Digital Health Innovation: Learnings from the frontline

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NHS Navigator, Digital Health.London Accelerator
Agenda

• CW+ and Chelsea and Westminster NHS Foundation Trust
• Innovation
• Reality Checks
• Mind the fox
• A model
Who are we?

• NHS Health Charity
• Chelsea and Westminster NHS Foundation Trust
• Grants programme
• Innovation
Bhavnani S. et al. Journal of the American College of Cardiology Volume 70, Issue 21, November 2017
Interfacing demand and supply ecosystems

Chelsea and Westminster Hospital NHS

NHS Foundation Trust

Supply
It can still be confusing...
A timeline

- Sensium patch pilot
  - Sep
- Stoma bag sensor pilot
  - Oct
- digital ward auditing
  - Nov
- Physio telecare
  - Dec
- Burns telecare
  - Jan
- Compliant messaging trial
  - Feb
- Heart Failure patient monitoring
  - Mar
- Post-natal discharge digitisation
  - Apr
- Augmented reality in Surgery
  - May
- Digital Manuals
  - Jun
- ICU sensors
  - Jul
- 2016
- 2017
Stoma bag sensor efficacy and usability trial

“The stoma bag sensor could really make a difference to our patients. I look forward to seeing the conclusions of our pilot and how it can impact quality of life.”

Christos Kontovounisios, Colorectal Surgeon
Heart Failure remote patient monitoring

“CW+ were instrumental in setting up this project [...] It now encompasses almost the entire heart failure pathway within our local region”

Sadia Khan, Consultant Cardiologist and Project Lead
Digitising the postnatal discharge pathway

Project 4

Chelsea & Westminster Hospital NHS Foundation Trust

Start

Identify woman for discharge/ checks complete

Is doctors review needed?

Yes

Place “R” in doctors review on board

Communicate to shift Coordinator

Communicate reviews

“Fit for Discharge” on bed board

Prioritise discharge time

No

State Not Applicable

1. NIPE
2. Obstetric Review
3. Neonatal Review
4. TTO
5. Discharge talk

SHO via doctors book

Red House

11:00am – 13:00pm
“Red House bed board”

Red House can dispense anytime

Postnatal Discharge - Midwifery Pathway

09:00am/ 11:00am/ 15:15pm

Communicate TTO’s to ward pharmacist

Update board re TTO’s [“R” for Required]

Complete discharge talk. Update board

Complete mum and baby notes (Back page)

Hand notes to discharge coordinator

Ensure CW Mum and Baby app info given

TTO present on ward, update board

Dispense TTO’s from ward stock

End

Check CMIS discharge summary

Woman and Midwife sign “notes copy”

Reprint and sign if errors found

Document discharge time nearest 15min

Remove mum and baby for Last word census

Check Last word discharge summary complete

See admin Pathway – on how to discharge

Place ante, neo and postnatal notes on Ann Steward Ward

CMIS done before 08:00am

TTO Printed

Print discharge letter

Timer
ICU environmental sensing

JANE-MARIE HAMIL
Lead Nurse for Burns and Intensive Care

“Temperature and quality of air are crucial for our patients and staff. This new tech will give us level of control we’ve never had before.”
Digitising manuals and training
## Digitising Colorectal PROMs / PREMs

<table>
<thead>
<tr>
<th>Domains</th>
<th>1. Benign Coloproctology (day cases)</th>
<th>2. Colorectal Cancer</th>
<th>3. Pelvic Floor Disorders</th>
<th>4. Inflammatory Bowel Disease</th>
<th>5. Other/Colorectal</th>
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<tr>
<td>Score/Assessment</td>
<td>Fee/Licence</td>
<td>No. of questions</td>
<td>Score/Assessment</td>
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<td>Parsons, Caron Saebo, Hemorrhoidal PROM</td>
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<td>No info found</td>
<td>Memorial Sloan-Kettering Cancer Center (MSKCC) Bowel Function Instrument: dietary subscale</td>
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<td>Minnesota Fisula PROM</td>
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<td>EORTC QLQ-CR39 (Colorectal)</td>
<td>Free for academic settings, User Agreement is required for each study</td>
<td>Manitoba IBD Index</td>
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<td>Quality of life assessments</td>
<td>EuroQol EQ-SD-3L and EQ-SD VAS</td>
<td>CW will already have a licence</td>
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<td>EORTC QLQ-C30 (General Cancer)</td>
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<td>Schedule / time points</td>
<td>Baseline, q1 weeks</td>
<td>4 weeks post-op, 3 months post op, 6 months post op.</td>
<td>Baseline on first consultation, every 3 months post-baseline</td>
<td>4 weeks post-op, 3 months post op, 6 months post op.</td>
<td>4 weeks post-op, 3 months post op, 6 months post op.</td>
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<td>Patient Satisfaction</td>
<td>Decision Regret Scale (5 questions) &amp; up to 5 ChelWest Specific patient experience questions - asked at baseline on first consultation and every 6 months post-baseline</td>
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<td>EuroQol EQ-SD-3L and EQ-SD VAS</td>
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**CW+** Chelsea and Westminster Hospital NHS Foundation Trust
Limitation 1: Operations

Improve Fuel Pump Efficiency
(Nurture Innovation)

Improve Combustion Efficiency
(Support Innovation Operations)
Limitation 2: Governance

- Innovation is process intensive
  - (risk / unknown change / interfaces / incumbent processes / culture / safety)
- Can’t just use conventional decision making routes
  - Speed
  - Nimble
  - But safe!
- Avoid process duplication
- Transform blockers into enablers
- Protect the frontline!
Limitation 3: Evidencing impact

$11bn

In 2017

Impact of remote patient monitoring on clinical outcomes: an updated meta-analysis of randomized controlled trials

Benjamin Noah¹,², Michelle S. Keller¹,²,³, Sasan Mosadeghi⁴, Libby Stein¹,², Sunny Johl¹,², Sean Delshad¹,², Vartan C. Tashjian¹,²,⁵, Daniel Lew¹,²,⁵, James T. Kwan¹,², Ama Jusufagic¹,²,⁵, and Brennan M. R. Spiegel¹,²,⁵,⁶

Difference-in-difference point estimation revealed no statistically significant impact of remote patient monitoring on any of six reported clinical outcomes, including body mass index (−0.96; 95% CI: −2.30, 0.37), weight (−1.29; −3.06, 0.48), waist circumference (−2.41; −5.16, 0.34), body fat percentage (0.19; −1.2, 1.57), systolic blood pressure (−2.62; −5.31, 0.06), and diastolic blood pressure (−0.74; −2.34, 0.86). Studies were highly heterogeneous in their design, device type, and outcomes.
Although there is promise in the development of such innovations to shift traditional healthcare delivery to virtual and real-time methods and to empower the healthcare enterprise to utilize new technologies and data analytics, there remains a lack of true evaluation of whether these innovations actually improve outcomes and the quality of care. There are major integration challenges across the spectrum of health care for the effective use of new devices, data, and precision-health approaches within existing health information technology systems. Furthermore, early adoption of new innovations that are not evidence-based or those that have yet to demonstrate effective integration into patient care may risk unintended consequences, such as breaches of privacy or inadvertently increasing the costs of care. Achieving meaningful transformation requires organizational governance to guide the development of clinical programs and the next phase of research methodologies, and to align the objectives from a cooperative network of partners and stakeholders.
Limitation 3: Evidencing Impact

Published evidence of digital health will increase over 500 percent through 2022

Source: IQVIA AppScript Clinical Evidence Database, Feb 18, 2018; IQVIA Institute, Feb 2018
Notes: 2018 data and growth in efficacy studies extrapolated from growth trend. Historical numbers updated since original publication based on database update.
Report: 2018 and Beyond: Outlook and Turning Points, IQVIA Institute for Human Data Science, Mar 2018
Impact = when a project works = will + skill + resource

Something the organisation actually cares about
(= is willing to own and invest in)

serious project planning and management
Defining Baselines
Defining (feasible) Goals

methods
data analytics
business / process analytics

operations resource
integration resource
monitoring resource
collection resource
communication resource
Impact = investment

01 Through 2019 every $1 enterprises invest in innovation will require an additional $7 in core execution.

Source: Gartner
Limitation 4: Dedicated Support

Stakeholder Engagement
Problem identification & definition
Stakeholder alignment
Matchmaking & solution development
IG / IT compliance
Impact / outcomes
IP / Contracts
Funding
Comms
OPS

enthusiasm, inspiration, motivation, teamwork, leadership

Chelsea and Westminster Hospital
NHS Foundation Trust
Need support? We’re not alone...

- n=317 replies, 44 CEOs and 273 Innovation leaders
- 75% of execs believe digital innovation is important
- Among those >400 beds, 75% are gearing up to create an innovation centre or have already established one

Yet:

“23 months from idea to scaling [...] implementation operations, staffing and implementation agility are the trickiest parts of innovation”
A ‘Hacker in Chief’...

- Outcomes focused
- Purpose & Vision
- Facilitator of people, skills and knowledge, to design and deliver the best solutions.
- Diplomat
- Collaborator and co-creator
- Dot Joiner of the purpose, knowledge and data.
- Empathetic guide
- Translator of needs
- Story Teller

Change management
Quality Improvement
Bid writing
HoT drafting
Business Development
Commercial negotiator
Commercialisation
IP
IG
Process analytics
Ambiguity management
A comment on maturity:
Sigmoid curves mean cooperativity

- Find Champions
- Experimentation
- Awareness
- Senior Engagement
- Champion cultivation / expansion
- Early results
- Communication
- Mature results
- Governance
- Resource
- Scaling
- Reward
- Strategic Transformation
- Hard Evidence
- Dissemination
- BAU/Leadership

Innovation output vs time/effort
A comment on maturity: Defined vs Agile

Strategic Priorities

Implementation

maturity

opportunism & Democratisation excellence

Frontline Priorities & Talent

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Enter the fox

- Frontline excellence and experience
- Drive and passion above salary
- Often combined clinical with achievement / leadership in other sectors
- Humanist, Patient-centric thinking
- May not be connected to top
- May not have all skills or info needed
- May not be excellent communicators
- BUSY! & possibly a bit disappointed...
A way to start: Breaking complexity

Organisation Demand
All Challenges & Opportunities for clinical, operational and/or financial improvement

LOCAL - MULTI SKILLED — SERVICE MINDED — RESOURCE ENABLER — OPERATIONAL — STRATEGIC

ALTRUIST — EMOTIONAL — DRIVEN RELIABLE — COMMERCIAL

ANALYTICAL — PRAGMATIC

SPECIALIST — GENERALIST — AMBITIOUS
Growth = friends