Queensland Clinical Senate 2016

Digital Disruption and Health Care

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Digital Disruption and Health Care

➢ First, there was.....

“The Green Screen”
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Then…..

*HBCIS

*ORMIS

*EDIS

*ELMS, MOSAIQ, CHARM

*OSIM

*PACS/RIS

*ICU, Cardiology, GE

*Telehealth CRE

*R1 …………… etc
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Then.....

iEMR/Digital Hospital
What is eHealth?

“eHealth is the combined use of electronic communication and information technology in the health sector.”

World Health Organisation

- Electronic medical records: such as patient records, clinical administration systems, digital imaging and archiving systems, e-prescribing, e-booking etc.
- Telemedicine and telecare
- Decision support tools
- Internet-based technologies and services
iEMR – Part of the eHealth Agenda

The eHealth revolution…..

"eHealth is the single-most important revolution in healthcare since the advent of modern medicine, vaccines, or even public health measures like sanitation and clean water".

(European Institute of Public Administration, 2003)
iEMR – Part of the eHealth Agenda

eHealth – a global focus…..

Focus of international agendas
2005 – World Health Assembly
2005 – WHO Global Observatory for eHealth (GOe) established
2005 – European Commission eEurope action plan released
2006 – World Summit on the Information Society
2009 – Obama Health Reform (ARRA)

National agendas
Canada Infoway
Scottish Care Information (SCI)
NHS Connecting for Health
Veterans Health Administration USA
iEMR – Queensland

eHealth in Australia

- 2003 - Victoria invests $232m in HealthSMART
- 2004 – eHealth WA program $334m
- 2005 – NeHTA established
- 2005 – HealthConnect South Australia begins
- 2007 - $243m QLD iEMR Project
- 2008 – Australian eHealth Research Centre opened in Brisbane (CSIRO/QH)
- 2009 – QLD iEMR (v2) commenced
- 2012 - $628m PCEHR (My Health Record) launched
- 2014 – First L6 HIMSS hospital – St Stephen’s
- 2015 – First large scale digital hospital - PAH
The Digital Hospital

- A digital hospital is a hospital service facility with highly connected, interactive digital information systems which support precise, informed treatment of individual patients/clients while enabling optimally efficient use of infrastructure.
The Digital Hospital

Much more than paperless medical records
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➢ The future is Digital
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- DISRUPT
- DISRUPTIVE INNOVATION
- DIGITAL DISRUPTION

Larry Downes, Paul Nunes
HBR, March 2013
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Disrupt:

• To throw into confusion or disorder
• To break apart or alter significantly
• To disturb or upset
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**Disruptive Innovation:** creates a new market and value network, disrupting existing networks eventually displacing established leaders and alliances.

**Examples:**

<table>
<thead>
<tr>
<th>Disruption</th>
<th>Legacy Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Computer (PC)</td>
<td>- Typewriter</td>
</tr>
<tr>
<td>Smartphone</td>
<td>- PC’s/Cell phones</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>- X Ray Imaging</td>
</tr>
<tr>
<td>Amazon</td>
<td>- Bricks and Mortar Retail</td>
</tr>
<tr>
<td>Wikipedia</td>
<td>- Encyclopedias (print)</td>
</tr>
<tr>
<td>Digital photography</td>
<td>- Photographic film</td>
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<tr>
<td>UBER</td>
<td>- Taxis</td>
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</tbody>
</table>
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Disruptive Innovation in Health Care

Examples:

• Emergency Imaging (CT; Ultrasound)
• Miniaturisation (Monitoring, Ventilation)
• Point-of-Care diagnostics
• Interventional Cardiology
• Helicobacter

Metro South Health
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Digital Disruption:

“Refers to changes enabled by digital technologies that occur at a pace and magnitude that disrupt an established way of value creation, social interactions, doing business, and more generally our thinking”

https://byresearch.wordpress.com
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Future of Healthcare:

Break/Fix  →  Predict/Prevent
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Future of Healthcare:

- Personalised Medicine
- Precision Medicine
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Future of Healthcare:

Precision Medicine is a healthcare model that proposes significant personalisation of decisions with preventive strategies, diagnosis and treatment tailored around the:

- genetics
- biology
- environment, and
- lifestyle

of the individual patient, enabled by eHealth and the digital world.

*e.g. Obama: “Precision Medicine Initiative, 2015”*
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The new healthcare ecosystem will fundamentally change the way technology is used for care delivery.

EXAMPLE TRENDS

- “Internet of Things” (Ubiquitous sensing, monitoring and connection)
- “Internet of Me”
- Wearable Technology
- “Apps”
- Telehealth
- Cybersecurity
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**Internet of Things** (IoT, IoMT, HCIoT etc)

“The Internet of Things is the network of physical objects or “things” embedded with electronics, software, sensors and network connectivity, which enables those objects to collect and exchange data, without human interaction.”
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Wearable Health Technology

- Monitor HR, BP, SpO2, RR, Activity, Sleep Temp, BSL, ECG etc
- Personal Emergency Response Systems (GPS, 2 way communication, fall detection etc)
- 100 million devices annually (2016)
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“Apps”

- Over 100,000 health apps e.g.
  - Cardiac Rehabilitation
  - Renal Dialysis
  - Suicide Prevention

MJA Vol 194 No 4 21/02/2011
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TELEHEALTH

- Since 1985 to remote communities
- Since 1991 in Qld ED’s.
- Increasing at 20% p.a
- Increasing commercial interest in e Consultations (e.g. Telstra Health)
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CYBER SECURITY

- Biometrics
- Block Chain
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COMBINATORIAL INNOVATION

Consumer Solutions with Clinical Capability

Clinical Solutions with Consumer Features

• Mobility
• Sensing
• Cloud
• Social
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**Problem:** 50% of patients with chronic disease do not take drugs as prescribed:

**Solution:** Digital Medication

“Adherence Transparency”
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“THE INTELLIGENT ENTERPRISE”

- Predictive Modelling/Streaming Analytics
- Cognitive Computing /Machine Learning/NSP/AI
- Big Data/Small Data –e.g. Digital Hospital
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The Digital Hospital

• Health record always available
• Evidence based care pathways
• Structured documents with Voice Analysis
• Active and passive decision support
• Monitoring device, and ECG integration
• Early warning systems
• Electronic order entry and results
• RFID Tracking – patients, staff, equipment
• P2P communication/location
• Business Intelligence and analytics
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- Personalised Medicine
- Precision Medicine
- e Health (telehealth, EMR)
- Integrated Care
- End of Life etc

Disruption ➔

ED Attendances
“Not all disruptive missiles are destined to hit you directly, or right away. Disruptions that will not greatly affect you for years only require you to consider the best path forward”.

Clayton Christenson
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Digital Disruption is:

- INEVITABLE and INEXORABLE
- AN ENDLESS OPPORTUNITY
- NOT A TECHNOLOGICAL ISSUE
- A LEADERSHIP AND COMPLEX CHANGE ISSUE

So..................
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Health Care may be changing we have adaptability in our genome, and have nothing to fear from disruption, digital or otherwise.
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Thank You.