Adapting Rapid SMS for Multiple Vaccination Campaigns - Malawi

Malawi - Ministry of Health and UNICEF- April 2023

Outline of the presentation

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2. CONTEXT OF DIGITIZATION IN MALAWI
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4. ACHIEVEMENTS
5. IMPLEMENTATION CHALLENGES
6. EFFORTS TO MITIGATE CHALLENGES
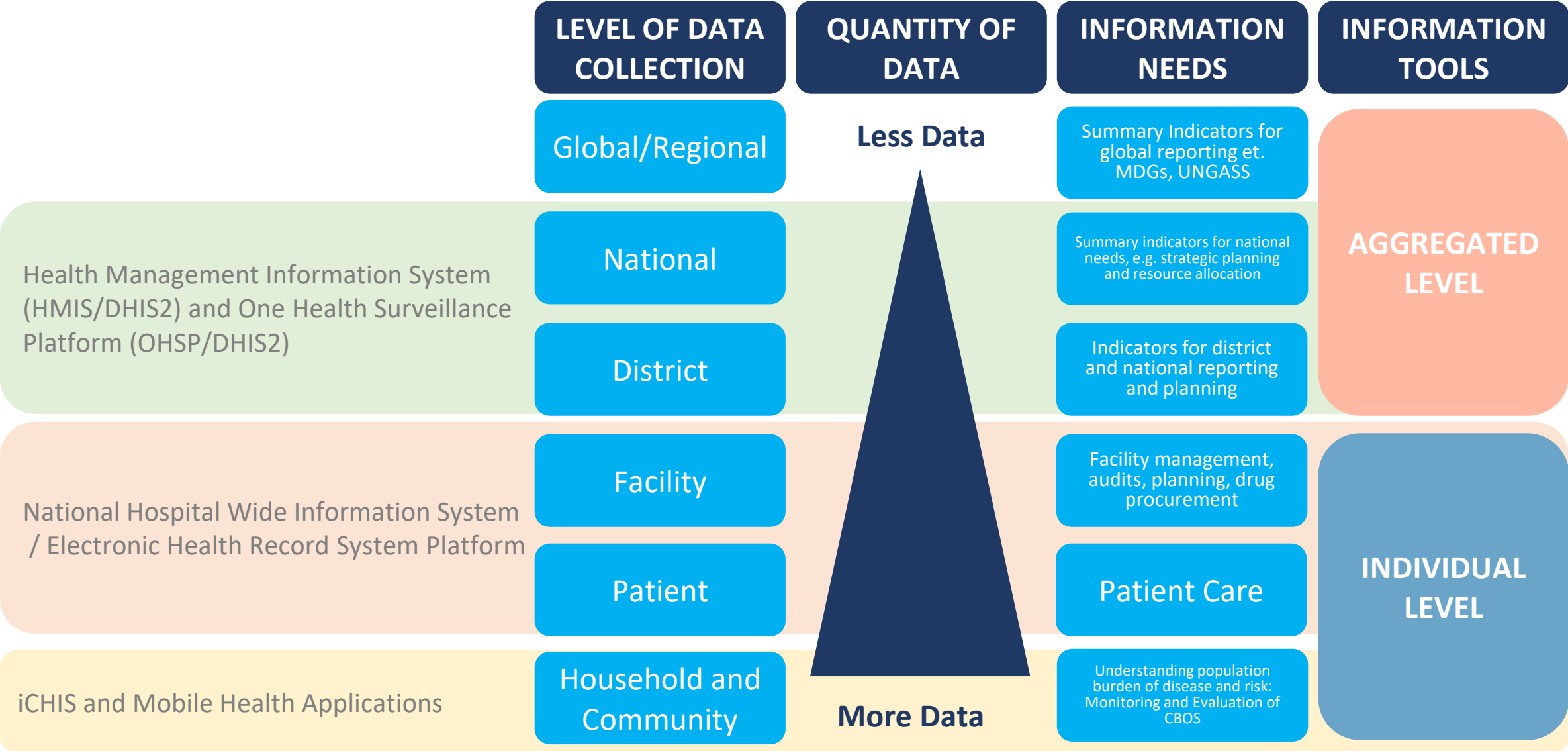7. LESSONS LEARNT & RECOMMENDATIONS

INTRODUCTION

- Malawi just like many other African countries is building the digital landscape in the healthcare system
- Currently the country is implementing the 2020-2025 Digital Health Strategy with the following vision:

  "To attain sustainable and harmonized country led digital health system that covers all areas of service provision and enables efficient delivery of health services to beneficiaries at all levels of the health system"

- The approach is based on 2016 Malawi HIS Architecture & Application Concept Standards

Malawi HIS Architecture & Application Concept Standards, 2022

LEVEL OF DATA COLLECTION	QUANTITY OF DATA	INFORMATION NEEDS	INFORMATION TOOLS
Global/Regional	**Less Data**	Summary Indicators for global reporting et. MDGs, UNGASS	
National		Summary indicators for national needs, e.g. strategic planning and resource allocation	**AGGREGATED LEVEL**
District		Indicators for district and national reporting and planning	
Facility		Facility management, audits, planning, drug procurement	
Patient		Patient Care	**INDIVIDUAL LEVEL**
Household and Community	**More Data**	Understanding population burden of disease and risk: Monitoring and Evaluation of CBOS	

Health Management Information System (HMIS/DHIS2) and One Health Surveillance Platform (OHSP/DHIS2)

National Hospital Wide Information System / Electronic Health Record System Platform

iCHIS and Mobile Health Applications

Electronic Vaccination (eVax) System in Malawi

Four key thematic areas of the system functions and usage
- Vaccination registration and certification
    - Individual level health records (to be add into HWIS and iCHIS)
    - Rapid development amid COVID-19 pandemic and nationwide roll-out
    - Built on OHSP/DHIS2 (registration) and National COVID-19 Website (certification)
- Vaccine commodity management
    - Managing vaccine commodities
    - Applying OpenLMIS and housed by HTSS
    - Existing interoperability with HMIS/DHIS2
- Cold-chain equipment management
    - Build on DHIS2 technology with QR code system
    - Piloted success and pending for further development and roll-out
- Planning and comprehensive monitoring and evaluation
    - Utilize the MoH owned Interactive Community Health Engagement Platform (ICHEP) for timely data collection: SMS, USSD, Calls, WhatsApp ChatBot

HOW IS MALAWI DIGITIZING THE CAMPAIGNS

1. Use of USSD and SMS to transmit rapid campaign data
   - High frequency data collection
   - RapidPro (SMS) and USSD as part of ICHEP
2. Use of mobile applications to capture data at community and facility level
   - DHIS2 Tracker, ODK
3. Use of DHIS2 to capture aggregate campaign data
   - HMIS, Vaccine Registry
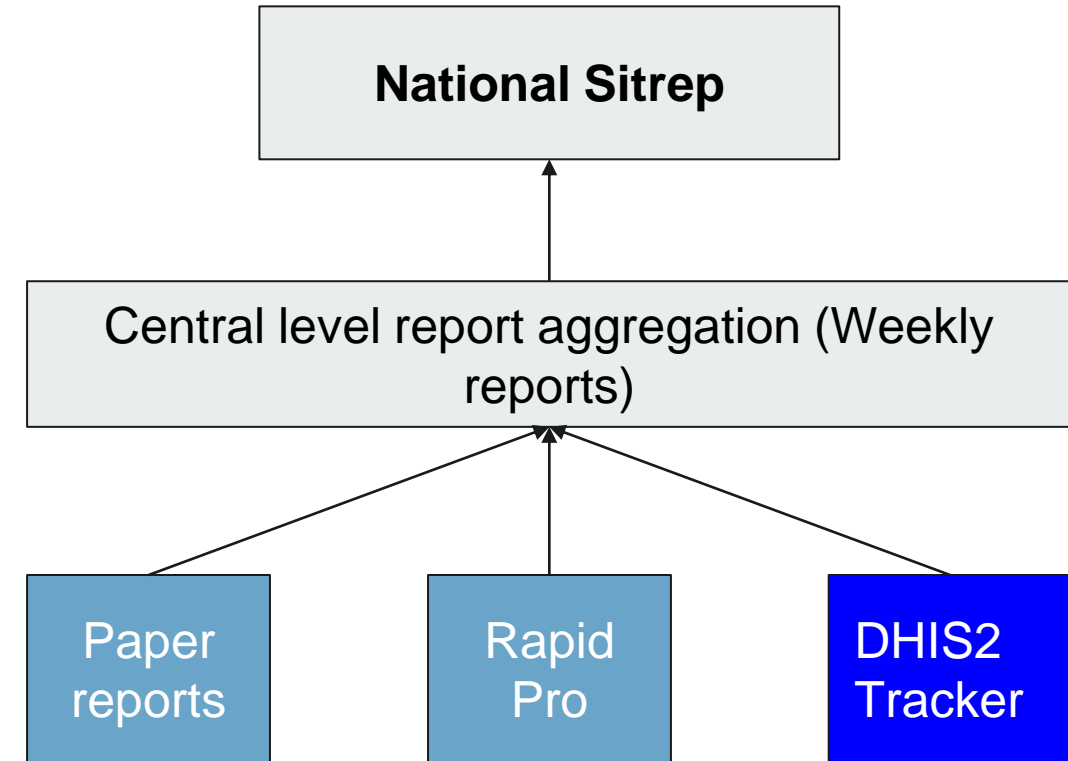4. Leveraging on the interoperability to exchange data from parallel data sources
5. Other methods

USE OF RAPID SMS DURING CAMPAIGNS

- Various vaccination campaigns are being conducted to address emerging health issues
  - COVID-19 vaccination campaign from March 2021 till to date
  - Oral Polio Vaccine (OPV) campaign in 2022 during Polio outbreak
  - Oral Cholera Vaccine (OCV) Campaign in 2022 during cholera outbreak
- ICHEP serves to improve reporting during campaigns
  - RapidPro SMS to broadcast bulk SMS to the general public
  - RapidPro SMS for high frequency data collection - works in remote areas where internet is limited
  - Use of WhatsApp ChatBot for reporting adverse events

IMPLEMENTATION EXPERIENCE DURING COVID-19 VACCINATION

- There were data collection challenges during the campaign period due to
  - Delayed submission of paper reports
  - Inaccurate statistics
  - Missing data
  - COVID-19 Vaccination Campigan : Considerable Data backlog and challenges of prompt data reporting from all sites and care providers. For example: as of Jan 2023, a total of C-19 doses Utilized : 4, 969,672 doses ; Reported to be Vaccinated : 4,077,637 people with percentage of wastage of 4.8% , there are still huge backlong and data dicrepancies
- Interventions:
  - Supplemented reporting via SMS on a later stage to collect data on key indicators
  - Bulk messages sent using RapidPro and DHIS2 Tracker to the general public to enhance vaccine uptake

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                    National Sitrep
                         ▲
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        Central level report aggregation (Weekly
                      reports)
                      ▲
              ┌───────┼───────┐
         Paper        Rapid        DHIS2
        reports        Pro        Tracker
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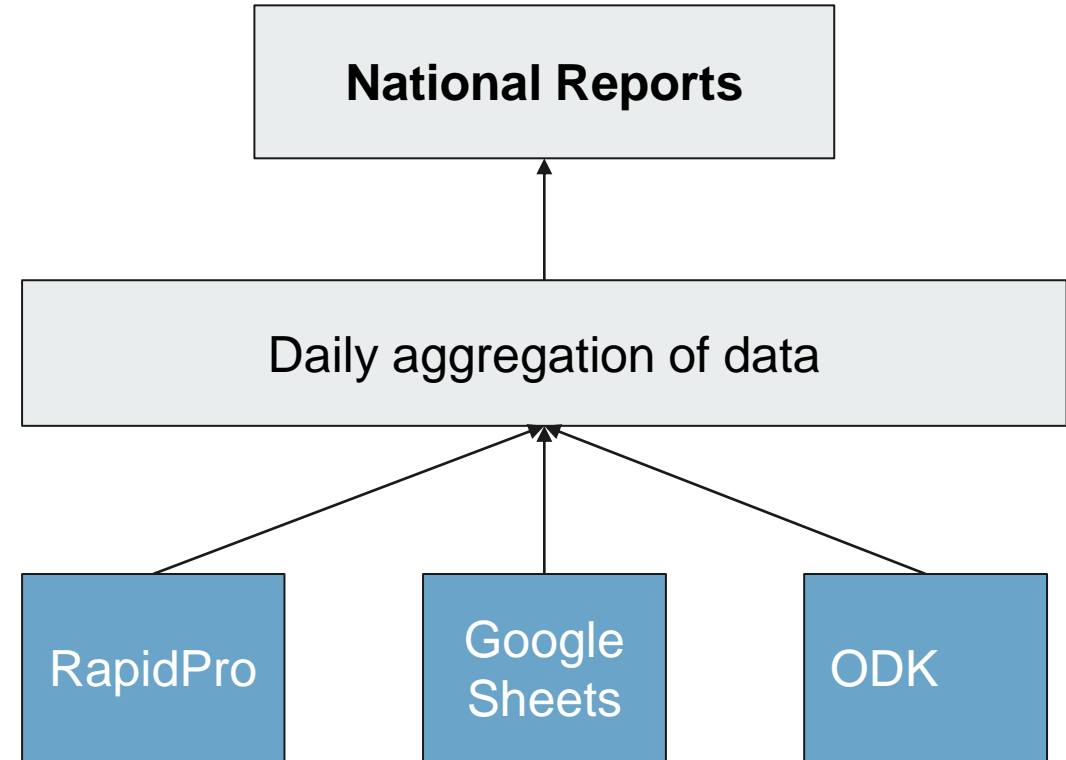
Reporting structure

IMPLEMENTATION EXPERIENCE DURING OPV CAMPAIGN

- Rapid-Pro SMS tool developed for the following;
  - Identify missed children
  - SMS reminders to vaccinators
  - Aggregate daily reports
- Other digital tools
  - ODK
  - Structured Google Sheets
- Interoperability layer developed to facilitate data transfer between RapidPro and DHIS2

Reporting structure

Various SMS reporting dashboards
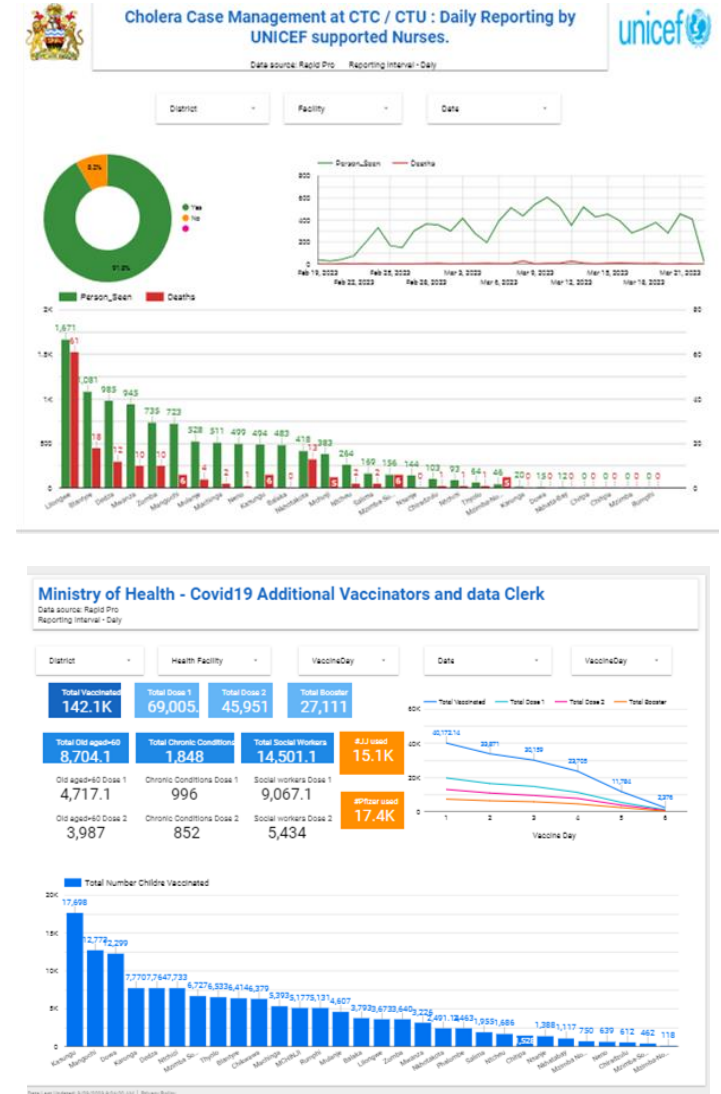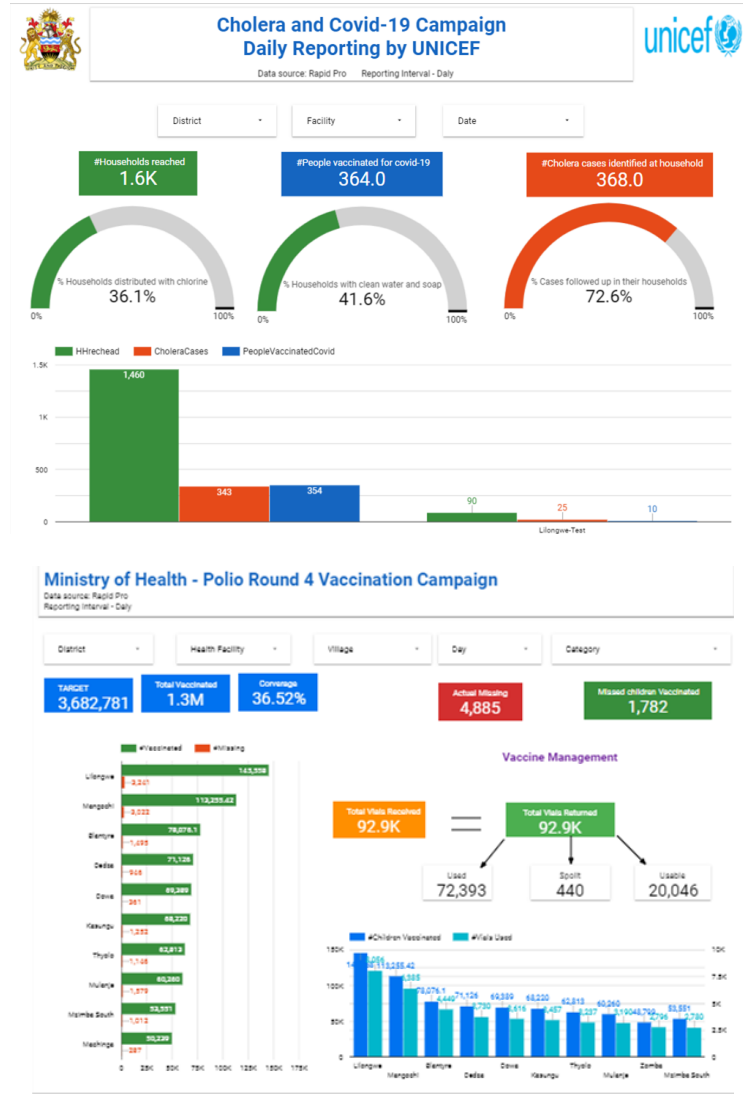
IMPLEMENTATION EXPERIENCE DURING OCV CAMPAIGN

- Bulk SMS are being used to increase uptake of OCV
  - Use of RapidPro bulk messaging instance to broadcast to the general public on vaccine sites and dates
  - Use of Mobile Network Operator tower information to send messages to the target population by geographic area

CHALLENGES IN IMPLEMENTATION

Technology Issues:

- No digital platform for data visualization and reporting at district and health facility level.
- The SMS platforms not fully integrated with other existing DH Solutions using the interoperability layer as there is no dedicated/comprehensive campaign platform.

ICT and Power Infrastructure

- Poor internet/network coverage in most remote areas leading to delayed reporting and data entry.
- Power issues - Locally installed solar power back-ups damaged batteries of most tablets affecting the data entry and reporting.

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Capacity Issues

- Most HSAs, responsible for the data entry, where not very conversant with the platform resulting to poor data quality.
- Shortage of personnel to enter the data leading to data backlogs or delayed reporting.
- Lack of incountry technical capacity to configure the platform to fully function on all network service operators.
- No data command centres at district level, then reporting to the national level data management team.
- With the real time data entry, no systems/procedures in place to validate the quality of the data being entered or reported

EFFORTS TO MITIGATE THE CHALLENGES

Technology Issues:

- The RapidPro collected data integrated with other digital health dashboard to allow access and reporting.

ICT and Power Infrastructure

- Internet bundles given depending on the network service providers with the best coverage in the particular area.
- On power issues, data entry gadgets bought were purchased together with solar power backup compatible with the gadget batteries.

Capacity Issues

- HSAs orientations and trainings were done in all districts to improve data entry and reporting
- District and facility mentorship and supervision activities enhanced by the Vaccine Data Management Team with technical support from DHD and CMED.
- Government lobbied for partner support through TAs for data management and system support.

LESSON LEARNED & RECOMMENDATIONS

- The timely data reporting from the household and community straight to the District and Ministry of Health has improved the quality of campaigns (Polio, COVID-19, OCV supplementary immunization) activities by helping decision-makers review progress against targets; identify emerging issues and gaps; track vaccine supplies; and take prompt corrective decisions.

- Leverage on micro planning at district and national level to mitigate issues and challenges learnt from previous campaign and activities.
- Work in collaboration the Digital Health Division and all other relevant partners to leverage on support on integrated digital health solutions for rapid data entry and visualization platforms
- Strengthening the Vaccine Data Management Technical Working Group to leverage on all support from all stakeholders.
- Invest in data entry and reporting capacity building by
    - Employing more personnel to work at all levels
    - Provide more trainings to system users at all levels
    - Strengthen the user support and helpdesk system
    - Establish data command centres at all levels
- Engage other government units and private partners to improve the ICT and Power infrastructure in the country to provide a conducive environment for DH solutions' implementation and use.

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- Strengthen and enhance the eVax system in country
  - Adding the individual vaccination recording functions in HWIS (facility level) and iCHIS (community level)
  - Enhance AEFI reporting and notification into EPI and surveillance program (OHSP)
  - Scale-up and institutionalize RapidPro SMS as one of the key component in ICHEP to aid real-time data capture during vaccination campaigns
  - Integrate and enhance vaccine commodity management in the National LIMS
  - Integrate and enhance cold-chain and related medical equipment management in the National Medical Equipment Management Information System
- Strengthen the EPI data management and data use capacity in the Ministry
  - Integrated and interoperable information products (dashboards, DHIS2)
  - Data review meetings and capacity building training
  - Regular EPI data TWG meetings
- Pilot geographic information system (GIS) embedded digital tools to aid routine and campaign vaccination microplanning