing patient data with other healthcare organizations on a case-by-case basis</td>
</tr>
<tr>
<td>Sharing patient data with many other healthcare organizations</td>
<td>Sharing patient data with many other healthcare organizations</td>
</tr>
<tr>
<td>Sharing patient data with other healthcare organizations, social care and public health</td>
<td>Sharing patient data with other healthcare organizations, social care and public health</td>
</tr>
<tr>
<td>Sharing information across the overall health ecosystem</td>
<td>Sharing information across the overall health ecosystem</td>
</tr>
</tbody>
</table>

N = 137 primary and secondary care providers and public health authorities in UK and the Nordics
Providers are increasingly drawing upon new data types and sources

**NOW**

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Percentage Now</th>
<th>Percentage in Two Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social care data</td>
<td>37%</td>
<td>74%</td>
</tr>
<tr>
<td>Population Health Data</td>
<td>64%</td>
<td>90%</td>
</tr>
<tr>
<td>Clinical Research Data</td>
<td>55%</td>
<td>86%</td>
</tr>
<tr>
<td>Medical remote monitoring devices and fitness wearables</td>
<td>23%</td>
<td>68%</td>
</tr>
</tbody>
</table>

N = 137 primary and secondary care providers and public health authorities in UK and the Nordics
Data sharing is still difficult as point-to-point integration of legacy applications based on proprietary technology prevails now and in two years.

**Approaches to architectural integration**

<table>
<thead>
<tr>
<th>No integration</th>
<th>Fully working internal system integration</th>
<th>Point-to-point application integration with other organizations</th>
<th>Service-oriented architecture used to share data across healthcare providers</th>
<th>Real-time and dynamic integration of information across the health ecosystem</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>37%</td>
<td>51%</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>2%</td>
<td>6%</td>
<td>58%</td>
<td>27%</td>
<td>7%</td>
</tr>
</tbody>
</table>

**The use of patient data is still limited to the single episode of care because of...**

- Dependence on proprietary systems that generate complex point-to-point integration
- Difficulty getting budgets for legacy data integration
- Limited adoption of interoperability standards
- Product-centric view of data integration

N = 137 primary and secondary care providers and public health authorities in UK and the Nordics
There is a strong latent demand for more real-time integration legacy data rather than read-only workarounds.

**The legacy data integration conundrum**

- Paper based: 4% (Now) 1% (In two years)
- On read-only applications: 5% (Now) 1% (In two years)
- On read-only applications, but shared on request: 64% (Now) 29% (In two years)
- Digital format stored in proper databases: 26% (Now) 57% (In two years)
- Fully migrated to the 3rd Platform: 1% (Now) 11% (In two years)

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A 360° degree view of the patient is the prerequisite to harness the value of data

Western Europe healthcare providers Big Data Analytics use cases

- Illness/ Disease Progression: 55%
- Organization resources utilization and turnover: 51%
- Clinical Decision Support/ Evidence-based Medicine: 48%
- Analyzing patient behaviours and conditions: 47%
- Compliance check and reporting on quality of care: 45%
- Population Health management: 28%
- Fraud and Abuse of organization resources: 20%

N= from 88 to 175; healthcare providers in France, Germany, Italy, Nordics, Spain, UK
Source: European Industry IT Executive Survey, 2015
Digital Transformation will require next gen security...

- Connecting security to other new technology investments.
- Architecting for security to protect IT systems from the inside out.
- Moving from reactive to proactive to real-time security.

Top 3 security priorities for Western European healthcare IT executives

1. Data loss/ leakage prevention
2. Identity and access mgmt
3. Mobile security

Number of respondents = 175
Source: European Industry IT Executive Survey, 2015

N=175; healthcare providers in France, Germany, Italy, Nordics, Spain, UK
Source: European Industry IT Executive Survey, 2015
Key take away for healthcare providers

- Designing an integrated care information management model to supporting a 360-degree view of the patient.
- Developing and aligning strategy, governance and architecture capabilities to implement an integrated care information management model.
- Building the business case to adopt 3rd platform technologies that enable true real-time data integration.
- Overcoming the focus on siloed systems that limit the use of patient data to a single episode of care.
- Enabling Mental Health to embrace an integrated care model.
Questions?

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Humanitas Research Hospital is the flagship hospital of Humanitas Group

- **40,000** inpatients per year
- **2,400,000** outpatient visits per year
- **2,300** professionals
- Certified by the **Joint Commission International** since 2002
- Teaching hospital
- **IRCCS** in the field of **immuno-degenerative** pathologies

In Italy, private HDOs are accredited by the Region and provide health care services directly to the Italian citizens. The patients are free to choose where to get treated. The Government reimburses the clinical services based on the DRG system. Humanitas provides around 80% of its services to the NHS.
Humanitas: the competence centers

**Cancer Center**
- Oncology
- General surgery
- Thoracic surgery
- Plastic surgery
- Urology
- Gynecology
- Breast Unit
- Dermatology
- Nuclear Medicine
- Radiotherapy

**Cardio Center**
- Heart surgery
- Cardiology
- Vascular surgery
- Electrophysiology
- Hemodynamics
- Echocardiography
- Cardiac care unit
- Rehabilitation

**Ortho Center**
- Orthopedics
  - prosthetics
  - shoulder
  - knee
  - hand
  - foot
- Traumatology
- Rehabilitation

**Neuro Center**
- Neurosurgery
  - head
  - spinal column
- Functional neurosurgery
- Neurology
- Stroke Unit
- Rehabilitation

**Internal medicine** *(medical clinic, gastroenterology, hepatology, nephrology, endocrinology, pneumology)*

**Specialty activities** *(ophthalmology, Fertility Center, Day Surgery, Dental Center)*

**Services** *(radiology, ultrasound, endoscopy, clinical lab, anesthesia, intensive care unit, dialysis)*

**Emergency Department - EAS**
Enabling digital transformation

The Task

Review of all the clinical reports (outpatient and inpatient) in order to assess which data is relevant to be collected and when (ambulatory, ward, before and after hospitalization)

Focus on:
- clinical practice
- research
- teaching

The Outcome

- Completeness and timing of reports, data quality enhancement assessed by the clinical staff
- Roll out in 6 months, more than 2.000 active users, 22 different users’ profiles
- Data for clinical research
- Engage the patient through the deployment of the patient-centric IT infrastructure
Ministry of Labour, Health and Social Affairs

20 Regional and 62 District Offices, 3400 Employee

One Point To Get Data

One Point for Administration

One Point of Management
Georgia Health System – Quick Facts

Mix of state and private funded schemes covering 98.3% of population.

State Funded Healthcare Schemes (beneficiaries):
- Universal Health Care Program (UHC) – 2M
- State funded health insurance program – 1.5M
- Other state funded healthcare programs – 232K

Private/corporate Schemes:
- Private voluntary health insurance – 653K
- Health Insurance Companies – 12

Health Service Delivery Capacity:
- Hospitals – 267
- PHC Units – 390
- Rural doctors – 1400

Total Population
4.48 million
cEMR Project Objectives

Phase -1

1. Develop a system to store electronic medical records (EMR)
2. Enable the collection of patient-related activity data
3. Create a foundation Citizen portal as defined in workshops
4. Create a foundation GP portal as defined in workshops
5. Create a foundation EMR Citizen read only view of a citizen’s medical record that can be accessed using their mobile device.
6. Provide Train the Trainer Training

Deliver an effective solution that can be replicated
wHospital® was established in 2000 as a university research project in response to an emerging need for digitalization of clinical documents.

wHospital® is compliant with Joint Commission International standards to improve Clinical Risk management procedures.

wHospital® Team: computer engineers and bioengineers, with a decennial experience within the digitalization of clinical processes.

wHospital® was the first web-based Electronic Health Record Solution to:

- Manage the care process in a completely paperless way
- Manage clinical risk directly bedside
- Provide direct web access from mobile TabletPC and Smart-devices
- Provide web-based interface: easy to maintain, troubleshoot and operate
- Provide digital signature certification through Smartcard or Token on each clinical task as required from Italian and International Law.
wHospital Numbers

- Healthcare Providers: +15
- Patients/year: 2,172,825
- Nurses/Doctors: 4,933
- Hospital Departments: 466
- Beds: 4,643
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3. Open “Session Survey”
4. Answer the 4 questions and submit. Thank you!