

# Recommendations on digital interventions for health system strengthening

Overview of WHO guidelines

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(Note – Steve Ollis' presentation follows)

# General concepts

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## Target audience

- Decision-makers in ministries of health
- Public health practitioners
- Donors

## Aim

- Strengthen **evidence-based decision-making** on digital approaches by governments and partner institutions, encouraging the mainstreaming and institutionalization of effective digital interventions.

## Caveats

- Temper expectations based on the ICT and enabling environment
- Avoid unconnected systems
  - Impact on the effectiveness and sustainability of the intervention
- Recognize that there may be newer interventions that don't have evidence that meets WHO's strict criteria



# Interventions included now

(will add more over time)

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- **Birth** notification via mobile devices
- **Death** notification via mobile devices
- **Stock** notification and commodity management via mobile devices
- Client-to-provider **telemedicine**
- Provider-to-provider telemedicine
- Targeted **client communication** via mobile devices
- Digital **tracking** of patients'/clients' health status and services via mobile devices
- Health worker **decision support** via mobile devices
- Provision of **training** and educational content to health workers via mobile devices (mobile learning-mLearning)



# Interventions in taxonomy

## 1.0 CLIENTS

<b>1.1 Targeted client communication</b>	<b>1.3 Client to client communication</b>	<b>1.6 On-demand information services to clients</b>
1.1.1 Transmit health event alerts to specific population groups	1.3.1 Peer group for clients	1.6.1 Client look-up of health information
1.1.2 Transmit targeted health information to clients based on health status or demographics	<b>1.4 Personal health tracking</b>	<b>1.7 Client financial transactions</b>
1.1.3 Transmit targeted alerts and reminders to clients	1.4.1 Access by clients to own medical records	1.7.1 Transmit or manage use of practice payments by clients
1.1.4 Transmit diagnostic result, or notification of result, to clients	1.4.2 Self-measurement of health or diagnostic data by clients	1.7.2 Transmit or manage receipts to clients for health services
1.1.4.1 Transmit or manage receipts to clients for health services	1.4.3 Active data capture dissemination by clients	1.7.3 Transmit or manage incentives to clients for health services
<b>1.2 Unsegmented client communication</b>	<b>1.5 Content and reporting</b>	
1.2.1 Transmit unsegmented health information to an undefined population	1.5.1 Reporting of health system feedback by clients	
1.2.2 Transmit unsegmented health event alerts to undefined group	1.5.2 Reporting of public health events by clients	

## 3.0 HEALTH SYSTEM MANAGERS

<b>3.1 Human resources</b>	<b>3.3 Public health system interventions</b>	<b>3.6 Equipment and asset management</b>
3.1.1 Use health workforce codes and related identification information	3.3.1 Notification of public health events from point of diagnosis	3.6.1 Monitor status of health equipment
3.1.2 Monitor performance of health workers	<b>3.4 Care, recognition and vital statistics</b>	3.6.2 Track registration and license of medical equipment
3.1.3 Manage certification and registration of health workers	3.4.1 Notify birth events	<b>3.7 Facility management</b>
3.1.4 Record training credentials of health workers	3.4.2 Register death events	3.7.1 Use health facilities and related information
<b>3.2 Supply chain management</b>	3.4.3 Notify death events	3.7.2 Assess health facilities
3.2.1 Manage inventory and distribution of health commodities	3.4.4 Register death events	
3.2.2 Notify stock levels of health commodities	3.4.5 Notify death events	
3.2.3 Monitor consumption of essential commodities	3.4.6 Notify death events	
3.2.4 Register licensed drugs and health commodities	<b>3.5 Health financing</b>	
3.2.5 Manage programmes of commodities	3.5.1 Register and verify client insurance membership	
3.2.6 Report compliance or non-compliance of licensed drugs by clients	3.5.2 Track insurance billing and claims submission	
	3.5.3 Track and manage insurance reimbursements	
	3.5.4 Transmit routine payroll payments to health workers	
	3.5.5 Transmit or manage incentives to health workers	
	3.5.6 Manage budget and expenditure	

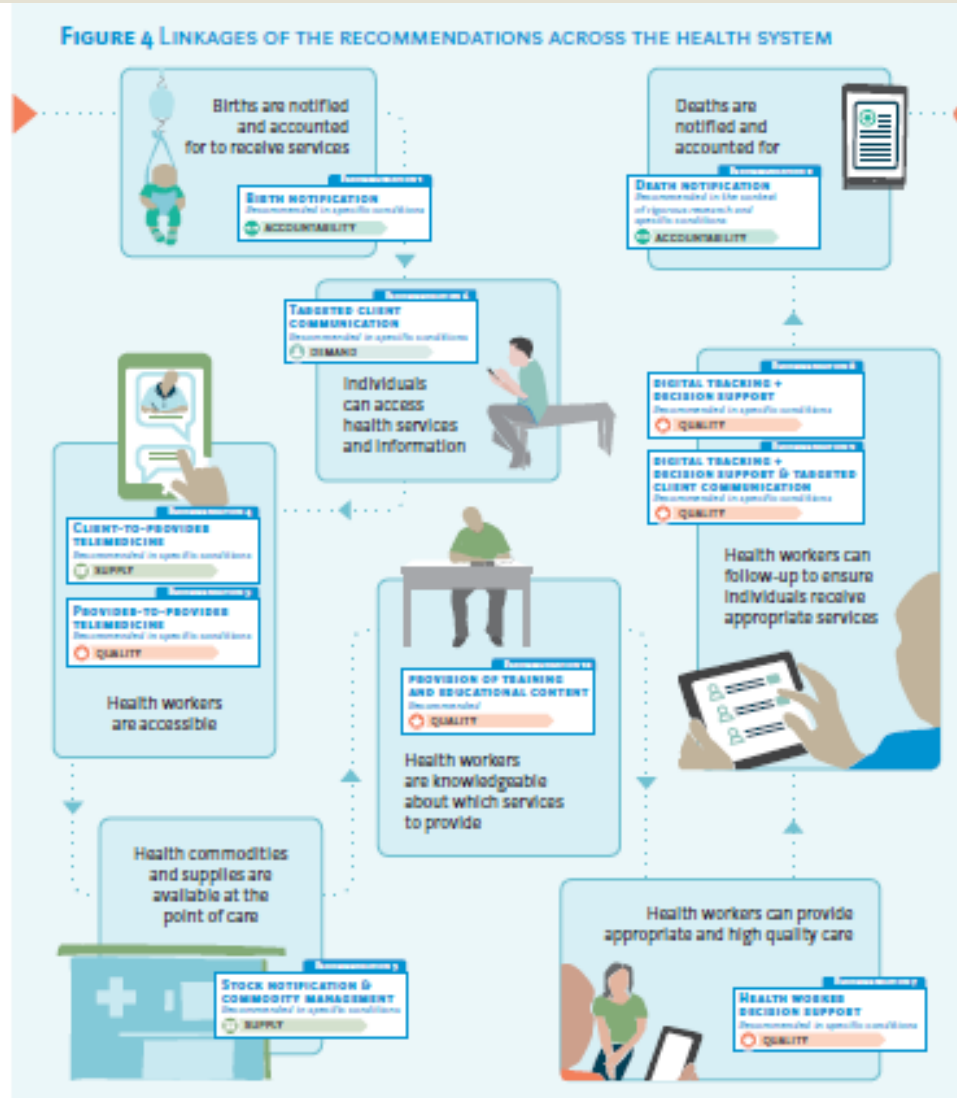
## 2.0 HEALTH WORKERS

<b>2.1 Client identification and authentication</b>	<b>2.5 Health worker communication</b>	<b>2.8 Health worker training</b>
2.1.1 Verify client unique identity	2.5.1 Communication from health workers to supervisor	2.8.1 Provide ongoing content to health workers
2.1.2 Enrol client for health service/medical care plan	2.5.2 Communication and performance feedback to health workers	2.8.2 Assess capacity of health workers
<b>2.2 Client health records</b>	2.5.3 Transmit receipt review and workflow notifications to health workers	<b>2.9 Prescription and medication management</b>
2.2.1 Longitudinal tracking of client/visit at facility and services	2.5.4 Transmit non-acute health event alerts to health workers	2.9.1 Transmit or track prescription orders
2.2.2 Manage clients or actual clinical records	2.5.5 Peer group for health workers	2.9.2 Track clients medication consumption
2.2.3 Manage clients unclassified clinical records	<b>2.6 Emergency coordination</b>	2.9.3 Report adverse drug events
2.2.4 Manage clients or actual clinical records	2.6.1 Coordinate emergency response and triage	<b>2.10 Laboratory and diagnostics systems management</b>
<b>2.3 Health worker decision support</b>	2.6.2 Manage referrals between point of service within health sector	2.10.1 Transmit diagnostic result to health worker
2.3.1 Provide prompts and alerts based according to protocol	2.6.3 Manage referrals between health and other sectors	2.10.2 Transmit and track diagnostic orders
2.3.2 Provide checklists according to protocol	<b>2.7 Health worker activities planning and scheduling</b>	2.10.3 Capture diagnostic results from digital devices
2.3.3 Screen clients by risk or other health status	2.7.1 Identify clients in need of services	2.10.4 Track biological specimens
<b>2.4 Telemedicine</b>	2.7.2 Schedule health workers activities	
2.4.1 Consultations between remote clients and health worker		
2.4.2 Remote monitoring of client health or diagnostic data by provider		
2.4.3 Transmission of medical data to health worker		
2.4.4 Consultations for case management between health workers		

## 4.0 DATA SERVICES

<b>4.1 Data collection, management, and use</b>	<b>4.2 Data coding</b>	<b>4.3 Location mapping</b>
4.1.1 Non-acute data collection and management	4.2.1 Place unstructured data into structured data	4.3.1 Map location of health facilities/units
4.1.2 Data access and aggregation	4.2.2 Merge, de-duplicate, and create coded datasets or terminologies	4.3.2 Map location of health events
4.1.3 Data synthesis and visualization	4.2.3 Classify disease codes or cause of mortality	4.3.3 Map location of clinics and households
4.1.4 Automated analysis of data to generate new information or predictions on future events		4.3.4 Map location of health worker
		<b>4.4 Data ownership and responsibility</b>
		4.4.1 Data exchange across systems

# All part of strengthening health systems



## Set up

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### For each recommendation

- **Summary of evidence**
  - positive and negative effects of the intervention
  - acceptability and feasibility,
  - equity, gender and human rights impacts,
  - resource use



# Recommendation 1

## Birth notification via mobile devices

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WHO recommends the use of birth notification via mobile devices under these conditions:

- in settings where the notifications provide individual-level data to the health system and/or a civil registration and vital statistics (CRVS) system, and
- the health system and/or CRVS system has the capacity to respond to the notifications.

*(Recommended only in specific contexts or conditions)*

Responses by the health system including the capacity to accept the notifications and trigger appropriate health and social services, such as initiating of postnatal services.

Responses by the CRVS system include the capacity to accept the notifications and to validate the information, in order to trigger the subsequent process of birth registration and certification.

# Recommendation 2

## Death notification via mobile devices

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WHO recommends the use of death notification via mobile devices under these conditions:

- in the context of rigorous research, and
- in settings where the notifications provide individual-level data to the health system and/or a CRVS system, and
- the health system and/or CRVS system has the capacity to respond to the notifications.

*(Recommended only in the context of rigorous research and in specific contexts or conditions)*

Responses by the health system include the capacity to accept the notifications and trigger appropriate health and social services.

Responses by the CRVS system include the capacity to accept the notifications and to validate the information, in order to trigger the subsequent process of death registration and certification.



## Recommendation 3

### Stock notification and commodity management via mobile devices

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WHO recommends the use of stock notification and commodity management via mobile devices in settings where

- supply chain management systems have the capacity to respond in a timely and appropriate manner to the stock notifications.

*(Recommended only in specific contexts or conditions)*

## Recommendation 4

### Client-to-provider telemedicine

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WHO recommends the use of client-to-provider telemedicine

- to complement, rather than replace, the delivery of health services and
- in settings where patient safety, privacy, traceability, accountability and security can be monitored.

*(Recommended only in specific contexts or conditions)*

In this context, monitoring includes the establishment of standard operating procedures that describe protocols for ensuring patient consent, data protection and storage, and verifying provider licensing and credentials.

# Recommendation 5

## Provider-to-provider telemedicine

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WHO recommends the use of provider-to-provider telemedicine in settings where

- patient safety, privacy, traceability, accountability and security can be monitored.

*(Recommended only in specific contexts or conditions)*

In this context, monitoring includes the establishment of standard operating procedures of that describe protocols for ensuring patient consent, data protection and storage, and verifying provider licensing and credentials.

## Recommendation 6

### Targeted client communication via mobile devices

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WHO recommends targeted client communication via mobile devices for

- health issues regarding sexual, reproductive, maternal, newborn, and child health
- under the condition that potential concerns about sensitive content and data privacy can be addressed

*(Recommended only in specific contexts or conditions)*

## Recommendation 7

### Health worker decision support via mobile devices

WHO recommends the use of decision support via mobile devices

- for community and facility-based health workers in the context of
- tasks that are already defined within the scope of practice for the health worker.

*(Recommended only in specific contexts or conditions)*

## Recommendation 8

Digital tracking of clients' health status and services (digital tracking) combined with decision support

WHO recommends digital tracking of clients' health status and services, combined with decision support under these conditions:

- in settings where the health system can support the implementation of these intervention components in an integrated manner; and
- for tasks that are already defined as within the scope of practice for the health worker.

*(Recommended only in specific contexts or conditions)*

## Recommendation 9

Digital tracking combined with:

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(a) decision support and

(b) targeted client communication

WHO recommends the use of digital tracking combined with decision support and targeted client communication under these conditions:

- where the health system can support the implementation of these intervention components in an integrated manner;
- for tasks that are already defined as within the scope of practice for the health worker; and
- where potential concerns about data privacy and transmitting sensitive content to clients can be addressed.

*(Recommended only in specific contexts or conditions)*



## Recommendation 10

Digital provision of training and educational content to health workers via mobile devices/ mobile learning (mLearning)

WHO recommends the provision of learning and training content via mobile devices /mLearning

- to complement, rather than replace, traditional methods of delivering continued health education and post-certification training

*(Recommended)*





# Overall support / issues about digital health

## Health Workers

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### *Factors that may increase acceptability*

- expand their range of tasks
- efficiency
- increased speed
- save travelling time
- portability
- Connections
- Status

### *Factors that may decrease acceptability*

- do not reduce their workload and in some cases increase their workload
- loss, damage and theft
- shaped by their pre-existing digital literacy.

### Feasibility for health worker

- network connectivity and access to electricity
- usability issues
- integration with other digital systems
- problems with the design of the programmes or of the device itself,
- confidentiality of medical information and data security



# Overall support / issues about digital health

## Clients/individuals

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- Feel like someone is interested
  - providing support, guidance and information, and giving a sense of direction, reassurance and motivation
  - offering reassurance and a sense of safety
- appreciate the increased access and the consistency and continuity of care
- increased their independence and self-care

People with health conditions that are often stigmatised or very personal (e.g. HIV, family planning and abortion care)

- worry that their confidential health information will be disclosed
- prefer face-to-face contact
- should be little or no charge

Individuals who speak minority languages

- access to health workers who speak this language
- But low literacy or digital literacy skills

Clients with other responsibilities, living far from health care facilities or with few funds

- may save money and reduce the burden of travel
- but poor access to network services, electricity or mobile devices



# How to read the guidelines

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- Go over the recommendations
- Choose the ones that interest you
- Read the section in detail, to become more acquainted with the evidence
  - Effectiveness
  - Acceptability
  - Feasibility
  - Resource use
  - Gender, equity and human rights
- And to understand the justification for the recommendations
- And read the implementation considerations
- So you can
  - Convince colleagues as necessary
  - Improve your intervention



Recommendations on digital interventions for health system strengthening

Classification of digital health interventions



**John Snow, Inc.**

# Reactions to the Digital Health Guidelines

Steve Ollis, Co-chair  
Digital health and innovations sub-group  
Child Health Task Force

17 May 2019

# Reactions

- Evidence a bit dated
- Review the additional remarks in each section – provides reactions and thoughts of GDG outside of the evidence *“GDG also believed that the use of mobile devices to perform this task was likely to provide a more expedient means of effecting the notification and subsequent health services”*

IMPLEMENTATION PHASE	COST CATEGORY	DESCRIPTION
ONE-TIME START-UP COSTS	Content adaptation (\$)	<ul style="list-style-type: none"> <li>▸ <b>User-centred design process</b> to define requirements within appropriate context. This includes business process mapping, understanding the intended users, and documenting functional and non-functional requirements.</li> </ul>
	Outreach and raising awareness of the intervention (\$\$)	<ul style="list-style-type: none"> <li>▸ <b>Raising awareness in the community</b> about the intervention and how to make notifications. This may be conducted by outreach through community health workers, pamphlets, billboards, mass messaging.</li> <li>▸ <b>Campaigns and community outreach programmes</b> directly to communities and key informants.</li> </ul>
	Equipment/hardware (\$)	<ul style="list-style-type: none"> <li>▸ <b>Devices</b> (e.g. mobile phones, tablets, computers) used by key informants for conducting birth notifications.</li> <li>▸ <b>Set-up of cloud hosting or physical server</b>, which would require physical and virtual security and authentication.</li> </ul>
	Initial training (\$)	<ul style="list-style-type: none"> <li>▸ <b>Development/adaptation of training curriculum</b> and standard operating procedures. This can include materials for training-of-trainers approaches.</li> <li>▸ <b>Training on standard operating procedures</b> for the recipient of the birth/death notification (i.e. health workers and civil registrar personnel).</li> </ul>

IMPLEMENTATION PHASE	COST CATEGORY	DESCRIPTION
RECURRING COSTS	Human resources (\$\$)	<ul style="list-style-type: none"> <li>▶ <b>Personnel to oversee overall programme.</b></li> <li>▶ <b>Personnel for system set-up and user support.</b></li> <li>▶ <b>Personnel for partnership building and coordination meetings</b> to align with stakeholders (e.g. ministry of health counterparts, other implementing partners, mobile network operators).</li> <li>▶ <b>Incentives for reporting</b> birth and death notifications, particularly if relying on community members and key informants for the notification.</li> </ul>
	Refresher training and workflow management (\$\$)	<ul style="list-style-type: none"> <li>▶ <b>Refresher training or continued community outreach</b> to facilitate uptake of notification processes.</li> <li>▶ <b>Periodic review meetings</b> to discuss feedback on system performance and challenges.</li> </ul>
	Communication/ data exchanges (\$)	<ul style="list-style-type: none"> <li>▶ <b>SMS text message/ USSD voice call/ data transmission charges</b> based on volume of communication content and communication channel.</li> <li>▶ <b>Short code maintenance fee</b>, which represents a simplified number for clients to use when registering for the service.</li> <li>▶ <b>Aggregator maintenance fees</b> to enable communication across multiple network carriers.</li> </ul>
	Technology maintenance (\$)	<ul style="list-style-type: none"> <li>▶ <b>Data hosting</b> (e.g. server maintenance or cloud-hosting fees).</li> <li>▶ <b>Software maintenance</b>, licensing and upgrade fees.</li> <li>▶ <b>Hardware maintenance</b>, including insurance and</li> </ul>



# Web Annex M

The WHO/ITU National eHealth Strategy Toolkit [9] has identified the following implementation considerations:

- Infrastructure
- Health workforce
- Governance
- Financial resources
- Interoperability and standards
- Policy and regulations

In addition, drawing on systematic reviews of the global evidence, we identified the following cross-cutting implementation issues:

## *Involve stakeholders in programme design and implementation*

- Involve health workers, facility staff and other users in the design, user testing and implementation of the programme, and include them in decisions about changes to the programme. Ensure that the programmes and digital devices are easy to install and to use
- When designing the programme and planning health worker training, pay particular attention to the needs of health workers who are not technically literate. Make an effort to ensure that the requirements of the new programme do not threaten their job security
- Raise awareness of the programme among clients and potential clients in order to increase their trust in and use of the programme

## *Assess how programmes can be efficiently integrated with the rest of the health system*

# What does this mean for us?

Promote awareness

Take advantage of cost and consideration data

Identify areas for further research

Be sure the details don't get lost