

Summary of Seminar on Prioritising Research and Evaluation for Digital Health in South Africa

Hosted by the SAMRC-Jembi Collaborating Centre for Digital Health Innovation and the SAMRC Health Systems Research Unit, on 17 July 2019; 09:00 – 15:00, SAMRC, Pretoria

Introduction

Against the background of the launch of the 2019 WHO Guideline: Recommendations on digital interventions for health system strengthening¹, this seminar aimed to:

- To bring together key government, research, and digital development stakeholders to explore how researchers and government stakeholders can work collaboratively to support decision-making and evaluation of digital interventions in South Africa.
- To initiate the process of identifying and prioritizing topic areas and robust research methodologies to support systematic evaluation on digital health interventions by government.

Summary of key issues, research themes and priorities(pg1-3)

National Department of Health Perspective and Needs

- The National Department of Health (NDOH), will be releasing their new five -year National Digital Health Strategy for South Africa (2019-2024) soon. The strategy identifies nine areas for strategic intervention. This is a useful reference point for stakeholders in the digital health development, implementation, and evaluation space.
- The digital health research community needs to assist NDOH with providing evidence to show a return on investment from digital health and ways to encourage better investment by the government in digital health.
- NDOH-related health research should be coordinated through the NDOH's Health Research Directorate which is responsible for setting the national health research agenda and priorities. It also coordinates the national health research committee and the national health research ethics committee as well as making inputs into the governance of research in the provinces. It would like a set of research priorities from the digital health research space.
- The NDOH has several research priorities, e.g. evaluation of new interventions and the needs of Community Health Workers and healthcare workers, more generally. The most important priority area for NDOH is NHI. Many digital health recommendations are concerned with mobile health-based interventions but researchers should also look at other interventions, such as artificial intelligence, big data, and robotics.
- The research community should think broadly, as several areas have not been researched, leading to a lack of evidence. Further research can expand the scope and definition of digital health.

Medical Research Council Role

- The MRC supports digital health and research through its Directorate of Grants Innovation and Product Development (GIPD) directorate and the MRC – Jembi Collaborating Centre for Digital Health Innovation (CCDHI).
- The MRC is planning to publish self-initiated research (SIR) grants for digital health research and evaluation and is also looking at strategic funding partnerships as a possible future funding model, specifically for innovation.

Evidence for Digital Health

- Evidence has a key role in the evaluation of digital health projects. Some authors cite a lack of evidence for digital health, while others suggest that there is emerging evidence for some digital health interventions.
- WHO recently (June 2019) published formal guidelines for ten digital health interventions based on published evidence "Recommendations on digital interventions for health system strengthening" ¹. The establishment of these formal recommendations signifies the WHO's recognition of evidence for the potential of digital health interventions for significant impact.

¹ WHO guideline. Recommendations on digital interventions for health system strengthening.

<https://apps.who.int/iris/bitstream/handle/10665/311941/9789241550505-eng.pdf>

- Therefore, the guidelines discuss key criteria for digital health interventions to strengthen health systems, that would enable them to further the goal of UHC, such as effectiveness, acceptability, feasibility, resource use, as well as gender, equity, and rights. The guidelines also cover several other recommendations, such as the key components of the Information, Communication Technology (ICT) and enabling environment necessary for effective digital health interventions.
- Ongoing systematic reviews of the evidence for digital health interventions could be useful and help South Africa learn from other countries.
- It seems that seeing digital health systems in isolation is less effective than a systems approach.
- A shift historically, is that there is now emerging evidence of effectiveness of some interventions (See WHO 2019 Digital Health Recommendations), and thus it becomes increasingly important to investigate the scalability, cost-effectiveness and sustainability of digital interventions that may have shown to be effective in some areas and in some settings.
- In South Africa, there is increasing evidence in government to evaluate the ‘business’ or ‘investment case’ for digital health interventions; which is an important recognition that the use of government funds would require evidence of the appropriateness and cost effectiveness of digital health in South Africa.
- There is also a lack of a research methodology that properly positions evaluation within interventions which would provide evidence to scale investments. Often investments are reliant on faith rather than economic or impact evaluations (termed as the investment case). The research methodology should be strengthened to correct for this, such that evaluations are included from the start of the interventions. This is especially important for national-scale projects. Competitive cases for investment must be made based on impact and economic arguments.
- Researchers should consistently be included in teams behind digital health interventions.
- One way to maximise cost-effectiveness is to combine research and non-research funding by using the research funding to carry out research on the implemented idea associated with the non-research funding.

Research Needs and Gaps

- WHO has highlighted several research gaps:
 - Lack of health promotion-focused interventions
 - Lack of cost-utility or efficacy data for digital health interventions. As attractive as digital health interventions are, researchers must compare them to other types of interventions to justify trade-offs in resource allocation.
 - Better understand the integration of research with implementation. Technologists may create solutions that may prove to be harmful, while on the other hand researchers may not understand the technical requirements for scaling up and implementing an intervention.
 - There is a need to expand our evaluation tool kit.
- Further research is needed to better understand how digital health can be implemented in a way that does not deepen inequities in the system.
- RCTs have been the standard for research on other more traditional interventions, yet they may not always be applicable to evaluating digital health interventions. Researchers must establish a new more fast-paced research methodology that more suitably matches the fast pace of digital intervention development.
- Research capturing the health worker’s perspective is also needed.

Research Areas and Priorities

- There is a research question around the legislative landscape; what is done and what are the gaps in SA digital health?
- Implementation research (in addition to impact research) is a key area for digital health, particularly to help understand how promising interventions can scale and be sustained as part of the health system.
- Economic evaluations are a key component of this. There is a need for economic evaluations and governance and a need to understand impact to do a proper economic evaluation.
- When considering evaluation, we should consider localisation and that technologies may not always work in the same way, everywhere.

- Evaluation should be included in the planning phase of an intervention project which shouldn't progress unless there is an evaluation framework in place.
- We should bridge the gap between research and implementation and have implementation frameworks that can accompany implementations. There is a large chasm between technical research and innovation and a need for methodologies to integrate research and evaluation with implementation.
- There is a need for research into targeted client communications as most are presently in MNCH, and this is also the source of most of the evidence on effectiveness of targeted digital client communication
- There is a need for research into new innovations that could be used in South Africa.
- There is a need for honesty in embracing research and openness to evaluation.

Additional Priority Areas

The following additional priority research areas for digital health were identified:

- nursing informatics
- legislation and the interface between digital health, legal and policy
- patient advocacy/agency
- health promotion
- evidence synthesis practice and capacity
- multi-disciplinary approach (which ties into stakeholder collaboration)
- community health workers (and within that, the *treatment* of community health workers)
- utilisation of the existing Global Digital Health Atlas, to highlight our work and find out who is doing what
- Reinforcing the idea that user requirements are very important to build the product around the user.

Sources

- Pages 86-87 (Annex 5) of the WHO Digital Health Guideline document prioritizes a few digital health research areas²
- Guidance for evaluations is found in the mobile health (mHealth) evidence reporting and assessment (mERA) checklist³.

Next steps

1. Follow up meetings to keep stakeholders updated and to focus on areas of interest, such as, for example, research methods for digital health, government initiatives and how researchers can support this.
2. As a collective, put a draft proposal together around the investment case, build a research innovation test case and present to philanthropy funders.
3. Explore ways for researchers to engage more formally with government (national and provinces), to support their decision-making and evaluation of digital health.
4. Build on the research themes and priorities identified in this seminar, including if needed, a set of more formal prioritising exercises within and between government and key research stakeholders.
5. Start a Think Tank or Technical Advisory Group on Digital Health.

See APPENDIX for Minutes, Programme and Attendees.

² WHO guideline. Recommendations on digital interventions for health system strengthening.
<https://apps.who.int/iris/bitstream/handle/10665/311941/9789241550505-eng.pdf>

³ Agarwal, S., LeFevre, A. E., Lee, J., L'Engle, K., Mehl, G., Sinha, C., & Labrique, A. (2016). Guidelines for reporting of health interventions using mobile phones: mobile health (mHealth) evidence reporting and assessment (mERA) checklist. *BMJ*, 352, i1174.
<https://doi.org/10.1136/bmj.i1174>

APPENDIX: MINUTES, PROGRAMME, ATTENDEES **Detailed Minutes of the Meeting (Draft)**

The Seminar on Prioritising Research and Evaluation for Digital Health in South Africa brought together delegates with a vibrant diversity of both disciplines and experiences. To begin Chris Seebregts briefly introduced two bodies in the South African digital health space: the SAMRC and the SAMRC-Jembi Collaborating Centre for Digital Health Innovation.

National Digital Health Strategy for South Africa - Mbulelo Cabuko

Mbulelo Cabuko from the NDoH presented on the National Digital Health Strategy for South Africa. The previous eHealth Strategy for 2012-2016 led to significant achievements, including the development of foundational elements like the Health Normative Standards Framework, national information systems, financial controls, and stakeholder engagement.

However, through this work and consultations with stakeholders, key challenges for the expansion of digital health programs were also revealed, such as poor network connectivity, skill shortages in information and communications technology (ICT)-related disciplines, budget allocation issues, fragmentation, poor coordination, and cyber-security. Mr Cabuko then presented the 2019-2024 Digital Health Strategy, which is anticipated to be formally released and published later this year in the second week of August. Key strategic interventions proposed to better support the development of digital health interventions include:

1. *The development of **leadership capacity** for digital health innovation and adaptive management.* The NDoH aims to ensure the establishment of programmes for developing future leaders in this field, such as the programme iLead and GEEKS (CDC).
2. ***Appropriate multi-stakeholder engagement** for shared opportunities and successful implementation of digital health programmes.* The NDoH hopes to drive disparate stakeholders and digital health programmes toward a singular group, so as to better coordinate these initiatives.
3. *The development of **sustainable interventions** and **appropriate investing and funding mechanisms** for digital health implementation.* As the NDoH aims to negotiate a National Grant from the National Treasury amounting to 3-5% of the National Budget, Cabuko urges the research community to assist in producing evidence to encourage better investment by the government in digital health.
4. *The review and strengthening of **governance structures** and **oversight mechanisms** for Digital Health Strategy Implementation.* Accountability must be approved at all levels (ex: district, provincial, etc.).
5. *The establishment of an **integrated information architecture** for interoperability and effective, safe sharing of health information across health systems and services.* For example, National Unique Identifiers, a South Africa Digital Health Platform, etc.
6. *The development of **appropriate digital applications** that improve health services for patients and health workers.* A roadmap for digitising health system processes could be established using a User Experience (UX) design approach.
7. *The establishment of a robust **physical and network infrastructure** and **broadband connectivity** for priority Digital Health applications and services.* Such an endeavour would benefit from collaboration with relevant departments, such as the Department of Communications.
8. *The formulation of a **national legislative policy and regulatory framework** for digital health.* Cabuko suggested on focusing, for example, on strengthening cyber-security to protect patient privacy and data.
9. *The development of **enhanced digital health technical capacity** and **skilled workforce** for digital technology support and implementation.* In order to ensure the sufficient supply of technical skills required for the demand created by the expansion of digital health systems in South Africa, the NDoH aims to identify the specific skills necessary to acquire at various levels (undergraduate to postgraduate) to create this workforce.

The next steps for the National Digital Health Strategy are to complete a costed implementation plan, consult key stakeholders for feedback on this plan, and develop impact profiles and investment cases for better funding. Cabuko

also emphasized that this seminar provided a vital opportunity to identify critical research priorities for developing this digital health strategy.

Following a question about which context stakeholders should think about research into new technologies so to best suit the needs and requirements of the NDoH, Cabuko urged the research community to think broadly, as a number of areas have not been researched, leading to a lack of evidence. While many digital health recommendations have generally concerned mobile health-based interventions, Cabuko responded that researchers should look beyond mobile health to other interventions, such as artificial intelligence and big data. Further research can expand the scope and definition of digital health.

mHealth and the NDoH - Peter Barron

Mobile Health (MHealth) applications have been increasingly gathering momentum as the healthcare industry takes advantage of the recent rise in the use of technology. Examples of such MHealth applications include MomConnect, a messaging service offering prenatal and antenatal advice for women; NurseConnect, a messaging service for nurses, BWISE, an information service aimed at adolescents and young women; and Vula, a referral app that links providers with the nearest specialists, doctors, nurses, or other health staff.

The NDoH will also be launching an app store specific to mobile health apps. The general aim with MHealth is to provide quality health information and feedback channels to individuals and health workers across Africa. Questions still exist around how private companies behind various MHealth strategies can better coordinate their efforts with those of relevant national organisations like the NDoH. However, seminar attendees agreed on several requirements for these initiatives, including the need for the data to be interoperable and for the lack of a profit motive from private companies looking to collaborate with the NDoH.

WHO Digital Health Guidelines and HSS in South Africa - Peter Benjamin

The rapid growth of mHealth as well as of its legitimacy is evident in the sheer number of new initiatives (which has even led to the problem of fragmentation), as well as the establishment of digital health maturity tools and formal journals dedicated to digital health.

The WHO is now taking the lead on global digital health, whereas before a number of NGOs and researchers had primarily lead these efforts. Consequently, the WHO has published several documents to support and guide digital health initiatives, such as a set of formal guidelines for digital health released this past April. Benjamin emphasized that the establishment of these formal recommendations signifies the organization's recognition of evidence for the potential of digital health interventions for significant impact. The WHO Recommendations for Digital Health are briefly summarised below:

1. Birth notification and death notification
2. Stock notification and Commodity Management
3. Client-to-provider telemedicine (currently, this is blocked by South African legislation from the 1980s)
4. Provider-to-provider telemedicine
5. Targeted client communication
6. Decision support for health workers (on which South Africa has done much work)
7. Digital tracking of client health status and services
8. Digital tracking combined with decision support and targeted communication
9. Training of health workers (also known as mLearning)

The WHO Recommendations for Digital Health are based on the steps for achieving universal health coverage. Therefore, the guidelines discuss key criteria for digital health interventions that would enable them to further the goal of UHC, such as effectiveness, acceptability, feasibility, resource use, as well as gender, equity, and rights. The guidelines also cover a number of other recommendations, such as the key components of the ICT and enabling environment necessary for effective digital health interventions.

Key caveats from the WHO include the fact that these interventions are not separate, and that their integration is necessary in digital health initiatives. As the infrastructure built for one intervention often overlaps for others, it would be economically inefficient to create separate interventions for different issues. The WHO also stresses that the lack of health promotion-focused interventions, as well as the lack of cost-utility or efficacy data for these digital health interventions. As attractive as digital health interventions are, researchers must compare them to other types

of interventions to justify trade-offs in resource allocation by the NDoH, for instance. Furthermore, one must remain cognizant of the fact that inequity can be increased by the expansion of digital health services, especially for those who do not have access to appropriate technology, data and airtime, etc.

Seminar attendees discussed several points following this talk, one of which concerned the necessity of cross-linking different disciplines (as in interventions concerning social behavior change) in the development of digital health interventions as well as the importance of health empowerment for clients. Attendees discussed the difficulties of successfully creating digital health interventions that address these points; while mHealth interventions in the maternal and child space, such as MomConnect, can successfully engage clients by following the natural timeline of gestational age, other health fields do not have as clear of a metric to guide interventions.

Another point concerned the integration of research and implementation. Technologists may create solutions that actually prove to be harmful, while on the other hand researchers may not understand the technical requirements for scaling up and implementing an intervention. In other words, many pilots may exist with little evidence or much evidence may exist for few pilots. Benjamin responded that the WHO guidelines address this concern explicitly, as well as the need for new tools. RCTs have been the standard for research on other more traditional interventions, yet they are not as applicable to digital health interventions. Researchers must establish a new more fast-paced research methodology that more suitably matches the fast pace of digital intervention development.

Developing a Sustainability Model and Investment Case for Digital Health - Michelle Mulder

The MRC is supporting digital health through its Directorate of Grants Innovation and Product Development (GIPD) which links with other MRC research groups. It also has the MRC – Jembi Collaborating Centre for Digital Health Innovation (CCDHI) which is helping MRC maintain a link with digital health, particularly mobile health. The CCDHI is hoping to act as an honest broker and use the MRC's convening function to promote digital health innovation. Established in 2018, the SAMRC-Jembi Collaborating Centre (CC) promotes coordination from various stakeholders in the digital health space across South Africa. The centre has funded several digital health projects, however many of these projects' progress has been negatively impacted by a lack of traction with DoH. For these and other digital health tools better sustainability is required. This can be achieved through steps such as increasing engagement with NDoH and implementing evaluation methods for the impact of digital health tools. One attendee brought attention to the limitation that at current, no grant mechanisms exist specifically for digital health. In response, Mulder pointed to some current SAMRC grant programs that have the potential to overlap with digital health projects. Some of the challenges that are being addressed include:

- procurement processes issues in NDOH
- absorptive problems in NDOH
- server hosting at MRC costing money and not sustainable investment case

The Strategic Health Innovation Partnership (SHIP) programme within GIPD is prepared to fund new digital health innovation, including areas such as data and digital health governance. MRC is hoping that this meeting will help it to better define its role in the digital health ecosystem. Implementation research, finance, affordability, cost-effectiveness, impact on health service delivery.)

MRC is planning to release calls for self-initiated research (SIR) grants and digital health will be included in the next call, perhaps more on the research and evaluation. It is also looking at strategic funding partnerships, which could be the future funding model, specifically for innovation (eg AMR etc).

How do we prioritise research questions in support of digital interventions? - Panel Discussion and Group Input as facilitated by Janan Dietrich

The first discussion topic was barriers to scaling up successful pilot digital health projects to the national level. One attendee used a personal example of a digital health project that had received good results and good buy-in, with supporting data having been collected at both the individual and aggregate level. Despite this, the project had struggled beyond the local level. Another attendee had a similar experience with an app dedicated to providing decision support for chronic diseases. The discussion moved to the closely related issue of funding. Questions surrounding the direction of projects and how that impacts funding allocation, where the project belongs within the digital health space, costs of development, were raised. One key solution that came from the discussion was that competitive cases for investment must be made based on impact and economic arguments. Another suggested

solution was the creation of a section within nationally-supported digital health applications dedicated to pilot health interventions as the increased visibility may attract investment.

The issue of evidence came up next, specifically the problematic lack of it given its key role in the evaluation of digital health projects. This lacking is largely due to research methodology that fails to properly position evaluation within interventions. The resultant lack of evaluation is an obstacle to scaling as investments then become reliant on faith rather than economic/impact arguments (termed as the investment case). Methodology must be improved and strengthened to correct for this, such that evaluations feature from the start of the interventions. This is especially important for national-scale projects.

On a higher level, the strength of the digital health ecosystem was called into question. One example is the standards that exist within the digital health field and their variable interpretation by different parties, contributing to the fragmentation present within the digital health space. This fragmentation is an obstacle for the creation of solutions that work across multiple contexts.

The problem of fragmentation was presented from another perspective as being a problem that stems not from the digital health ecosystem but from the 'bottom' as when the infrastructure fails, it is individuals that step in to bridge the gap with problem-solving. The issue deepens when that information is not exchanged across individuals.

In response to the issue of funding, it was pointed out that various dimensions of impact have been neglected which limits the opportunity for early stage digital health interventions to demonstrate their promise. The bias of the digital health space towards treatment and away from health prevention and empowerment was also noted. Digital Health should be utilised to support patient advocacy and agency. It was reminded that mediums like community radio, perhaps not instantly or traditionally considered as digital health, are valid and important mediums.

The issue of equity came up as being crucial yet absent from most plans behind digital health interventions. One obvious issue is the limit of access to mHealth to phone owners. The digital health strategy leaves those unable to overcome the operational challenges of not owning a phone or not being able to access data behind. Efforts need to be made to bridge and not widen the digital health gap.

Past experiences of digital health interventions, both successes and failures, represent valuable lessons for future interventions. An obstacle to this learning is the occasional reluctance of parties to share data. DHLI is assessing the success of interventions within the digital health field, serving as a global collective wisdom on the matter. Their work encourages investment by facilitating donor alignment. With regards to investment, the distinction between and consequent differing priorities of donor and national investment is worth noting.

The issue of broadband connectivity engages with this distinction. Although broadband connectivity is a prerequisite for the effectiveness of initiatives in a large number of areas, it is a challenge to engage donors. The solution to this is framing the investment case for broadband connectivity in such a way that it attracts donors e.g. health systems argument.

Balance should be sought between the quality of an app and the speed at which it is developed. Often, the fast development of an application can come at the expense of quality, particularly in the area of user engagement as user feedback is not obtained. It is not only the user voice that is sometimes absent during the inception of digital health projects but also the researcher and the government. Development of a multidisciplinary consortia that includes and engages various different stakeholders is pivotal to the success of any digital health intervention. Early engagement of the government is especially helpful, perhaps by involving the National Health Research Committee and/or the National Ethics Council.

The importance of research for implementation was a major topic. When the government are behind projects, it is less obvious where the opportunity for research is, however it remains that research is integral to implementation. As such, researchers should consistently be included in teams behind digital health interventions. One way to maximise cost-effectiveness is to combine research and non-research funding by using the research funding to carry out research on the implemented idea associated with the non-research funding. Research capturing the health workers perspective is also desirable. Preliminary data from the US has shown that while digital health was intended to alleviate their burden, it has actually increased it due to the high demands associated with a digital solution.

The legislative landscape can be limiting. Simply-put, more legislation translates to less innovation and implementation, however there are real issues to be worked through pertaining to legislation. An example from telemedicine was used to illustrate this; the initiation of new relationships via telemedicine is forbidden, blocking the provision of the low-cost, immediately accessible form of healthcare that telemedicine is.

The main outcome of the discussion was the establishment of the following as priority research areas for digital health going forward: nursing informatics, legislation, patient advocacy/agency, health promotion, evidence synthesis practice and capacity, multi-disciplinary approach (which ties into stakeholder collaboration), community health workers (and within that, the *treatment* of community health workers) and utilisation of the Global Digital Health Atlas.

Loose Transcription of Discussion

- Electronic Tick Register
 - Collect workload-related data and indicators specific to clinics
 - Piloted the project in several clinics → headcount in the register will be higher than headcount in the books in two weeks
 - Wanted it to be delivered in phases
 - Like an electronic health record for patients
 - In the future: connect with decision support
 - How do we look at the cost to develop the other areas we are interested in?
 - There is not a willingness to share/connect data and engage
 - *Responses:*
 - How do you scale the system within the public health system? And map intervention to the specific health area it is impacting?
 - Subsection for pilot intervention that have been found to be useful - Bottom-up innovation (researchers can come join evaluation and use interventions as case studies)
 - Economic evaluation - need to understand what you're evaluating and its impact
- National Health Information Exchange
 - We are lacking a strong digital health ecosystem to support development of intervention.
 - Three things to consider: technical indicators, health indicators, and business indicators
 - Something can be working well but you may have not built it to the current standards → however, standards can have many interpretations and versions
 - Need to localise standards so that everyone has access to a clear interpretation and understanding of the standard
 - A solution that is contextualized to a certain community may not work for others
 - Must strive to not further fragment the system
 - *Responses*
 - The problem starts at the bottom, where an individual is looking for a solution and does not find one, the individual will use whatever technology that is cheap and forward to create their own solution → leading to fragmentation
 - Needs to be a central source for information about these interventions
 - Need a proof of concept for your intervention before you share it with good responses but it is difficult to obtain this proof of concept
 - **Need to look more holistically at possible avenues for impact**
 - An area that is less discussed is the area of health prevention - most of the discussion currently is about patients currently at hospitals
 - How do you use the technology that is available for disease prevention and health empowerment?
 - The MRC prior to 2013 had a consumer health informatics group. It is difficult to measure how up-stream interventions can impact public health (obesity, diabetes epidemic, etc) (Ex: SoulCity)
 - There is a critical need right now - how do we fit in economic valuations with what we do every day? A retrospective trial is not possible, so there must be guidelines to help people collect information and perform evaluations as they go along. There are a lot of interventions happening but it would be important to strengthen that from a methodological approach.

- Building in evaluation from the start is important for national scaled programs such as baseline evaluation. Mandating such evaluation is essential - emphasizing that such baseline evaluation is necessary to bring projects to scale.
- Equity (how can you say access to services is only for people with a smartphone, for instance?) and power (who's power are you increasing with the increase of information and who's power are you decreasing?)
- Though you cannot collect data on those not using your services, you can collect socioeconomic data of your users to determine who is left behind
- Everyone does not have a smartphone so we must think of these operational challenges
 - Should we be looking to the experiences of high-income countries with digital health for these solutions? We should look at failures and successes and consult global collective wisdom
- DHLI - assessing what is working in digital health
- Donor alignment to limit fragmentation and global goods
 - Invest in global digital goods - platforms that are mature → in multiple countries, past pilot stage, diverse funding streams, based on standards, diverse and strong user base
- View of introducing broadband connectivity as a public good
 - From a donor perspective → these would not be seen as a case for donor investment as opposed to national investment (role of the national government)
 - But there are donors in South Africa who are financing roll-out of better connectivity systems in communities
 - Connectivity is a prerequisite for implementation for HIS and for effective digital health transformation
 - Must make a good case about funding connectivity to attract donors
 - Tangible results
 - Must think about study design and the data collected - researcher as part of a team
 - How to develop consortiums so that if there is a national intervention there is funded research?
 - Researchers can sometimes not be welcome in innovation or feel threatening to the government because they reveal that certain things are not effective for example.
 - Limit research to be less controversial or political?
 - Timing → address barrier up-front
 - In methodologies tend to overlook user involvement during development → so lower willingness to adopt interventions
 - Research for digital health or research for health with a digital element?
 - Need more advocacy, such as among patients
 - Digital health to support the patient voice and the act of advocacy
 - Must ensure that your research agenda is being met
- Legislation? If you want to do research, but it hasn't yet been approved, how can you ensure you get approval and provide the evidence?
 - Provider-to-client telemedicine → limited by legislation (can only do this if a patient initiates telemedical interaction) yet successful in other countries
 - Ex: HelloDoctor
 - Use impact research from other countries
 - Pilot project in CT
 - How is government trying to navigate the data protection issue in expanding digital health?
 - Multiple stakeholders must be brought together to navigate this issue, including IRB bodies
 - National health research community and National ethics council
 - Research prioritisation, provincial governments
- Should think about research that includes the perspective of health workers
 - Such as NurseConnect - not much information on this (NurseConnect has feedback/helpdesk system for nurses, improves agency of health workers)
 - Increase in health worker burn-out due to the burden of the demands of digital health interventions reported in the US

- Nursing informatics has not been talked about extensively in South Africa, but it must be included in the conversation.

Closing Advice

- Do not solely rely on MRC for funding
- Draft proposal around investment case, using case studies like MomConnect and other initiatives - commercialization project/get funding
- Better coordination and communication with NDoH
- Research matches pace of development/innovation
- Do not reinvent tools that are already available
- Universal health achievement model
- Investment case
- Raising of stakes as we move to national scale and use of taxpayer money
- Decouple technical from clinical evaluation
- South Africa is better-placed
- Interface between digital health and legal and policy scripts
- Economic evaluation

Priority Research Areas

- Nursing Informatics
- Health Promotion
- Patient Agency + Advocacy
- Legislation
- Multidisciplinary Approach
 - Stakeholder Coordination and Collaboration
- Community Health Workers (NDOH)
 - Treatment of Health Workers
 - Unique ID of Health Workers
- Global Digital Health Atlas / mERA (mHealth evaluation, reporting, and assessment checklist)
- Evidence Synthesis Practice and Capacity

Agenda

Time	Agenda Item	Presenter / Facilitator
09:30 - 09:35	Opening Background on SAMRC & Jembi collaboration	Chris Seebregts, SAMRC- Jembi Collaborating Centre for Digital Health Innovation
09:40 - 10:00	The new Digital Health Strategy for South Africa	Mbulelo Cabuko, NDOH, Director: Health Info Systems
10:00 - 10:20	Digital Health in SA in the era of the NHI: Lessons learnt from implementing MomConnect	Peter Barron, NDOH Technical Advisor
10:20 - 10:40	WHO Digital Health Guidelines for Health system strengthening and the implications for digital health decision-making in South Africa	Peter Benjamin, Health Enabled
10:40 - 11.15	Digital research landscape: <ul style="list-style-type: none"> What digital health research are you involved with? What do researchers need for their research to contribute more directly to supporting government digital health efforts? How do we build more health system digital health research capacity? 	Chris: Group input
11:15 - 11.30	TEA	
11:30 - 11.45	Developing a sustainability model and investment case for digital health	Michelle Mulder, SHIP, SAMRC
11:45 - 12:30	How do we prioritise research questions in support of government digital health efforts? <ul style="list-style-type: none"> What are the priority research questions for digital health in SA? (Immediate operational research questions and more long term 'blue sky' questions) What must be put in place to facilitate and expedite research on these priority questions? Where do we have capacity and what are the gaps What are possible sources of funding for this research? How best to ensure that the research findings feed into relevant decision processes? 	Panel discussion and group input
12:30 -13:00	Lunch	
13:00 -13:10	Digital health research landscape in South Africa: Overview (Research and methodologies)	Janan Dietrich & Natalie Leon, HSRU, SAMRC
13:10 – 14.00	Prioritising digital health research topics and methodologies	Group participation
14:00 - 14: 30	Wrap up, next steps & closure	Janan, Chris, Peter

Participants

#	Name	Organisation
1	Adelle Botha	CSIR Meraka Institute
2	Amnesty Lefevre	UCT SPHFM
3	Beverley Sebastian	Jembi
4	Chris Seebregts	Jembi
5	Debbie Rogers	Praekelt Foundation
6	Edward Nicol	MRC HSRU
7	Funmi Adebsin	UP
8	Gugulethu Tshabala	PHRU
9	Hlengiwe Moloi	MRC HSRU
10	Janan Dietrich	MRC HSRU
11	Jane Goudge	WITS SPH

12	Joanne Peter	CONZA
13	Kizito Nsanzya	UNFPA
14	Kofi Okeyere-Dede	Novitech Digital
15	Lesibana Malinga	
16	Malefetsane Morobe	TELEMEDICINE
17	Mamakiri Khunwane	PHRU
18	Martin Weiss	Jembi
19	Maxine Singaram	
20	Mbulelo Cobuko	NDoH
21	Michelle Koh	PHRU
22	Michelle Mulder	MRC, TTO
23	Musha Kalalizi	ANOVA
24	Natalie Leon	MRC HSRU
25	Peter Barron	NDoH
26	Peter Benjamin	Health Enabled
27	Rone/ Reynecke	Allegra
28	Ronnelle Kellerman	GPhealth
29	Rosaline Hendricks	PATH
30	Rosemary Foster	UCT
31	Shirley Nkone	CDC
32	Sikhelhiwe Masuka	MRC
33	Simon Lewin	MRC HSRU
34	Stefanie Vermaak	MRC, PHRU
35	Sue Goldstein	WITS
36	Tebogo Sole	MRC
37	Tendani Nevondo	WITS
38	Thubalethu Mambane	WITS
39	Tondani Mudau	PHRU
40	Trisha Crawford	TC Data Consultant
41	Witness Mapanga	WITS
42	Zoe Hughes	PHRU