mHealth for Chronic Disease Management: It Takes More Than an ‘App’

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„Hier Kuschke zur Zeit Ecke Friedrich-Behrensstraße... gut - bon - gemacht - komme sofort!“
The Evolution of Mobile

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- iPhone (2007)
- iPhone OS, iOS
- (1, 2, 3, 4, 5, 6, 7)
The Evolution of Mobile

HTC Dream (2008)
Android v1 (2008)
1, Cupcake, Donut, Éclair, Froyo, Gingerbread, Honeycomb, Ice Cream Sandwich, Jelly Bean, KitKat
The Evolution of Mobile

1G (1979 – 56 Kbit/s)
2G (1991 – 150 Kbit/s)
3G (2001 – 1.4-3.1 Mbit/s)
4G LTE (2009 – 4-22 Mbit/s)
The Evolution of Mobile

App Store

Google Play
iTunes App Store
Windows Store
The Evolution of Mobile

What is mHealth?
Today’s Talk

A Definition of mHealth
mHealth Technology
mHealth Programs
Lessons from the Literature
Current Challenges
World Health Organization

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To date, no standardized definition of mHealth has been established

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Mobile health (mHealth) is [...] the provision of health services and information via mobile technologies such as mobile phones and Personal Digital Assistants (PDAs)
mHealth is the use of mobile and wireless devices to improve health outcomes, healthcare services and health resources.
mHealth Alliance

[...] medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, tablets, personal digital assistants (PDAs), and other wireless devices
The Technology – Hardware

Basic / Feature Phones
Smart Phones
Peripherals
The Technology – Software

App Stores

Application Programming Interfaces
The Technology – Servers

Patient data storage / access
Provider access
The Programs – SMS “Texting”

Educational, encouraging, challenging
Targeting behavioral change
Minimal technological requirements
The Programs – Data Collection

Activity trackers & calorie counters
Medical device interfaces
Electronic logs
The Programs – Support Apps

Extension of data collection
Shares results, informs of non-compliance
Provides information about conditions
The Literature

- mHealth and Pediatric Chronic Conditions (2014)
- A mHealth Application for Chronic Wound Care: Findings of a User Trial (2013)
- A Data Encryption Solution for Mobile Health Apps in Cooperation Environments (2013)
- Comparison of Traditional Versus Mobile App Self-Monitoring of Physical Activity and Dietary Intake Among Overweight Adults Participating in an mHealth Weight Loss Program (2013)
- Contemporary Vascular Smartphone Medical Applications (2013)
- Development and Evaluation of Tools for Measuring the Quality of Experience (QoE) in mHealth Applications (2013)
- Hispanic Migrant Farm Workers’ Attitudes Toward Mobile Phone-Based Mapping mHealth Research: A Decade of Evolution (2013)
- Older Adults are Mobile Too! Identifying the Barriers and Facilitators to Older Adults’ Use of mHealth for Pain Management (2013)
The Literature

- Patient Apps for Improved Healthcare: From Novelty to Mainstream (2013)
- Telehealth for Management of Chronic Health Conditions (2013)
- Understanding Determinants of Consumer Mobile Health Usage Intentions (2013)
- A Mobile Health Intervention for Inner City Patients with Poorly Controlled Diabetes: Proof-of-Concept of the TExT-MED Program (2012)
- Advancing the Science of mHealth (2012)
- Design of an mHealth App for the Self-Management of Adolescent Type 1 Diabetes: A Pilot Study (2012)
- Lessons From a Community-Based mHealth Diabetes Self-Management Program: “It’s Not Just About the Cell Phone” (2012)
- Designing Interventions to Overcome Poor Numeracy and Improve Medication Adherence in Chronic Illness, Including HIV / Aids (2011)
The Lessons – Culture is Key

Target patients with appropriate mHealth app
Meet them where they are
The Lessons – Devices Differ

BYOD, Version 2.0
Patients have very different phones
Form factors and functions vary
The Lessons – No Silver Bullets

You can lead a horse to water ...
The problem of compliance
The Lessons – Build Relationships

Not technology for technology’s sake
Supplement, don’t replace relationships
The Lessons – Quantity != Quality

Need actionable context
Who needs what, and when?
The Challenges – Too Many Apps

Patients are overwhelmed
Providers are overwhelmed
Quality is variable across applications
The Challenges – Certification

What measures do we certify against?
Who determines the necessary measures?
Who ensures the certifying body does it right?
The Challenges – Privacy & Security

[I am not a lawyer]
Who has access to the data?
How is it protected?
The Challenges – Data

Quantity
Interoperability
Workflows
Training
The Challenges – Reimbursement

Who pays for devices?
Connectivity?
Apps?
The Potential

Increase patient compliance
Kick-start data interoperability
Measurably improve patient wellness
The Resources - TTAC

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www.telehealthtechnology.org
The Resources - Other

imedicalapps.com
mobihealthnews.com
IMS Institute for Healthcare Informatics
Any Questions?