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Digital Health: Catapulting Personalised Medicine Forward

Digital Public Health – The Future NHS

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Digital key roles

- Enabling patients to play more proactive role in their own care
- Supporting providers in delivery of a patient-centric integrated service focused on outcomes. *pwc 2013*
- Real-time alerts to duty health professional and to patient – e.g. cancer out-patient with lab white blood count ↓↓.
- Confirmation by HP of actions and next steps
- Prompt to HP to report adverse event and feed-back outcomes.-

Opportunities

- Personal responsibility: people taking more responsibility for their own health and well-being
- The agile provider: the degree to which the system, providers and the workforce adapt to the drivers of change and **needs** of the public.
 - Actual needs vs. perceived needs
 - Medicalised need
 - Obesity
 - New alcohol deterrent vs. self-control
- Personalising medicine and medicines

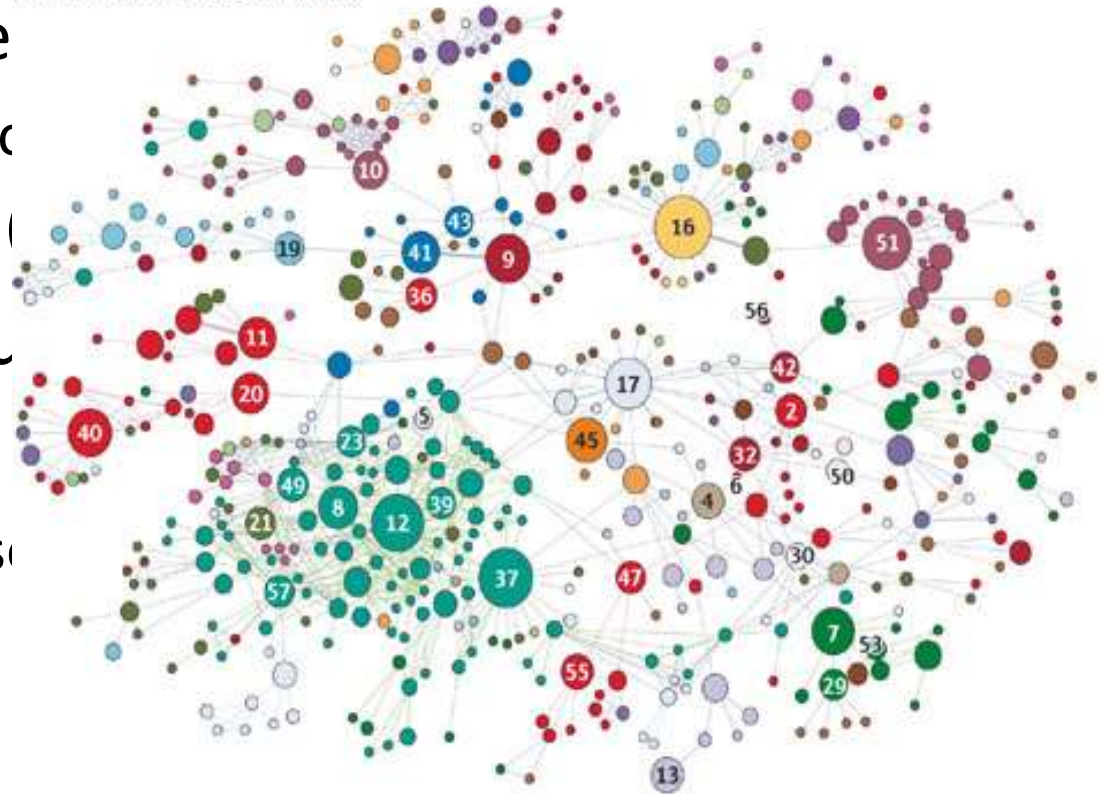
Opportunities - recording

- Record trends
 - Lifestyle: activity, diet, alcohol ...
- Current medical history
- Drug history – accessed and used OR not
 - Prescribed
 - OTCs
 - Traditional
 - Recreational

Opportunities - interaction

- Prompts to address
 - Lifestyle: activity, diet, alcohol ...
- Prompts for health review
- Prompts for disease
 - Secondary prevention
 - Tertiary prevention
- Tele-link to GP, nurse
- Alerts - **ALLERGY!**
 - Drug-gene/drug-disease

Aa Human disease network



General healthcare perspectives



· interface
on
·/healthcare

Fallability



Atul Gawande

NHS perspectives

- Better clinical effectiveness?
 - Improved diagnosis
 - Reduced errors
 - cf air industry/surgical check-lists
- Better cost-effectiveness?
 - Fewer missed appointments
- Improved patient safety?
- Improved patient satisfaction?
- Better patient education
 - Earlier health-seeking behaviour
 - cf Traditional medicine and malefics
 - Improved patient adherence to advice and medicines

User perspectives

- Public
 - Health protection/primary prevention
- Patients
- Families/carers
 - Supporting medicine/lifestyle adherence
 - General health and social care

Patient perspectives

- What digital channels for health services would you like to see opened up?
- By 2024, will the digital doctor replace the old fashioned family doctor?
- How much clinical data are you happy to share with the NHS, and with whom?
- Complexity of using a digital health interface
- Trusted apps?
- Trusted e-pharmacies?
- Pharmacovigilance

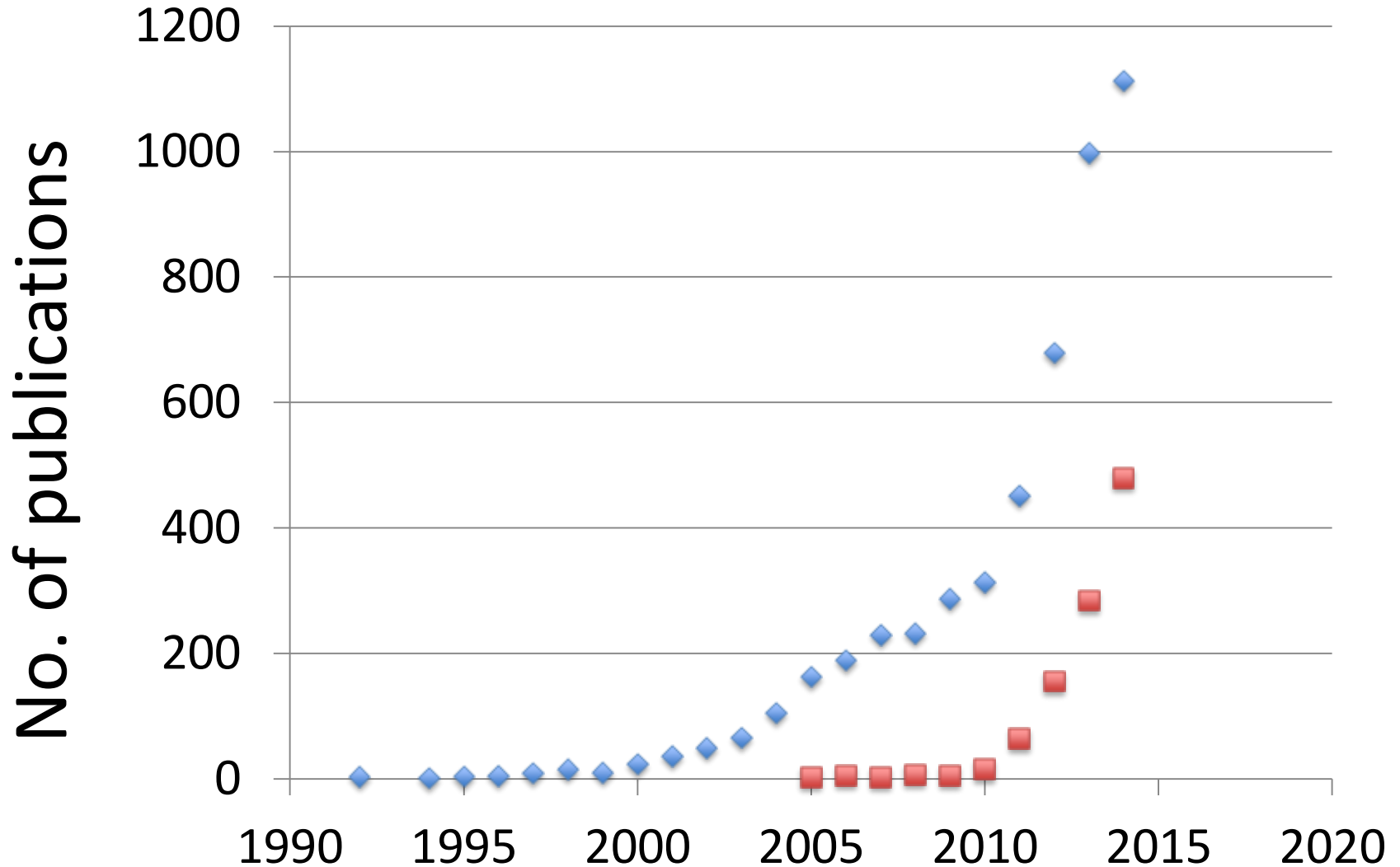
Family/carer perspectives

- How do you think the NHS can best embrace the potential of digital?
- New digital channels for health services?
- Rapid access to support services
 - Efficient, correct response and action
 - Peer-to-peer support
- Access to your data
 - Interface with family-family alerts
 - Insurance company
 - Diabetes training and learning in Germany

Digital health and the consultation

- Rapid access
 - Patient smart card
 - Patient biometrics (cf Kanombe canteen)
- Rapid decision support
 - Diagnosis ... Drug selection
- Rapid recording of information
- Personalised information on actions
 - Plan
 - Medication advice

Smart or mobile phones - PubMed



A smartphone application to support recovery from alcoholism: A randomized controlled trial

- 8 months intervention and 4 months follow-up, patients in the A-CHESS group ↓ risky drinking days vs. control group – past month
- 1.4 vs. 2.8 days 95% CI δ [0.5- 2.3])
- P= 0.0003

Evidence base?

Prompts

- Mobile phone intervention for risky alcohol use in university students: RCT. Addict Sci Clin Pract. 2014.
- Mobile phone reminders in children with HIV in **Cameroon** (MORE CARE): multicentre, single-blind RCT. Lancet Inf Dis. 2014
- Effect of SMS on infant feeding in **Shanghai**. JAMA Ped. 2014

Diagnosis

- ED real-time teledermatology. JAMA Dermatol. 2014

Monitoring

- Tachycardia detected by smartphone in pediatrics. J Ped. 2014

Generalisable?

UK: 45 clinical trials – smartphone or mobile phone

Challenges

- Who pays?
- Validation of effectiveness of medical apps and devices?
 - 45 UK clinical trials “smartphone and health”
- Validation of effectiveness of Digital Health solutions?
 - vs. conventional approaches
 - the worried well vs. those in need



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