

## **Empowering the Patient: Integrating mobile technology into healthcare delivery**



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# *mHealth Research Group in NUI Galway*



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Colleges & Schools

## THE M-HEALTH RESEARCH GROUP AT NUI GALWAY

What we do | People | Research | Publications

### Research Focus

The M-Health Research Group was established in NUI Galway in 2014.

The particular focus of this area of research, M-Health, which is led by [Dr. Jane Walsh](#), is an abbreviation for mobile health, a term used for the practice of medicine and public health supported by mobile devices (e.g. mobile phones, tablet computers and PDAs), for health services and information, but also to affect emotional states. M-health applications include the use of mobile devices in collecting community and clinical health data, delivery of healthcare information to practitioners, researchers, and patients, real-time monitoring of patient vital signs and direct provision of care (via mobile telemedicine).

M-health research encompasses a variety of possibilities, including increased access to healthcare and health-related information (particularly for hard-to-reach populations); improved ability to diagnose and track diseases; timelier, more actionable public health information; and expanded access to ongoing medical education and training for health workers.











**health Conference**



**15<sup>th</sup> June 2017**  
**Behavioural Science  
and Mobile Technology**

**Arts Millennium Building  
NUI Galway**



**NUI Galway**  
**OÉ Gaillimh**



**IRISH RESEARCH COUNCIL**  
**An Chomhairle um Thaighde in Éirinn**



**Whitaker  
Institute**





"Patient empowerment is a process to help people **gain control**, which includes people taking the **initiative**, **solving problems**, and **taking decisions**, and can be applied to different settings in health and social care, and self management" [ENOPE 2012].



## Vision

- Healthcare providers (HCP) able to recommend that a patient uses an app in a treatment, prevention or care plan, confident that the app and its data would be reliable
- HCP and patients are able to work with patient generated data by linking apps with the electronic health records or personal health records

*Source: EC mHealth Open Stakeholder meeting (May 2016)*



## An empowered activated patient

- **Understands** their health condition and its effect
- Participates in **decision-making** with healthcare professionals
- Able to make **informed choices** about treatment
- Makes necessary **changes to lifestyle** for self-management
- Able to challenge and **ask questions** of the healthcare professionals
- **Takes responsibility** for their health and actively seeks care
- Actively seeks out, evaluates and makes **use of information**.



# The Empowered Patient: Consumer-driven Healthcare

- Advancements in personal health care are responding to new technology
- wearable devices and smartphone apps are now allowing individuals to **track their health**.
- Consumers are becoming central to driving the health experience.

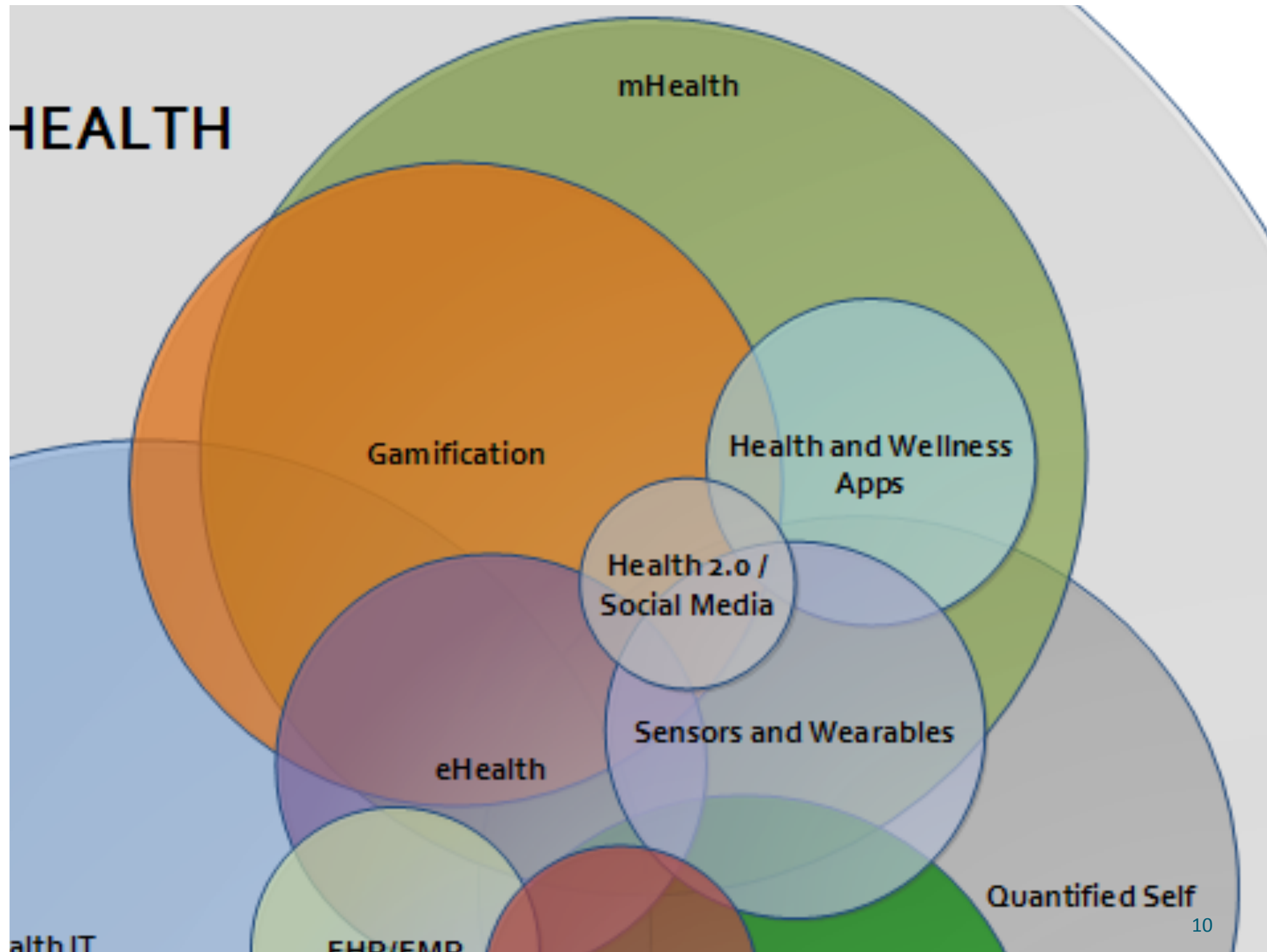




# Self-monitoring of Health



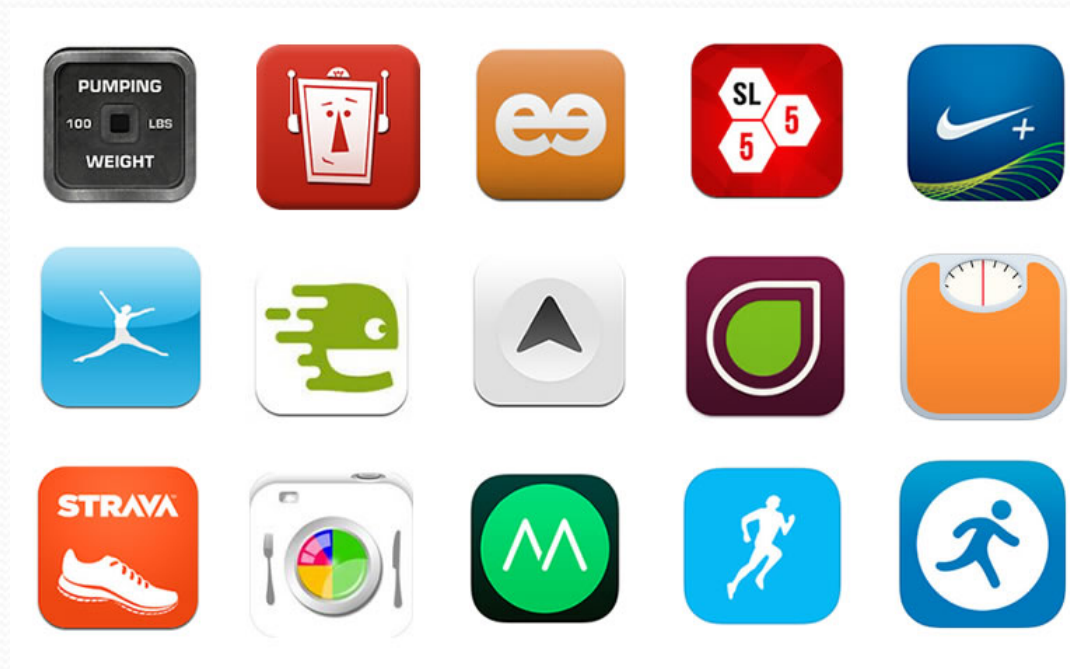
HEALTH





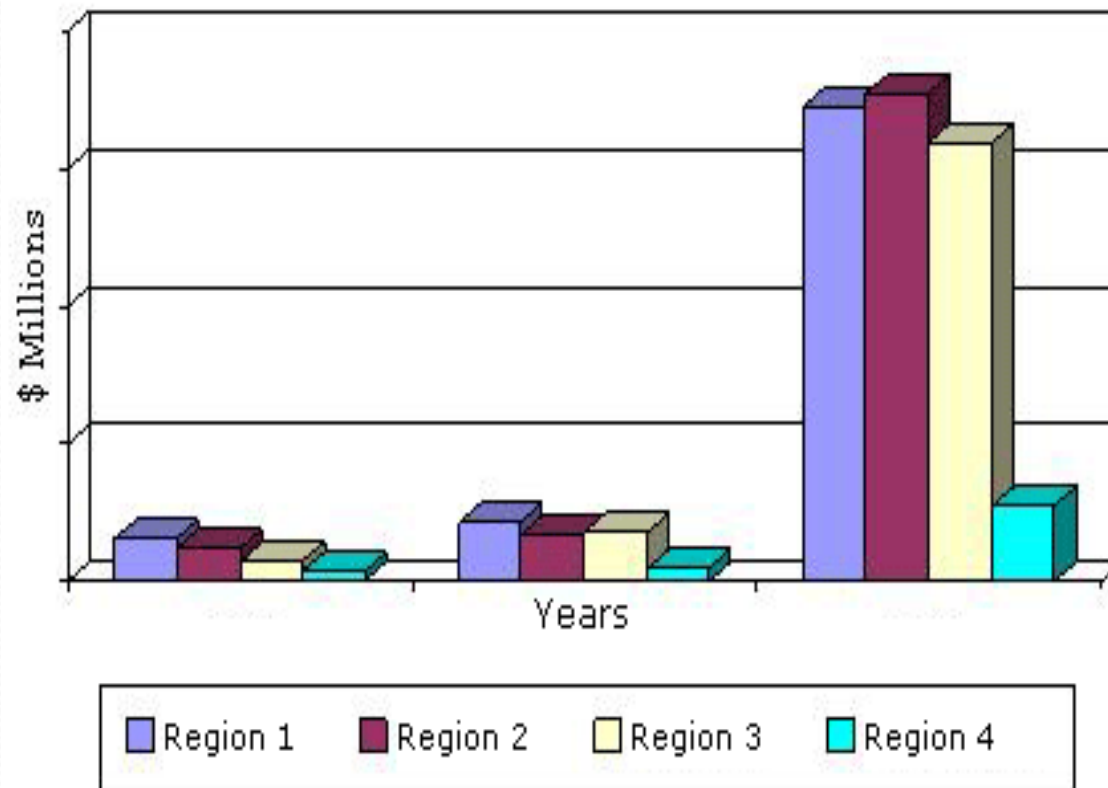
# Health and Fitness Apps

There are over **100,000 'Health Apps'** are on sale in the mobile health sector, which includes tracking apps



The European Commission (2016)

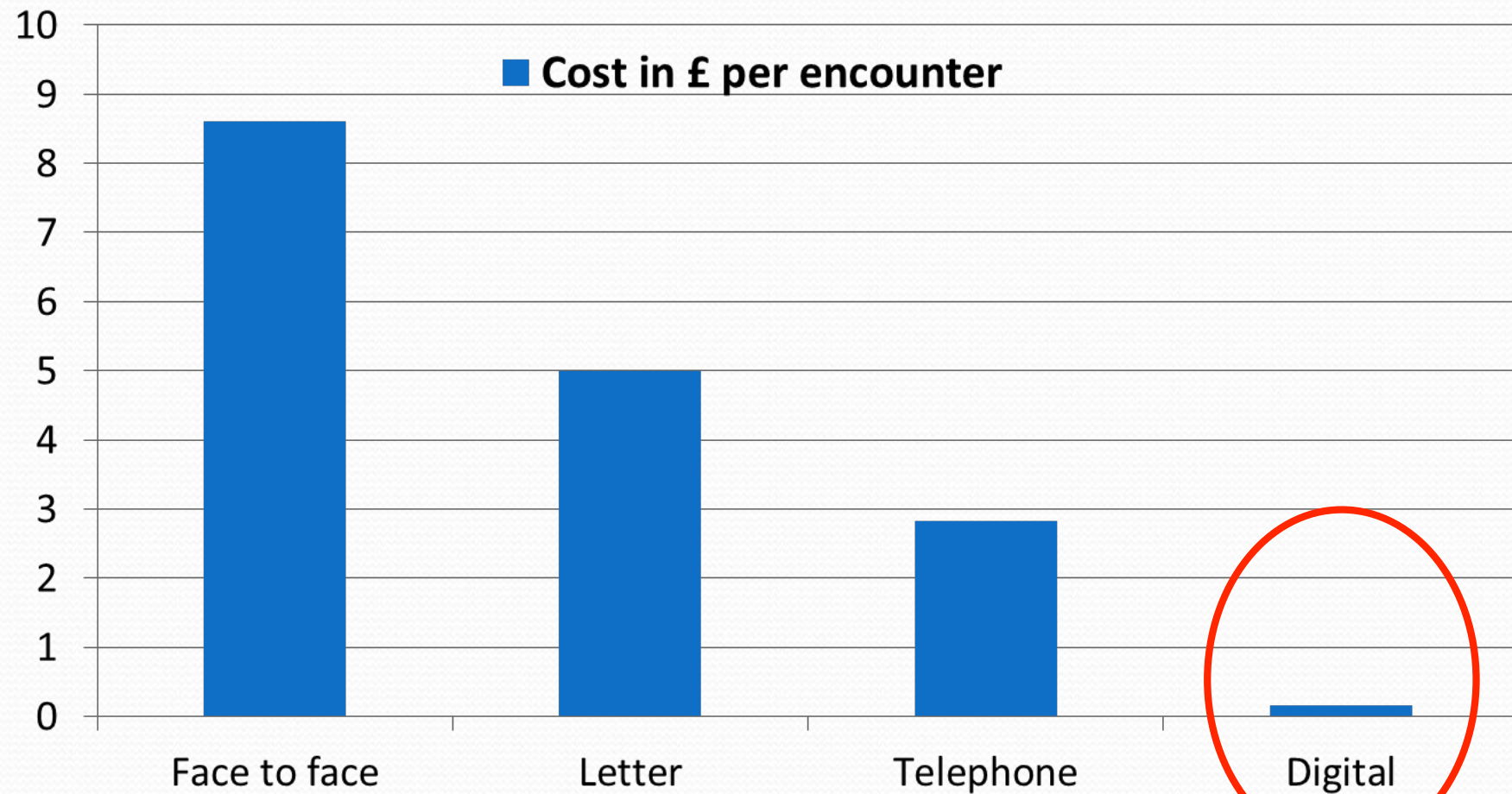
## GLOBAL MHEALTH MARKET, 2012-2018 (\$ MILLIONS)



Source: European Commission green paper on mobile health (2014)



## Mean public sector cost per completed encounter



**Source: UK Cabinet Office Digital Efficiency Report (2013)**

# Potential cost savings of health apps

- **EU Green paper** predicted that by 2017 more than **1.5 billion** people around the world will be using these apps, generating total revenues of **£14.5bn** (\$23bn).
- In the EU alone it is estimated that these apps and gadgets could reduce health care costs by 100bn euros.





# HSE eHealth Strategy (2013)





Feidhmeannacht na Seirbhíse Sláinte  
Health Service Executive

## HSE – Future Health ICT reform

- Strategic ICT and eHealth will enable patients to:
  - See their medical details on their smartphone or other devices using a unique **HEALTH IDENTIFIER**
  - View their own personal information
  - Request or change appointments
  - Ask questions about their care.
  - **Utilise all information and tools to help them maintain their health and wellbeing.**



# HSE – Future Health ICT reform

*Specific desired outcomes include:*

- Reduce acute hospital service demand by supporting the **cost-effective delivery** of services outside hospitals
- Improve health outcomes & **reduce health cost** per capita
- Foster continuous **innovation** & improvement by creating platforms for development & validation of ICT solutions



# Are doctors recommending apps to patients?

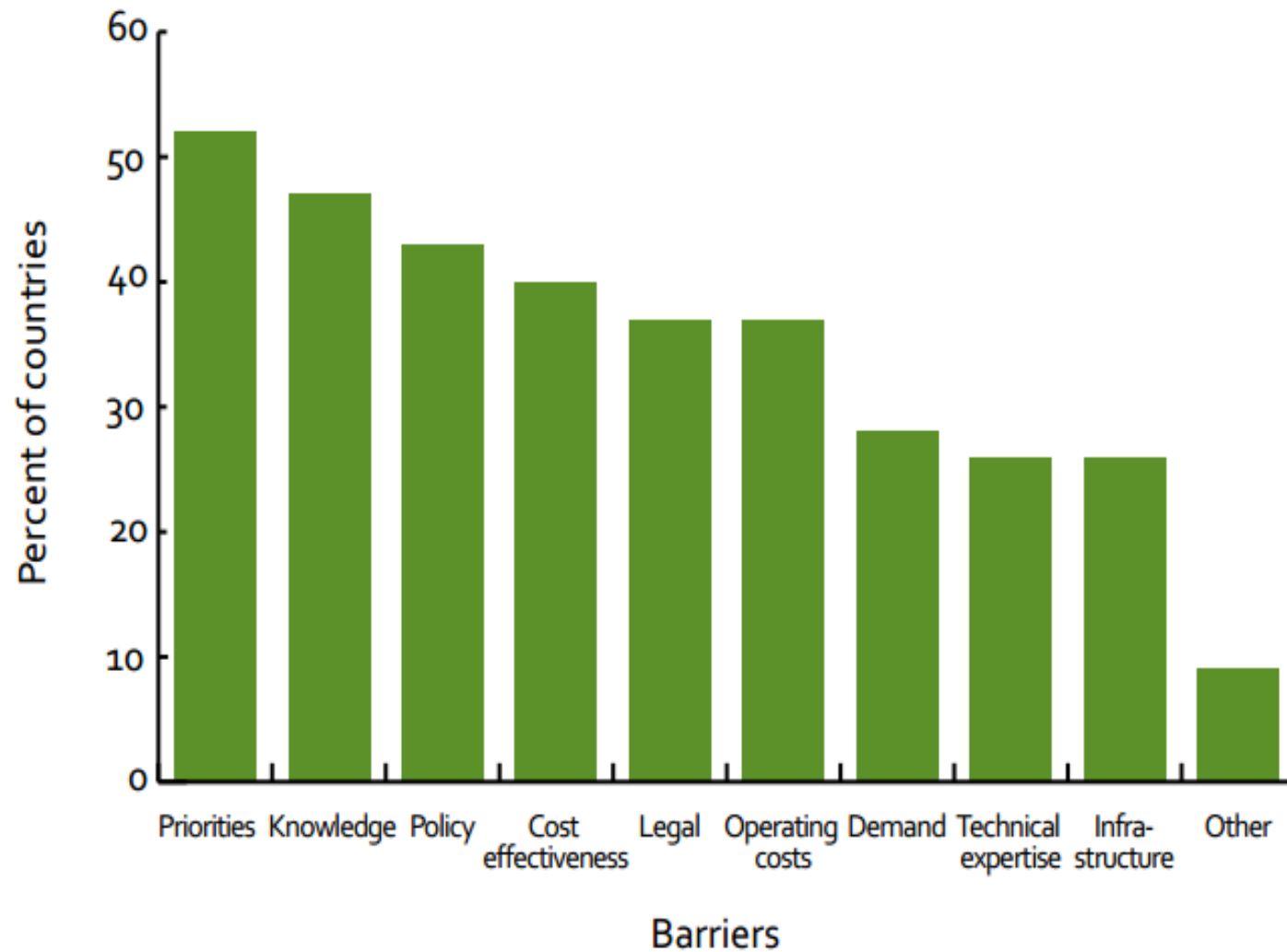


*only 15% of US Doctors speak about wearables & mHealth apps with their Patients*

- But 38% of patients not using wearables would benefit from such devices. (MedPanel, 2015)

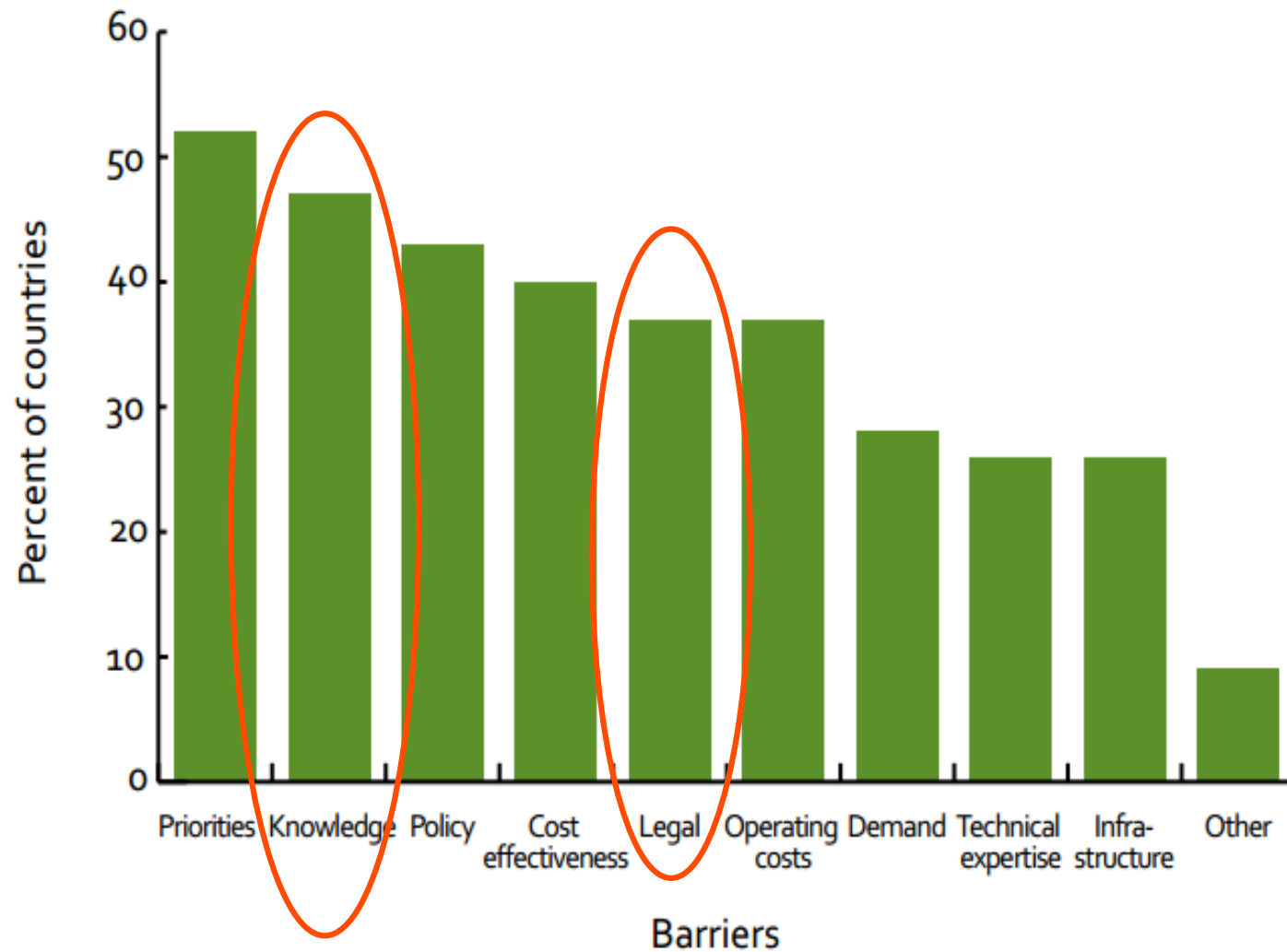


Figure 9. Barriers to mHealth implementation, globally



***Source: (WHO, 2011) mHealth: New Horizons for health technology through mobile devices***

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**Source: (WHO, 2011) mHealth: New Horizons for health technology through mobile devices**





## NEWS

### “Apps” that harm patients will be hunted down, says regulator

Matthew Limb

London

A UK health regulator has issued a warning to makers of mobile medical “apps” that may harm patients.

Neil McGuire, clinical director of devices at the Medicines and Healthcare Products Regulatory Agency (MHRA) said, “Be under no illusion—if you have a medical device and it’s software or an app and patients come to grief, we’re coming looking.”

McGuire spoke at a health technologies seminar in London on 18 March attended by NHS and private sector representatives

their diabetes, said that he saw regulation not as a burden but as a means of “differentiation” between types of devices. He said that wearable technologies encompassed wellness and fitness trackers that may help to promote healthy lifestyles, as well as approved medical devices that took longer and cost far more to bring to market.

Khoory said, “There is a place for both. It is all about the claims, understanding the quality of those devices, the quality of the



IRISH MEDICAL  
ORGANISATION  
Ceardchumann Dochtúirí na hÉireann

# #IMOAGM16

## Motion 31

The IMO calls on the Minister for Health to ensure that medical apps that may be used in clinical practice for the treatment of patients are subject to regulatory control in the same way as medical devices.



# **Evidence-based design is KEY**

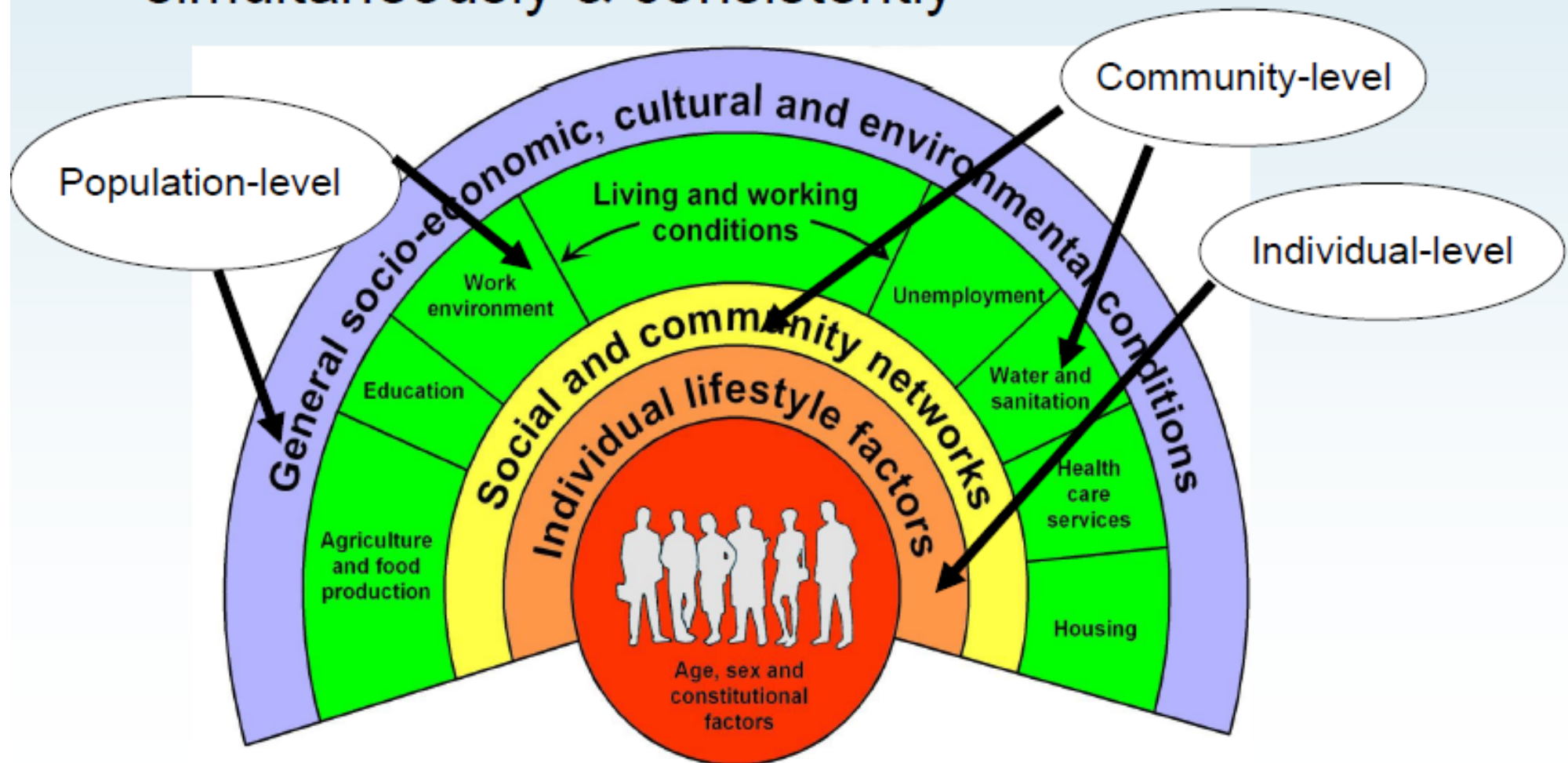




*NICE Guidance for  
Behaviour change at  
population,  
community and  
individual levels  
(2007)*

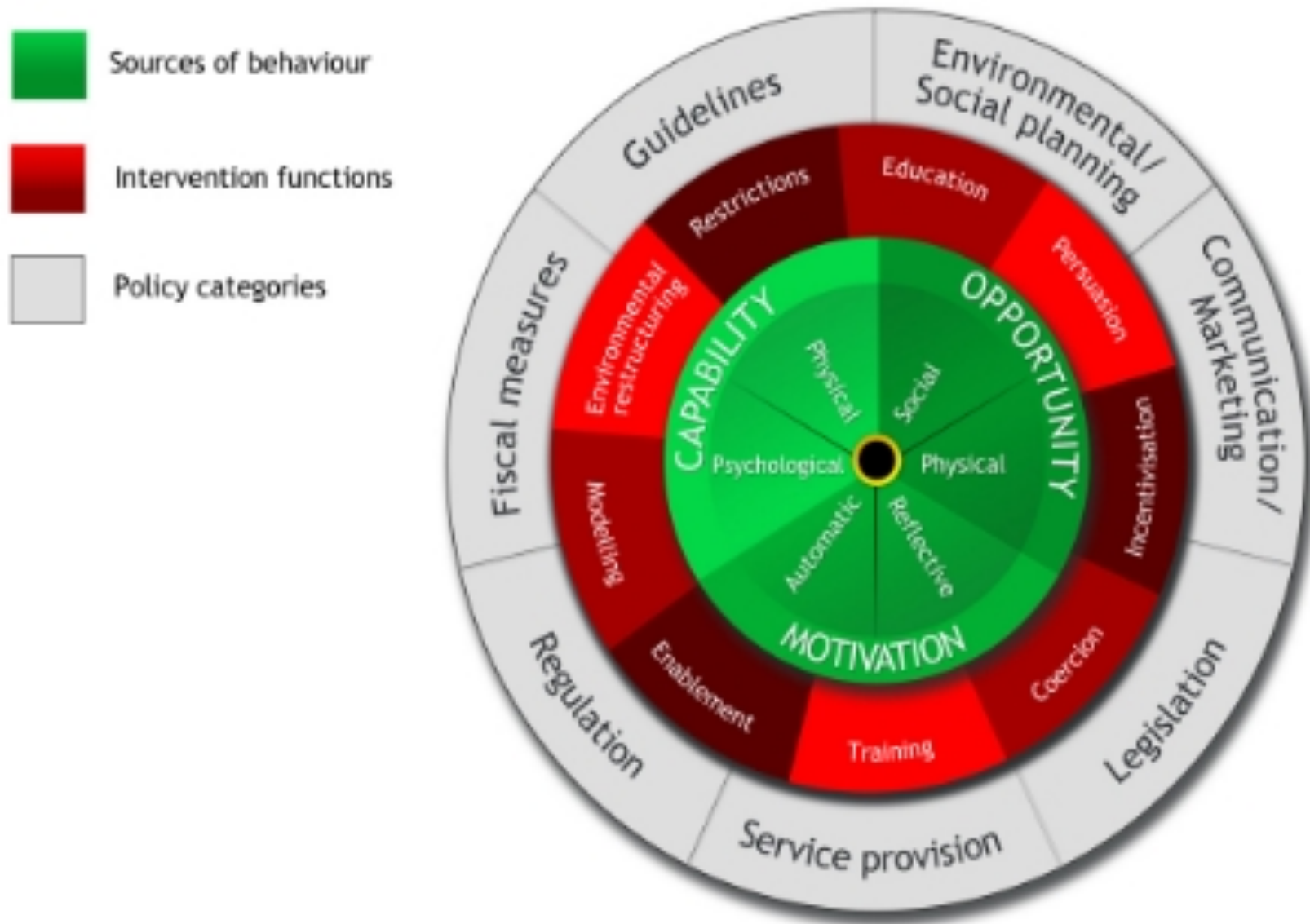
# Changing behaviour

- Intervene at many levels
- simultaneously & consistently



Source: Dahlgren and Whitehead, 1991

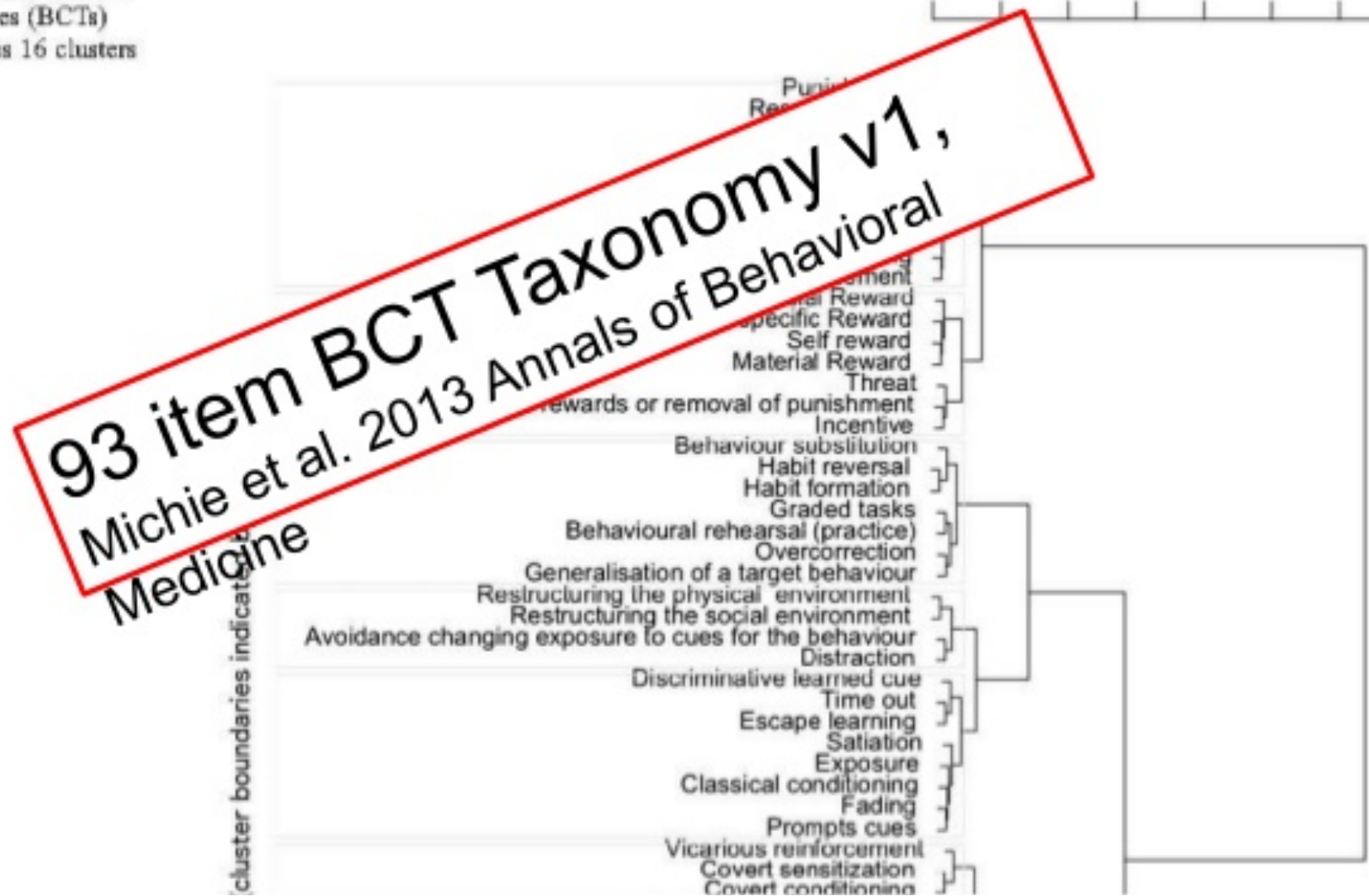
# The Science of Health Behaviour Change



# Behaviour-change techniques taxonomy



Fig. 1 Results of hierarchical cluster analysis (step 6): dendrogram for 85 behavior change techniques (BCTs) partitioned across 16 clusters





# Where is the evidence?



American Journal of Preventive Medicine

Available online 17 November 2015

In Press, Corrected Proof — Note to users



Brief Report

## Behavior Change Techniques in Apps for Medication Adherence: A Content Analysis

Eimear C. Morrissey, MSc  , Teresa K. Corbett, MSc, Jane C. Walsh, PhD, Gerard J. Molloy, PhD

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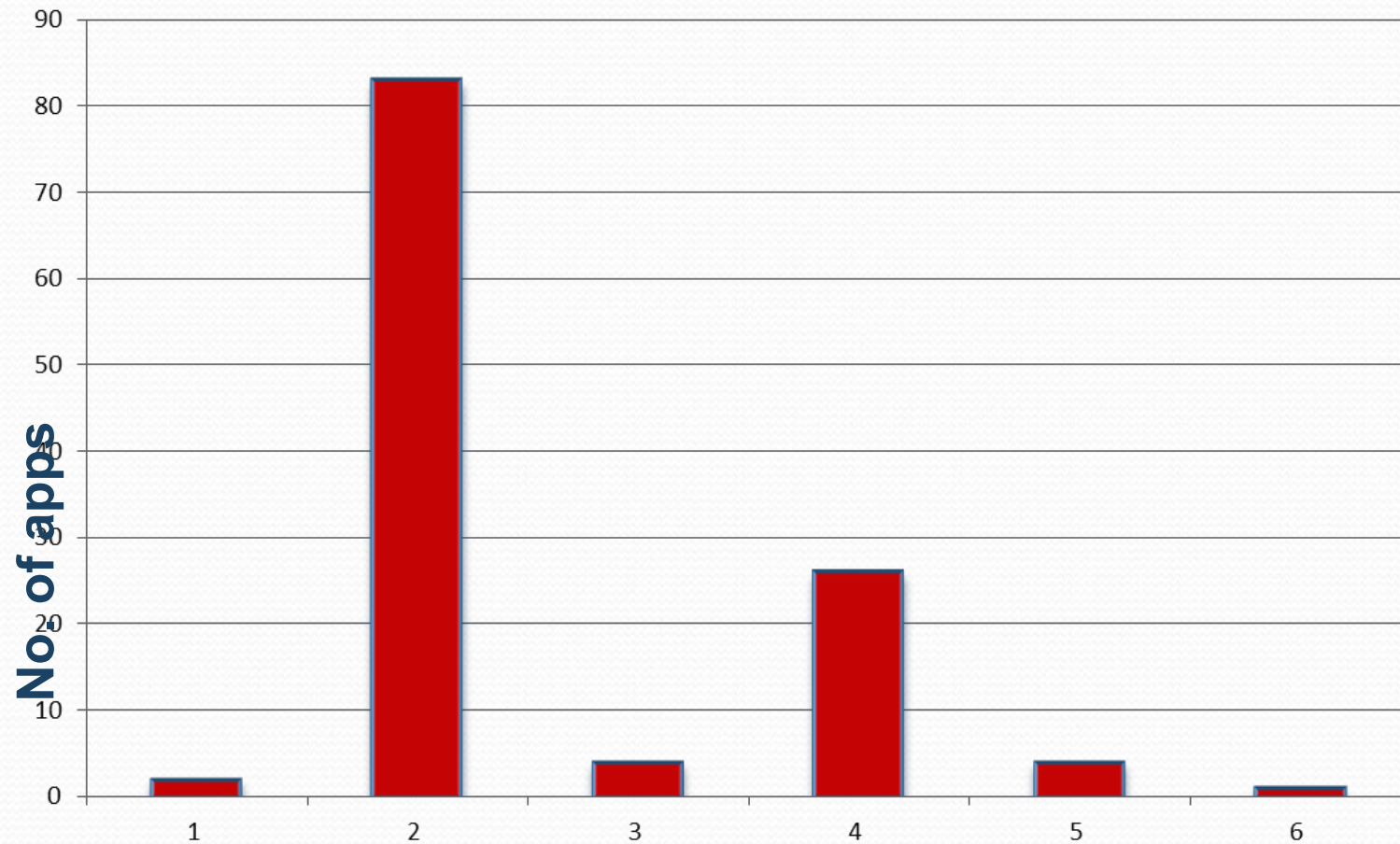
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Lack of evidence base in many apps on the market

## No. of BCTs present in each free app





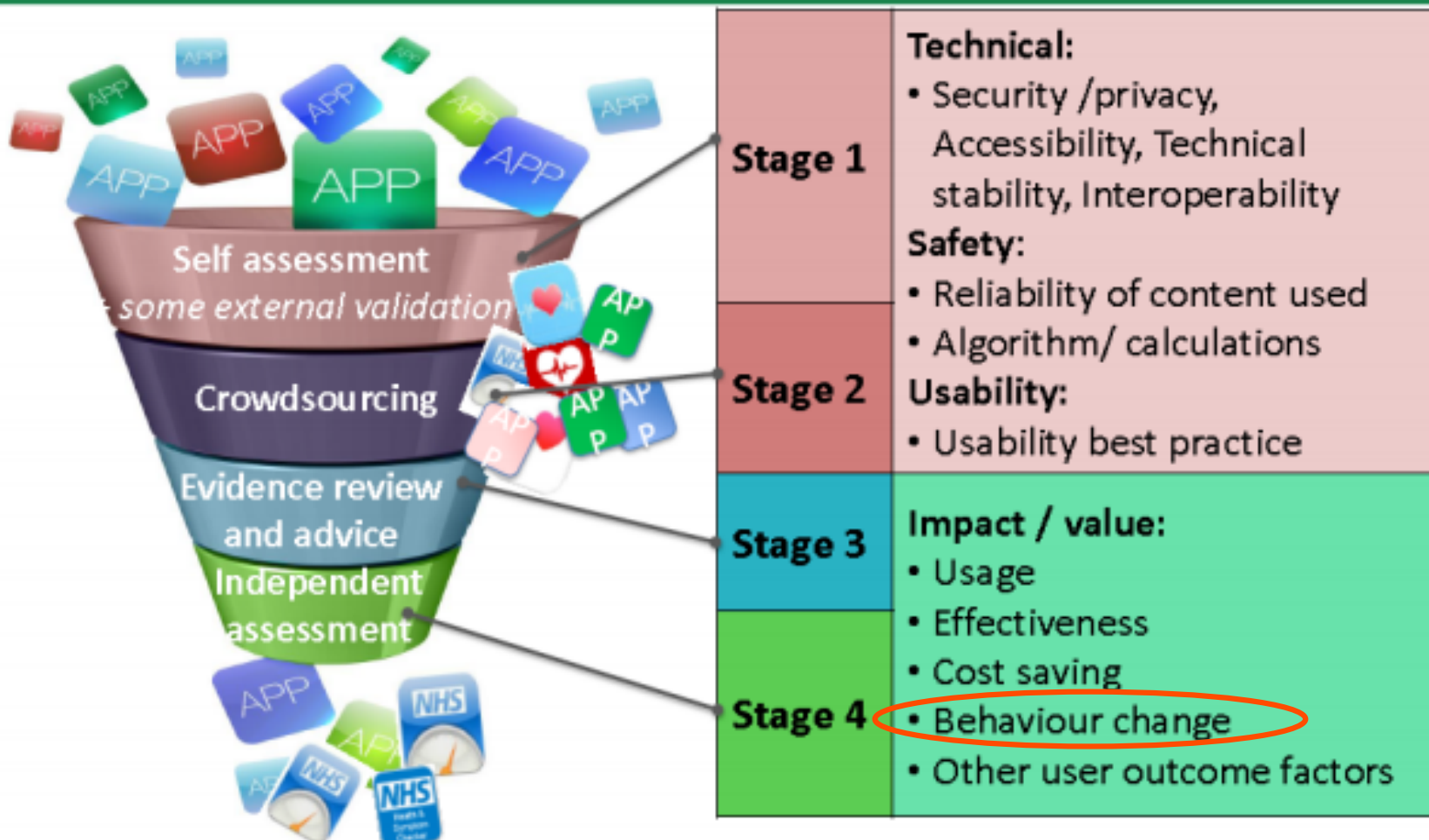


European  
Commission

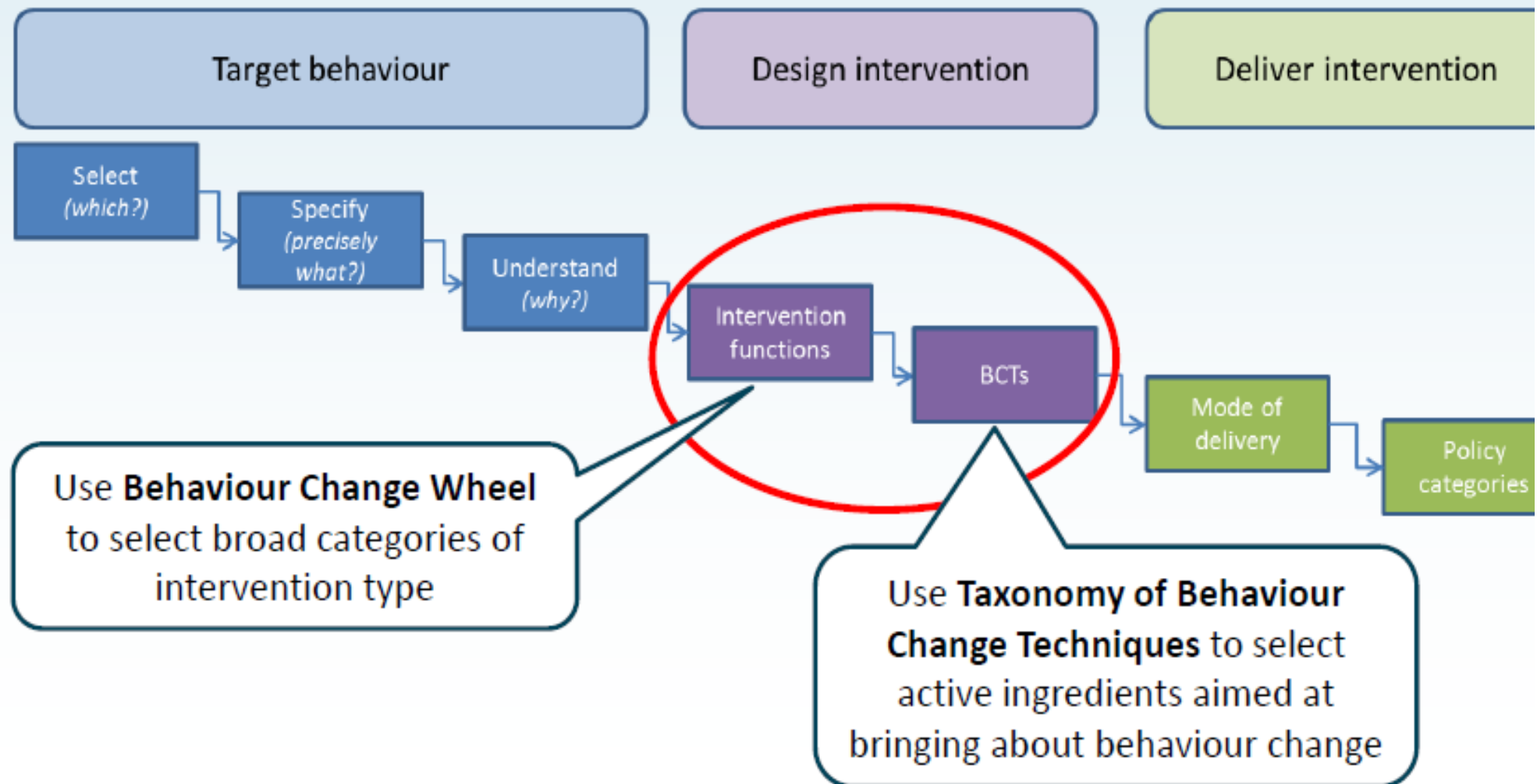
## Draft Guidelines: Assessment of reliability of mobile technology (May 2016)

### Phased assessment

NATIONAL  
INFORMATION  
BOARD



# An approach to developing behaviour change interventions



**Recent Paper!**

JMIR MHEALTH AND UHEALTH

Walsh et al

Original Paper

# An mHealth Intervention Using a Smartphone App to Increase Walking Behavior in Young Adults: A Pilot Study

Jane C Walsh<sup>1\*</sup>, PhD; Teresa Corbett<sup>1\*</sup>, MSc; Michael Hogan<sup>2</sup>, PhD; Jim Duggan<sup>2</sup>, PhD; Abra McNamara<sup>2\*</sup>, BA

<sup>1</sup>mHealth Research Group, School of Psychology, National University of Ireland, Galway, Galway, Ireland

<sup>2</sup>National University of Ireland, Galway, Galway, Ireland

\*these authors contributed equally

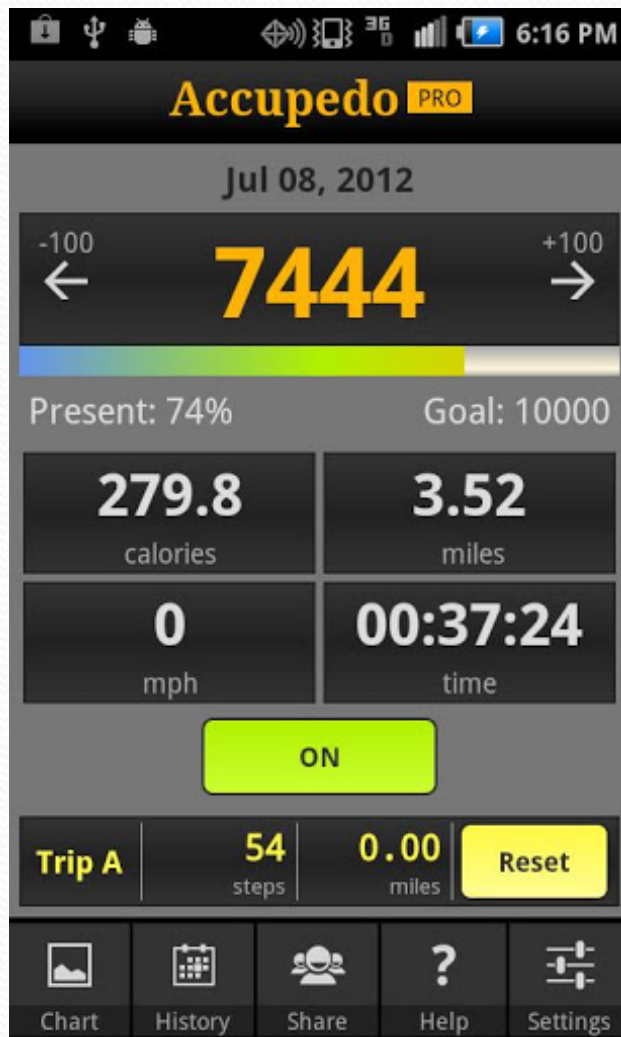
**Corresponding Author:**

Jane C Walsh, PhD

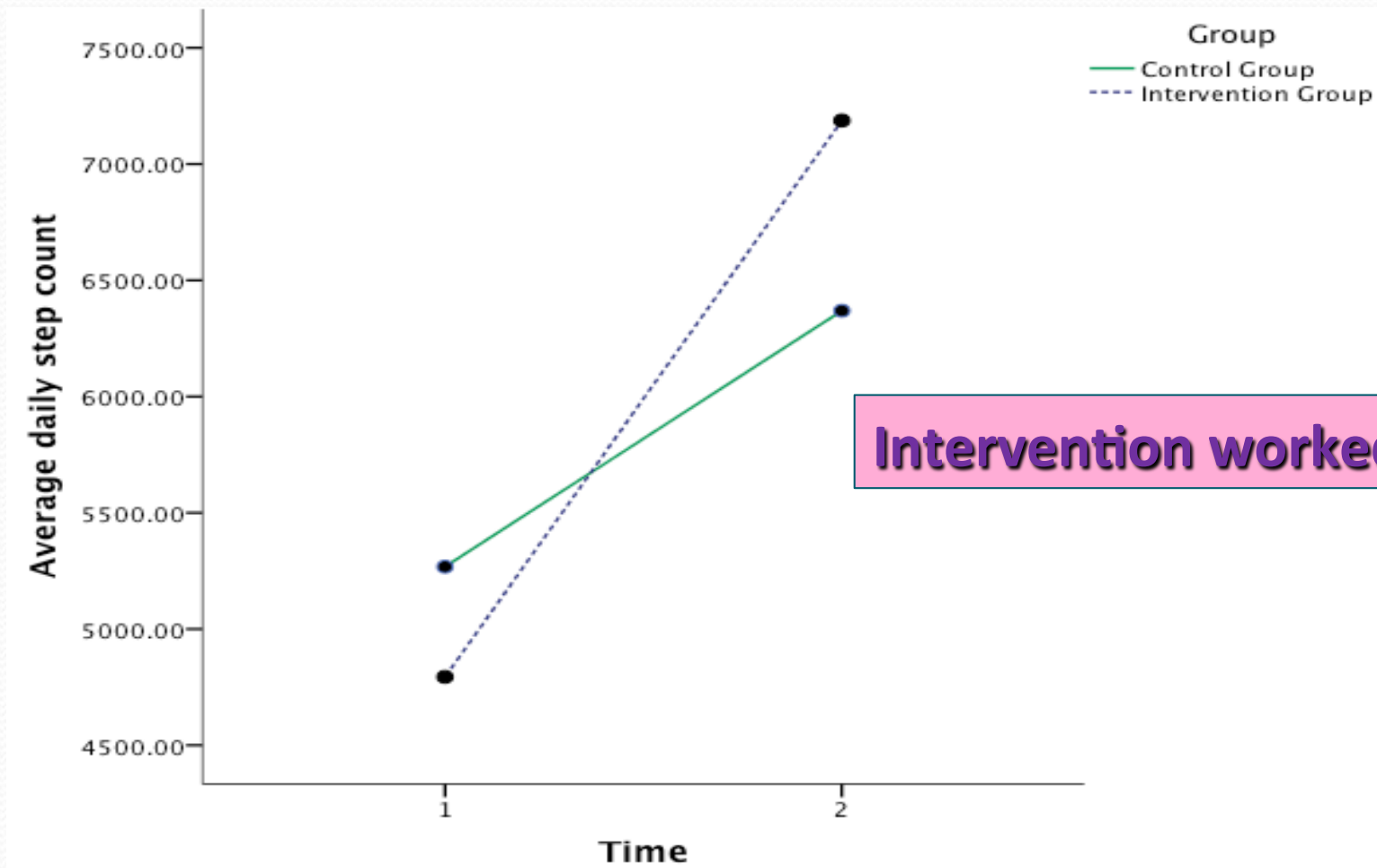




# Accupedo app



# Results



**Intervention worked!**

**Sig. Time x Group interaction ( $F_{(1,53)} = 4.30, p = .043$ )**

**BMC Medicine 2015**

Glynn et al. BMC Family Practice (2015) 16:119  
DOI 10.1186/s12875-015-0333-7

 **BMC**  
Family Practice

**RESEARCH ARTICLE**

**Open Access**



# Patients' views and experiences of technology based self-management tools for the treatment of hypertension in the community: A qualitative study

Liam Glynn<sup>1\*</sup>, Monica Casey<sup>1</sup>, Jane Walsh<sup>2</sup>, Patrick S. Hayes<sup>3</sup>, Richard P. Harte<sup>4</sup> and David Heaney<sup>5</sup>

## Abstract

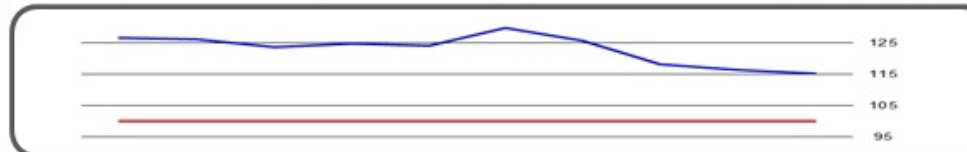
**Background:** Patients with hypertension in the community frequently fail to meet treatment goals. The optimal way to organize and deliver care to hypertensive patients has not been clearly identified. The powerful on-board computing capacity of mobile devices, along with the unique relationship individuals have with newer technologies, suggests that they have the potential to influence behaviour. However, little is known regarding the views and experiences of patients using such technology to self-manage their hypertension and associated lifestyle behaviours. The aim of this study was to explore patients' views and experiences of using technology based self-management tools for the treatment of hypertension in the community.



## My Dashboard

Thursday 22<sup>nd</sup> November

Johnny Murphy



### Exercise Target

Day	Walk Time
M	30 mins
T	30 mins
W	30 mins
T	
F	
S	
S	

### Exercise Progress

3/7

You're doing great!

Log Exercise

Send My  
GP Report

Stress  
Manager

Food  
Slider

### Medication Tracker

M T W T F S S  
v v v v

Secret Salt  
Finder

Useful  
Support

### Motivational Videos

Exercise



Lifestyle



Taking Your  
Medicine



Monitoring  
Your Own BP



Managing  
Stress



Healthy  
Eating



### My BP

M	T	W
120/79	122/79	123/80

Enter Today

## Results

Four key inter-related themes emerged from the analysis :





**There is no one size fits all!**  
**Personalised solutions are key....**





# What is the way forward?



## Research Partnership with Industry



Walsh, J.C. & Corbett, T. (2015). mHealth Research Group NUI Galway: Using mobile technologies for effective health behaviour change. *European Health Psychologist*, 17(4); 193-7.

## **New Horizon 2020 project - innovative personalised nutrition for ageing population €4.2 Million Euro**

- **Industrial Leadership Pillar** - Innovation Action for SMEs.
- Aims to facilitate the development of *innovative ideas* in the field of **personalised nutrition** for the silver population by stimulating innovations in the market.







University of  
**ULSTER**



NUI Galway  
OÉ Gaillimh

## New H2020 project to improve 'smart environment' for patients with Alzheimers **€1.1 Million Euro**





# Quality multidisciplinary research is key...

**Technologist** meets **Psychologist** meets **Doctor** meets  
**Entrepreneur** meets **Economist!**



## *In conclusion*

- mHealth technologies have the potential to have a central role in improving health and wellbeing by:
  - Empowering patients/improving knowledge
  - Facilitating doctor-patient communication
- However selection of 'evidence-based' solutions is key





# Thank you!



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[@DrJaneWalsh](https://twitter.com/DrJaneWalsh)