An emerging world of digital medicines: a multi-episode study

Tony Cornford¹ & Valentina Lichtner²
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1 Department of Management, London School of Economics
2 School of Healthcare, University of Leeds
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www.digital-drugs.org
Point of Departure

Digital materiality: The nature of things (e.g. medicines) as they become (more) digital and more active/connected (with digital agency)

Medicines as hybrids – part chemical, part physical, part informational, part digital (with agency)

Technology in practice: Technology as revealed in the doing (e.g. technology of medicines) (Orlikowski 2000)
Point of Departure

Digitalization

“Simply put, digitalization refers to the encoding of analog information into a digital format and the possible subsequent reconfigurations of the socio-technical context of production and consumption of [...] products and services.

Digitalization can happen [to] three broad types of artifacts, physical objects, routines, representations.”

(Yoo, 2012)
Aims and scope

• Digitalization is often seen to promise making the supply and use of medicines more effective, safe and efficient, and as a way to better healthcare (?perhaps cheaper healthcare?)

• This is predicated on task oriented software, new devices and new digital representations and data infrastructures

• Trials, Pilots, Assessments and Evaluations usually focus on digital interventions for specific tasks: e.g. DSS in prescribing, administration with bar codes, adherence with smart phones

• Our aim is to investigate the digitalisation of medicines themselves within and across the overall system, and proposing active roles for digital medicines (their digital agency)
Methods

An Exploratory study

Qualitative/interpretative approach

Interviews, Observation, Documentation

Purposive sampling of ‘Episodes’ in the life of a digital medicine – from factory gate through clinical settings to bodies and then data points

“Follow the drug” (not the task/workflow, the patient or the disease)

Using Tracer drugs

Making and re-making maps as elicitation devices
Study design: follow-the-drug in a multi-episode study

5 Episodes
regions where digitalisation (reconfigurations) occur

- Supply Medicines
- Hospital Medicines
- Patient Medicines
- Research Medicines
- Pharmacovigilance Medicines
(plus Community Medicines)
‘Follow the Drug’;
‘Follow the drug’ - tracer approach

3 Exemplar medicines: selected tracer drugs followed across the five episodes –

– pain killers
– anticoagulants
– antibiotics

Tracers:

Objects to follow through the organisation to investigate processes across times and stakeholders, to gather information about the whole (Combey 1980)

Used as “both a source of data and as a means of sampling key participants” (Hornby and Symon 1994)
Tracers across five episodes
New worlds, New maps

Mappa Mundi,
Hereford Cathedral, circa 1300

See:
http://www.herefordcathedral.org/visit-us/mappa-mundi-1
Hospital medicines
Hospital medicines

GS1

dm&d

decision support for precise dosing

precise dosing

decision support for pharmacogenomics

electronic prescribing

robotic dispensing

mobile apps as reminders for HCPs

barcode scanning for administration of medicines

mobile apps as reminders for patients

electronic discharge summaries

data - for patient care, audits, research, ...
Integration/communication

Digital medicine hybrids are often fragmented, constituted by multiple digital resources (e.g. databases, evidence summaries, protocols, DSS etc)

This fragmentation is for both good and bad reasons

The hybrid ‘identity’ is more often tied to task, than to episode or the wider system.

Integration or unification *per se* is (probably) not the answer.
Digital value

The digital agency of medicines has potential to directly generate value by enabling:

1) control
2) efficiency (automation) and
3) precision

Each implies some “reconfigurations of the socio-technical context”

Broader impacts may emerge from

1) access to information,
2) stronger system feedback,
3) more active patients.
Conclusion

• Medicines are central to contemporary health care.
• New medicines offer hopes for improvement in care delivery,
• So too can ‘digital enhancement’ of those we already have.
• So far, this field has been predominantly concerned with digital initiatives based around tasks.
• Understanding medicines as hybrids (‘digital medicines’) that generate value across contexts offers a valuable lens to help practitioners and policy makers work for improvement goals.
• Our work contributes necessary and complimentary focus on the medicine itself.
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References


www.digital-drugs.org

Tony Cornford
Department of Management
London School of Economics
t.cornford@lse.ac.uk