

Monitoring and Evaluating Digital Health Interventions

A practical guide to conducting research and assessment





JOHNS HOPKINS UNIVERSITY Global mHealth Initiative



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Acronyms and abbreviations

ANC	Antenatal care
CBA	Cost–benefit analysis
CCA	Cost–consequence analysis
CEA	Cost-effectiveness analysis
CHW	Community health worker
CIEL	Columbia International eHealth Laboratory
CONSORT	Consolidated Standards of Reporting Trials
СМА	Cost-minimization analysis
CUA	Cost-utility analysis
DALY	Disability-adjusted life year
DHIS	District Health Information System
DHS	Demographic and Health Survey
eHealth	Electronic health
FGD	Focus group discussion
HEI	HIV-exposed infant
HIPAA	Health Insurance Portability and Accountability Act
HIS	Health information system
HIV	Human immunodeficiency virus
HL7	Health Level 7 (data standard)
HMIS	Health management information system
HRP	The UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction
ICD	International Classification of Diseases
ІСТ	Information and communications technology
IDI	In-depth interview
IR	Immediate results
ISO	International Organization for Standardization
ІТ	Information technology
IVR	Interactive voice response
IWG	Innovation Working Group
JHU-Gml	Johns Hopkins University Global mHealth Initiative
JHSPH	Johns Hopkins University School of Public Health
JSI	John Snow, Inc.
K4Health	Knowledge4Health
KEMRI	Kenya Medical Research Institute

M&E	Monitoring and evaluation
МАМА	Mobile Alliance for Maternal Action
MAPS	mHealth Assessment and Planning for Scale
mERA	mHealth Evidence Reporting and Assessment
mHealth	The use of mobile and wireless technologies for health
MICS	Multiple Indicator Cluster Survey
MNO	Mobile network operator
мон	Ministry of health
MOTECH	Mobile Technology for Community Health (Ghana)
N/A	Not applicable
NGO	Nongovernmental organization
Norad	Norwegian Agency for Development Cooperation
OpenMRS	Open Medical Record System
PAR	Participatory action research
РМТСТ	Prevent mother-to-child transmission (of HIV)
PNC	Postnatal care
PRISM	Performance of Routine Information System Management
RCT	Randomized controlled trial
RMNCAH	Reproductive, maternal, newborn, child and adolescent health
RMNCH	Reproductive, maternal, newborn and child health
SBA	Skilled birth attendant
SMART	Specific, measurable, attainable, relevant and time-bound
SMS	Short messaging service (also known as text messages)
SOP	Standard operating procedure
SP	Sulfadoxine-pyrimethamine, used in preventive treatment of malaria in pregnancy
SRS	Software requirements specification
STI	Sexually transmitted infection
STROBE	STrengthening the Reporting of OBservational studies in Epidemiology
UHC	Universal health coverage
UI	User interface
UNDP	United Nations Development Programme
UNF	United Nations Foundation
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USSD	Unstructured supplementary service data
WHO	World Health Organization

Preface

Over the past five years, substantial progress has been made in defining terms around the landscape of digital, mobile and wireless technologies for health, or digital health – also commonly referred to as mHealth or eHealth. Broadly, digital tools are increasingly being tested, evaluated and, in some instances, integrated at scale into health systems in low- and middle-income countries striving to meet goals of universal health coverage (UHC). Along with the proliferation of small innovation projects testing the use of mobile and digital technologies, concerted efforts to harmonize and learn from these deployments are also under way.

Since 2011, in partnership with the World Health Organization (WHO) Department of Reproductive Health and Research (RHR), the United Nations Foundation (UNF) has been supported by the Norwegian Agency for Development Cooperation (Norad) to oversee three yearly rounds of grants to mHealth projects. A total of 26 organizations received financial investments and technical assistance towards the goal of demonstrating potential for scaling up digital health innovations to catalyse achievement of the health-focused United Nations Millennium Development Goals (MDGs). The research and technical support provided through this mechanism, with assistance from the Johns Hopkins University Global mHealth Initiative (JHU-GmI), have afforded numerous opportunities to engage with and learn from implementing partners on the ground, across Asia and Africa.

This resource represents the collective learning from five years of engagement with agencies working to strengthen their digital health deployments, develop robust evaluations, and scale up their activities nationally and regionally. The lessons learnt from working with these partners are described in this document, which provides high-level guidance and systematic direction to programme planners and implementers embarking on similar journeys. Specifically, this Guide provides an introduction to the approaches and methods that were identified as useful for (i) the monitoring of project (i.e. intervention) deployments, focusing on the quality and fidelity of the intervention inputs; and (ii) the evaluation of project outputs and impacts across a number of axes, from user satisfaction to process improvements, health outcomes and cost–effectiveness.

Although more in-depth texts and curricula are available on the methods discussed, this Guide focuses on presenting pragmatic highlights and experience-informed tips for implementers to consider, together with links and resources for further study. It leads the reader through the development of value "claims", evaluation designs and indicators associated with their digital health intervention, an assessment of the quality and availability of the data from their intervention, and finally, a series of guidelines for the reporting of findings.

Executive summary

This Guide provides step-wise guidance to improve the quality and value of monitoring and evaluation (M&E) efforts in the context of digital health interventions, which are also commonly referred to as mHealth or eHealth interventions. Among the many challenges identified in the digital health landscape, those of programme monitoring and impact evaluation remain areas of ongoing exploration. Digital health interventions are often very dynamic, evolving through several stages of maturity during which the M&E needs of the intervention are also changing rapidly. Digital health intervention projects typically begin with exploring basic questions of whether the intervention addresses the identified needs, including technical functionality and feasibility, followed by assessment of user satisfaction, then move towards efforts to evaluate the effectiveness, attributable impact and, ultimately, "value for money" of the intervention.

The Guide assists the reader to navigate through the development of value "claims", the selection of indicators and evaluation designs associated with their digital health interventions, as well as approaches for the assessment of the quality and availability of the data from their interventions, and finally, guidelines for the reporting of findings. This progression of activities requires a combination of methods, both qualitative and quantitative, to answer the questions being asked about digital health interventions. Accordingly, this resource directs the reader through a journey that begins with defining the basic technical requirements and continues to early implementation testing and monitoring, through to the evaluation and reporting of intervention impact.

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