







Let's get digital:
Implementation science and digital health interventions workshop



Wednesday 7 July 2021
Global Alliance for Chronic Diseases



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Housekeeping

-  The workshop will be **recorded** and will be publicly available after the event (apart from Session 3)
-  To reduce background noises, **please mute yourself** when not asking a question or making a comment
-  When in plenary (large group) **please use the 'raise hand' function** to ask a question or make a comment, or use the chat box
-  **Comfort break** scheduled for half-way through



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Agenda

	Welcome and housekeeping	5 mins
1	Why does digital health matter in low- and middle-income country contexts and what factors influence successful implementation?	15 mins
2	Digital health in real life Split session A: The rules of the game Split session B: GACD experiences of digital interventions – past and present	30 mins
	Return to main room; comfort break	10 mins
3	Digital healthcare and equity	30 mins
4	Ensuring the sustainability and continued equitable uptake of digital health interventions after the grant lifecycle	30 mins
	Close of workshop	

Session 1

Why does digital health matter in low- and middle-income country contexts and what factors influence successful implementation?

Speaker: Josefien van Olmen



GACD - Implementation science and digital health care interventions workshop
7 July 2021

 Department of Primary & Interdisciplinary Care Antwerp
University of Antwerp

Prof. Dr. Josefien van Olmen

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Let's go digital?

The relevance and implementation of digital health
in LMICs

 Department of Primary & Interdisciplinary Care Antwerp
University of Antwerp

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Wellcome Open Research Wellcome Open Research 2020. 5:7 Last updated: 22 APR 2020




RESEARCH ARTICLE

REVISED **Implementation barriers for mHealth for non-communicable diseases management in low and middle income countries: a scoping review and field-based views from implementers [version 2; peer review: 2 approved]**

Previously titled: Implementation barriers for mHealth for non-communicable diseases prevention and management in low and middle income countries: a scoping review and field-based views from implementers

Josefien van Olmen ^{1,2}, Erica Erwin ^{3,4}, Ana Cristina García-Ulloa ⁵, Bruno Meessen⁶, J. Jaime Miranda ^{7,8}, Kirsty Bobrow^{9,10}, Juliet Iwelunmore¹¹, Ucheoma Nwaozuru¹¹, Chisom Obiezu Umeh¹², Carter Smith¹³, Chris Harding ¹⁴, Pratap Kumar¹⁵, Clicerio Gonzales⁵, Sergio Hernández-Jiménez ⁵, Karen Yeates^{12,16}




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Relevance of digital health (for NCD) in LMICs

Delivery models for interventions include digital channels

- websites
- mobile phones



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Digital ecosystems

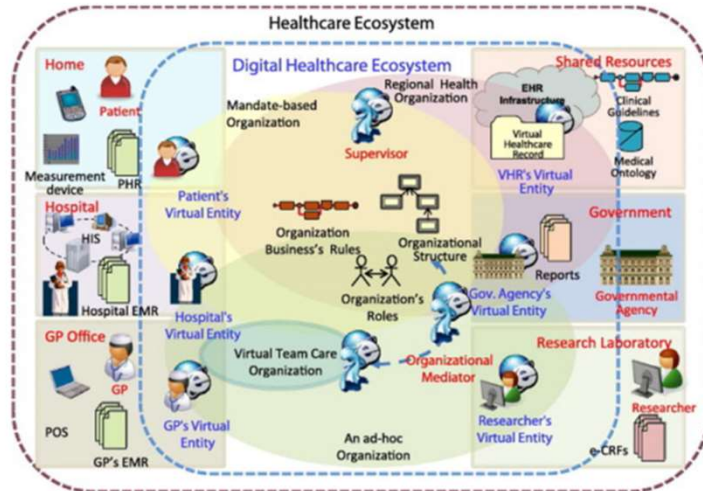
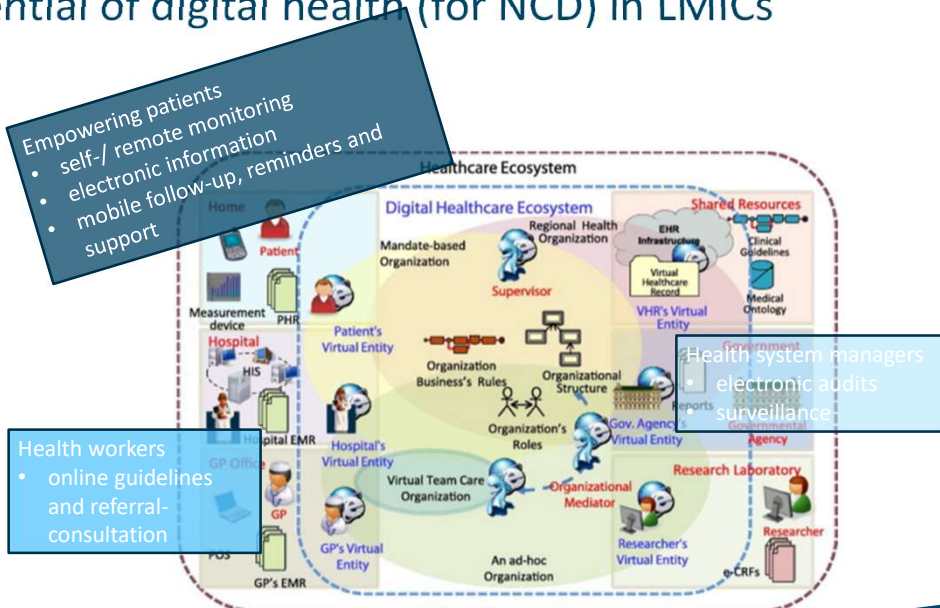


Fig. 4. Components of Digital Health Eco-Systems.
Source: Serbanati et al., 2011, p 631.



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Potential of digital health (for NCD) in LMICs



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Type of interventions – field based

	self-management	lifestyle information & health promotion	quality of care	health system barriers
Systematic Medical Assessment, Referral and Treatment for Diabetes care in China using Lay Family Health Promoters - SMART Diabetes	X	X	X	X
Evaluation of a pilot project to prevent diabetes in the workplace using information technology			X	
Development of an interactive social network for metabolic control of patients with diabetes	X			
Development and validation of a software to facilitate medical treatment of the patient with type 2 diabetes	X			X
SMS supporting treatment for people with type 2 diabetes	X	X		X
The Bangladesh D-Magic Project		X		
Implementation of foot thermometry and SMS to prevent diabetic foot ulcer	X	X	X	
CommCare		X		
Guidelines Adherence in Slums Project				
Mind Tale	X			
ConnectMed Kenya				X



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Implementation issues: mHealth evidence reporting and assessment (mERA) checklist

Criteria	Item no	Notes
Infrastructure (population level)	1	Clearly presents the availability of infrastructure to support technology operations in the study location. This refers to physical infrastructure such as electricity, access to power, connectivity etc. in the local context. Reporting X% network coverage rate in the country is insufficient if the study is not being conducted at the country level
Technology/platform	2	Describes and provides justification for the technology architecture. This includes a description of software and hardware and details of any modifications made to publicly available software
Interoperability/ Health information systems (HIS) context	3	Describes how mHealth intervention can integrate into existing health information systems. Refers to whether the potential of technical and structural integration into existing HIS or programme has been described irrespective of whether such integration has been achieved by the existing system
Intervention delivery	4	The delivery of the mHealth intervention is clearly described. This should include frequency of mobile communication, mode of delivery of intervention (that is, SMS, face to face, interactive voice response), timing and duration over which delivery occurred
Intervention content	5	Details of the content of the intervention are described. Source and any modifications of the intervention content is described
Usability/content testing	6	Describe formative research and/or content and/or usability testing with target group(s) clearly identified, as appropriate
User feedback	7	Describes user feedback about the intervention or user satisfaction with the intervention. User feedback could include user opinions about content or user interface, their perceptions about usability, access, connectivity, etc
Access of individual participants	8	Mentions barriers or facilitators to the adoption of the intervention among study participants. Relates to individual-level structural, economic and social barriers or facilitators to access such as affordability, and other factors that may limit a user's ability to adopt the intervention
Cost assessment	9	Presents basic costs assessment of the mHealth intervention from varying perspectives. This criterion broadly refers to the reporting of some cost considerations for the mHealth intervention in lieu of a full economic analysis. If a formal economic evaluation has been undertaken, it should be mentioned with appropriate references. Separate reporting criterion are available to guide economic reporting
Adoption inputs/ programme entry	10	Describes how people are informed about the programme including training, if relevant. Includes description of promotional activities and/or training required to implement the mHealth solution among the user population of interest
Limitations for delivery at scale	11	Clearly presents mHealth solution limitations for delivery at scale
Contextual adaptability	12	Describes the adaptation, or not, of the solution to a different language, different population or context. Any tailoring or modification of the intervention that resulted from pilot testing/usability assessment is described
Replicability	13	Detailed intervention to support replicability. Clearly presents the source code/screenshots/ flowcharts of the algorithms or examples of messages to support replicability of the mHealth solution in another setting
Data security	14	Describes the data security procedures/ confidentiality protocols
Compliance with national guidelines or regulatory statutes	15	Mechanism used to assure that content or other guidance/information provided by the intervention is in alignment with existing national/regulatory guidelines and is described
Fidelity of the intervention	16	Was the intervention delivered as planned? Describe the strategies employed to assess the fidelity of the intervention. This may include assessment of participant engagement, use of backend data to track message delivery and other technological challenges in the delivery of the intervention



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Reporting of implementation in studies

	Pakistan	India	Tiber, China, India	Iraq	Pakistan	Russia	Iran	Tanzania	Iran	Mexico	Malaysia	Iran	Bangladesh	DR Congo, Cambodia, Philippines	Jordan	Turkey
Infrastructure								X		X	X	X	X	X		
Technology/Platform							X	X	X	X	X	X	X	X		
Interoperability						X				X			X	X		
Intervention Delivery	X	X	X	X	X		X	X	X	X	X		X	X		
Intervention Content	X		X	X	X		X				X	X	X	X		
Usability/Content Testing							X	X	X	X		X	X	X		
User Feedback								X		X				X		
Access of Individual Participants										X	X		X	X		
Cost Assessment									X				X			
Adoption Inputs and Program Inputs											X			X		
Limitations for Delivery at Scale			X		X								X	X		

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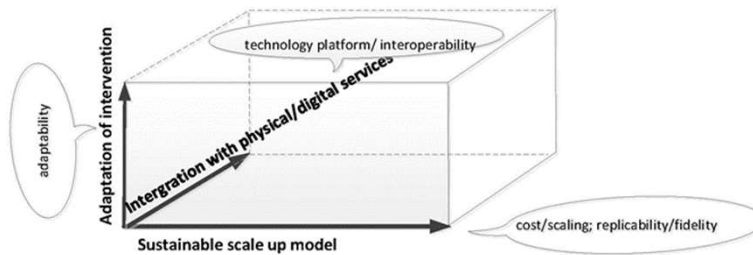
Effective implementation strategies

- ongoing engagement with patients
- adaption in delivery channels:
 - voice messages

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Decision domains for scale-up

1. Reviewing the need for adaptation of the intervention
2. Integrating the mHealth intervention with other digital systems and with the physical health care process
3. Designing sustainable scale-up models



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Criteria for decision-making about scale-up strategies

Decision criteria to scale-up NCD interventions

Socio-economic & cultural context: Behavioural norms, inequalities, gender roles

Resources & organisation health system: treatment, self-management support, patient records, quality & access to care

Actors involved in intervention: Patients, caregivers, intervention manager, health workers, pharmacies

Objective of intervention: Education, self-management, quality of care, access to treatment, follow-up

End user: age, literacy, impairments, expectations, fin means

security/legal issues

access/entry

infrastructure

intervention delivery/content

usability/user view



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Statements for discussion

- Impact of m health in LMIC: Modest and variable: Implementation strategies are the missing link
- Expectations of target population about the intervention affect the uptake
- Supply driven versus demand-generation interventions



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Session 2

Digital health in real life

Two parallel sessions

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Digital health in real life

Split session A



The rules of the game

Two presentations,
with audience Q&A

Speakers: D Praveen
& Marieke Hoevenaar-Blom
Facilitator: Alyssa Chase-Vilchez

Split session B



GACD experiences, past and present

Four lightning round presentations,
with audience discussion

Speakers: Abdul Kuddus, Jill Murphy,
Raymond Lam & Maike Greve
Facilitator: Izzy Bandurek

Split Session 2A

Digital health in real life: The rules of the game

Speakers: D Praveen & Marieke Hoevenaar-Blom
Facilitator: Alyssa Chase-Vilchez

D Praveen



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Considerations for successful digital interventions



07 July 2021

Dr D Praveen
Program Head – Primary Health Care Research
George Institute for Global Health, India
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mHealth

- mHealth??
- World Health Organisation - "Mobile Health (mHealth) is an area of electronic health (eHealth) and it is the provision of health services and information via mobile technologies such as mobile phones and Personal Digital Assistants (PDAs)."
- National Institute of Health - "the use of mobile and wireless devices to improve health outcomes, healthcare services, and health research."
- The mHealth Alliance - "mHealth stands for mobile-based or mobile-enhanced solutions that deliver health."



mHealth

- mHealth – utilisation of
 - Voice communication
 - Short messaging services (SMS)
 - Multimedia messaging services (MMS)
 - Interactive voice response (IVR)
 - Global Positioning System (GPS)
 - Mobile web (WAP/GPRS)
 - Audio/video playback facility
 - Bluetooth technology



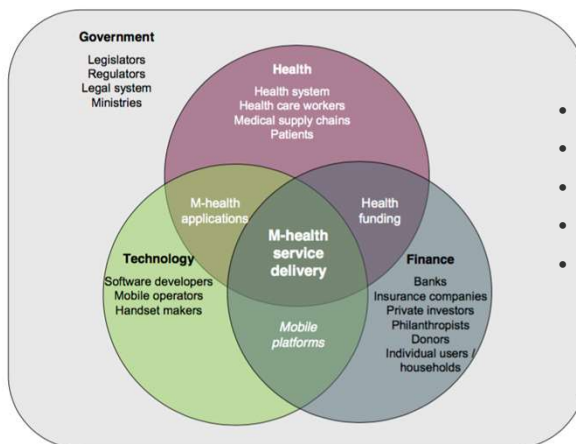
mHealth is multidimensional



Labrique 2013 Global Health Sci Pract



mHealth ecosystem



- Consumer literacy
- Health worker literacy
- Medical training institutions
- Retention of health staff
- Complementary mServices

Source: Dalberg research and analysis



Technical aspects for consideration

1. Technology and channels
2. Assessment of available options
3. Establishing processes for procurement
4. Developing and accessing dashboards
5. Partnership with telecoms operators, aggregators and operators
6. Privacy and data security
7. Planning for technology pre-testing and scale-up



A handbook on how to implement mHypertension. Geneva: World Health Organization and International Telecommunication Union, 2020. Licence: CC BY-NC-SA 3.0 IGO.



In addition, other technical aspects:

1. Involvement of key stakeholders

- Ministry of health
- Telecom ministry
- Telecom regulatory authority
- mHealth service providers
- Telecoms operators
- Local aggregator
- Data privacy commission
- WHO and ITU

A handbook on how to implement mHypertension. Geneva: World Health Organization and International Telecommunication Union, 2020. Licence: CC BY-NC-SA 3.0 IGO.



In addition, other technical aspects:

2. Consideration of the technology options in terms of

- Capacity
- Cost-effectiveness
- Reach
- Ease of integration
- Ease of use

3. Flexibility

4. Ensuring free access

5. Sustainability

6. Evidence based

7. Literacy and training

8. Contractual agreements

Thank you...

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Marieke Hoevenaar-Blom



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 779238
National Key R&D Programme of China (2017YFE0118800)



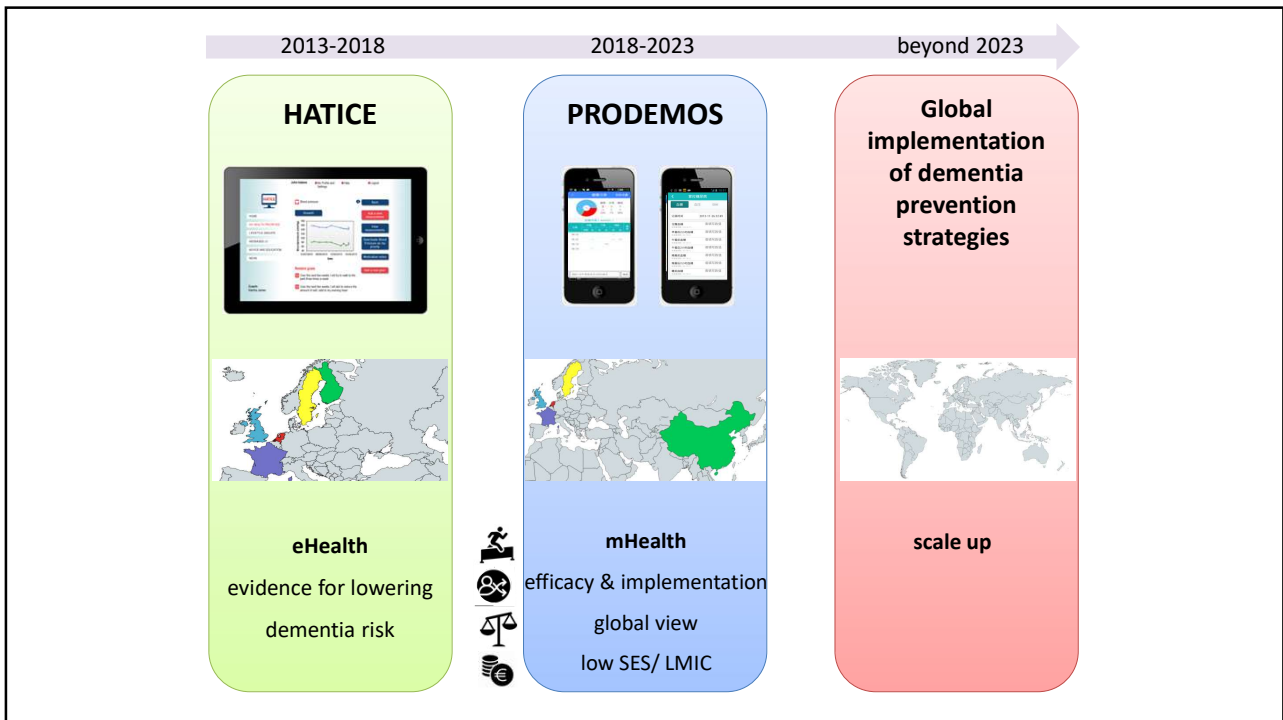
**Prevention of Dementia using
Mobile phone Applications**

China – EU partnership for mHealth intervention

GACD
07-07-2021

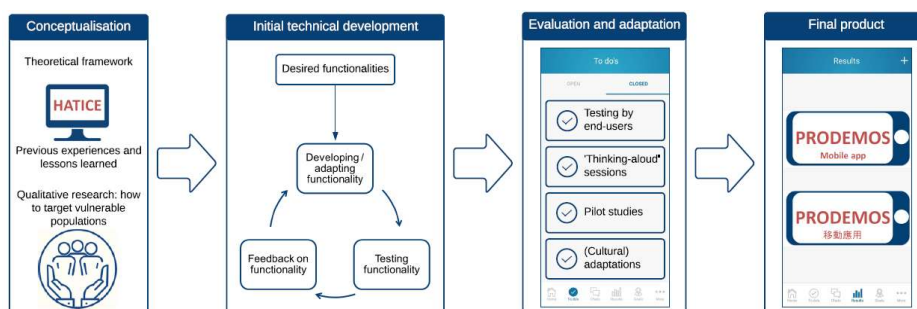


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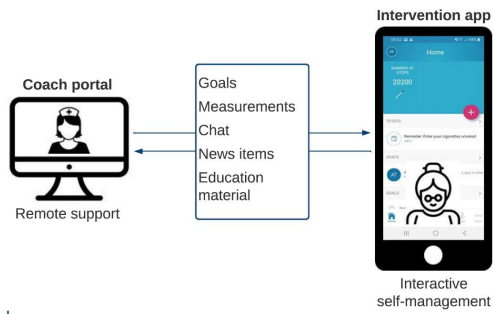
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Platform and app: development



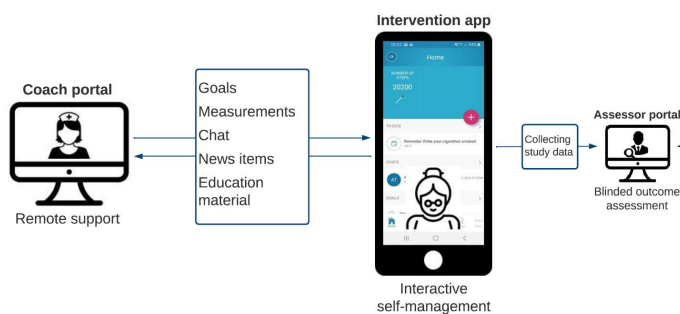
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The platform and app: overview



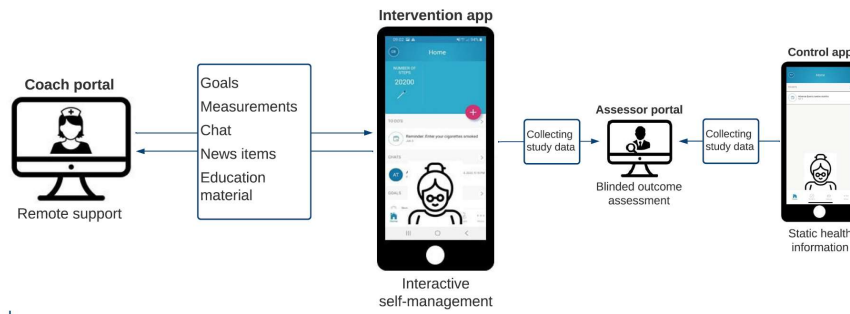
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The platform and app: overview



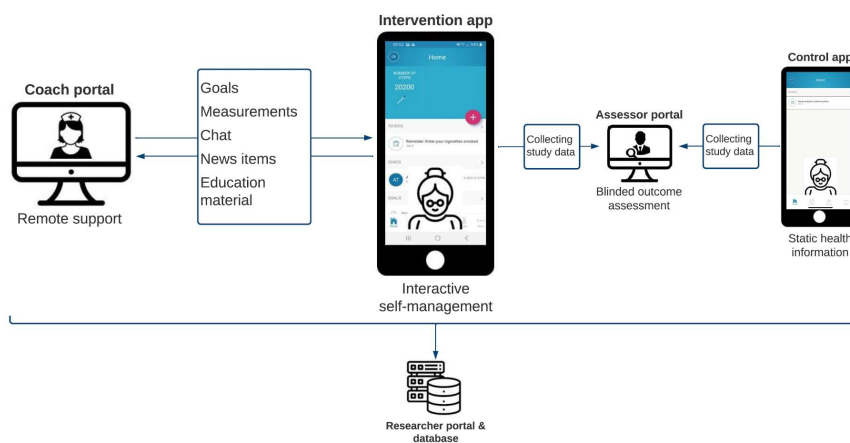
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The platform and app: overview



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The platform and app: overview



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Chinese platform and app: plan

1. Dutch company builds platform and app in English
2. Translate to Chinese language
3. Adapt to Chinese culture
4. Data centrally saved by Dutch hosting party
5. Ready to use! 😊



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But when all was almost finished...

- Chinese law: hosting of data from Chinese participants...
 - in mainland China
 - by a company that is Chinese
- Dutch company that developed the app and platform:
 - protect intellectual property
- **Solution:** rebuilding and hosting the app and platform by a company within China

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Data traffic

- Data collected in mainland China -> analyzed in the Netherlands (EU country)
- Ethical and privacy regulations in both China and EU complicate data sharing
- **Solution:** by anonymizing the data, it does not fall under privacy regulations anymore

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Advice

- Make beforehand a plan for hosting and data sharing
 - Discuss this thoroughly and in detail with all your partners
 - Don't assume it will work out by itself
 - It will... but takes up a lot of time and effort

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Current status

- We have an European and Chinese platform and app
- Anonymised data can be freely shared amongst partners if needed
- Pilot was success
- Full trial started
- Expected results: second half of 2023

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Split Session 2B

Digital health in real life: GACD experiences, past and present

Speakers: Abdul Kuddus, Jill Murphy, Raymond Lam & Maike Greve

Facilitator: Izzy Bandurek

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Abdul Kuddus



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Learning from a diabetes mHealth intervention in rural Bangladesh: what worked, what did not and what next?

- The mHealth intervention was evaluated as part of the DMagic three-arm cRCT
- We used mixed methods to describe the implementation of the intervention
- Trial results showed that mHealth had large, significant impacts on population knowledge and awareness of T2DM and how to prevent it
- But no effect on the occurrence of intermediate hyperglycaemia and T2DM in the population

Speaker: Abdul Kuddus

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The interventions-mHealth voice messages

- mHealth messages were available free of charge to anyone with access to a mobile phone in the intervention areas.
- 120 messages were sent in total
- Initially there were 9381 recipients, and this dropped slightly to 8980 at the end of the intervention
- We sent two one-minute messages every week on Fridays and Mondays between 8-8.30 pm
- An automated system detected if the message was not received the first time, and it was re-sent on Saturday and Tuesday
- Messages included information on signs, symptoms, prevention, and care for T2DM, and provided examples of strategies to reduce the risk of T2DM and its complications



Speaker: Abdul Kuddus

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Challenges:

- High frequency of mobile phone number changes
- Message fatigue
- Persistent social norms, habits and desires made behaviour change challenging


Conclusions:

Exposure to and engagement with messages can be optimised by


- 1) sending identifiable messages from a trusted source
- 2) increasing population participation in the design of mHealth interventions
- 3) mHealth messaging should be implemented as part of a multi-component multi-sectoral approach

Speaker: Abdul Kuddus

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Jill Murphy


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Technology and Equitable Access for Mental Health in a Post-COVID Asia Pacific (TEAM-CAP)

GACD Digital Health Workshop. July 7th 2021
Session 2b 'GACD Experiences, Past and Present'
Dr. Jill Murphy, University of British Columbia



 **Speaker: Jill Murphy**

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Challenge and Approach

-  Rapid shift to use e-mental health approaches
-  Risk of exclusion by at-risk populations
-  Consultation and survey with diverse stakeholders
-  Dissemination of best-practice recommendations

Speaker: Jill Murphy

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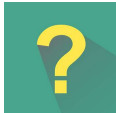
Preliminary findings

-  Priority at-risk populations
-  Barriers in access to digital mental health care
-  Barriers in delivery of digital mental health care
-  Necessary resources and actions

Speaker: Jill Murphy

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Reflections and research implications


-  Consider equity in digital health research
-  Engage diverse stakeholders, including service users
-  Consider all aspects of accessibility
-  Research challenge: digital data collection and bias

Speaker: Jill Murphy

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THANK YOU

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Speaker: Jill Murphy


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Ray Lam

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Enhanced Measurement-Based care Effectiveness in Depression EMBED: A Canada-China Implementation Project





PIs: Raymond Lam and Jun Chen

Aims

- Identify barriers and facilitators to measurement-based care (MBC) in China
- Adapt a Canadian enhanced MBC (eMBC) program for the Chinese health care setting
- Evaluate the effectiveness of eMBC vs. standard MBC for physician implementation and clinical outcomes
- Build knowledge and capacity for scale up in China and beyond

Canada	<ul style="list-style-type: none"> • University of British Columbia • University of Alberta • University of Toronto • Queen's University
China	<ul style="list-style-type: none"> • Shanghai Mental Health Centre • Peking University
International	<ul style="list-style-type: none"> • University of Melbourne • University of Michigan • University of California, Davis • Boston University
Organizations	<ul style="list-style-type: none"> • Mood Disorders Society of Canada • APEC Digital Hub for Mental Health • CANMAT • CAN-BIND





Speaker: Ray Lam

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Measurement-Based Care for Depression

What is measurement-based care (MBC)?

- Routine assessment with scales integrated into clinical care.
 - Symptoms, side effects, functioning, quality of life.
- Discussion of scores with patients
- Using outcome measures for shared decision-making, such as timely adjustment of medications.



Speaker: Ray Lam

Hong RH et al. Neuropsychiatr Dis Treat 2021;17:79-90.

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Enhanced Measurement-Based care Effectiveness in Depression
EMBED: A Canada-China Implementation Project



WeChat



- Chinese multi-purpose messaging, social media, mobile payment app
- Over 1 billion monthly active users
- Described as “China’s app for everything”

EMBED WeChat Mini-Program

- Mini-apps or programs used within WeChat
- Easy to use and share with others
- Our eMBC Mini-Program is **轻松治郁**, which means “Easy to Recover from Depression”

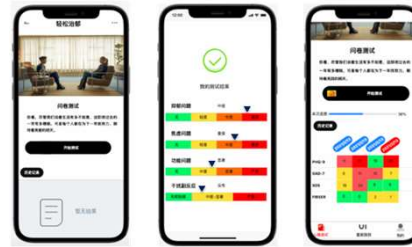


Speaker: Ray Lam

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EMBED 轻松治郁 WeChat Mini-Program

- Mood tracking feature, **心境测试**



- Self-management feature, **重振旗鼓**
- Lay coaching via WeChat audio / video / chat



Speaker: Ray Lam

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Enhanced Measurement-Based care Effectiveness in Depression
EMBED: A Canada-China Implementation Project

Challenges and advice

- Self-management program was adapted from a Canadian program, Bounce Back.
- Translated and culturally adapted in collaboration with developers.

Challenge:

- Working with collaborators without digital technology knowledge.

Advice:

- Involve collaborators into the technology development from the start.
- May be easier to develop a new program instead of adapting an existing one.

Speaker: Ray Lam

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Maike Greve


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Chair of Information Management
Prof. Dr. Lutz M. Kolbe

 Digital
Health
Research
Group




MAIKE GREVE – UNIVERSITY OF GOETTINGEN

Supporting NCD Prevention: The CHW App

WHO-PEN@Scale Project – Horizon 2020 – European Union


 Speaker: Maike Greve

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WHO-PEN@Scale


The Burden of NCDs in Eswatini

- 41 million people die per year because of Non-communicable diseases (NCDs)
- Especially LMIC show high premature death rates due to NCDs

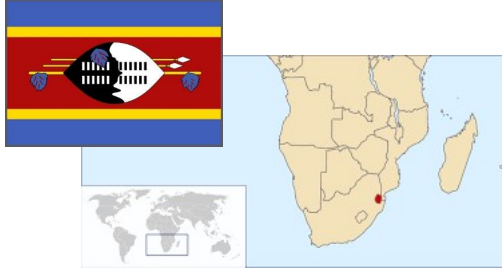
High Blood Pressure

 **33.5%** of the adult population

Diabetes

 **14%** of the adult population

- High blood pressure and diabetes are a national epidemic in Eswatini. Rates are set to rise in the coming years as life expectancy increases and economic development continues.
- Less than 20% of Swazi people with these conditions have been diagnosed¹, even fewer are enrolled on the basic treatment that could save their lives.




The WHO-PEN@Scale Project

- The project supports the idea of community-based care to relieve overburdened hospitals and increase the number of diagnosed and treated people.
- The project is investigating whether community-based care is acceptable to the people and can be provided by health workers. A part of the project is to support the health workers with a suitable mobile phone application to support client treatment and information transfer.

Source: 1) Swaziland WHO Steps Survey 2014


Speaker: Maike Greve

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WHO-PEN@Scale

mHealth for Health Workers to support NCD prevention


 **Disease Warning**

The app issues warnings for patients who are at risk or already ill





 **Long-term analysis of patients**

The course of a patient's disease is measured to evaluate the success of the applied therapy


 **Behavioral instructions**

Instructions regarding the use of tobacco, alcohol and hazardous foodstuffs



 **Individualized risk analyses**

Each patient receives an individual assessment of their clinical picture through their own risk analysis



Speaker: Maike Greve

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Supported by the European Union's Horizon 2020 research and innovation programme under grant agreement No 825823.

<https://cordis.europa.eu/project/id/825823>
<https://www.gacd.org/research-projects/diabeteshypertensionscale-up/su04>

 Speaker: Maike Greve


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Questions?

Comments?

Reflections?

How does this relate to your work?



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Session 3

Digital healthcare and equity

Host: Izzy Bandurek

Small group facilitators: Morven Roberts, Alyssa Chase-Vilchez, Raymond Lam, Jill Murphy, Sridhar Vaitheswaran, Jackie Jackson, Alison Simmons, Dawn Duke & Irene Coker



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Introduction to small group sessions

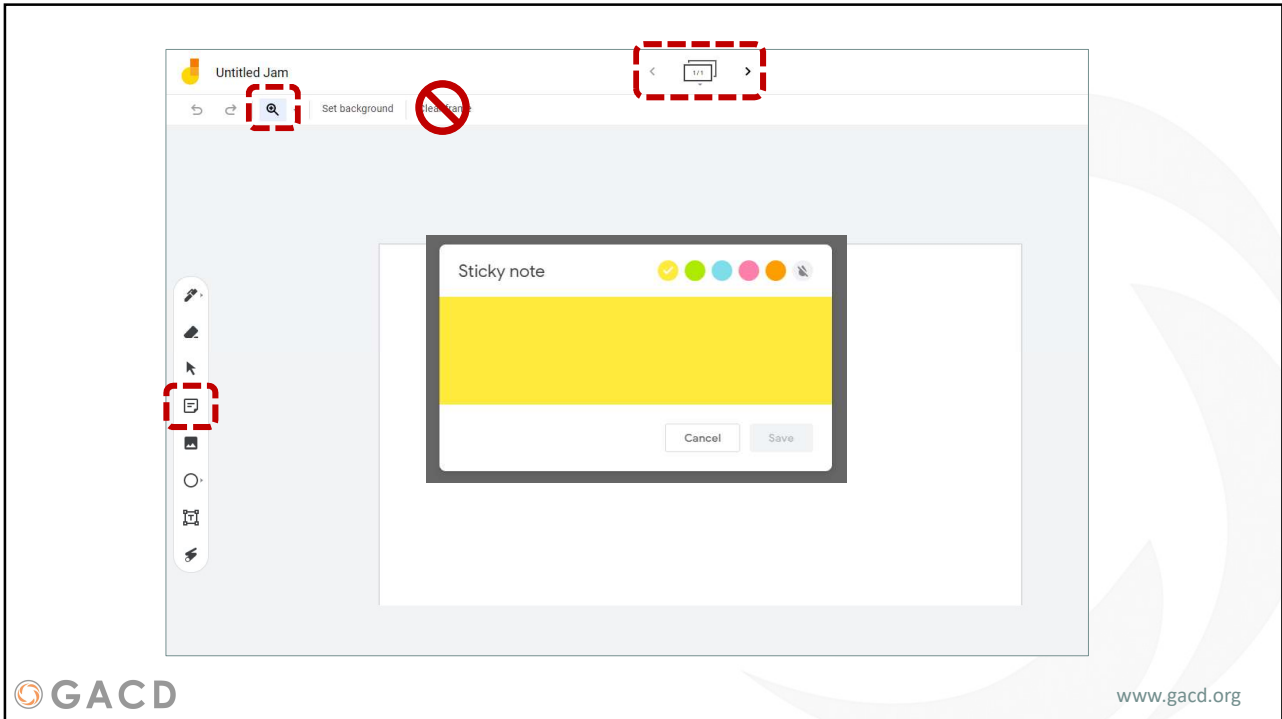


- Randomly assigned to a breakout room with a facilitator
- Facilitator will provide you with a link to access the **Jam Board**
- As a group, you will explore a 'reverse brainstorm' activity



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Reverse brainstorming

What can we do to develop and implement an equitable digital healthcare intervention?

➔

What can we do to develop and implement a digital healthcare intervention that will **worsen inequity?**

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Small group A	Small group B	Small group C	Small group D	Small group E
Raymond Lam	Jill Murphy	Sridhar Vaitheswaran	Morven Roberts	Alyssa Chase-Vilchez

Small group F	Small group G	Small group H	Small group J
Jackie Jackson	Alison Simmons	Dawn Duke	Irene Coker

SMALL GROUP A

- not for profit
- Develop the mHealth tool/App with end-users and other decision makers/stakeholders
- Work multidisciplinary
- be flexible
- Think about sustainability from the very beginning. How will you sustain it and hand it over?
- Free and accessible
- Solution: Adapt for multiple operating systems (Apple + android, Mac and microsoft)
- Make it fun to use!
- all text and little pictures
- Make it very complex
- Take into account literacy, visual barriers, motor deficits, etc
- Do a needs assessment!
- not doing needs an situational assessment first
- not context specific
- messy interface
- Solution: Be selective of specific indicators/features in the interface. Keep it clean. engage with end-users to ensure it is user-friendly
- adds significant increased time to a health workers work day
- Not culturally or contextually developed for end users
- Don't include other sources
- Offer a suite of options such as telephone, in-person, or texting
- expensive
- Don't include a low tech alternative
- Requires heavy bandwidth
- Don't involve the users in the development
- End users aren't part of developing the solution
- not including the target group
- use visuals instead of text
- Keep video to a minimum or use low resolution graphics
- start with a small piece and
- lots of scientific/medical jargon
- consideration of internet bandwidth
- involve users from needs assessment through to development and beta-testing
- intervention non-representative group
- What
- Develop on the
- plemer
- orsen i
- al h
- y?
- re

Digital healthcare and equity - Reverse brainstorming - Wednesday 7 July 2021 SMALL GROUP B

What can we do to develop and implement a digital healthcare intervention that will **worsen** inequity?

design for technology in use e.g. old android version

multiple channels for delivery

Co-create content and platform

Don't engage patients and providers

use a lot of text with difficult words

lot of pictures, videos. Not too much text

high cost to join

Make sure the intervention is really expensive

free to use, covered by health care insurance company

co-creation, user-centered design

limit amount of language

Engage partners who may be able to help reduce cost

Assume that everyone has your technical skills/affinity

one language

local language

Multiple languages

rely on the newest technology and best

make available for older devices

No cultural adaptation

Ensure you meaningfully engage with the community to understand their needs and culture (co-design)

GACD

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Digital healthcare and equity - Reverse brainstorming - Wednesday 7 July 2021 SMALL GROUP C

What can we do to develop and implement a digital healthcare intervention that will **worsen** inequity?

mhealth in Multiple languages

Base solution development on theory of change

Make it user friendly. Compatible to the local mobile provider and considering the study participants in depth

Implement interventions for rural families that are only available on smartphones

Develop a mhealth software not pertaining to study or non understandable to the study participants at various levels

App that does not support low-end mobile phones

develop app for various mode

Using SMS as a primary mode of delivering the intervention

User unfriendly UX

User-centered design and usability testing

No cultural consideration

Implement interventions only available in a majority language

Make the intervention available in all local languages

Having local language into consideration before developing a digital platform

Involve target group and local healthcare providers in solution design

Understanding the local needs in detail, before developing a software

GACD

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Digital healthcare and equity – Reverse brainstorming – Wednesday 7 July 2021 SMALL GROUP D

What can we do to develop and implement a digital healthcare intervention that will **worsen inequity**?

- hello you are in the group
 - Use digital applications as one of the means of delivering the service
- Solutions that only technocrats can access
- use only proprietary software
 - not use proprietary software (open source)
- make it in a language not used locally
 - check out local language - engage community
- Use restrictive/selective language
- just text - no graphics
 - include videos, podcasts
 - Use graphics, make app very interactive to user
- Make it very expensive. Use long complicated sentences:
 - Use short and simple but accurate sentences
- Make sure that people understand that the profit for themselves will be in the far future (outcome of our research: low SES is mostly motivated by direct profit, no far away (health benefits))
- take into account circumstances (low budget)
- Link service delivery to digital application usage. So people who do not have access to the technology would get nothing.
- Using too long complicated sentences
- Over-engineer the solution so no one would understand how to implement or use the application.
- use open source technology
- Use open source solutions/platforms
- Study the population of the study before designing the intervention
- ignore user's characteristics, such as age, gender, socioeconomic status
- Not thinking of usability issues
 - Come up with simple solution
- ignore the ethics of the region where the intervention will be applied
- use interviews, focus groups to explore
- Not involving ground-level stakeholders at designing stage
 - Follow agile development principles
- avoiding co-production in the tailoring of the language of questionnaires

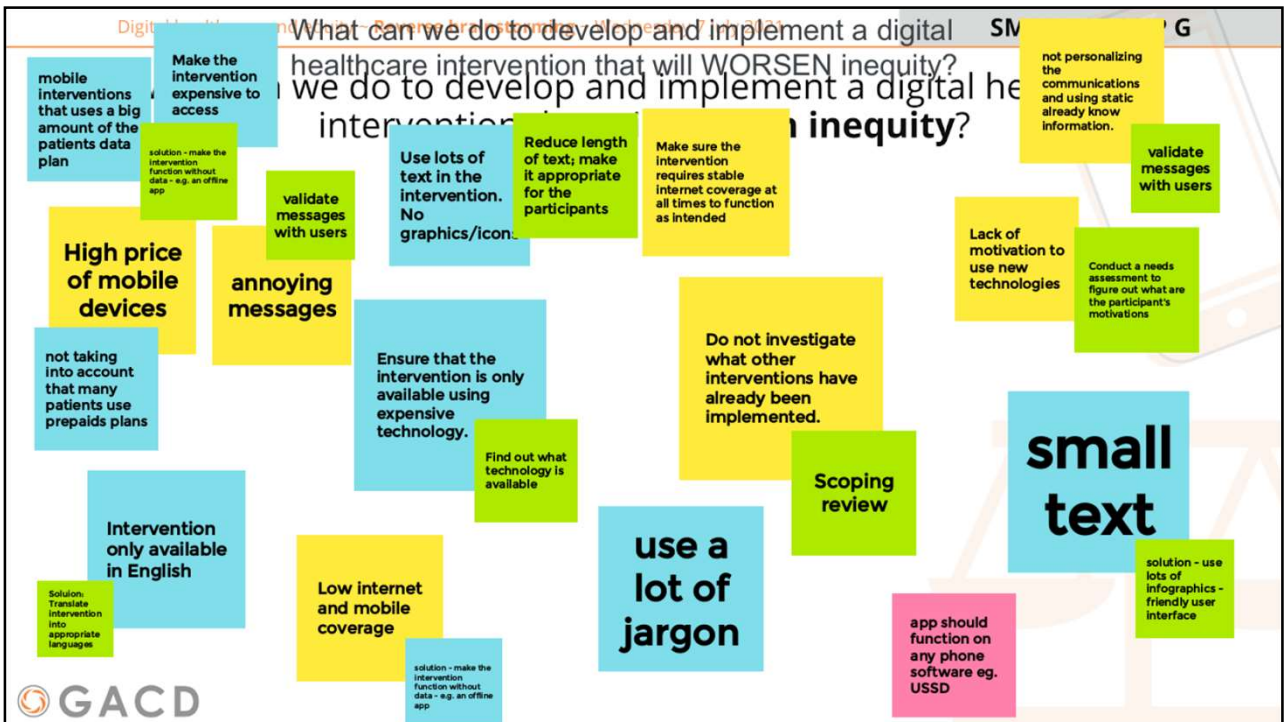
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Digital healthcare and equity – Reverse brainstorming – Wednesday 7 July 2021 SMALL GROUP E

What can we do to develop and implement a digital healthcare intervention that will **worsen inequity**?

- Making it inaccessible
- Make it so complicated that it will not work for resource poor or illiterate people
- Use the language the user does not understand
- Translate the app in the local language
- require consistent access to data or WIFI
- Having offline and online capabilities so as to allow working in internet poor areas
- design a tool that would require regular updates of the system
- Have a system where automatic updates are possible and this should not hamper the overall structure or the workflow
- make it useable with flip cell phones- not only smart phones
- Design a tool/app too complex to use for digitally non-experienced users
- Make it have an adverse impact on privacy
- Forget about data privacy and store non-anonymised data
- integrate with MOH for public sector insurance coverage
- Make it very resource intensive
- Making it compatible only with expensive tools, such as iPhone
- A very disruptive tool requiring a lot of interaction
- Remove all non-essential interactions
- Make it technology independent
- technology used by young people for an intervention with older people and vice versa

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Session 4

Ensuring the sustainability and continued equitable uptake of digital health interventions after the grant lifecycle

Moderator: Raymond Lam

Panellists: Sameer Pujari, Smisha Agarwal, Rick Glazier & Maike Greve

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Smisha Agarwal PhD MPH MBA

Research Director, Johns Hopkins Global mHealth Initiative, Johns Hopkins Bloomberg School of Public Health

- Smisha is an Assistant Professor of Digital Health and Research Director of the Johns Hopkins Global mHealth Initiative. She has joint appointments in the Johns Hopkins Bloomberg School of Public Health and Johns Hopkins Medicine. Her research aims to improve maternal and newborn health in low-income settings through strengthening community health systems and leveraging innovative technological solutions. Over the last decade, Dr. Agarwal has developed methods for evaluating programs that employ digital tools such as mobile phones for health service delivery. She also led a series of systematic Cochrane reviews that have been leveraged by the WHO to develop global guidelines on the use of digital tools to strengthen health services and continues to work with bilateral and multilateral agencies to support development and implementation of routine health information systems. This is her first time attending a GACD event.

Sameer Pujari

Master's in computer engineering (terminal degree)

Head of the Department of Digital Health and Innovation, World Health Organization

- Sameer is the A.I. Unit Head and co-founder of the Be Healthy Be Mobile Initiative in the World Health Organization's Digital Health and Innovations Department. He is also overseeing development and implementation of the [Global Strategy](#) for Digital Health and is the vice chair of the WHO ITU Multisectoral Ai for health [focus group](#).
- Sameer joined WHO headquarters in Geneva in February 2008. With WHO, he has worked extensively on Digital Health including mHealth, Big Data, and AI initiatives. He has provided in-country support in over 40 countries. Since 2012, he has also been co-leading the development and implementation of a joint WHO and International Telecommunication initiative of the United Nations on Digital Health. The initiative has successfully scaled digital health programs in 20 countries reaching millions of people.

Rick Glazier MD MPH

Scientific Director, Institute of Health Services and Policy Research, Canadian Institutes of Health Research; Senior Scientist, ICES

- Rick is Scientific Director of the Institute of Health Services and Policy Research at the Canadian Institutes of Health Research (CIHR). He is also a Family Physician and Senior Scientist at ICES (formerly Institute for Clinical Evaluative Sciences). He is a staff family physician at St. Michael's Hospital in Toronto and a Scientist in its MAP Centre for Urban Health Solutions. At the University of Toronto, Dr. Glazier is a Professor in the Department of Family and Community Medicine and the Dalla Lana School of Public Health. His research focuses on evaluating health system transformation, primary care health services delivery models, health of disadvantaged populations, management of chronic conditions, and population-based and geographic methods for improving equity in health.

Maike Greve PhD

Head of Digital Health Research Group, Georg-August-Universität

- Maike is an academic member of the GACD Research Network from the University of Goettingen. She is the head of the "Digital Health Research Group" at the Chair of Information management. Her research is focused on information systems (IS), especially mobile health in developing countries. Her research group is part of several third party funded projects concerning digital health interventions. She and her team have designed, developed, and evaluated a smartphone app for community health workers for diabetes and hypertension prevention in Eswatini as part of the ongoing EU Horizon 2020 Project WHO-PEN@Scale. She has mainly published in IS Journals and conferences regarding the design of mHealth, as well as scalability and sustainability strategies of mHealth in developing countries.

Please refer to the workshop recording for
the panel discussion

No slides were used for this session

Thank you

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