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Do definitions of digital health interventions reflect their value?

Digital Health Special Interest Group

Zsombor Zrubka MD, MBA, PhD
HECON - Health Economics Research Center
Óbuda University, Budapest, Hungary

How digital health is defined in systematic reviews?



A collaborative research project by the ISPOR Digital Health SIG members



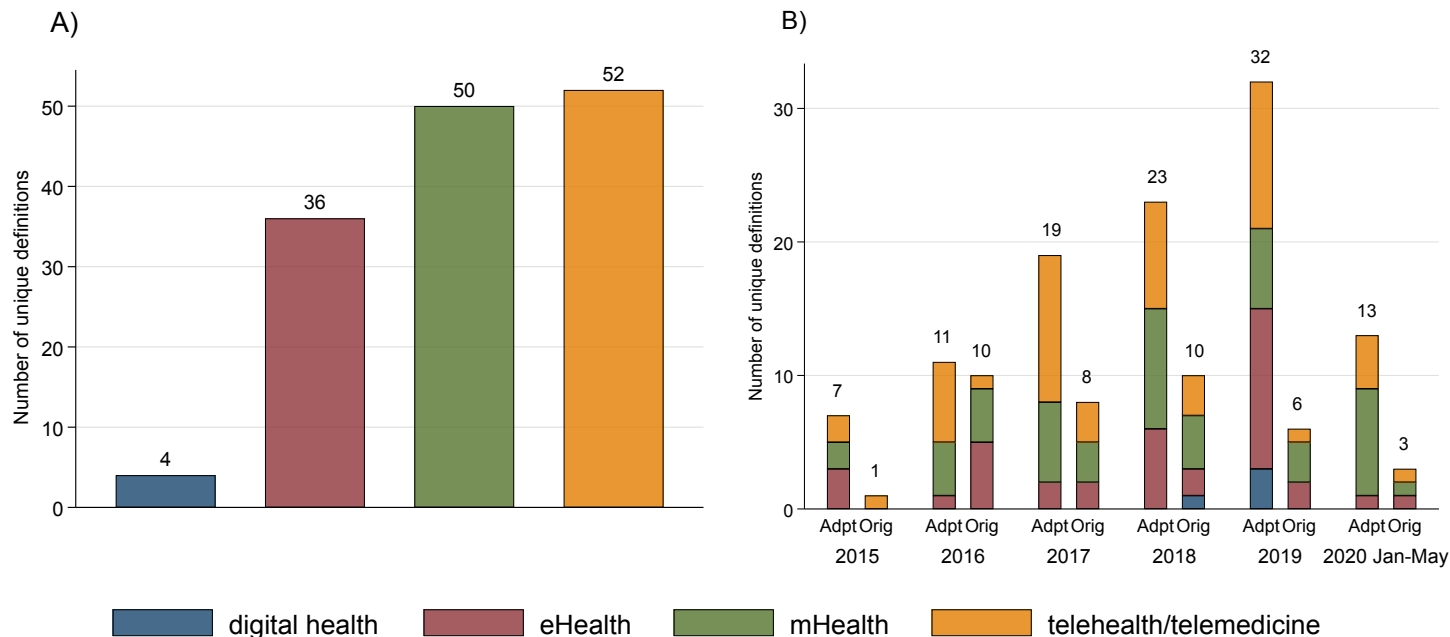
Search in Pubmed, EMBASE,
Cochrane and EconLit

MeSH terms of digital health
AND systematic review AND
synonyms of „definition”

2610 records
545 papers
214 eligible

1st report:
142 definitions of four
umbrella terms in 134 papers

Why are there so many definitions?





digital health

**mHealth**

eHealth



telehealth / telemedicine

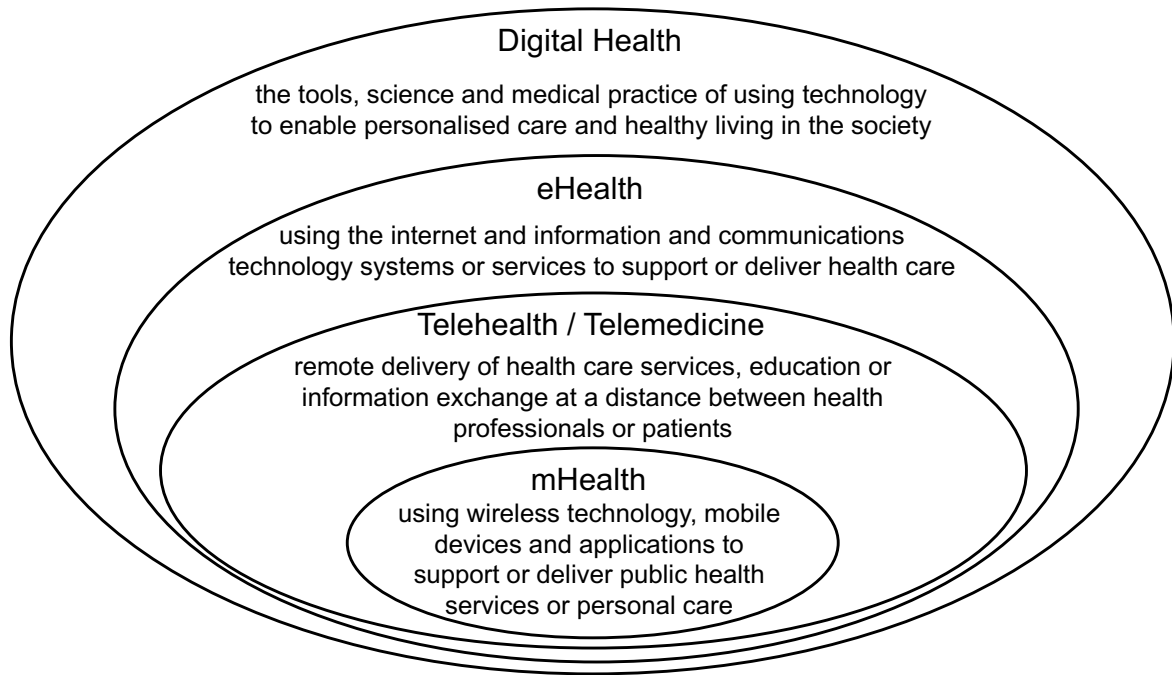


What is unique about these terms?

Still text analytics

merging all definitions by term,
TF/ICF (term frequency inverse
corpus frequency) for each word,
20 words that most set terms apart,
constructing "distilled" definitions

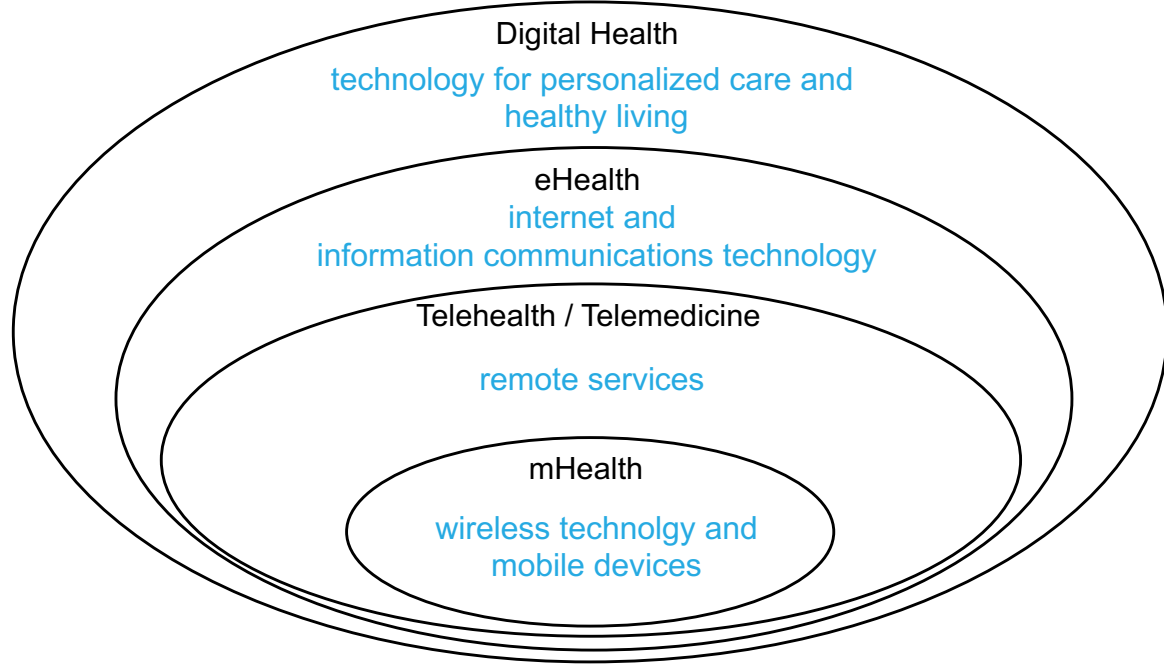
A hierarchy
appears but terms
are still too broad



Common sense

...an interpretative technique

A hierarchy
appears but terms
are still too broad
and overlapping

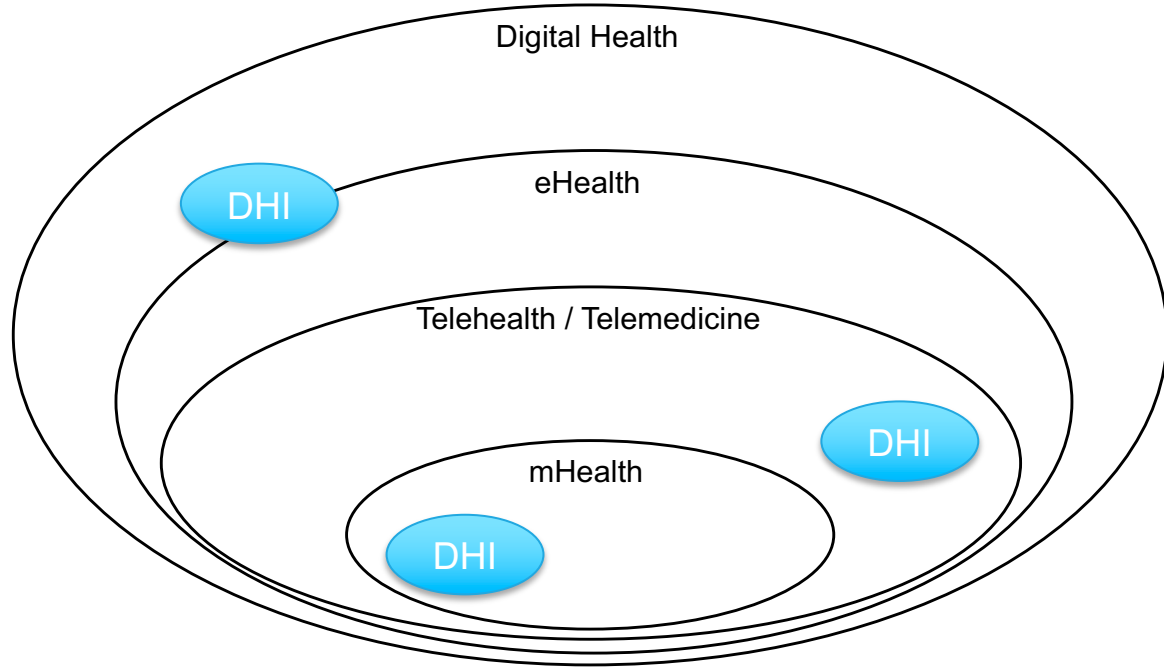


Digital health
interventions need
to be specified in
more detail



Digital Health SIG Project 2

analysing definitions of digital health
related subterms



What do Unique Device Identifiers (UDIs) of medical devices and softwares tell us?

Elements of a GS1 DataMatrix UDI Label

Brand Name — **CompuHyper GlobalMed®**
Ultra Implantable™

GMDN Description — **Fictitious Medical Device**

Device Identifier GTIN — **GTIN 11111111111113**

Production Identifier Lot Number — **LOT AB3887**

For Single Use — **USE BY 2016-09-11**

Labeler Name and Labeler Physical Address — **Manufacturer**
 CompuHyper GlobalMed
 123 Technology Dr
 Somersworth, NH 03075
 800 555 1234 (USA)
 555 555 123 (All others)
 www.chgm.com

Support Contact Information — **MedDev Front UK**
 Somersworth
 2012 100 UK
 www.mdf.co.uk

Production Identifier: Expiration Date — **USE BY 2016-09-11**

Storage and Handling — **KEEP DRY**

Unique Device Identifier (DI & PI) — **(01)11111111111113 (17)160911 (10)AB3887**

Digital health
intervention

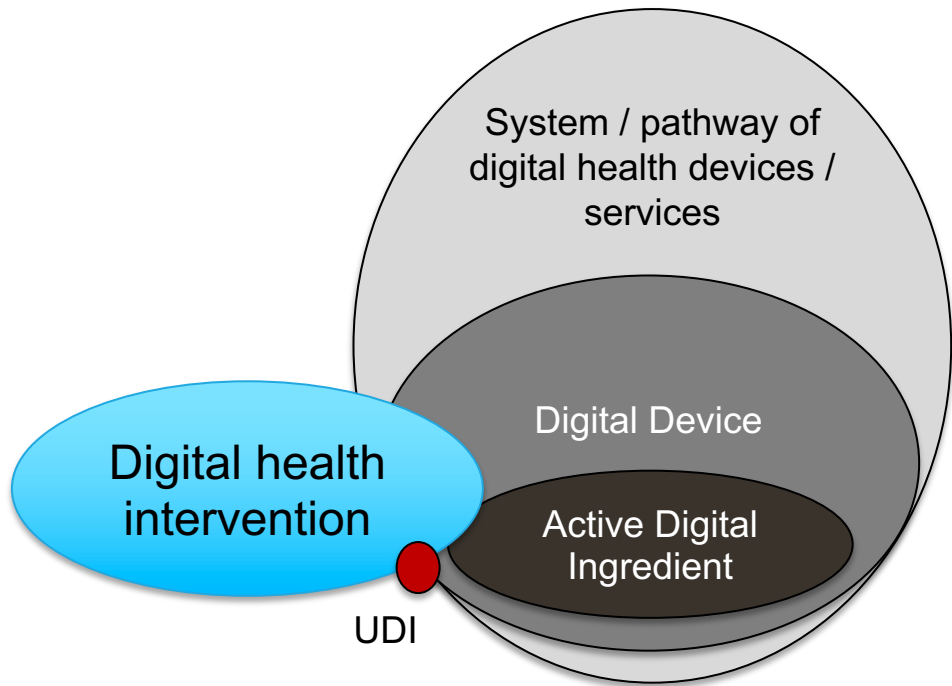
UDI

Information to identify the exact product
item sold / applied in a patient

To reflect their value,
we miss an
important level of
detail from
definitions of digital
health interventions



Informing PICOTS
unanimously



Active Digital Ingredient (ADI): sufficient technical detail and evidence that a digital technology has a specific health effect in a given population, which separates it from its alternatives with a similar effect on the same population

The example of teledermatology



Cochrane Database of Systematic Reviews

Teledermatology for diagnosing skin cancer in adults (Review)

Chuchu N, Dinnes J, Takwoingi Y, Matin RN, Bayliss SE, Davenport C, Moreau JF, Bassett O, Godfrey K, O'Sullivan C, Walter FM, Motley R, Deeks JJ, Williams HC, Cochrane Skin Cancer Diagnostic Test Accuracy Group

The studies were very different from each other in terms of the

- types of suspicious skin cancer lesions and
- the type of teledermatology.

A single reliable estimate of the accuracy of teledermatology could not be made.

Study results were too variable to tell us how many people would be referred unnecessarily for a specialist dermatology appointment following a teledermatology consultation.

The example of digital biomarkers



A scoping review of systematic reviews involving digital biomarkers

Using WHO's classification systems to categorise digital biomarkers

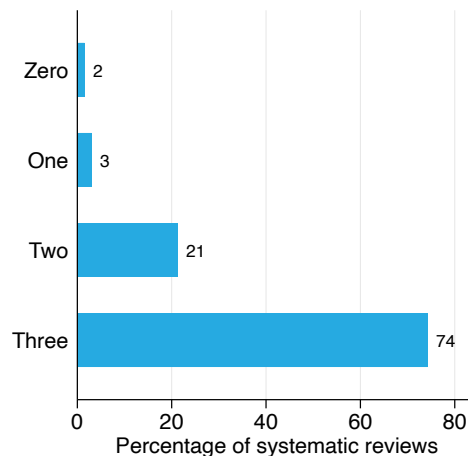
Patients
ICD-11

Intervention
ICHI

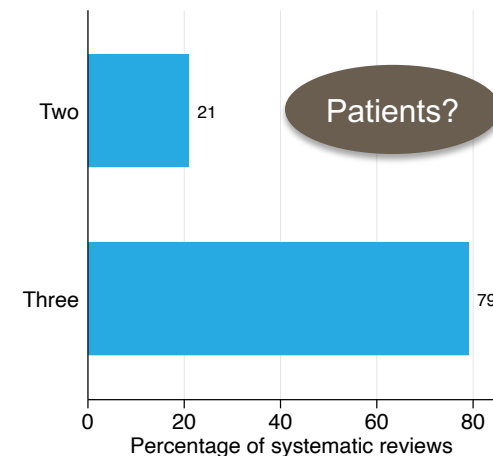
Outcome
ICF

Number of elements specified: Patients, Intervention, Outcome

Any use of digital biomarkers (N=66)



Digital biomarkers as interventions (N=43)

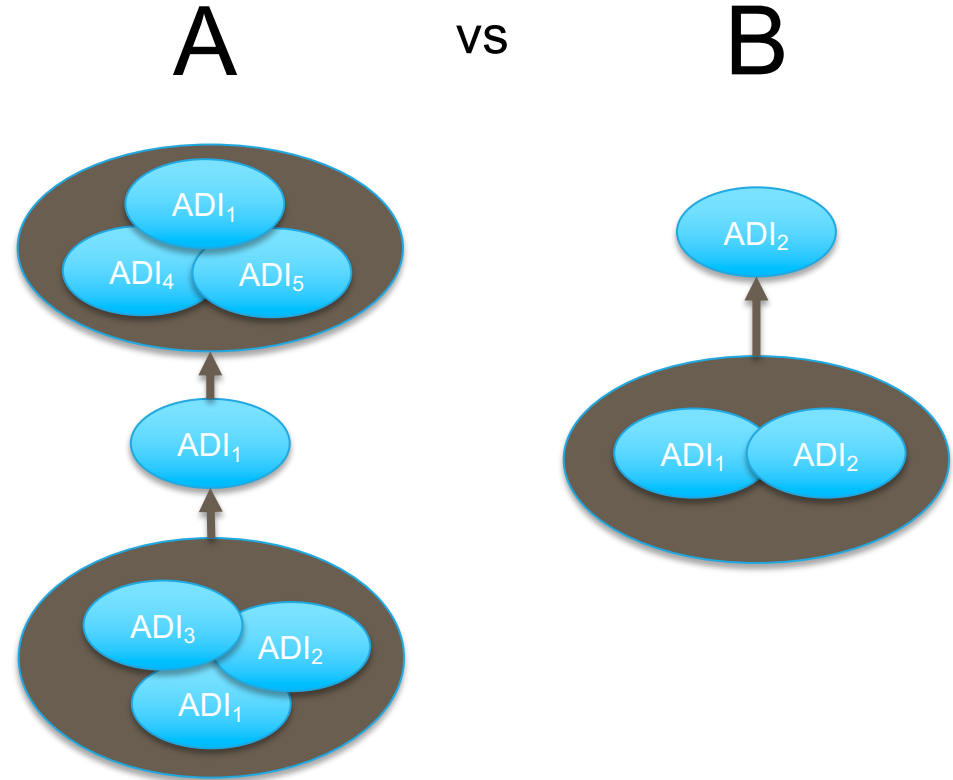


Evaluating patient
pathways



Digital health
ecosystems

Health data
ecosystems



Thank you!

Contact details

e-mail: zrubka.zsombor@uni-obuda.hu

web: <http://uni-obuda.hu/en/hecon-health-economics-research-center>

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Improving healthcare decisions