REPORT & RECOMMENDATIONS

From The

3RD -
AFRICA DIGITAL
HEALTH SUMMIT
(ADHS 2023)

Held at the Eko Hotels And Suites, Lagos Nigeria on the 22nd - 23rd June, 2023

AFRICA DIGITAL HEALTH SUMMIT
(ADHS)

PREMIER MEDICAL SYSTEMS NIG. LTD.

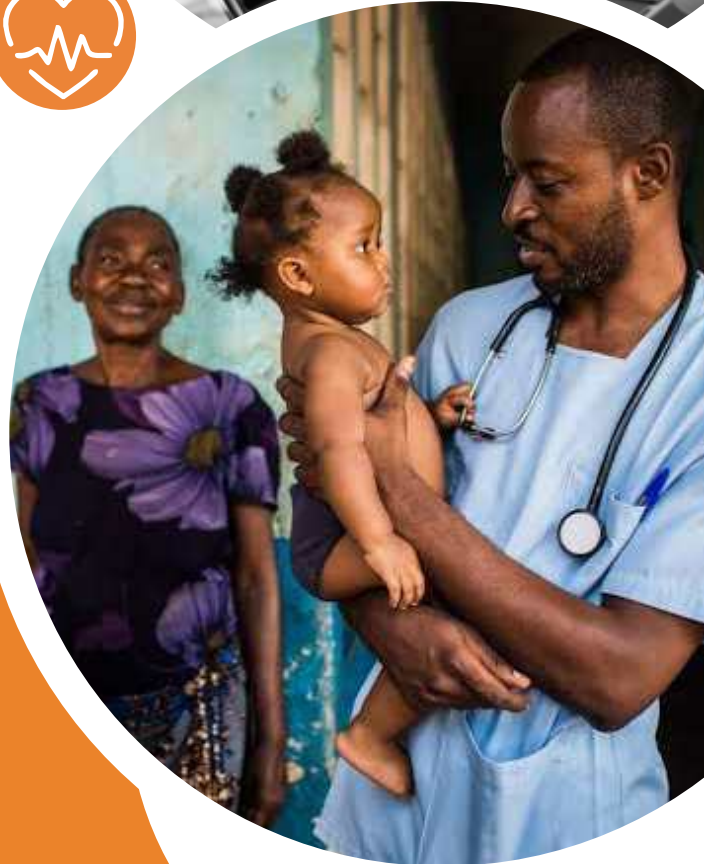Improving Access to Quality Healthcare...

OUR SERVICES:

Health Systems Strengthening

Digital Transformation of Health Systems

Events and Capacity Building

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PharmAccess is an international development organization dedicated to improving access to affordable and quality healthcare in sub-Saharan Africa. We have offices in Ghana, Kenya, Nigeria, Tanzania and The Netherlands, employing 220 full-time staff, with 70% based in our African offices.

Most health systems in sub-Saharan Africa suffer from limited investments and low public trust in quality of care. of care. Few people are insured, and high out-of-pocket costs deter healthcare utilization. Health facilities struggle to improve services due to insufficient income, and banks are unwilling to invest as they perceive the sector as risky. Poor quality care dissuades patients from pre-paying or joining insurance schemes. By leveraging public-private partnerships and capitalizing on digital technology, we support the development of inclusive healthcare markets to provide access to affordable and quality care for millions of people in sub-Saharan Africa. In doing so, we build trust and transparency in the health system for patients, providers and payers.

The virtuous cycle of trust

Key areas of our work include:

- Leverage mobile and digital technologies: Our digital innovations promote equitable redistribution of healthcare services and funds, reduce costs, and eliminate inefficiencies. They enable real-time data sharing, improve transparency, and enhance care quality. One example is our digital health platform that connects patients, healthcare providers and payers (e.g. health insurers, government, donors), allowing them to easily exchange money and data. Known as 'M-TIBA' in Kenya, the platform connects over 4.5 million Kenyans to save money, access entitlements and pay for health services using their mobile phone. The digital platform is also being rolled out in Nigeria.

- Supporting efforts towards Universal Health Coverage: We help develop health insurance to provide coverage for poor and vulnerable populations. So far, 18 million people have access to health insurance through PharmAccess supported initiatives – this work includes delivering digital health insurance products and doing data analytics with Ghana's National Health Insurance Authority.

- Drive improvements in quality of care: Through our internationally accredited SafeCare program, we have supported over 7,000 primary healthcare facilities across sub-Saharan Africa to improve quality of care, supported by digital tools. These facilities cater for almost 8 million monthly patient visits.

Our strategic objectives are:

Accelerating demand-side financing	**Strengthening the quality of health services**	**Increasing investments into the healthcare sector**	**Matching demand and supply**	**Advocacy, research, and learning**
supporting governments in their rollout of effective and sustainable health insurance models, exploring different financing mechanisms	through creating transparency, setting benchmarks and creating a culture of quality	mobilize investments through digital and blended financing, making it possible for health acilities to invest in the quality care	building patient-centric health solutions through value-based care models	enabling fact-based decision-making of partners and other stakeholders in the (global) health sector to replicate and inspire successful innovations

Principles

Holistic
In order to set the virtuous cycle of trust in motion, creating stronger healthcare systems, all underlying drivers need to be continuously activated and all parties involved need to play their part – from governments and payers (investors and banks) to suppliers (healthcare facilities) and patients.

Digital technology & Innovation
Digitalization & innovation opens a world of opportunities to improve transparency and accountability for all parties in the health system. Mobile technology enables inclusive insurance by reaching, targeting, and enrolling people at marginal cost. The data insights enable better-informed decision-making, for example, on quality of care. And digital tools empower people to take control of their own health.

Start private, grow public
In sub–Saharan Africa, the private sector provides 50% of health services, so it has by default an important role to play in the healthcare system. Often innovative care models are developed by the private sector and tested on a small scale, but governments play an essential role in scaling nationally.

Partnerships
Partnerships are central to everything we do. Collaboration leads to wide adoption of interventions and sustainable change. Since the start of PharmAccess, collaboration has been one of our key values.

Inclusive
A failing health system leads to the most vulnerable being left behind, without access to essential and quality health services. The most vulnerable groups include those with low incomes, (pregnant) women, and those with existing health complications. PharmAccess strives to make healthcare markets work, irrespective of gender, ethnicity, income, or any other status.

TABLE
OF CONTENT

Appendix:

ACKNOWLEDGEMENT

We extend our heartfelt appreciation to our partners and sponsors whose invaluable support has been crucial to the success of the African Digital Health Summit (ADHS).

Our deepest gratitude goes to the Federal Ministry of Health, Lagos State Ministry of Health, PharmAccess, LCCI and Society for Telemedicine and Health in Nigeria.

We are immensely grateful to our sponsors, the Bill and Melinda Gates Foundation, Reach Digital Healthcare, Society for Family Health, JHPIEGO, and Dokilink. Their unwavering commitment and collaborative efforts have been instrumental in advancing the ongoing digitalization of healthcare. Together, we will continue to drive positive change and enhance healthcare delivery in Africa.

PARTNERS

SPONSORS

EXECUTIVE SUMMARY

The 3rd Africa Digital Health Summit (ADHS 2023) which held at the prestigious Eko Hotel and Suites in Lagos, Nigeria, from June 22nd to 23rd, was a resounding success. Under the theme "Digital Transformation of Health Systems: The Role of Collaboration and Partnerships," the summit brought together an impressive array of stakeholders from over 15 countries across Africa and beyond.

The event featured 10 panel discussions with 57 speakers. 29 presentations were made during the scientific sessions, These served as a dynamic platform for showcasing best practices and expertise in achieving universal health coverage. Valuable insights and knowledge were shared, emphasizing the crucial role of collaboration and partnerships in propelling digital healthcare solutions across the continent.

The convergence of perspectives from both African and international participants added a unique dimension to the summit's discussions, further enriching its impact. By fostering an environment for the exchange of ideas and the initiation of collaborative initiatives, the ADHS actively promoted the advancement of digital transformation within healthcare systems.

The summit successfully demonstrated real-life success stories, setting a compelling precedent for continuous advancements in the digital health arena. As a result, the prospects of a healthier future for all Africans have been significantly bolstered. By providing a platform for sharing and learning successful practices, the ADHS is undoubtedly playing a pivotal role in leveraging technology to propel the continent's healthcare landscape forward, leaving an enduring legacy of improved health outcomes.

OVERVIEW

The 3rd Africa Digital Health Summit (ADHS 2023) organized by Premier Medical Systems has now become the premier forum for thought leaders in the healthcare industry to converge and exchange insights on digital health in Africa. The annual conference brought together diverse stakeholders to share their knowledge and best practices in digital health.

It was hosted as a 2-day hybrid conference from Thursday June 22nd to Friday 23rd, 2023 at Eko Hotels and Suites, Victoria Island Lagos Nigeria.

The primary focus of the summit was to promote collaboration and partnerships in order to explore the transformative power of digital technologies in revolutionizing healthcare systems. The summit was themed - Theme "Digital Transformation of Health Systems: The Role of Collaboration and Partnerships."

By convening stakeholders from diverse sectors and countries, the event served as a platform to exchange insights and showcase best practices.

Distinguished speakers and participants actively engaged in dynamic discussions, underscoring the significance of collaboration in catalyzing favorable transformations. The summit facilitated networking opportunities, laying the groundwork for potential collaborations and initiatives.

57
PANEL DISCUSSANTS

29
SCIENTIFIC PRESENTATIONS

OVER
300
participants from 15 different countries
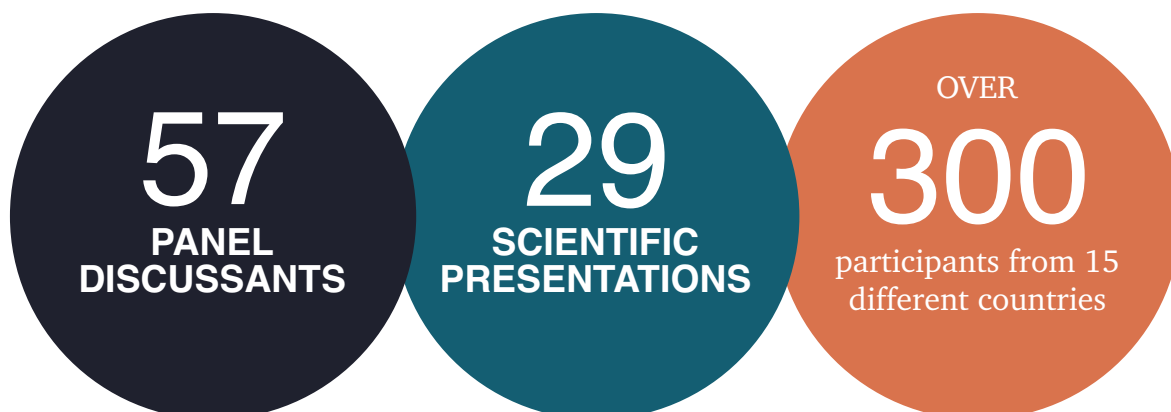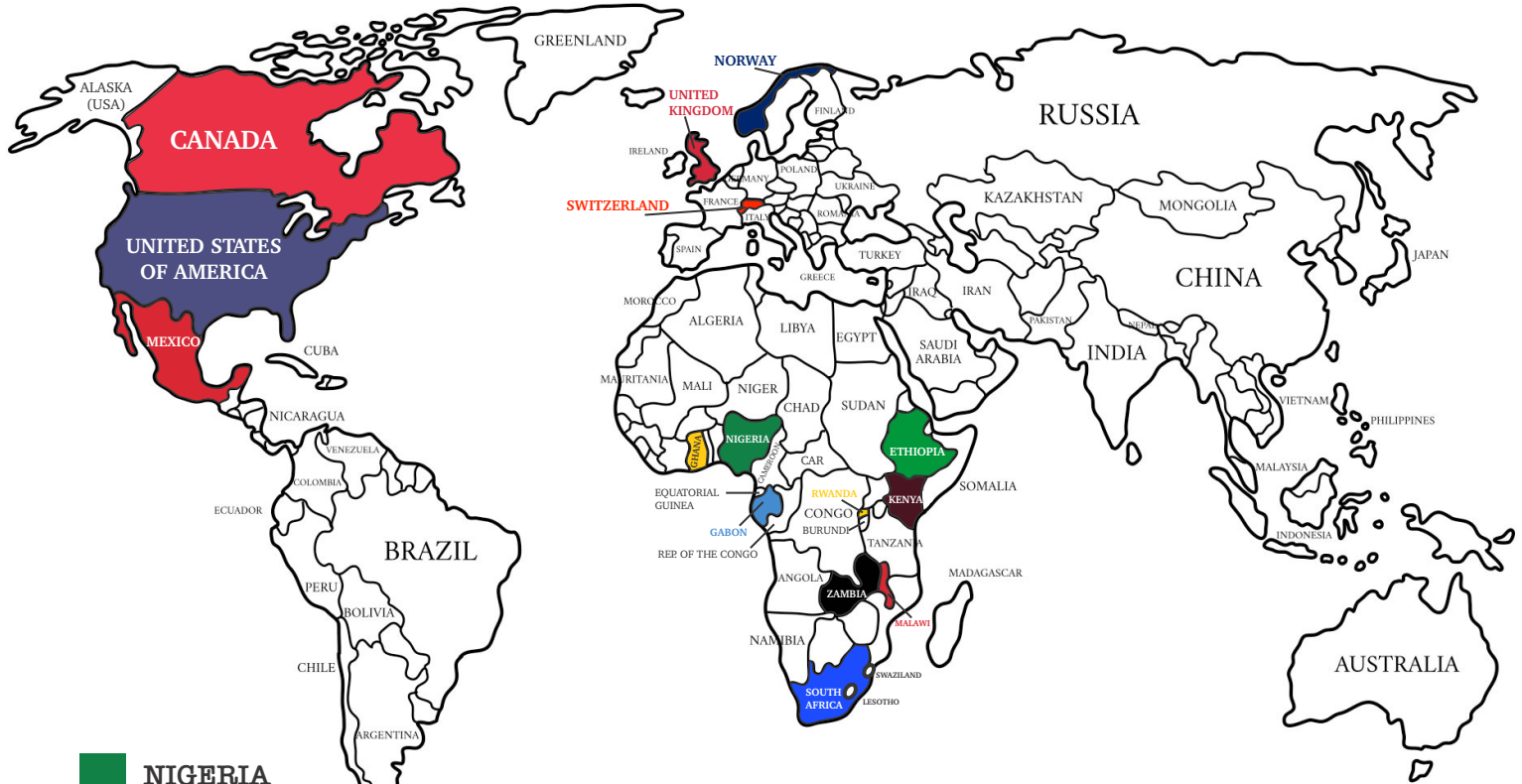
Legend:
- NIGERIA
- GHANA
- SOUTH AFRICA
- MALAWI
- ZAMBIA
- GABON
- KENYA
- RWANDA
- ETHIOPIA
- MEXICO
- NORWAY
- SWITZERLAND
- UNITED KINGDOM
- UNITED STATE OF AMERICA
- CANADA

The Africa Digital Health summit extended to more African countries this year. The participation cut across academia, innovators, practitioners, government, NGOs, and development partners.

PICTURES FROM SCIENTIFIC SESSIONS

The scientific sessions served as a platform for the sharing and dissemination of digital health implementations, research and practice.

SESSION I & II

The summit kicked off with Scientific Session I (chaired by Dr. Sunny Ibeneme) and session II (Chaired by Dr. Adeolu Arogundade and Mr. Emmanuel Atuma).

SESSION III & IV

Scientific Session III was chaired by Dr. Olumide Okulaja, while Scientific Session IV was chaired by Emeka Chukwu.

SCIENTIFIC SESSION SPEAKERS AT ADHS 2023

ABST. CODE	ABSTRACTS TITLE	AUTHORS	AFFILIATION
ADHS2023/001	Using Digital Innovations to Increase Access to Self-Care Contraceptive Messaging and Uptake of DMPA-SC Self-Inject Services among Women of Reproductive Age in Nigeria and Uganda	Dr Oluwaseun Adeleke, Simeon Christian Chukwu, Mogbonjubade Adesulure et al	Society for Family Health
ADHS2023/002	Use of CSV-dedup to improve data quality amidst data quality problems in South Africa	Shepherd Nyamhuno, Mehebub Mahomed, Elizabeth Oliveras et al	Jhpiego South Africa
ADHS2023/003	Participatory Co-Design of Wearable Solutions for Monitoring Infants in Remote Environments in Sierra Leone	Steven Sam, Cigdem Sengul, Aimone Bodini, Sylvester Macauley et al	Brunel University London
ADHS2023/004	Digital Transformation of Health Systems: The Role of Collaboration and Partnership	Mercy Amulele, Lincoln Pothan, Winnie Atieno, Eunice Anyango, Priyanka Shrestha et al	Medic Mobile Kenya
ADHS2023/005	Implementation of a Digital Antenatal Risk Stratification (ARS) System to Improve Maternal Healthcare in Nigeria	Eba Ajima, Ashiat Bakare, Valentine Amasiatu, Wuraola Babalola et al	Solina Centre for International Development and Research (SCIDaR)
ADHS2023/006	Effective strategies for improving the quality of healthcare services: using mobile audio job aids to strengthen capacity of healthcare workers in five states in Nigeria.	Ifeoma Nwosu, Winnie David, Charles Ohikhuai, Glory Akhabue et al	Viamo
ADHS2023/010	Using Digital Health systems (ARTACCESS) to deliver Differentiated HIV service delivery models in Uganda	Jackie Lydia N Ssemata, Eva Nakibuuka1, Joshua Beinomugisha et al	Infectious Diseases Institute, Uganda
ADHS2023/011	Reinforcing the safe resumption of community activities using interactive voice response approach: lessons from the COVID-19 pandemic in Nigeria.	Winnie David, Charles Ohikhuai, Justin DeNormandie, Juanita Sackey, et al	Breakthrough ACTION-Nigeria
ADHS2023/012	Landscaping assessment to inform digital solutions for priority needs for neglected tropical diseases in Nigeria	Charles Ohikhuai, Maureen Ugochuku, Soraya Verjee, Kirollos Fares et al	Viamo
ADHS2023/014	How can the digital transformation in remote PHC be initiated successfully? Results from acollaborative project partnership in Adamawa State, Nigeria.	Sulaiman Bashir and Daniel Ishaya	Adamawa State Primary Healthcare Development Agency

ADHS2023/015	Use of DHIS2 Tracker Capture by the Ethiopia Clubfoot Program and data sharing with FMOH	Solomon Dinku	Hope walks Ethiopia
ADHS2023/016	Accelerating quality, equitable, universal health care (UHC) through digitization of Community Health Workers (CHWs)	Simon Mbae	Medic Mobile Inc
ADHS2023/017	The collaborative use of social media platform tools to provide sustainable system support for digital health applications: Lessons from eLABS in Southern Africa	Kumbirai Chigudu1, Njongo Ntlangeni1, Ashley Mudau1, Motshidisi Marumule et al	Wits Diagnostic Innovatin Hub
ADHS2023/019	Participatory Co-Design of Wearable Solutions for Monitoring Infants in Remote Environments in Sierra Leone	Steven Sam, Cigdem Sengul, Aimone Bodini, et al	Brunel University London
ADHS2023/020	Exploratory data analysis of community health volunteers learning on a mobile platform in Kenya.	Peter Otieno, John Harnisher, Anzhelika Lyubenko et al	DataKind
ADHS2023/021	Tackling appointments defaults in health facilities: The automated appointment reminder system in Nigeria	Ifeoma Nwosu, Winnie David, Charles Ohikhuai, et al	Viamo
ADHS2023/024	A long journey with DISC-MALI: Codevelopment of a digital tool for community health : in Mali	Loukman Tidjani	Medic Mobile Inc
ADHS2023/025	Mhealth tools for community-based infectious disease surveillance in Africa: a scoping review protocol	Yayra Aku1, John Humphrey Amuasi, Linda Batsa Debrah, Daniel Opoku et al	German West African Centre for Global Health and Pandemic Prevention and School of Public Health, KNUST
ADHS2023/026	Digitalization of Malaria Campaigns in Nigeria: current landscape and the need for improved coordination	Uchenna Igbokwe, Oluwaleke Jegede, Perpetua Uhomoibhi et al	Solina Centre for International Development and Research (SCIDaR)
ADHS2023/027	Coordination with Governments, a vital asset in designing scalable technology in the health sector: a case study from Madagascar	Chris Ngwa Akonwi, PhD, MPH, 1Henri Andrianteranagna, MD et al	UNICEF Cameroon
ADHS2023/029	Using storytelling, delivered through mobile technology, to improve health outcomes among northern Nigerian communities.	Winnie David, Charles Ohikhuai, Justin DeNormandie et al	Breakthrough ACTION-Nigeria
ADHS2023/030	Viamo 4-2-1 platform: a national hotline that provides life-saving information to underserved communities in Nigeria	Charles Ohikhuai, Glory Akhabue, Maureen Ugochuku et al	Viamo
ADHS2023/031	Risk engine on MomConnect using predictive analyses and algorithms on maternal health challenges	Rodwell Ndlovu, Kris Lemon, Ann Kistenmacher	REACH Digital Health

POSTER PRESENTATIONS

ABST. CODE	ABSTRACTS TITLE	AUTHORS	AFFILIATION
ADHS2023/033	Improving data for decision making to enhance lactation support and use of human milk.	Ms Sue Wairimu	PATH
ADHS2023/034	Collaboration for Decision Support and Improvement in Nigeria	Ms Ene Odu	Pathfinder International
ADHS2023/036	Exploring the value proposition of global digital health inventories for stakeholders	Mats Blakstad, Konstantinos Antypas, Oksana Debrah, Chipo Kanjo et al	SINTEF, Norway
ADHS2023/037	Stakeholder participation in eHealth Policy development: a Ghana study	Dr Oksana Debrah	University of Cape Coast
ADHS2023/038	Steps towards the development of strategic plan to promote successful eHealth implementation in African countries	Dr Oksana Debrah	University of Cape Coast
ADHS2023/039	Febra Diagnostica: A tool to improve diagnosis of febrile diseases in resource-scarce settings	Christie Divine Akwaowo, Nnette Ekpenyong, Chimaobi M. Isiguzoet al	Community Medicine Department, University of Uyo, Nigeria,

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Welcome Address By Dr. Niyi Osamiluyi

During his welcome address, Dr. Niyi Osamiluyi, the CEO of Premier Medical Systems (PMS), the organizers of the Africa Digital Health Summit (ADHS), highlighted the summit's purpose of establishing a platform for sharing of knowledge and best practices in Digital Health throughout the continent. He acknowledged the persistent healthcare challenges faced by Africa and emphasized the transformative potential of technology in addressing these issues and ensuring healthcare access for all.

Dr. Osamiluyi stressed the importance of providing Africans working in Digital Health with a platform to exchange knowledge and expertise. He emphasized that the overarching goals of the Africa Digital Health Summit include providing a platform for engagement and fostering collaboration among key stakeholders. The ultimate aim is to leverage technology in accelerating progress towards achieving Universal Health Coverage and the Sustainable Development Goals.

Keynote Address By Dr. Olusegun Ogboye (Permanent Secretary)

In his keynote address, Dr. Olusegun Ogboye, the Permanent Secretary for Health in Lagos State, highlighted the crucial role of policy, collaboration, and technology in integrating digital health solutions. He acknowledged the financial and skill limitations compared to the private sector but emphasized the government's responsibility as the custodian of policy, setting the tone for innovation.

Dr. Ogboye emphasized the significance of collaboration between the public and private sectors, leveraging their respective expertise and technology investments to catalyze the digital health system. He highlighted Lagos State's pursuit of becoming a 21st-century economy and a smart city, which necessitates advancements in smart health and digital transformation. Technology plays a pivotal role in driving inclusion, universal health coverage, and improved health system outcomes.

Various digital health applications, including telemedicine, electronic medical records, and digital platforms for ambulances and blood transfusion services, were highlighted by Dr. Ogboye. He underscored the benefits of technology, such as improved patient care, enhanced efficiency, and reduced healthcare costs. The importance of data governance, compliance, and privacy protection was also stressed.

Dr. Ogboye shared ongoing efforts in Lagos State, including the development of a digital health strategy and the establishment of a unified data platform for evidence-based policy decision-making. Additionally, he proudly announced that Lagos State has obtained its NDPR (Nigeria Data Protection Regulation) certificate, making it the first ministry in Lagos to achieve this compliance. This certification highlights their commitment to safeguarding patient data and preserving privacy.

The address concluded with a call for collaboration and collective efforts to build a resilient healthcare system empowered by digital health solutions.

2023 ADHS PANEL DISCUSSANTS/SPEAKERS

S/N	NAME	ORGANIZATION
PANEL DISCUSSION I		
Lagos State Digital health transformation roadmap in focus (Sponsored by Bill and Melinda Gates Foundation (BMGF))		
1	Dr. Olusegun Ogboye	Permanent Secretary, Lagos State Ministry of Health
2	Dr. Ibrahim Mustafa	Permanent Secretary, Lagos State Primary Healthcare Board
3	Dr. Dayo Lajide	Director, HCPRS, Lagos State Ministry of Health
4	Dr. Emmanuella Zamba	Lagos State health management Agency (LASHMA)
5	Dr. Abiola Idowu	Executive Secretary, Health Facility Monitoring and Accreditation Agency (HEFAMAA)
PANEL DISCUSSION II		
Can CDSS facilitate better collaboration and partnerships in healthcare delivery		
1	Dr. Mujidat Babah	EHA Clinics
2	Ifeoluwa Dare-Johnson	Founder/CEO, Healthtracka
3	Ayodele Adeyemo	Co-Founder, PneumaCare
4	(Moderator) Dr. Ifunanya Ilodibe	EHA Clinics
PANEL DISCUSSION III		
Harnessing the power of collaboration across organizations to overcome data quality problems in digital health systems		
1	Solomon Muhumuza	Data Governance & Security Specialist (Uganda Ministry of Health)
2	Patrick Zzimula	Program Manager for BRAC
3	Dr. Beatice Wasunna	Director of Research at Medic
4	Mitali Ayyangar	Datakind
5	(Moderator) Priscillah Balirwa	Digital health Manager, Living Goods Uganda

PANEL DISCUSSION IV		
Expanding Family Planning through ePharmacy Optimization in Nigeria- Challenges and Opportunities		
1	Dr. Jennifer Anyanti	Deputy Managing Director Strategy, SFH
2	Pharm Ibrahim Babashehu Ahmed	Registrar, Pharmacy Council of Nigeria (PCN)
3	Prof. Lere Baale	CEO of Business School Netherlands (BSN)
4	Babatunde Oyelana	Technical Advisor for ePharma and Technological Innovations at the SFH
5	Moderator Ijeoma Nwankwo	Senior Program officer, Pharmaceutical Society of Nigeria Foundation
PANEL DISCUSSION V		
The Potential and Prospects for Artificial Intelligence (AI) for Digital Health Transformation in Africa		
1	Njide Ndili	Commissioner Lancet and FT Commission on Digital Health/AI
2	Frank Verzefeˊ	CEO, TrueSpec Africa
3	Nkem Nweke	PM, Engineering Innovation, Microsoft
4	AbdulHamid Yahaya	Deputy Director, ICT & Operations, eHealth Africa
5	Moderator Dr. Adeolu Arogundade	President, Society for Telemedicine and eHealth in Nigeria
Financing and Delivering Better Care for All Leveraging Digital Innovations: How can we scale innovations?		
1	Prof. Mohammed Nasir Sambo	Director General/CEO, National Health Insurance Authority
2	Prof. Nketia-Amponsah	Professor of Health Economics, university of Ghana
3	Mr. Ronald Adom	CEO, Private Health Insurers Association Ghana
4	Dr. Debo Odulana	Chief Innovation Officer, Evercare Hospital, Lagos
5	Moderator Dr. Kwasi Boahene	Director, Advocacy and Program Development, Health Insurance, PharmAccess Group
Novartis Foundation Cardiovascular HealthTech Innovation Challenge: #Play4Health – Winning Startups Award Ceremony		
1	Lucy Setia	Director of Digital Transformation, Novartis Foundation
2	Belise Kanimba Niwemwari	HealthTech Hub Africa Partnership Lead

	PANEL DISCUSSION VII	
Digitalization of Healthcare Delivery in Africa through the lens of Ubuntu; the matters arising	
1	Dr. Olayemi Dawodu	CEO, Clina-Lancet Laboratories
2	Ms. Folake Owodunni	Co-Founder, Emergency Response Africa
3	Dr Dinachi Nwanali	Physical, Special needs therapist
4	Kehinde Muraina	Human-Centered Design Specialist, Development Sector Personnel
5	Moderator Noimot Balogun	Project Lead, Linka.NG
Africa CDC Digital Transformation Strategy in Focus (Presentation) In collaboration with Africa Center for Disease Control (Africa CDC), West African Institute of Public Health (WAIPH) and Africa Health Business (AHB)	
1	Jean Philbert Nsengiamana	Chief Digital Health Adviser, Africa CDC
PANEL DISCUSSION VIII	
Digital Health Impact: Shaping a Strong Pan-Africa Digital Health Community	
1	Dr. Ngozi Azodoh	Director, Health Research & Statistics, FMOH (Chair)
2	Jean Philbert Nsengimana	Chief Digital Health Adviser, Africa CDC
3	Dr. Francis Ohanyido	Director General, WAIPH
4	Dr. Nneka Mobisson-Etuk	Co-Founder and CEO, mDoc
5	Moderator Dr. Nkem Ene	CEO, Preston Associates for International Dev
PANEL DISCUSSION IX	
Boosting multistakeholder collaboration for successful eHealth development in Africa	
1	Ernest Obbie Zulu	Senior Radiology Resident, University Teaching Hospitals, Lusaka Zambia
2	Dr. Anthony Adofo Ofosu	Deputy Director General, Ghana Health Service
3	Dr. Lawrence Ofori-Boadu	Ag, Director Institutional Care Division, Ghana Health Service
4	Maganizo Monawe	Senior Digital Health Technical Advisor, MoH Malawi
5	Moderator Dr. Chipo Kanjo	Computing Department, University of Malawi & BETTEReHEALTH partner HISP Malawi
UNICEF approach to Digital health for strengthening primary health care services	
1	Dr. Sunny Ibeneme	Digital Health Specialist, UNICEF
Use of Digital technology to enhance value-based care: the NCD example in Ghana	
1	Dr. Maxwel Antwi	Ghana Country Director, PharmAccess Foundation

The Role of Teleradiology in the Digitalization of Lagos State: Using InstantRad as a xase study	
1	Bayode Oke Thomas	Country Lead, InstantRad Nigeria

PANEL DISCUSSION X		
The Future of Digital Health Partnerships in Africa		
1	Folake owodunni	Co-Founder and CEO, of Emergency Response Africa (ERA)
2	Abimbola Adebakin	CEO, Advantage Health Africa
3	Kemi Olawoye	Co-Founder and CEO, Babymigo
4	Dr. Debo Odulana	Chief Innovation Officer, Evercare Hospital, Lagos
5	Moderator Dr. Ebi Ofrey	GeroCare Solutions Ltd

Workshop on Digital Health Standards and Interoperability Data protection, privacy policies and regulations Hosted by the Society for Telemedicine and eHealth in Nigeria		
1	Dr. Adeolu Arogundade	President, Society for Telemedicine and eHealth in Nigeria
2	Dr. Adebola Olajide	Chair, National Technical/Mirror Committee ISO TC215-Health Informatics
3	Dr. Raphael Akangbe	Board Member, Society for Telemedicine and eHealth in Nigeria

PANEL DISCUSSIONS

PANEL DISCUSSION I

Lagos State Digital Health Transformation Roadmap (Sponsored by the Bill and Melinda Gates Foundation (BMGF)

The session focused on Lagos State's digital transformation journey and the efforts to create an enabling digital health environment in Lagos State through the development of a digital health strategy roadmap being funded by BMGF. The significance of partnerships and collaboration in successfully implementing digital health initiatives to advance primary healthcare and Universal Health coverage was emphasized. Effective coordination and regulation were underscored as crucial factors to drive the digital health transformation in Lagos State.

PANEL DISCUSSION II

Can CDSS facilitate better collaboration and partnerships in healthcare delivery?

The panel discussed how Clinical Decision Support Systems (CDSS) can play a vital role in improving patient outcomes. This system offers numerous benefits but also comes with its fair share of challenges, making the need for better data collation and integration essential. By effectively utilizing CDSS, healthcare stakeholders can enhance collaboration and partnerships, leading to more informed and data-driven decision-making, ultimately improving the overall quality of patient care.

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PANEL DISCUSSION III

Expanding Family Planning through ePharmacy Optimization in Nigeria- Challenges and Opportunities (Hosted by Society For Family Health (SFH)

During this panel, the focus was on the crucial role of pharmacies in optimizing healthcare and how Pharmacy optimization in Nigeria can expand access to vital services like family planning. The discussion highlighted the challenges and opportunities of using digital platforms to enhance accessibility, reduce stigma, and provide convenient access to contraceptives. Ensuring the safety and quality of medications sold online was emphasized, underscoring the importance of regulation and guidelines. The Pharmacy Council of Nigeria (PCN) plays a key role in setting these regulations and guidelines to ensure medication safety and promote better healthcare outcomes.

PANEL DISCUSSION IV

Financing and Delivering Better Care for All Leveraging Digital Innovations: How can we scale innovations? (Hosted by PharmAccess Foundation)

The panel discussion focused on the significant role of technology in financing better care within Nigeria's healthcare sector. The participants discussed the challenges and achievements, particularly in relation to the National Health Insurance Scheme (NHIS), which was made mandatory for all citizens and residents through a new law. Collaboration, decentralization, the adoption of digital health systems such as telemedicine services, and innovative financing options were emphasized as essential factors in improving healthcare access and services. The panelists emphasized the importance of stakeholders working together, including government agencies, healthcare providers, insurers, and technology companies, to address challenges and harness technology for a positive impact in the healthcare sector.

PANEL DISCUSSION V

African CDC: Digital Health Impact: Shaping a Strong Pan-African Digital Health Community

During this session, held in collaboration with the Africa CDC, the West African Institute of Public Health, and African Health Business, the focus was on the digital transformation strategies of the Africa CDC. The discussions centered around the crucial necessity of integrating technology into healthcare systems in Africa, with a specific emphasis on Nigeria and Ghana.

Various challenges were addressed during the session, including data sovereignty, fragmented healthcare systems, prevailing biases against technology adoption, and the vital aspect of governance. The speakers highlighted the immense potential of technology in tackling healthcare issues and underscored the significance of collaboration, knowledge exchange, and capacity-building within the healthcare ecosystem.

A bottom-up approach was emphasized, along with the importance of open-mindedness, allowing for the identification of readily achievable and impactful technological interventions. The session served as a platform to foster ideas and solutions that can drive positive change in healthcare delivery across Africa.

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PANEL DISCUSSION VI

Boosting multistakeholder collaboration for successful eHealth deployment in Africa (Hosted by Better eHealth Project)

The core of the multi-country Better eHealth project centers around collaboration, data sharing, and the scaling up of successful healthcare initiatives. The project emphasizes the vital role of government support and involvement in driving the implementation of innovative projects within the healthcare sector.

The achievements in Malawi and Ghana serve as shining examples of successful collaborations, underscoring the significance of government engagement to ensure long-term sustainability. However, the project also acknowledges challenges that must be addressed to achieve successful scaling.

Factors such as government bureaucracy, funding constraints, and the need for adequate technical support are recognized as crucial elements that demand attention and resolution. By tackling these challenges head-on, the project aims to create a robust framework for expanding successful healthcare initiatives across multiple countries, ultimately improving healthcare outcomes and accessibility on a larger scale.

PANEL DISCUSSION VII

The Future of Digital Health Partnerships in Africa

The discussion highlights the importance of partnerships and collaborations in scaling healthcare initiatives in Africa. Successful partnerships are based on mutual benefits and a symbiotic relationship between organizations. It is crucial to understand the dynamics and structures of partner organizations to ensure alignment and maximize impact. The establishment of effective partnerships requires clear communication, identification of shared goals, and a willingness to adapt and collaborate.

PANEL DISCUSSION VIII

Harnessing the power of collaboration across organizations to overcome data quality problems in digital health systems.

The importance of data quality in healthcare and the need for unified methodologies to assess and improve data quality. They shared insights on how partnerships and collaborations can contribute to overcoming data quality issues in digital health systems. It highlighted the importance of leveraging partnerships to create unified methodologies, improve operational efficiency, and ultimately enhance the delivery of healthcare services at the community level.

PANEL DISCUSSION IX

Digitalization of Healthcare Delivery in Africa through the lens of Ubuntu; the matters arising.

The session emphasized collaboration and digital integration to improve healthcare outcomes in Nigeria and Africa. Ubuntu, emphasizing communality and humanity, guided the discussion on inclusive healthcare delivery. Panelists shared experiences using digital tools for data collection, diagnostics, emergency response, and patient-centered care. User-centric design, stakeholder engagement, and social behavioral sciences were emphasized for relevance and acceptance. Partnerships across healthcare, telecommunications, fintech, and insurance sectors were deemed vital for sustainable healthcare ecosystems. By combining these approaches, Africa can harness digital technology to enhance healthcare, guided by the principles of Ubuntu, fostering inclusivity and improved healthcare delivery.

PANEL DISCUSSION X

The Potential and Prospects for Artificial Intelligence (AI) for Digital Health Transformation in Africa.

The session talked about various aspects of AI and its application in healthcare. They highlighted the need for responsible data collection, privacy protection, and ethical use of AI in healthcare systems. The speakers emphasized the importance of connectivity and data availability as fundamental rights, particularly in Africa. They also discussed the potential of AI to revolutionize healthcare, mentioning innovations like mobile technology and digital health passports. The session recognized the challenges Africa faces in terms of AI readiness and stressed the need for collaboration, policy development, and finding a balance between data ownership and the public good.

UNICEF APPROACH TO DIGITAL HEALTH FOR STRENGTHENING PRIMARY HEALTHCARE SERVICES.

The session focused on UNICEF's approach to using digital health to strengthen primary healthcare services. The importance of digital technologies in improving access, quality, and equity in healthcare delivery with a focus on UNICEF's initiatives in leveraging digital tools for data collection, monitoring, and decision-making processes.

USE OF DIGITAL TECHNOLOGY TO ENHANCE VALUE-BASED CARE: THE NCD EXAMPLE IN GHANA"

The role of digital solutions in improving healthcare for non-communicable diseases (NCDs) in Ghana. The PharmAccess Country Director for Ghana presented various digital tools and platforms that can enhance data collection, remote monitoring, and patient engagement. Emphasis was placed on value-based care, which focuses on delivering effective and efficient healthcare outcomes. The discussion explored the potential of partnerships, stakeholder engagement, and policy frameworks to scale digital interventions for NCD management in Ghana. Overall, the panel demonstrated the transformative impact of digital technology in advancing healthcare for NCDs in Ghana.

THE ROLE OF TELERADIOLOGY IN THE DIGITALIZATION OF LAGOS STATE, WITH INSTANTRAD SERVING AS A CASE STUDY.

Teleradiology was highlighted as a valuable tool for improving access to radiological services, reducing diagnostic delays, and enhancing patient care. The panel discussed the benefits of InstantRad, a digital platform enabling remote radiology reporting, and emphasized its impact on reducing turnaround time, improving accuracy, and optimizing resource allocation. The session underscored the significance of integrating teleradiology solutions to enhance healthcare delivery and digital transformation in Lagos State.

The workshop on Digital Health Standards and Interoperability focused on addressing data protection, privacy policies, and regulations in the realm of digital health.

Workshop (Hosted by the Society for Telemedicine and eHealth in Nigeria)

The workshop on Digital Health Standards and Interoperability focused on addressing data protection, privacy policies, and regulations in the realm of digital health.

QUOTES FROM THE SUMMIT

By forming strategic partnerships, we can harness the strength of both the private and public sector to create sustainable business models that Drive innovation, expand access and improve the adoption of digital health solutions in Nigeria

Dr Olusegun Ogboye

Digital Technologies is fast becoming a critical determinant of health as well as the need to build trust around the use of data.

Njide Ndili

The need to continue to expand the frontiers for universal health coverage using the boundless and limitless opportunities that exist in digital transformation.

Jennifer Anyati

GENERAL RECOMMENDATIONS

1.   Encourage collaboration among stakeholders, including governments, donor agencies, development partners,NGOs, healthcare institutions, technology experts, and ethics boards, to develop policies and guidelines that accelerate digital transformation of health systems and promote responsible data collection, privacy protection.

2.   Leverage digital technology to alleviate pressure on secondary healthcare institutions and enhance the primary healthcare system.

3.   Embrace and expand telemedicine services to reach remote areas, providing consultations with distant consultants and improving patient outcomes.

4.   Recognize connectivity and data availability as fundamental rights, particularly in Africa, and work towards improving infrastructure and access to ensure and support the seamless integration of digital technology in healthcare.

5.   Establish robust data systems and promote evidence-based decision-making to inform healthcare operations and improve patient care.

6.   Enhance coordination and synergy among different digital platforms and healthcare solutions to ensure effective implementation and avoid duplication of efforts.

7.   Strengthen health insurance schemes to provide financial coverage and ensure access to universal healthcare, aligning with the goal of achieving universal health coverage.

8.   Focus on investing in capacity development programs to enhance and create an enabling environment for the adoption of digital health solutions and provide necessary skills for healthcare professionals, personnel and data scientists.

9.   Implement comprehensive regulations to ensure the quality and privacy of digital healthcare services, particularly for telemedicine platforms.

SPECIFIC RECOMMENDATIONS

1.   Investigate the role of clinical decision support systems (CDSS) in optimizing patient outcomes.

2.   E-Pharmacy Services: Improve infrastructure, implement digital verification and transparency measures, address reproductive health barriers, build trust, and review regulations for online services and e-pharmacies.

3.   AI in Healthcare: Find a balance between data ownership and the public good, considering the ethical implications of AI in healthcare. Encourage discussions and frameworks that ensure equitable access, fair data usage, and protection of patient privacy.

4.   Health Insurance: Enforce mandatory health insurance laws, promote decentralization, integrate technology, learn from past experiences, and foster collaboration among stakeholders in the health insurance sector.

5.   Integration of Technology into Healthcare Systems: Tailor technology integration to country-specific needs, foster collaboration and partnerships, invest in digital literacy and capability-building, establish governance structures and policies, prioritize impactful areas, engage stakeholders, and promote collaboration and data sharing among countries.

6.   Effective Partnerships: Identify mutual benefits, understand partner organizations, align goals and values, maintain clear communication and adaptability, build trust, prioritize needs, initiate the partnership process, and approach partnerships with professionalism and respect.

CONCLUSION

The recommendations from the 3rd Africa Digital Health Summit provide a roadmap for leveraging digital technology to transform healthcare in Africa. By focusing on key areas such as infrastructure development, telemedicine, data utilization, coordination, health insurance, capacity development, and regulation, healthcare systems can be strengthened and improved across the continent.

These recommendations highlight the need to explore the benefits and challenges of technology, foster partnerships and collaborations, invest in digital literacy, ensure governance structures and policies, and address barriers to effective healthcare delivery. By embracing technology, leveraging partnerships, and implementing evidence-based solutions, African countries can enhance healthcare access, quality, and outcomes.

It is crucial for governments, healthcare providers, insurers, technology companies, and stakeholders to work together, sharing best practices and driving innovation in healthcare. Through mutual collaboration, clear communication, trust-building, and a customer-centric approach, sustainable and effective partnerships can be established to achieve shared objectives and address the unique healthcare needs of the population. By approaching partnerships with professionalism and respect, the potential of digital technology to revolutionize healthcare in Africa can be fully realized.

PRESENTATION OF AWARDS TO PARTNERS AND SPONSORS

Using Digital Innovations to Increase Access to Self-Care Contraceptive Messaging and Uptake of DMPA-SC Self-Inject Services among Women of Reproductive Age in Nigeria, Uganda, and Malawi.

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Introduction: Digital innovations have been useful to support a client's contraceptive user journey from awareness to method initiation. The concept of contraceptive self-care is being promoted globally as a means for achieving universal access to quality contraceptive care, however information about this approach is limited. An important determinant of the scale of awareness is the message construct, choice of information channel and an understanding of the socio-epidemiological dynamics within the target audience.

Significant gains have been made recently on expanding the awareness base of DMPA-SC – a relatively new entrant into the family planning method mix. The cornerstone of this success is a multichannel promotion campaign themed Discover your Power (DYP). The DYP campaign combines content marketing, across select social media platforms, chatbot, Cyber-IPC, Interactive Voice Response (IVR), and radio campaign.

Methodology: During implementation, the project monitored predefined metrics of awareness and intent. such as number of persons reached with the messages, number of impressions and meaningful engagement (link-clicks). Metrics/indicators are extracted through native insight/analytics tools across the various platforms. The project also enlists community mobilizers (CMs) who go door-to-door and engage WRA to advertise DISC's online presence and support them to engage with IVR, digital companion (chat bot), Facebook page, and DiscoverYourPower website.

Results: The result showed that the digital platforms recorded 242 million impressions and has reached 82 million users with key DMPA-SC self-injection messaging in the three countries. As many as 3.4 million persons engaged (liked, clicked, shared, or reposted) digital posts.
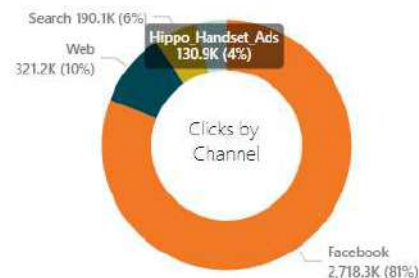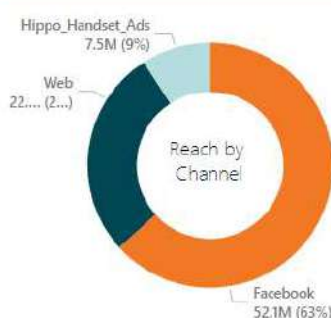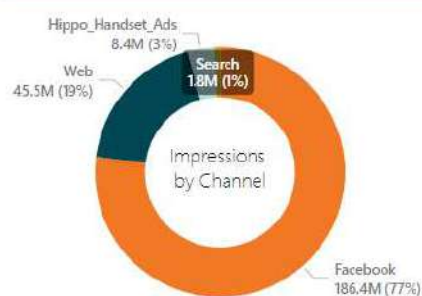
Conclusion: This study finding indicates that digital solutions and innovations is gradually becoming the veritable tool towards the advancement of the self-care agenda, Digital innovations can also be used to increase awareness and uptake of DMPA-SC self-inject services for women of reproductive age if they are made an integral part of reproductive health programming.

Use of CSV-dedup to improve data quality amidst data quality problems in South Africa

Authors: Shepherd Nyamhuno, Mehebub Mahomed, Elizabeth Oliveras, and Maiyuran Vethakuddikurukkal

The discovery of data fraud is always unsettling in any President's Emergency Plan for AIDS Relief (PEPFAR) funded activity where data integrity is a key aspect of the program. In public health programs, when fees are paid for services or there is pressure to meet targets, the motivation for fraud can be high. Undoubtedly, the voluntary medical male circumcision (VMMC) program is no exception. In the PEPFAR VMMC program, we discovered that some of our contracted service providers (General Practitioners (GPs)) were duplicating client entries. When our system warned them that they were entering existent records into our monitoring and evaluation (M&E) system, they circumvented the system, by altering the biographical data slightly to avoid detection while retaining key aspects of the client's identity. For example, they would change a few digits in the client's national identification number, swap the second name and first name, or alter the spelling of the name. Such changes would allow the service provider to enter the clients as a unique record. A data quality check using Excel picked up a few of these manipulated entries and yet still implied a bigger problem. Jhpiego decided to research for a more robust system that could detect sophisticated duplicates where alterations were made and discovered the comma-separated value (CSV)–dedupe as a solution to the problem. CSV-dedupe is an open-source machine learning tool that provides a simplified user interface using a command prompt for the deduplication of large datasets based on the dedupe python library. This tool was able to pick up several duplicates that could not be detected through a simple excel sheet. The continued use of CSV-dedupe for routine data validation has ensured that Jhpiego's data guides good decision-making to ensure that quality services are provided to beneficiaries.

Participatory Co-Design of Wearable Solutions for Monitoring Infants in Remote Environments in Sierra Leone

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Introduction: This project explores the potential of digital health technologies, including wearable Internet of Things (IoT) solutions, to remotely monitor and capture parameters and data for detecting and improving communications in accessing health care. The main aim is to facilitate the prevention of various health conditions (e.g., preterm, tetanus, fevers, measles and diarrhoea) in infants in Sierra Leone that lead to high infant mortality rates in Sierra Leone. Sierra Leone has one of the highest infant mortality rates, estimated at 39 per 1000 live births – three times higher than the Sustainable Development Goal (SDG) target of 12 infant deaths per 1000 live births by 2030. Lack of access to and low utilisation of effective and efficient health systems, aggravated by a range of factors, such as inequity in coverage, inadequate human resources and weak infrastructure, referral information and community health systems, are major contributing factors for high infant deaths. The solutions will assist in addressing these challenges.

Objectives: The project aims to assist efforts to reduce infant deaths through developing culturally appropriate, people-led design of digital health technologies, including mobile and wearable IoT solutions to: (i) facilitate remote monitoring of infant health (vital signs such as temperature, pulse rates, respiration blood pressure, etc.) and alerting of potential critical illness in non-clinical settings, and (ii) improve healthcare access and ethical and FAIR data sharing between parents and health workers in Sierra Leone.

Methods: The overall research approach is informed by a participatory design thinking framework, with the emphasis on four fundamental principles critical for developing appropriate and contextualised digital technologies in resource-poor settings: availability, accessibility, affordability and usability. It adopts a mix of socio-technical research using literature review and interviews and a co-design workshop with healthcare providers and caregivers. The socio-technical research provides in-depth insights into the contextual issues around the current healthcare system, challenges and opportunities for new technology innovations. The design workshop embodied inputs from the socio-technical research, participants' experiences, design scenarios, image-based reflections, journey maps and group discussions.

Results: Timing is everything to reduce child deaths. Both healthcare workers and caregivers report that acting as soon as the first symptoms are detected can make a significant difference in reducing the risk of infant deaths. Therefore, the remote monitoring solutions should provide early alerting for symptoms of common child illnesses such as malaria, pneumonia and diarrhoea, to facilitate informed decision making, timely response and treatment. Results further show a layered deployment of remote monitoring technology ecosystem including a paired wearable design used both on infants and primary carers, a mobile application and community/mobile internet kiosk to facilitate communication among different stakeholders, which, at times, may not even share a common spoken language. This layered approach is also expected to facilitate technology adoption in phases.

Conclusion: Our research confirms that digital technologies solutions designed together with the actual users can address contextually relevant healthcare solutions that reflect their actual needs. The layered deployment ecosystem emerged as a potential solution to strengthen information sharing and timely decision making and provide effective routes for remote monitoring and early alerting and access to the treatment of leading causes of infants' deaths in Sierra Leone.

Keywords: IoT Wearable health solution, Remote health monitoring, Infant health, Co-design, Sierra Leone, Africa

Digital Transformation of Health Systems: The Role of Collaboration and Partnership

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Introduction: Strategic flexibility in adopting digital health innovations is a challenge in developing countries with decentralized structures. Kenya is in the process of rolling out a nationwide electronic community health information system to 47 autonomous decentralized counties. Direct to client messaging has been shown to improve quality of care by facilitating interaction between health consumers and providers, reducing provider workload by reducing in-person visits; and when integrated with community health information systems, improve decision making and provide metrics for performance tracking. We describe lessons learnt in the co-design of CHV-NEO – an interactive SMS intervention connecting community health volunteers with peripartum women, with the aim to integrate the feature to the existing eCHIS in one county.

Methods: We conducted qualitative formative research using human-centered design techniques. Sixteen key informant interviews (KIIs) and 12 focus group discussions (FGDs) with CHVs, CHV Supervisors, PPWs, health care workers, peripartum women (PPW), and policymakers in Western Kenya between April and August 2022. Three stakeholder engagement meetings have been held so far to align partners with the Kenya Ministry of health agenda, and adhere to county and sub-county priorities. Transcripts, observer notes, and photographs were coded using a hybrid inductive and deductive approach; and analyzed using the thematic framework.

Results: Participants identified direct-to-client communication via SMS as potentially useful in supporting CHV workflow and promoting clients' access to care through features and functions, including scheduled visit reminders, educational and health promotion messages, client referral messages, and patient follow-up messages. Feedback suggested that SMS could also improve timely data flow between clients, CHVs, and facilities. Major potential challenges include the initial financial and training burden, establishing boundaries in the roles of a CHV while empowering their decision making in referrals, data security (access and storage), sustainability concerns upon partner exit due to local resource constraints, and establishing buy-in for scale up in a decentralized health system context.

Conclusion: Integration of interactive direct to client SMS communication between CHVs and PPW is an innovative approach to improving access to care for clients by allowing for rapid on-demand communication, supporting CHV provision of preventive and promotive health care, and strengthening data tracking and reporting structures. Involvement of all stakeholders including local county governments, implementers, and end-users (prioritizing CHVs) is essential to ensure acceptability, sustainability, and resource access.

Implementation of a Digital Antenatal Risk Stratification (ARS) System to Improve Maternal Healthcare in Nigeria

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Introduction: Nigeria has a high maternal mortality rate, with 512 deaths per 100,000 live births,1 which can be linked to the three phases of delays; delays in decision to seek care, delays in reaching care and delay in receiving adequate care. Solina and Helium Health are collaborating to leverage digital health in deploying an individualized antenatal risk stratification (ARS) tool to address two of the three delays. The program will test the hypothesis that equipping pregnant women with information on their pregnancy risk levels and the appropriate facility to seek care will reduce the first and second delay.

Objectives:
1.   Develop and evaluate the accuracy of the ARS tool
2.   Test its effectiveness in determining the risk level of women and recommending the appropriate level of care to prevent maternal death

Methodology: The implementation research will be conducted in three states; Akwa-Ibom, Kano and Lagos; assessing pregnant women of all age groups and socio-demographic categorization. The study will be approached in two phases; Phase 1 - tool design and validation; and Phase II - randomized controlled trial using cognitive behavioral approach. The study will involve 2,469 pregnant women across the states who will be randomized into the intervention and control group.
Data will be collected adhering to all ethical considerations using a structured questionnaire, and analyzed using structural equation modeling in the Statistical Package for Social Sciences.

Expected Results: The findings from this study will demonstrate the effectiveness of ARS in improving prompt and informed decision to seek and access appropriate maternal care, leading to a reduction in maternal morbidity in intervention communities.

Conclusion: The ARS program will potentially inform policies and approaches to maternal health interventions in Nigeria and other low-income countries by demonstrating the impact of empowering women with information on their maternal health.

Effective strategies for improving the quality of healthcare services: using mobile audio job aids to strengthen capacity of healthcare workers in five states in Nigeria.

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Introduction: The dearth of adequately trained personnel among other obstacles hinders the delivery of high-quality healthcare services in Nigeria. Continuous capacity strengthening of Healthcare Workers (HCWs) can improve the quality of services at health facilities. The USAID-funded Integrated Health Program (IHP) leveraged mobile Audio Job Aids (AJAs) to empower health facility providers in Bauchi, Ebonyi, FCT, Kebbi and Sokoto on healthcare content.

Objectives: To provide healthcare workers with information to improve knowledge and skills, for providing quality services.

Methods: Job aids for providing services on family planning, child health, malaria, nutrition, maternal new-born health, COVID-19 vaccination, routine immunizations, gender-based violence, waste management, Lassa fever, and meningitis were optimized, translated, and recorded into audio format. The optimized contents were deployed on a digital audio platform set up by Viamo, with inbound (pull) and outbound (push) calls access. HCWs who subscribe to the Airtel network, access AJAs toll-free, by calling 4-2-1 to listen in their preferred language. Non-Airtel subscribers can access, toll-free, content via state specific long numbers. AJAs are also periodically pushed to HCWs. User engagement is monitored and analyzed for improvements to the platform.

Results: Between January 2021 and February 2023, 9,341 HCWs accessed 50,605 AJA contents. The most accessed were Nutrition (19%), Child Health (15%), and Immunization (11%). Among 7,081 of HCWs who provided their gender, 54% were male and 46% female. Analysis of platform use revealed that engagement was highest with pushed content. Anecdotal evidence reveals AJAs contributed to improving HCWs' knowledge in providing quality health services.

Conclusions: Mobile AJAs are effective and efficient for continuously strengthening HCWs capacity to deliver quality services. A formal review of the impact of the AJAs is planned.

Keywords: 4-2-1, Healthcare workers, Audio Job-Aids, capacity strengthening, Toll-free

Using Digital Health systems (ARTACCESS) to deliver Differentiated HIV service delivery models in Uganda.

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Introduction: ARTACCESS is a web based digital system that facilitates efficient ART delivery through Community private pharmacies (CPP) without additional human resource. It supports documentation of ART refills, provides real time communication between facilities and pharmacies and ART stock management within pharmacies and facilities.

Objectives: To assess the usability, acceptability and feasibility of the ARTACCESS system in delivery of ART refills through CPP.

Methods: Between February and March 2022 we conducted In-Depth Interviews (IDIs) (n=9) with Ministry of Health Officials, Nurse clinicians, records clerks, pharmacy dispensers and medical doctors. The discussions were open-ended topic-guided questions including; understanding of the system, benefits, challenges, recommendations and willingness of private pharmacies to host the system. The IDIs were audio recorded and transcribed verbatim and categorized into themes using Nvivo version 12 following a content-thematic approach.

Results: We explored experiences of 9 participants balanced by gender and role. Majority were female; n=5 with an average age range of 32 years. Content analysis identified 6 themes: understanding the ART access system, benefits and challenges, recommendations and benefits of hosting it in pharmacies. Data suggested that most stakeholders understood the system; *"you can use it to dispense drugs, know how many clients are active or on a certain regime, know the stock you have at hand and book the next client's visit."*

Many acknowledged its user friendliness, accessibility, flexibility, convenience, reduced paper work and ease of use. A few did not face any challenges with the system but some noted power outages, internet coverage and cost. They recommended creating an offline version, procuring back-up power sources and creating secure passwords.

Conclusions: The involvement of partners, collaborators and various stakeholders in the ARTACESS development process was fundamental in creating user friendly, acceptable and feasible system.

Keywords: ARTACESS, Community private pharmacies, Digital system

Reinforcing the safe resumption of community activities using interactive voice response approach: lessons from the COVID-19 pandemic in Nigeria.

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Introduction: Community-level activities were disrupted during the first 8–9 months of the COVID-19 pandemic in 2020, due to social gathering restrictions. The USAID-funded Breakthrough ACTION-Nigeria (BA-Nigeria) project leveraged Interactive Voice Response (IVR) to build the capacity of 1,626 community volunteers and Local Government Area supervisors on the safe resumption of community activities in five Nigerian states of Sokoto, Kebbi, Bauchi, FCT, and Ebonyi.

Objectives: To increase participants' knowledge of the COVID-19 precautionary measures to prevent the spread of the virus during community activities.

Methods: The safe resumption training content, for IVR, was developed, translated, recorded in multiple languages, and tested with a select audience. The training included 11 lessons, optimized for mobile communication, and delivered weekly through the IVR channel. Participants received an SMS a day before the training began, to inform them of the time of the call and the phone number from which the call would be sent. Participants could choose their preferred language from a list of options. A call-back feature was enabled, allowing participants to flash the number for a call-back at their preferred time if they missed the pushed call. Data was extracted from the platform and analyzed.

Results: The training was deployed to 1,626 participants, of which 96% started the training and 80% completed both baseline and end-line. Up to a +10% change in knowledge among participants was observed when the baseline was compared with the end-line survey results. While a +4% average change in knowledge was reported among participants who completed the training.

Conclusions: The training result indicates that IVR is a cost-effective way to reach even hard-to-reach communities with information and reinforce capacity. Further study would be required to determine why some participants could not complete the training.

Keywords: COVID-19, Interactive Voice Response, Community, Training, cost-effective

Landscaping assessment to inform digital solutions for priority needs for neglected tropical diseases in Nigeria

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Introduction: In July 2022, the Bill and Melinda Gates Foundation and key stakeholders developed seven use cases to better understand the priority needs for Neglected Tropical Diseases (NTDs). The use cases focused on how to reach underserved populations; proactively send targeted information to individuals; deploy digital social and behavioural change communication messages; assess barriers to uptake; engage stakeholders; provide reminders for appointments; improve and sustain capacity of health providers. To better understand these priority needs, a landscaping assessment was carried out in Nigeria, Burkina Faso, and Uganda from November 2022 to February 2023.

Objectives: To identify priority needs in the NTDs programme that can be addressed by innovative digital solutions.

Methods: The landscaping assessment was carried out using two approaches. Firstly, a literature review of available digital tools that can address identified priority needs was conducted. Secondly, a landscaping assessment exercise was carried out with key informant interviews (KII) using an unstructured questionnaire for stakeholders from government parastatals, implementing partners, NTDs technical working groups, researchers, and funders. A mix of virtual and face-to-face interview was conducted. Findings from the literature review and KII were synthesized and analyzed.

Results: Following the landscaping assessment, digital solutions with evidence of success rate were recommended to address identified priority needs. The solutions include GIS mapping for population data, and the use of the Viamo platform for targeted mass messaging, health information toll-free hotline, interactive voice response (IVR) mobile survey to assess barriers to uptake, push IVR, and appointment reminders, mobile curriculum, and digital training.

Conclusions: The landscaping assessment report contains novel digital solutions that can address priority needs for NTDs in Nigeria, Burkina Faso, Uganda. This report will be useful to stakeholders planning to deploy digital solutions for NTDs within the region. Further studies will be required to test the effectiveness of these proposed solutions.

Keywords: Neglected Tropical Diseases, Platform, Digital, Landscaping, Interactive Voice Response.

How can the digital transformation in remote PHC be initiated successfully? Results from a collaborative project partnership in Adamawa State, Nigeria.

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Introduction: Primary Health Care (PHC) services in most low-income countries are facing challenges with limited resources, insufficient infrastructure, and poorly skill staff. These challenges contribute to poor health outcomes, particularly for children. In response, ADSPHCDA in Nigeria formed a project partnership with the International Committee of the Red Cross and the Swiss Tropical and Public Health Institute in 2016 to introduce a digital Clinical Decision Support System (CDSS) called ALMANACH and initiate the digital transformation of the Adamawa PHC system.

Objectives: The partnership's objective was to implement a digital health solution that assists health workers (HW) in PHC with assessment and management of childhood illnesses, thereby improving quality of care, and reducing morbidity and mortality in children under five.

Methods: The partnership employed a collaborative approach to develop and implement ALMANACH. This involved adapting the CDSS to the Nigerian context, embedding it into the Adamawa PHC system, training and supportive-supervision of HW, and monitoring and evaluating the initiative.

Results: The initiative led to significant improvement in the management of childhood illnesses in Adamawa State. A large-scale, peer-reviewed observational study found that HW's adherence to clinical guidelines improved resulting in higher clinical recovery of patients and better quality of care.

Conclusions: Through a complementary partnership, it was possible to initiate the digitalization of PHC in rural Nigeria with the implementation of a digital tool and improve quality of care. The success of this initiative demonstrates how multisector collaboration can be leveraged to achieve universal health coverage.

Keywords: digital clinical decision support, childhood illnesses, primary health care, quality of care.

Use of DHIS2 Tracker Capture by the Ethiopia Clubfoot Program and data sharing with FMOH

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Introduction: The Ethiopian Federal Ministry of Health (FMOH) launched HSTP 2 in achieving its Information revolution agenda aiming for high quality, equitable, sustainable, adaptive, and efficient health services. Hope walks -Ethiopia collaboration with FMOH, uses DHIS2 Tracker Capture for data collection, recording and data analysis. DHIS2 Tracker Capture contributions to achieve Ethiopia's HSTP 2 in clubfoot treatment clinics throughout the country.

Objectives: To define and explain the significance of using DHIS2 Tracker Capture for tracking, assessing, and exchanging data with the FMOH on the country clubfoot program.

Methods: During July 2022 and December 2022, data from 20 selected clubfoot clinics were reviewed using DHIS2 Tracker Capture.

Results: Clubfoot data collection, recording, and analysis were all greatly improved by the DHIS2 Tracker Capture. In clubfoot clinics that started using DHIS2 Tracker Capture vs clinics that didn't, data quality and patient care management improved more. Regarding to patient's data is more easily accessible and is kept secure due to the tool. In addition, the tool is vital for producing both routine and analytical clubfoot service reports and for data usage.

Conclusions: DHIS2 Tracker Capture is a tool used to collect, record, and analyze data on clubfoot services. It has the power to enhance data quality, generate reports, and patient care, and it has improved, strengthened, and helped sustain clubfoot treatment countrywide. It has also provided FMOH and policymakers access to vital data. To gather, record, and analyze data about clubfoot treatment clinics in the future, all clubfoot clinics will use this technology.

Keywords: Clubfoot, DHIS2, Tracker Capture, Ethiopia.

Accelerating quality, equitable, universal health care (UHC) through digitization of Community Health Workers (CHWs)

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Introduction: Health system today continues to exclude people from health care. Globally, nearly 1 billion people are disconnected from basic primary health services in part due to minimal and siloed investment in community health. Further, barriers to digital health tools such as cost, and limited technical capacity inhibit digital transformation.

Objectives:
1. Highlight the value digital global public goods in accelerating Community Health Information Systems
2. Demonstrate impact of democratizing capacity for sustained impact.
3. Highlight the role of partnerships in catalyzing digital health transformation

Methods: Medic builds CHIS with and for CHWs to advance equitable care. For 13 years now, we have prioritized addressing enablers of a digitally transformed community health system for UHC as below;

1. Enhancement and maintenance of the Community Health Toolkit (CHT) as the leading open-source platform to provide a foundation to build custom CHIS's faster for national scale

2. Democratizing CHT expertise and establishing strategic partnerships to enable sustainable uptake and local ownership of CHIS,

3. Incubation of new methods and tools to foster discovery, improve data quality & health impact, and strengthen health systems;

4. Drive systems-level change by translating evidence and best practices into policy.

Results: Today the CHT supports over 40,000 CHWs, who conducted 3.59 million assessments; 84% of which were within 72 hours of symptoms onset in 2022. Additionally, the CHT has been officially adopted in 4 countries as the platform to power CHIS in Kenya, Uganda, Mali and Zanzibar. The journey is still long.

Conclusions: The CHWs we're supporting are doing everything in their power to help their neighbors. We think technology is a critical part of this mission.

Keywords: Digitalization, Transformation, Equitable, Impact

The collaborative use of social media platform tools to provide sustainable system support for digital health applications: Lessons from eLABS in Southern Africa

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Introduction: Implementation of digital health (DH) applications has increased significantly in recent years to enhance service delivery in the health sector. DH applications require end-user support. eLABS is an innovative mHealth intervention designed from a need to automate remote monitoring of the pathology value chain. Monitoring includes sample logistics, results return and alerts to healthcare workers, supported by dashboards and a web portal. eLABS is scale-up in Zambia and South Africa for their national HIV-VL programs. Through collaborative efforts with Ministries of Health (MoH) and local implementing partners, eLABS has a 3-tier support model to effectively resolve system issues. Multiple platforms used for logging support tickets include WhatsApp, email and phone calls.

Objectives: The main objective is to demonstrate the collaborative efforts adopted to effectively provide sustainable mechanisms to resolve eLABS system issues for the end-users.

Methods: The adopted 3-tier support model defines roles and responsibilities for first, second- and third-line support. First line support is provided by MoH personnel and local implementing partners, second-line by system owners and third-line by the technology partner. The electronic ticket logging tool was developed on Arc GIS at second-line to record all tickets logged by end-users.

Results: To date, 1410 facilities have been implemented in Zambia and 2060 facilities in South Africa. During the period January 2022 to March 2023, a total of 18585 support tickets were logged and resolved; Zambia (n=5149) and South Africa (n=13928). Of the 18585 tickets logged, 17660 (95%) were logged via WhatsApp, 549 (3%) logged via direct calling and 376 (2%) via email.

Conclusions: Collaborative efforts with clearly defined roles and responsibilities between these stakeholders, ensures effective and sustainable support for DH applications. Use of social media applications, which are widely used by end users for general purposes like WhatsApp, provides the most convenient and preferred platform for system support.

Key work: Digital health, WhatsApp, mHealth, collaborative, support, implementing partners

Participatory Co-Design of Wearable Solutions for Monitoring Infants in Remote Environments in Sierra Leone

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Introduction: This project explores the potential of digital health technologies, including wearable Internet of Things (IoT) solutions, to remotely monitor and capture parameters and data for detecting and improving communications in accessing health care. The main aim is to facilitate the prevention of various health conditions (e.g., preterm, tetanus, fevers, measles and diarrhoea) in infants in Sierra Leone that lead to high infant mortality rates in Sierra Leone. Sierra Leone has one of the highest infant mortality rates, estimated at 39 per 1000 live births – three times higher than the Sustainable Development Goal (SDG) target of 12 infant deaths per 1000 live births by 2030. Lack of access to and low utilisation of effective and efficient health systems, aggravated by a range of factors, such as inequity in coverage, inadequate human resources and weak infrastructure, referral information and community health systems, are major contributing factors for high infant deaths. The solutions will assist in addressing these challenges.

Objectives: The project aims to assist efforts to reduce infant deaths through developing culturally appropriate, people-led design of digital health technologies, including mobile and wearable IoT solutions to: (i) facilitate remote monitoring of infant health (vital signs such as temperature, pulse rates, respiration blood pressure, etc.) and alerting of potential critical illness in non-clinical settings, and (ii) improve healthcare access and ethical and FAIR data sharing between parents and health workers in Sierra Leone.

Methods: The overall research approach is informed by a participatory design thinking framework, with the emphasis on four fundamental principles critical for developing appropriate and contextualised digital technologies in resource-poor settings: availability, accessibility, affordability and usability. It adopts a mix of socio-technical research using literature review and interviews and a co-design workshop with healthcare providers and caregivers. The socio-technical research provides in-depth insights into the contextual issues around the current healthcare system, challenges and opportunities for new technology innovations. The design workshop embodied inputs from the socio-technical research, participants' experiences, design scenarios, image-based reflections, journey maps and group discussions.

Results: Timing is everything to reduce child deaths. Both healthcare workers and caregivers report that acting as soon as the first symptoms are detected can make a significant difference in reducing the risk of infant deaths. Therefore, the remote monitoring solutions should provide early alerting for symptoms of common child illnesses such as malaria, pneumonia and diarrhoea, to facilitate informed decision making, timely response and treatment. Results further show a layered deployment of remote monitoring technology ecosystem including a paired wearable design used both on infants and primary carers, a mobile application and community/mobile internet kiosk to facilitate communication among different stakeholders, which, at times, may not even share a common spoken language. This layered approach is also expected to facilitate technology adoption in phases.

Conclusion: Our research confirms that digital technologies solutions designed together with the actual users can address contextually relevant healthcare solutions that reflect their actual needs. The layered deployment ecosystem emerged as a potential solution to strengthen information sharing and timely decision making and provide effective routes for remote monitoring and early alerting and access to the treatment of leading causes of infants' deaths in Sierra Leone.

Keywords: IoT Wearable health solution, Remote health monitoring, Infant health, Co-design, Sierra Leone, Africa

Exploratory data analysis of community health volunteers learning on a mobile platform in Kenya.

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Introduction and Methods: Amref and DataKind conducted an exploratory data analysis project to evaluate the effectiveness of Leap, a telephone application that trains community health volunteers on health-related topics using Interactive Voice Recognition. The study aimed to provide quantitative evidence of the platform's effectiveness and its fit within the ecosystem of health care workers. The study also explored how Leap training connects to external behaviors of health care workers and health outcomes.

Results: The study found that structured programs tend to yield higher learning scores and completion rates for learning topics compared to unstructured learning. The voice-based presentation of information is also beneficial for individuals with varying levels of literacy. Although connecting learning data to behavioral outcomes was challenging, an initial connection between learning and referrals was found.

Conclusion: The study recommends updating data collection and storage processes to align with a more current platform approach and including new sources of data from the Ministry of Health or direct partnership with the Ministry of Health. The findings and recommendations provided by DataKind will help Amref to strengthen their programs, improve data-related processes, and enhance analytical capabilities. The study highlights the value of cross-organizational collaboration in improving health outcomes. The methodologies developed under this initial project have the potential to scale across geographies and new data sources for Amref, demonstrating the importance of collaboration in advancing health care delivery.

Keywords: health worker training, mobile learning, learning platform outcomes, exploratory data analysis

Tackling appointments defaults in health facilities: The automated appointment reminder system in Nigeria

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Introduction: Nigeria's maternal mortality is the fourth globally and estimated at 576 per 100,000 live births. This could partly be attributed to facility appointments default estimated at 61%. The ubiquitous mobile phone could be a tool for engaging clients to keep facility appointments. Hence, the Automated Appointment Reminder (AAR) system.

Objectives: To strengthen the continuum of care by reducing appointments defaults at participating health facilities.

Introduction: Nigeria's maternal mortality is the fourth globally and estimated at 576 per 100,000 live births. This could partly be attributed to facility appointments default estimated at 61%. The ubiquitous mobile phone could be a tool for engaging clients to keep facility appointments. Hence, the Automated Appointment Reminder (AAR) system.

Objectives: To strengthen the continuum of care by reducing appointments defaults at participating health facilities.

Methods: The AAR is a mobile solution that sends zero-charge Interactive Voice Response (IVR) calls to facility clients about their appointments. Deployed by the USAID-funded Integrated Health Program in Bauchi, Ebonyi, FCT, Kebbi and Sokoto from April 2022, the AAR sends IVR reminders to clients 24 hours before scheduled appointments in preferred languages. Social and behavior change communication messages tailored to client's services, are sent within 48 hours after appointments. Additionally, IVR surveys are sent to clients for feedback on services received, after seven days. Services supported by the AAR include Antenatal Care (ANC), Routine Immunization (RI), and COVID-19 vaccination.

Results: Table 1 shows AAR call outcomes over 11 months. After action reviews are focused on engendering completion of reminder calls.

	Reminder Calls		
Services	**Sent**	**Picked-Up**	**Completed**
ANC	41,948	36,010(**86%**)	24,254(**67%**)
RI	26,868	22,474(**84%**)	15,717(**70%**)
COVID-19	6,496	5,152(**79%**)	3,670(**71%**)

Table 1: AAR outcomes, April 2022 to February 2023

Survey findings revealed that 86% found the AAR call reminders helpful. Similarly, 86% subsequently returned to the facility for their appointments. There was a 39% and 23% increase in ANC and RI attendance respectively, comparing April 2022 to February 2023. This increase could be attributed to the contribution of the AAR system.

Conclusions: Within a few months, the AAR has demonstrated its usefulness in strengthening the continuum of care by reducing appointment defaults. Scaling up this intervention to more facilities and services would contribute more effectively to reduced mortality and morbidity.

Keywords: Health-facility, Automated Appointment Reminder, Mobile, Appointments Default

A long journey with DISC-MALI: Codevelopment of a digital tool for community health : in Mali

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Introduction: Medic has supported MALI in the implementation of its digitalization plan for community health. Medic has thereby acted as technical lead for the community health toolkit (CHT), an open source global public good, to support the development of digital health initiatives and promote universal health coverage. The mobile application developed by Medic within the DISC-MALI framework runs offline and is operated with basic phones (via SMS), smartphones, tablets and computers. Key user groups include community health workers, frontline supervisors, facility-based clinicians, health system managers, patients and caregivers.

Objectives: Mali's and Medic's shared objective is a development process whose objective is to equip national actors with abilities to implement a community health information systems (CHIS) health information system based on the CHT.

Methodology: The methodology used is focused around these important points:

1- A user-centered design : The codesign process included more than a dozen virtual individual interviews with CHWs and supervisors to surface the user needs, pain points, opportunities to integrate technology in the workflows for maximum impact as well as alignment with national community health guidelines and protocols.

2- Development of national expertise around the CHT : for ownership and sustainability, Medic conducted a series of capacity building sessions for the local technical teams aimed at equiping them with CHT design and technical capacity to manage the CHIS.

3- CHIS customization : Addressing cultural concerns and priorities is a challenge that has been met through the development of the DISC-MALI application.

* Adoption of a simple and easily understood language for users,
* Use of a local demographic model according to socio-cultural realities of Mali,
* Integration with DHIS2: State health information systems use DHIS2 at the national level. It is therefore imperative for the fullness and effectiveness of the offered solution to ensure interoperability with the DHIS2.

4- Partnership and collaboration

Results:
* Coordinated digitization process of community health in Mali
* Development of DISC MALI with 6 workflows ready and 4 new requests underway
* Institutionalization of the CHIS through an official launch of DISC-MALI in March 2023 and commitment to digitize 25,000 CHW by 2025

Conclusion: Building effective and sustainable tools for the people who care requires setting up an environment and a holistic approach with the involvement of all stakeholders

Keywords: Governance –Mhealth - eCHIS- MoH -Collaborative

Mhealth tools for community-based infectious disease surveillance in Africa: a scoping review protocol

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Introduction: Community-based surveillance is useful in ensuring the effectiveness of the integrated disease surveillance and response (IDSR) strategy. The approach encourages community participation in the surveillance system, early detection of outbreaks and other health threats. With the potential that mobile health holds in disease surveillance at the community level, it inarguably requires periodic review for best context-based practices.

Objectives: The purpose of this review is to map evidence on available mhealth tools for community-based infectious disease surveillance in Africa.

Methodology: The scoping review followed a mixed-methods approach in line with the framework of Arksey and O'Malley amended by Levac and colleagues and the Joanna Briggs Institute. Published literature between 2000 and 2022 have been retrieved in PubMed, Scopus, Web of Science, CIHNAL, Google Scholar and Google databases. Websites of relevant organizations were also be searched for grey literature. Studies on key concepts of mhealth, community-based volunteers and Africa were included and results to be presented according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis: Extension for Scoping Review Guidelines.

Results: Per the preliminary results 2,384 studies were retrieved from the databases. Thirteen (13) mhealth tools were retrieved from the grey literature with all (13) purposely for outbreak and disease surveillance, and four (community health tool kit, Commcare, ODK and EWARS) in use at the community level. Title screening of retrieved results is currently ongoing for further analysis.

Conclusion: Overall, mhealth among community health workers (CHWs) has the potential to improve timeliness of disease detection, reporting, data quality, and decision-making. Features of mhealth tools including voice prompts, short message services, and local language as the preferred language are significant for easy navigation among CHWs. Mhealth for CHW further enhances coordination between the community and the health system and must be embraced towards the digitization of disease surveillance in Africa.

Key words: Mhealth, community health worker, Africa, disease surveillance

Digitalization of Malaria Campaigns in Nigeria: current landscape and the need for improved coordination

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Background: Among other interventions, malaria campaigns (Insecticide Treated Net (ITN) and Seasonal Malaria Chemoprevention (SMC)) remain proven interventions to reduce the burden of malaria. In 2018, National Malaria Elimination Programme (NMEP) and its partners introduced digitalization to improve efficiencies of malaria campaigns in terms of swift payment of staff, and has since been expanded to other malaria campaign processes.

Objectives: This study was carried out to document the current status (scale and scope) of malaria campaign digitalization in Nigeria, highlight gaps and proffering actionable recommendations to optimize malaria campaign digitalization.

Methodology:
Qualitative approaches were utilized to collect information on current status and gaps. These include key informant interviews with 45 key stakeholders across government, donors and partner organizations, and FGDs with 32 groups of campaign implementers at the sub-national level

Results:
Digitalization of malaria campaigns occurs in 27 of 36+1 states with support from four donors (GF, PMI, BMGF, Givewell), and the number of states supported differed by donors. Significant progress has been made in the area of swift payment of staff (from an average of 1 year to pay staff post-campaign to 2 weeks), and accountability through real-time electronic monitoring of campaign activities.
There are five (5) tools deployed for malaria campaigns by multiple partners, and tools deployed are at different levels of advancement covering fractions of the malaria campaign processes. Opportunities for decision making is limited due to no linkage of tools to a central data repository. Additionally, digitalization efforts across stakeholders are not guided by a common roadmap.

Conclusion: Malaria campaign digitalization covers a fraction of states, and digital tools deployed by multiple partners are at different levels of advancement with no common roadmap guiding the digitalization efforts. There are opportunities for cross-learning, partnership and improved coordination through a common inclusive digitalization roadmap.

Keywords: Digitalization, Malaria, Campaigns, Nigeria, Coordination

Coordination with Governments, a vital asset in designing scalable technology in the health sector: a case study from Madagascar.

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Madagascar faces considerable challenges: 75% of the population live on less than $1.90 a day, and only 13% have access to electricity. But it also has huge potential. A vibrant tech industry of more than 230 firms employs 15,000 people. Broadband speeds are faster than many other countries, including the UK and France. There are 9.7 million mobile subscriptions, and the number of internet users grew by 37% between 2018 and 2019. The Government with support from UNICEF and the World Bank wanted to understand digital maturity and capability, then start work on public sector digital transformation with a specific goal of improving public service delivery to citizens and businesses.

In this case study, we leverage the process of designing the implementation of four initiatives: the electronic Logistics management system (e-LMIS), electronic Community health information system (e-CHIS) and the electronic Community Health workers master's list and Registry (e-CHWR), the Health Management Information systems (HMIS) maturity Model to document the impact of human design approaches especially coordination with governments in developing scalable digital technologies.

Overwhelmingly, government reported that digital technologies are having a major impact on program implementation especially in the health sector. Another key finding that stands out is that within the health sector, different programs are at very different stages in this journey. While a small percentage are what we consider "maturing," the overwhelming majority are still in the early or developing stages of the digital transformation journey.

This case study documents five factors shaping digital transformation within the health sector in Madagascar: strategy (digitally maturity requires a clear strategy aimed at fundamental transformation), leadership (having a Digitally savvy leadership is a game changer), workforce skills (The lack of digital workforce skills represents a major obstacle to transformation), digital culture (digital transformation will face the challenge of cultural norms), and user focus (digital transformation is achievable when the design focuses on the users).

Lastly, we identified major barriers that impede the Ministry of Health from taking advantage of digital transformation. These include Too many competing priorities, Insufficient funding, Insufficient technical skills, Lack of entrepreneurial spirit and willingness to take risks, Security concerns, Lack of an overall strategy, Lack of understanding, Lack of collaborative and sharing culture, Legislative and legal constraints.

Using storytelling, delivered through mobile technology, to improve health outcomes among northern Nigerian communities.

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Introduction: Nigeria has one of the highest maternal and neonatal mortality rates in the world. The dissemination of health messages can improve community members' adoption of priority behaviour. The Breakthrough ACTION-Nigeria (BA-Nigeria) project, funded by USAID, collaborated with Airtel Networks Limited to provide on-demand health content to listeners from the radio drama "Albishirin Ku!" on a 4-2-1 toll-free platform.

Objectives: To use mobile technology to promote behaviour that can improve maternal and child health outcomes.

Methods: The Albishirin Ku! (Hausa for "Glad Tidings") drama is set in the fictional town of Bakeso (Bauchi, Kebbi, and Sokoto) in northern Nigeria. Working with local scriptwriters, actors, and radio stations, BA-Nigeria has produced and broadcast five seasons of Albishirin Ku! since its debut in 2019. As part of expanding exposure to the storytelling on the radio, the drama is also available on the 4-2-1 mobile platform, set up by Viamo, as well as additional messages on multiple priority health behaviors. Accompanying jingles were recorded to promote the content on radio stations and on the platform's daily digest. Callers could choose their preferred language from a list of options. The engagement result was analyzed from the platform.

Results: Between July 2020 and February 2023, a total of 1,186,022 callers made 4,329,488 calls and listened to the drama on the 4-2-1 platform for 20,585,996 minutes. 63% callers stated their gender, with 70% being male and 30% female. Free calls made by subscribers during this period were estimated at a value of $313,082.

Conclusions: Storytelling via mobile technology is an effective way to disseminate health information to underserved and vulnerable populations, increasing coverage and improving maternal and child health. Continued partnerships with mobile network operators will increase coverage and ultimately improve maternal and child health.

Keywords: Platform, Health, Mobile, Nigeria, and Radio-drama

Viamo 4-2-1 platform: a national hotline that provides life-saving information to underserved communities in Nigeria

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Introduction: Access to valuable and life-saving information is limited in Nigeria's rural communities, primarily due to poverty, low literacy, lack of awareness, inaccessibility, etc., Accessibility and utilization of information can improve quality of life and lead to making informed decisions. The Viamo 4-2-1 platform is an Airtel network mobile service that people can call voluntarily to access pre-recorded life-saving information. The platform was launched in Nigeria in November 2015.

Objectives: To provide Nigerians access to life-saving information.

Methods: The Viamo 4-2-1 platform is a toll-free service that provides information to the public in English and local dialects via the mobile phone. This service is a partnership between Airtel Nigeria and numerous local and international non-governmental organizations. Key messages on subject areas are developed, optimized in mobile communication format, translated, and recorded in multiple languages before they are uploaded on the platform. These key messages are in the form of static messages, dramas, and games and can be accessed via Interactive Voice Response (IVR) channel. Users only need to dial 4-2-1 on their Airtel network to access the platform. However, non-airtel subscribers can call +234-708-060-1391 to access the platform at a regular call rate. Currently, the platform has different contents in health, agriculture, education, news, governance, climate, finance, crisis response, migration, etc.

Results: Between November 2015 and January 2023, over 3 million listeners, 62% males and 38% females, accessed over 61 million key messages on the platform. From January 2022 to January 2023, the platform received over 30 million calls with over 83 million minutes spent. This toll-free service has saved callers an estimated value of over $4.9million in one year.

Conclusions: The Viamo-Airtel partnership has proven to be effective in increasing access to critical information. This should be sustained, and service coverage expanded.

Keywords: Viamo, Life-saving, Health, Interactive Voice Response, Partnership

Risk engine on MomConnect using predictive analyses and algorithms on maternal health challenges.

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Introduction: The project aims to build and use predictive analyses and algorithms to address important maternal health challenges on MomConnect. A two-phase approach will be deployed, Phase 1 to conduct analyses, and Phase 2 to use analytical insights to enhance program approaches and data systems.

MomConnect aims to support maternal health using mobile technology. Currently, MomConnect operates in a largely one-size-fits-all manner with most mothers receiving largely similar content. However, the personal, direct-to-mother nature of the technology platform enables a customised approach for content and digital interventions that has not yet been fully realised. This collaboration seeks to further customise MomConnect to the health and wellness needs of individual moms and their babies. All interventions will be built on top of a common data and prediction architecture called the "Risk Engine". The algorithm starts with a population level risk score for every mother and continuously learns from new user data to update the mother's risk on a variety of conditions informing which interventions to trigger and when.

Objectives: The objective of the risk engine is to
- Segment users based on their risk scores for various adverse outcomes.
- Profile users based on demographic and health characteristics.
- Predict user behaviour and challenges based on risk score and demographic characteristics.

Methods: Types of interventions:
- Targeted messaging about the importance of ANC visits, healthy behaviours, and health condition specific knowledge i.e SRH
- Additional targeted reminders for women at risk of not attending ANC or PNC visits
- Targeted messaging based on identified behavioural barrier/s e.g. attitude and knowledge towards contraception.

Separately, we would develop, test, and deploy higher touch interventions targeted at critical points in high risk pregnancies as determined by the risk engine, targeted to individual mothers who are at high risk.
These interventions include:
- Provider initiated outbound phone or message based counselling sessions delivered by MomConnect help desk.
- Referral to clinic or hospital due to danger signs
- Offers to join digital support groups.

Results: A recent analysis revealed that
- >57,000 women registered on MomConnect are below the age of 20, linked to a lack of planning and neglect of ANC.
- 28% of adolescent women with multiple pregnancies registered in the MomConnect program had an interpregnancy interval of <6 months, compared to 15% in other age groups, significantly increasing the risk of adverse pregnancy outcomes.

Conclusions: Our goal is to improve the health and well being of millions of pregnant women, new mothers and their infants enrolled on the MomConnect platform. We believe by using data insights and machine learning predictions we can better target digital interventions, to accurately disseminate information and interventions at the right time on the right topic. Additionally by providing more bespoke information we will improve the overall effectiveness and retention of users on the MomConnect platform.

Maximum of 5-6 keywords:
Predictive analyses, Algorithms, Maternal, Health, Antenatal Care, Risk

Improving data for decision making to enhance lactation support and use of human milk.

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Introduction: The increase in child mortality rates among population across the globe pledge the need for research on the underlying issues and generate long term solutions to reduce loss of young lives. Every year, 2.5 million newborns die in their first month of life, with most of these deaths occurring in low- and middle-income countries. To reduce neonatal morbidity and mortality and meet Sustainable Development Goal 3.2, innovations are urgently needed to improve care, including optimal feeding during this critical period. Despite known interventions, inpatient newborns may not receive optimal nutrition, including mother's own milk or donor human milk from a human milk bank.

Objectives: Current data systems are lacking to track how newborns are fed, how mothers are supported to establish their lactation, and how human milk banks can provide safe and quality donor human milk to infants who lack their mothers' milk. This research investigates the possibility of developing a system that tracks and measures the feeding of infants to identify anomalies. A proactive monitoring and measuring approach will help in identifying struggling infants and using alternative means to provide sustenance and reduce child mortality rates.

Methods: By incorporating use of the human centered design (HCD) approach we managed to: first, identify the right problem to focus on; second, co-design with key stakeholders (Pumwani Maternity Hospital fraternity and Preemie Love Group); third, integrate the workflows with clinical and hospital workflows; and lastly, evaluate and test the system with key stakeholders.

Results: We cocreated and codeveloped a digital solution to address inpatient clinical decision making for support of maternal lactation and newborn nutrition, called the Newborn Nutrition Digital Adaptation Kit (NNDAK). The NNDAK has been designed within the Digital Adaptation Kit architectures recommended by the World Health Organization (WHO) and guided by globally and national recognized guidelines, including the WHO-UNICEF Baby Friendly Hospital Initiative for small, sick and preterm newborns and the Kenya Comprehensive Newborn Care protocol.

Conclusion: The NNDAK is now ready for piloting for eventual use by about 150 healthcare workers to support the feeding of approximately 36,000 newborns per year. The application is open source and anticipated to scale up to neonatal units across the globe.

Key Words: Newborn, nutrition, Digital Adaptation Kits, Digital

Collaboration for Decision Support and Improvement in Nigeria

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Nigeria contributes about 15% of the annual total global maternal deaths and the country's neonatal mortality rate is high at 37/1,000 live births[OBJ]. Attaining Universal Health Coverage has been daunting due to tightening fiscal space, poorly functioning service delivery points and a lack of actionable data to determine what to prioritize given tightening fiscal realities. Targeted planning at macro and micro levels is required to improve key RMNCH+N outcomes, service delivery and uptake.

The GeoST4R project draws from the successes and best practices of the Polio, Routine Immunization and COVID interventions, that have utilized a geo-enabled tool to enhance data availability for decision-making and improved health outcomes.

To achieve intended outcomes a collaboration between partners with expertise in RMNCHN project implementation, core geospatial data solutions, Artificial Intelligence, data visualization and data management continuums was formed. Applying geo-enabled technology for Reproductive Maternal Newborn Child Health and Nutrition (RMNCH+N) microplanning and decision support, provides a snapshot of enriched data and metrics sourced from discussion forums at the levels.

To drive sustainable change, the project prioritizes collaborating with existing state structures including technical working groups and forums for decision making on health issues to showcase and interpret trends on RMNCHN. At the facility level, outreach planning will target settlements most in need. Expected results include strengthened data systems, technical capacity for geospatial analysis, evidence with robust context which contributes to improved strategic interventions, enhancing overall systems for priority primary health care outcomes.

Key words: targeted microplanning, geo-enabled, decision making, data systems

Exploring the value proposition of global digital health inventories for stakeholders

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Introduction: Global digital health inventories can enhance evidence-based decision making, foster collaboration, mitigate duplicated efforts, and facilitate learning from existing experiences among stakeholders in the digital health ecosystem. However, given the diverse range of stakeholders, such as policymakers, solutions developers and investors, and their unique information needs, it is essential to determine the most crucial information that can be collected and utilized by all parties involved. BETTEReHEALTH has developed a comprehensive digital health registry in Africa, making significant progress on data collection for implemented digital health solutions. Ongoing collaboration with the Digital Health Atlas will enhance the understanding of stakeholder requirements, and consolidate the digital health solutions inventory.

Objectives: The aim was to identify the value proposition of global digital health inventories on digital solutions to inform the development of useful registries and incentivize stronger stakeholder involvement.

Methods: The research was informed by interviews of African digital health stakeholders, focus group discussions at the BETTEReHEALTH Regional Hub workshops that took place in Ghana, Malawi, Ethiopia and Tunisia in 2021, 2022 and 2023, and feedback from stakeholders while developing the BETTEReHEALTH registry.

Results: The study revealed that policymakers seek readily available comprehensive overview of regulatory documents, national and private digital health systems, cost analysis, and benchmarking between countries. They aim to identify policy gaps and enhance regulatory visibility. Solution developers aim to identify needs, and to understand regulations, and standards for integration with established systems. They seek inspiration from similar solutions, information about good practices, explore technologies, trends, and potential competitors. Showcasing results to the government and investors is crucial. Investors and donors seek innovative, impactful solutions while understanding regulations and national agendas. Efforts are needed to enhance visibility and utilization of existing platforms. A dynamic platform is necessary to accommodate updates and additional requirements.

Conclusions: Stakeholders in digital health share a common interest in developing an international inventory that promotes visibility and provides comprehensive overviews of the digital health space, while catering for diverse information needs.

Keywords: Digital health inventory, value proposition,

Stakeholder participation in eHealth Policy development: a Ghana study

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Introduction: Relevant persons or organizations with a vested interest in a country's eHealth policy, strategy, legislation, or eHealth environment can be considered stakeholders of eHealth. These stakeholders could affect or be affected by eHealth policies and, in one way or another, influence eHealth development and implementation. This study aimed to identify the stakeholders of eHealth in Ghana and their characteristics.

Methods: We conducted one-on-one interviews using a questionnaire based on WHO's Stakeholder Analysis Guidelines with identified priority eHealth stakeholders in Ghana. Data were analyzed according to eHealth stakeholders' characteristics: knowledge of existing eHealth policy/strategy (National e-health strategy (2010)), interest, and level of influence (leadership and power).

Results: Twenty-two organizations were identified. Stakeholders with high knowledge of Ghana's eHealth strategy were the Ministry of Health and Ghana Health Service, both responsible for the country's eHealth. Some international/donor organizations and higher education institutions had high knowledge because they were involved in developing eHealth policies sometimes. eHealth stakeholders in Ghana have an interest in eHealth implementation and strongly support the eHealth policy. Most professional associations though having no leadership, seemed to have either high or medium power to influence eHealth development and implementation in the country.

Conclusion: Although Ministries of Health and their affiliated institutions' involvement in eHealth development and implementation is vital, a well-developed eHealth policy involves all relevant stakeholders and addresses the concerns and needs of primary end-users. Such eHealth policies are user-centered and more likely to be accepted and successfully implemented.

Keywords: eHealth, policy, stakeholder's analysis, Ghana

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"Steps towards the development of strategic plan to promote successful eHealth implementation in African countries"

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Introduction: eHealth is making a growing impact to the delivery of health quality care, and strengthening health system with efficient, resilient applications more responsive to patient's needs and expectations. The BETTEReHEALTH project assesses the human, technical and public policy factors from four African countries, Ghana. Ethiopia, Tunisia and Malawi, to identify eHealth components that should be prioritized on the national eHealth vision. Using the countries own policy/ strategy, resources, requirements, priorities and expectations of the citizens necessary steps for successful eHealth policies and national programs were specified in strategic implementation plans for each of the participating African countries in the project.

Methods: We developed the country specific strategic implementation plan for eHealth for four participating African countries, Ghana, Ethiopia, Tunisia and Malawi, with reflect their own unique ecosystem, constrains and priorities based on the National eHealth Strategy Toolkit introduced by WHO and ITU. Internal assessment and multisectoral consultation with relevant stakeholders are approaches employed to identify and define activities of eHealth action lines, timelines of action lines, costing, risk associated with the delivery of action line plans and monitoring of the implementation plan.

Results: The result shows that Ghana, Ethiopia, Tunisia and Malawi have similar national eHealth visions and ecosystems. The almost identical eHealth ecosystems among the countries resulted in similar actions proposed for the eHealth implementation but with different timelines. The availability and timing of resources defined the timelines and priorities in the implementation plans. Countries exhibited similar risks associated with the delivery of action line of strategic implementation for the eHealth solutions. This provided the opportunity to develop recommendations for mitigation of eHealth delivery risks for African countries.

Conclusion: Formulation of an eHealth strategic implementation plan should be done in collaboration with end-user communities, policy makers to support national strategic ownership of eHealth programmes to fulfil end-user and societal needs. The country situational analysis on technical, human and political factors, priorities and resources, identified risk factors and there impact should be considered in the strategic implementation plan for successful digitalization of health sector.

Keywords: eHealth, strategic plan, African countries, BETTEReHEALTH

Febra Diagnostica: A tool to improve diagnosis of febrile diseases in resource-scarce settings

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Medical Decision Support Systems (MDSS) are systems that help clinicians make diagnosis especially when the signs and symptoms are non-specific and easily confusable. Adoption and utilization of MDSS however, have been found to be low globally, and in particular, low- and middle-income countries. These countries (mostly located in Africa) suffer from lack of resources, and very poor healthcare budget. The World Health Organization's tracking of universal health coverage ' reveals troubling statistics about healthcare access in the African health region when compared with global expectations.

There has been a significant push to utilize frontline health workers (FHWs) in delivering healthcare in locations where physicians are not available. The frontline health workers are able to perform basic diagnosis using the pre-defined standard operating procedure (SOP). We believe that technology could enhance the performance of FHWs in terms of accuracy of diagnosis, efficiency, and records management. Our study, funded by the New Frontiers in Research Fund, Canada, focused on the development of an application that aids the FHW in the process of diagnosing and treating febrile diseases in rural areas and other resource scarce settings.

Our study was conducted in the following phases: Phase I: Literature Review &Tools Development (September 2020-April 2021); Phase II: Adoption Studies (January 2021- June 2021); Phase III: Data Collection for the Main Study (May 2021- December 2021); Phase IV: Modelling and Development of the App (January 2022 - December 2022); Phase V App Launch and Implementation (January 2022 – Aug 2023). Our presentation focuses on the development and utility of the Febra Diagnostica (FEBRA) application and the features that make our system a unique one that could contribute significantly to healthcare access in resource scare settings.

Our study is one of the first to integrate medical and non-medical risk factors in the diagnosis process. This was informed by our previous study, which determined that these factors impact on the accuracy of diagnosis and patient outcomes. Equally, the utilization of mined experiential data of medical experts improved the performance of the model and enhanced the confidence in the system. It is also important to note that we adopted a joint application development methodology involving 37 people [including Research Assistants] from five countries [Canada, Nigeria, UK, USA, and Uganda] and from various disciplines in the fields of medicine, nursing, computer science, social works, and management. This created inbuilt robustness and internal checks to ensure that we moved away from theoretical to practical research. The Application (Febra Diagnostica), was initially completed in December, 2022, and released on Google Play Store as FEBRA. The App has since been refined based on feedback from testers including frontline health workers, physicians and computer scientists.

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PICTURES FROM THE SUMMIT DAY ONE

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