MOMENTUM Routine Immunization Transformation and Equity

How Data Systems Can Help Reach Zero-Dose And Under-Immunized Children | Findings from a Landscape Analysis
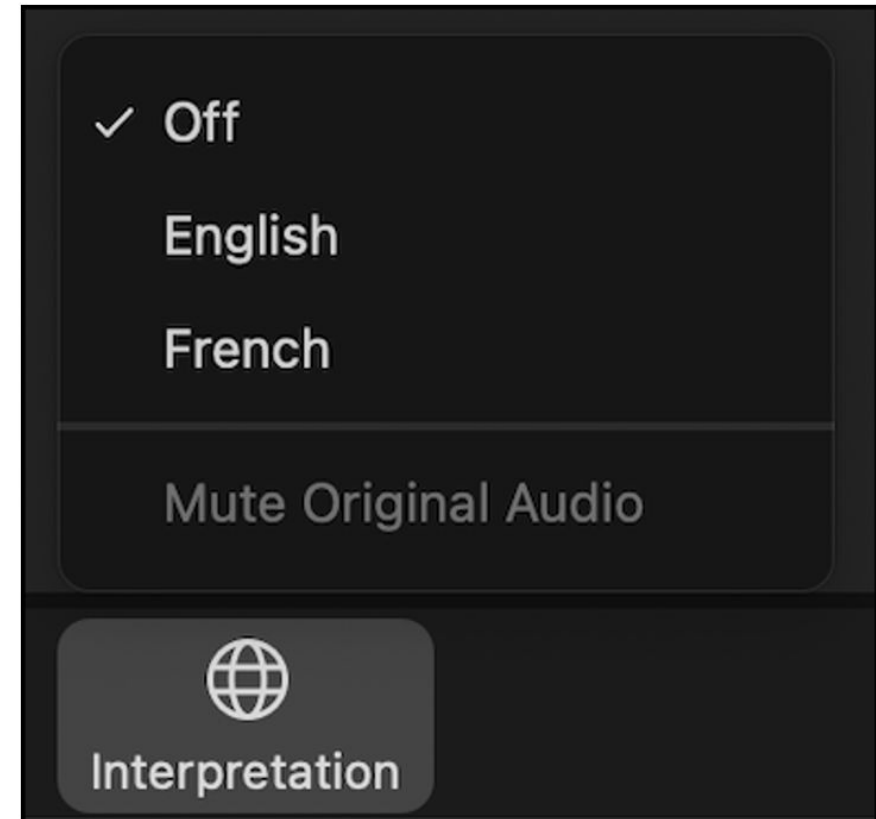
July 12, 2023

Language / Langue

Use the "Interpretation" icon at the bottom of your Zoom screen to listen to today's webinar in English or French.

Utilisez l'icône "Interprétation" en bas de votre écran Zoom pour écouter le webinaire d'aujourd'hui en anglais ou en français.

Webinar Tips

- Use the Q&A function to ask questions during the presentations or for technical help.

- Use the chat feature to introduce yourself and share your thoughts during the presentations.
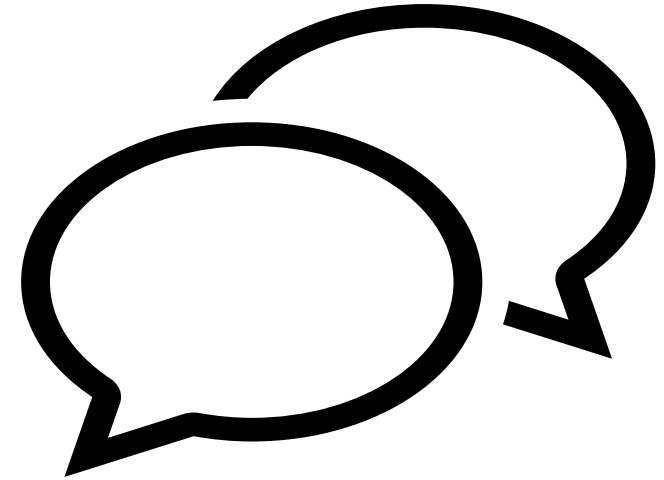
Introductions

Learning Series Host

Presenter

Guest Speakers

Natasha Kanagat
Senior Monitoring Evaluation
& Learning Advisor;
MOMENTUM Routine
Immunization Transformation
and Equity

Allison Osterman
Senior Program Officer
Health Systems;
MOMENTUM Routine
Immunization
Transformation and Equity

Landry Kaucley
Director of Vaccination
and Logistics / Benin EPI
Manager

Subhash Chandir
Director of Maternal &
Child Health;
IRD Global

Agenda

- MOMENTUM Routine Immunization Transformation and Equity Project

- Introduction to the zero-dose child (ZDC) toolkit and learning exchange series

- Results from the *Landscape Analysis of Health Information Systems and Data Tools for Identifying, Reaching, and Monitoring Zero-Dose and Under-Immunized Children*

- Discussion / Q&A

Our Project

MOMENTUM Routine Immunization Transformation and Equity envisions a world in which **all people eligible for immunization**, from infancy throughout the life-course, and particularly underserved, marginalized, and vulnerable populations, are regularly **reached with high-quality vaccination services** and use them to protect their children and themselves against vaccine-preventable diseases.

Award Date: July 27, 2020
Period of Performance: 5 years **Country programs:** 18

ZDC toolkit and learning exchange series
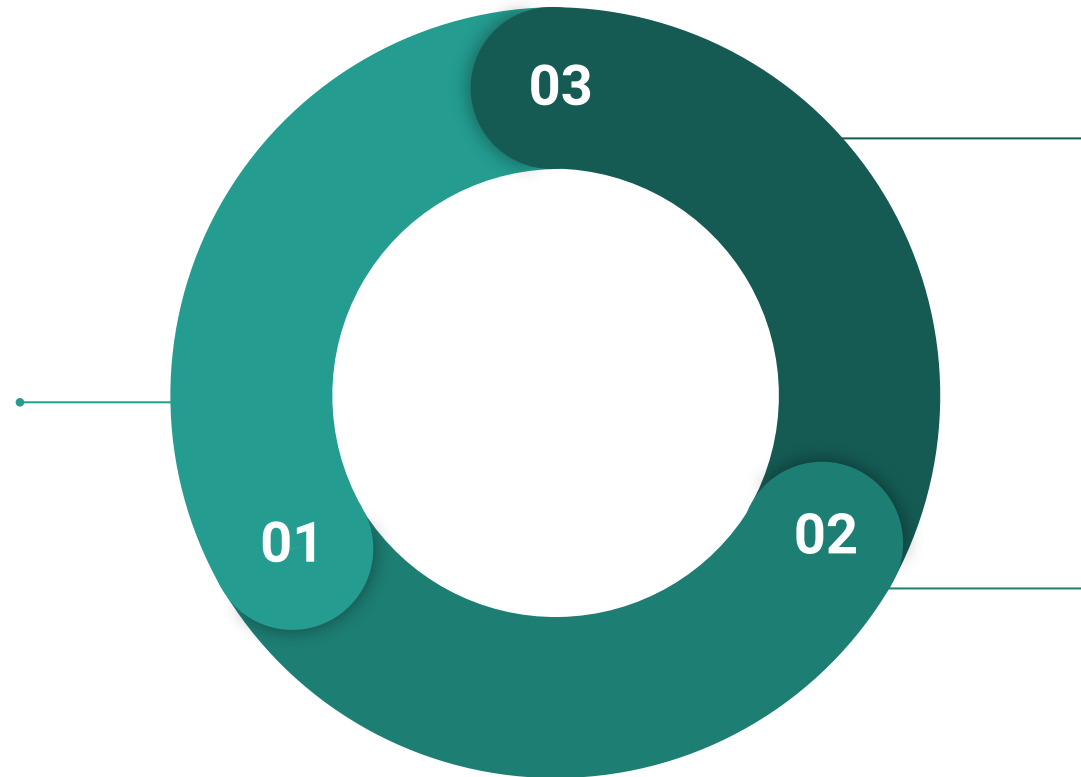
Background and purpose of ZDC toolkit

- Limitations of current administrative data systems in accurately quantifying and localizing ZDC are recognized especially in LIC and LMIC.

- WHO has generated a draft toolkit that provides an integrated approach to identify non or unvaccinated communities and zero-dose and under-immunized children by using decision making criteria and combined tools to decide when, where and how to go to the field to conduct rapid convenience assessments or targeted probabilistic surveys and take actions to reach, vaccinate, and follow up on non and under immunized communities.

- Toolkit is linked & complimentary to already available manuals and guides.

Multi-method approach to refining the toolkit

Learning Exchanges

Different topics related to zero dose and under-immunized children; goal is to get user feedback and experiences to inform the toolkit; build demand, knowledge, skills for the methods/approaches outlined in the toolkit.

Design Collaborative

5-10 countries; provide input into design and content

03

01

02

Field Test

Location: Nigeria; Conduct interviews; Actual tool use and user feedback

9

Today's Topic:
Findings from a Landscape Analysis of Health Information Systems and Data Tools for Identifying, Reaching, and Monitoring Zero-Dose and Under-Immunized Children

Warm-up: Getting to know who joined today's webinar

1. **Do you have a role in identifying ZDC? (Y/N)**

2. **What best describes your role related to identifying ZDC?**
   - Planning and implementing
   - Monitoring and evaluating
   - Providing technical assistance
   - Research
   - Other

3. **What is your greatest data-related challenge to identifying ZDC?**
   - Data collection
   - Data management
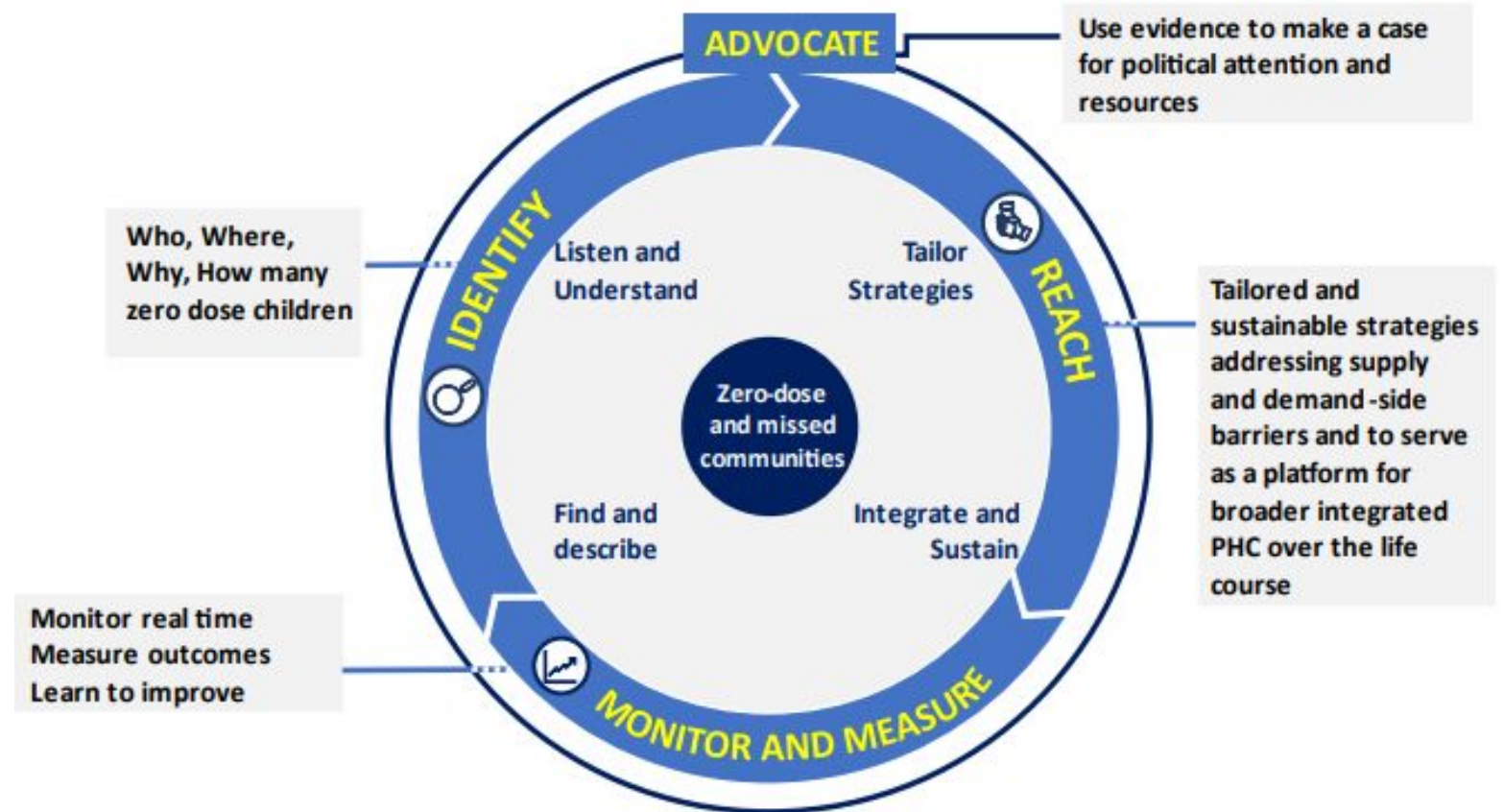   - Data analysis
   - Data use
   - Other

Key concepts

ZDC are those who have not received any routine vaccines.

Under-immunized children are those who have not received a full course of routine vaccines.

Missed communities are populations that face systematic constraints on access to immunization and other essential health services.

ADVOCATE
Use evidence to make a case for political attention and resources

IDENTIFY
Who, Where, Why, How many zero dose children
Listen and Understand
Find and describe

REACH
Tailor Strategies
Integrate and Sustain
Tailored and sustainable strategies addressing supply and demand-side barriers and to serve as a platform for broader integrated PHC over the life course

Zero-dose and missed communities

MONITOR AND MEASURE
Monitor real time
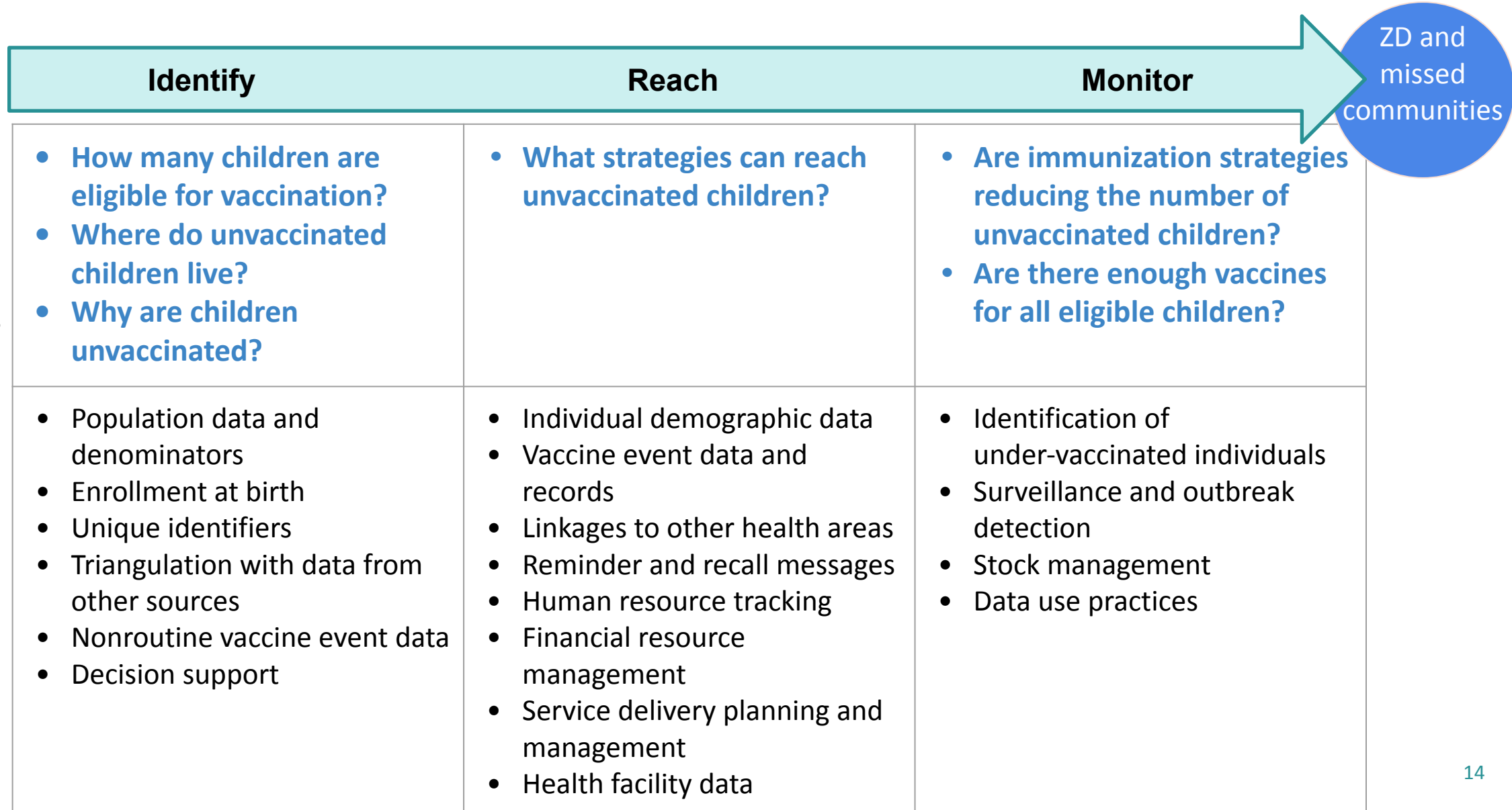Measure outcomes
Learn to improve

Health Information Systems (HIS) serve multiple users for a wide array of purposes that can be summarized as the *"generation of information to enable decision-makers at all levels of the health system to identify problems and needs, make evidence-based decisions on health policy and allocate scarce resources optimally"* (WHO definition)

12

Key questions that guided the landscape analysis

1. What types of information do healthcare workers need to identify, reach, and monitor zero-dose and under-immunized children?

2. What data tools and information systems are currently capturing this information?

3. What are the functional requirements for those tools and systems to identify, reach, and monitor zero-dose and under-immunized children?

4. What lessons can be drawn from tools and systems introduced for COVID-19 vaccination?

Information needs and information system functionalities

	Identify	Reach	Monitor	ZD and missed communities
Questions and information needs of decision makers and health workers	• **How many children are eligible for vaccination?** • **Where do unvaccinated children live?** • **Why are children unvaccinated?**	• **What strategies can reach unvaccinated children?**	• **Are immunization strategies reducing the number of unvaccinated children?** • **Are there enough vaccines for all eligible children?**	
Information system functionalities required	• Population data and denominators • Enrollment at birth • Unique identifiers • Triangulation with data from other sources • Nonroutine vaccine event data • Decision support	• Individual demographic data • Vaccine event data and records • Linkages to other health areas • Reminder and recall messages • Human resource tracking • Financial resource management • Service delivery planning and management • Health facility data	• Identification of under-vaccinated individuals • Surveillance and outbreak detection • Stock management • Data use practices	

14

Poll questions

- What data are you ***currently*** collecting and using to identify under-immunized children?

- What information do you need that you ***don't already have***? (that would help you identify ZDC)

Benin experience: data-related challenges to identifying, reaching, and monitoring zero-dose and under-immunized children

- **Type de données utilisées pour l'identification des ZD:** données administratives (Base de collecte Excel C8 et DHIS2)

- **Defis:**
  - Fiabilité du dénominateur (faible maîtrise des cibles) et du numérateur (exactitude des données)

  - Analyse ZD souvent désagrégée au niveau commune (Districts) mais pas au niveau des villages et quartiers

  - Absence de géolocation des enfants ZS et sous vaccinés

  - Absence d'outil de collecte de routine et de suivi des enfants ZD

Exemple de système d'information mise en place pour relever le défis des données:

Base d'ajustement des cibles
à partir des données EDS

Départements	Communes	0-11 Mois (Survivants)	Enfants survivants 2022 (Ajustées)	Penta1 2022	Zero dose 2022
Alibori	Banikoara	8568	14 173	12595	1 578
	Gogounou	4342	6 755	5363	1 392
	Malanville	6021	9 693	6750	2 943
Atacora	Kerou	3769	5 576	4338	1 238
	Kouande	3870	6 209	5059	1 150
	Materi	4492	6 342	5145	1 197
	Natitingou	3585	5 780	4746	1 034
Atlantique	Abomey-Calavi	25554	42 635	38355	4 280
	Allada	4854	8 283	6424	1 859
	Kpomasse	2488	4 394	2842	1 552
	Ouidah	6634	10 526	7963	2 563
	So-Ava	4116	7 701	3821	3 880
	Toffo	3576	6 598	4687	1 911
	Ze	4091	6 944	5688	1 256

Leçons apprises de l'utilisation des outils et système d'information:

- Nécessité d'intégrer l'identification des ZD et enfants sous vaccinés dans les systèmes d'information et de collecte des données de vaccination.

- Nécessité d'inclure les indicateurs en rapports avec les enfants ZD et sous vaccinés dans les tableaux de bord du PEV.

- Besoin d'un système d'information qui facilite l'identification et le suivi des enfants ZD et sous vaccines.

SECTION 03

Findings

Results

The landscape analysis identified **11 primary information systems and data tools**, some of which are already being used to strengthen immunization equity, while others have strong potential or require slight adaptations.

The systems and tools are listed below, according to **primary user**:

Clients: Caregivers and families of vaccine-eligible children

- Home-based records
- Client communication systems
- Client feedback systems

Health care providers: Nurses, doctors, other vaccinators, and community health workers

- Community-based information systems
- Electronic immunization registries
- Monitoring charts and data dashboards

Health system or resource managers: Those involved in the administration and oversight of public health systems, including at district, regional, and central levels

- Denominator estimation methodologies
- Immunization coverage surveys
- Health management information systems
- Geospatial technologies

Data services: Cross-cutting functionality to support multiple types of users with activities related to data collection, management, use, and exchange

- Data quality assessments

Results

- The 11 systems and tools have **multiple functionalities and uses** related to identifying, reaching, and monitoring zero-dose and under-immunized children.

- There is no **one-size fits-all** recommendation.

- Decision-makers can choose the right system or tool for the immunization data use and management gap they are trying to fill.

Functionality		Community-based information systems	Electronic immunization registries	Client communication systems	Health management information systems	Client feedback systems	Geospatial technologies	Denominator estimation methodologies	Home-based records	Immunization coverage surveys	Monitoring charts and data dashboards	Data quality assessments
		Systems						**Tools**				
IDENTIFY	Population data & demoninators	●	●				●	●	●			
	Enrollment at birth	●	●						●			
	Unique identifiers	●	●						●			
	Triangulation with data from other sources	●	●				●	●			●	
	Non-routine vaccine event data	●	●				●	●	●			
	Clinical decision support	●	●		●				●		●	
REACH	Individual demographic data	●	●				●	●	●	●		
	Vaccine event data & report	●	●						●			
	Linkages to other health areas	●	●			●			●		●	
	Reminder and recall messages	●	●	●					●		●	
	Human resource tracking		●									
	Financial resource management											
	Service delivery planning & management	●	●		●	●	●	●	●	●	●	
	Health facility data		●		●							
MONITOR	Identification of undervaccinated individuals	●	●	●			●	●	●	●		●
	Surveillance & outbreak detection	●		●				●			●	
	Stock management	●	●	●							●	
	Data use practices	●	●		●	●		●			●	●

21

Poll questions

- Which of these tools or systems are you currently using in your country to collect and analyze immunization data?

Findings: Spotlight on three information systems and data tools identified in the landscape analysis

- Community-based information systems
- Home-based records
- Electronic immunization registries

How to use **community-based information systems** (CBIS) to…

Identify

Zero-dose and under-immunized children

- Register births in the community and collect information on children soon-to-be born.

- Identify ZDC who are never brought to a health facility.

- Use in combination with geospatial technology to ensure that entire communities are not missed.

 In **Kenya**, CHWs are using CommCare to register pregnant women and children for vaccination and other services. The app walks the CHW through the workflows for vaccination and other services and allows them to target areas with low coverage and households needing a reach out.

24

How to use **home-based records** (HBRs) to…

Identify

Zero-dose and under-immunized children

- Focus on improving health worker training and caregiver understanding of the cards.

- Integrate with other maternal child health records to facilitate earlier identification of eligible children for vaccination.

- Link with an electronic immunization registries (EIR) to enable health workers to follow-up on children who have missed vaccines.

Mexico and **Argentina** have developed digital immunization cards that provide an electronic record of each person's vaccine history. The e-vaccine card is linked to the EIR, which enables health workers to follow-up on children who have missed vaccines. In Mexico, caregivers still receive a paper vaccination booklet containing a QR code that can be scanned at different facilities to pull up a child's immunization record, which mitigates limitations such as caregivers who lack internet access.

25

![IRD - Interactive Research & Development]
![Zindagi Mehfooz]
![MOMENTUM - A Global Partnership for Health and Resilience]

Leveraging Electronic Immunization Registries to Identify, Reach and Monitor Zero-Dose Children

Insights from Zindagi Mehfooz (Safe Life) Electronic Immunization Registry (ZM-EIR) in Pakistan

Subhash Chandir, MBBS, MPH, PhD
Maternal & Child Health Program
subhash.chandir@ird.global

July 12, 2023 @ M-RITE Webinar on How Data Systems Can Help Identify Zero-Dose and Under-Immunized Children

Overview of ZM-EIR features

1. Unique Identification
2. Web Interface
3. Mobile-based data entry & access
4. Interactive SMS reminders & call center
5. Offline Mode
6. Child Registry
7. Predictive Analytics
8. Cold Chain Equipment Management
9. Vaccine Stock Management
10. Built in iDSS for routine & catch-up immunization
11. Defaulter lists & reports
12. Micro-planning activities
13. GIS tracking of children & vaccinators
14. Virtual Immunization Certificate
15. DHIS2 Interoperability using FHIR standards

Highlighted features useful in identifying, reaching, and monitoring ZD children

Scale Up & Status of the ZM-EIR in Pakistan
(Oct 2, 2017 – Jul 2, 2023)

IRD
Interactive Research & Development

- Phase wise scale-up in Oct 2017 across Sindh province, Islamabad and Gilgit districts
- Currently being scaled as National-EIR

9.0M+ Children
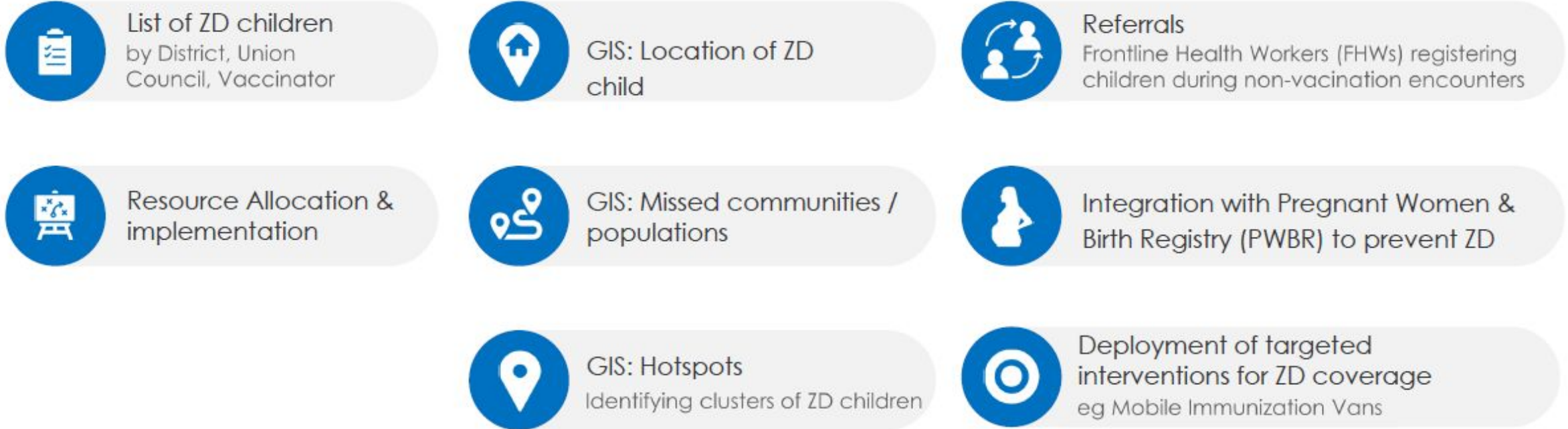
3.3M+ Women

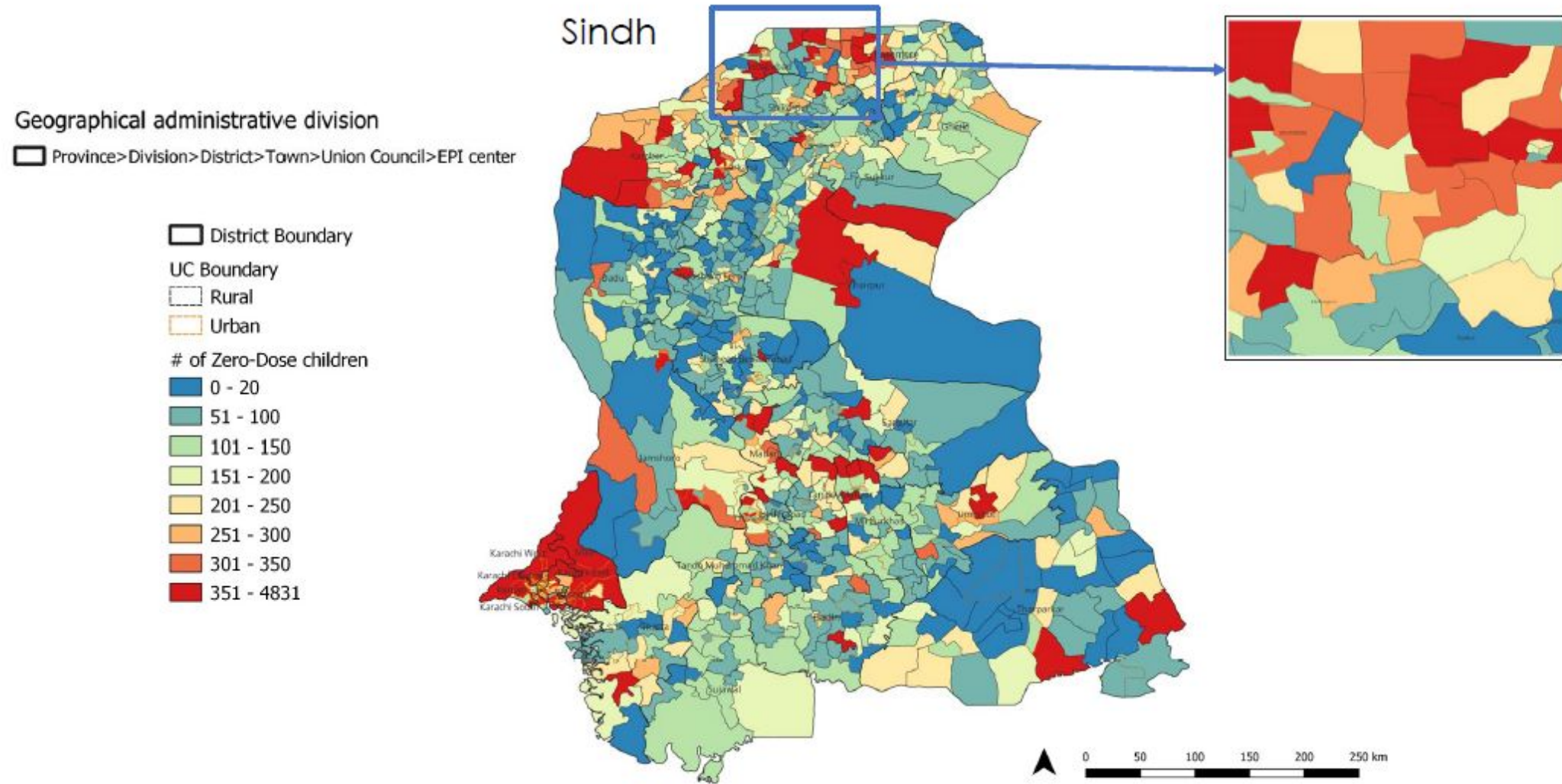**107M+** Immunizations

4,500 Vaccinators

2,232 Immunization Clinics

Zindagi Mehfooz

Pathways for covering Zero-Dose (ZD) children through ZM-EIR

List of ZD children
by District, Union Council, Vaccinator

GIS: Location of ZD child

Referrals
Frontline Health Workers (FHWs) registering children during non-vacination encounters

Resource Allocation & implementation

GIS: Missed communities / populations

Integration with Pregnant Women & Birth Registry (PWBR) to prevent ZD

GIS: Hotspots
Identifying clusters of ZD children

Deployment of targeted interventions for ZD coverage
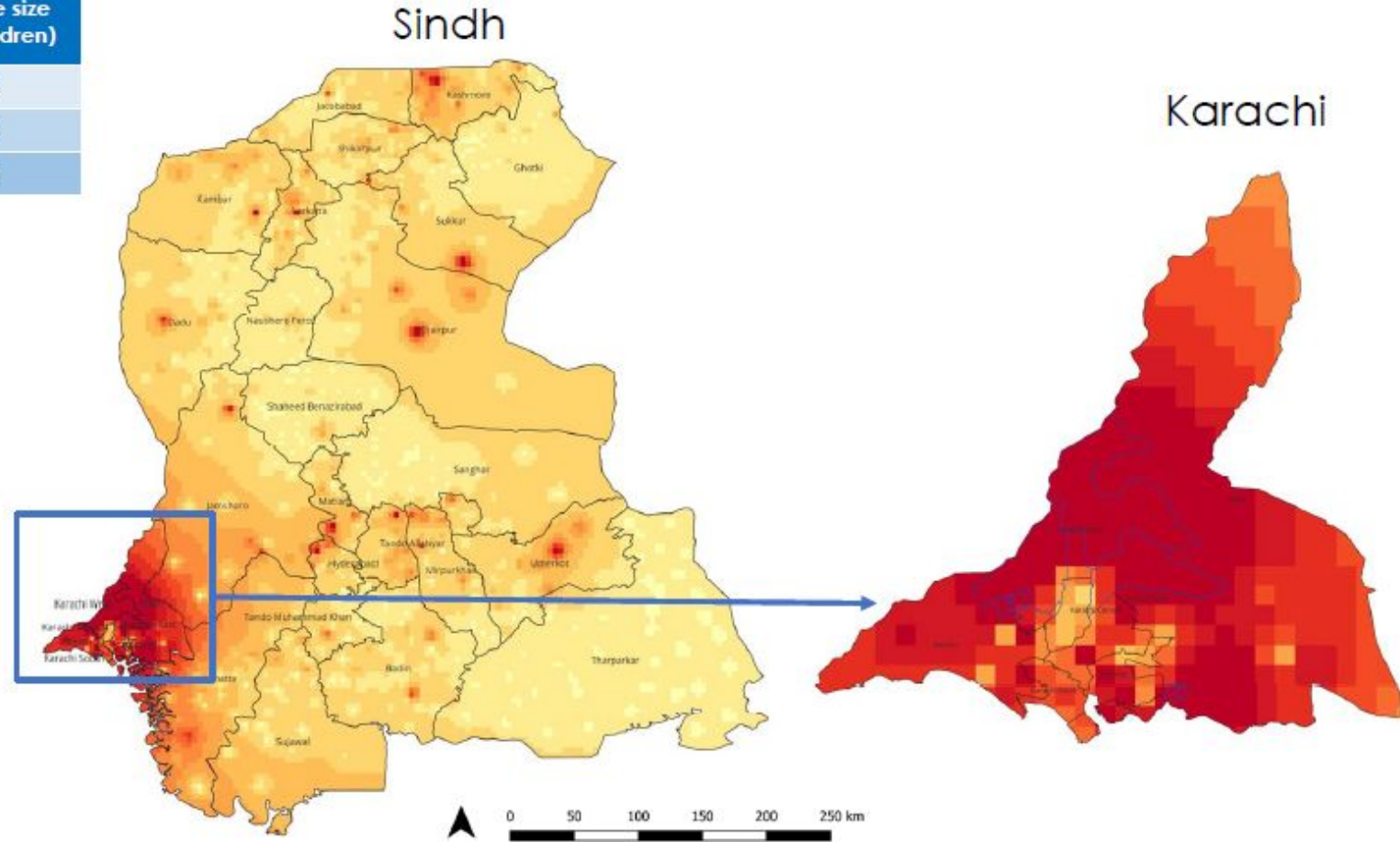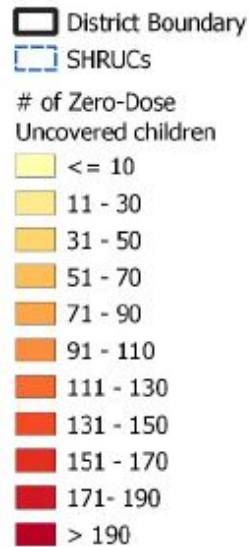eg Mobile Immunization Vans

Leveraging ZM-EIR to identify the locations of ZD children by Union Council (UC) in Sindh (n=133,688) (Jul 1, 2021 - Jun 30, 2023)

~3/5 (674/1,144) of the UCs have >50 Zero-Dose children

ZD defined as children who did not receive any dose of Pentavalent by 12 months of age

Leveraging ZM-EIR to identify hotspots of Uncovered ZD children, in Sindh (n=66,703) (Jul 1, 2021 - Jun 30, 2023)

	# of hotspots with >50 Zero-Dose children	Average size (# of children)
Outside Karachi	183	105
Karachi	123	285
Total	306	178

Sindh

Karachi

District Boundary
SHRUCs

# of Zero-Dose Uncovered children
- <= 10
- 11 - 30
- 31 - 50
- 51 - 70
- 71 - 90
- 91 - 110
- 111 - 130
- 131 - 150
- 151 - 170
- 171- 190
- > 190

- ~2/5 (122/306) of the UCs with >50 ZD children are located outside Karachi
- Karachi shows a general distribution of ZD children while rural setting shows clear hotspots
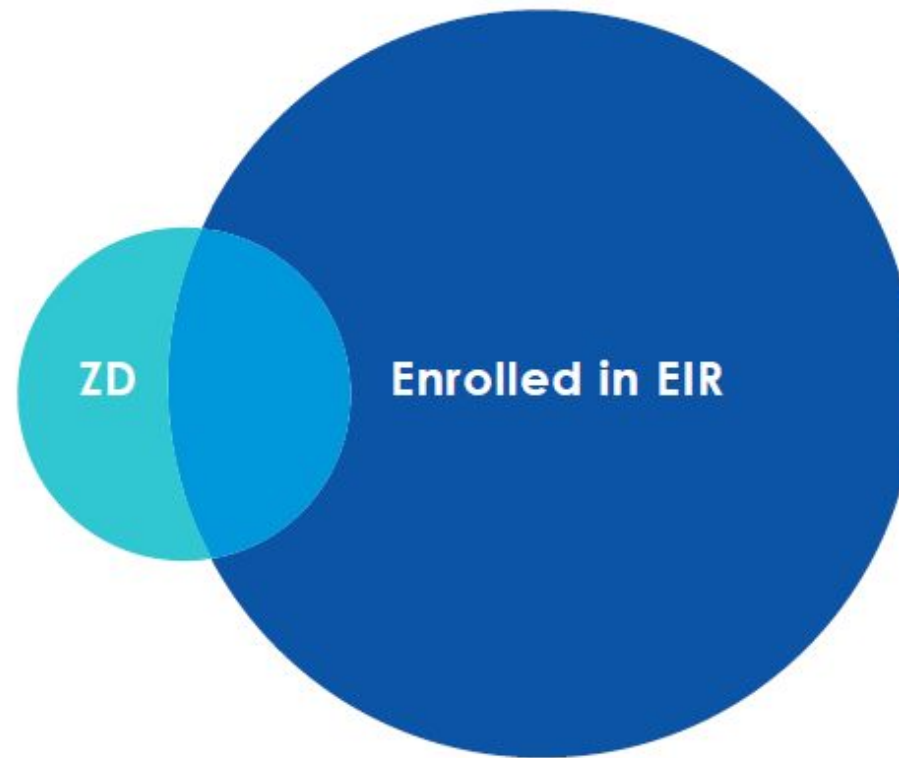
ZD defined as children who did not receive any dose of Pentavalent by 12 months of age

Key Limitation of EIRs in reaching ZD children

Only a proportion of ZD Children is covered through EIR

ZD

Enrolled in EIR

All children Under 2 years of age

1st step towards eliminating ZD

Digital Identity at Birth

PWBR to enroll children into the immunization system at birth, assign them a unique digital ID and link them to ZM-EIR

47,189
Newborns Enrolled

Reaching ZD through Mobile Immunization Vans
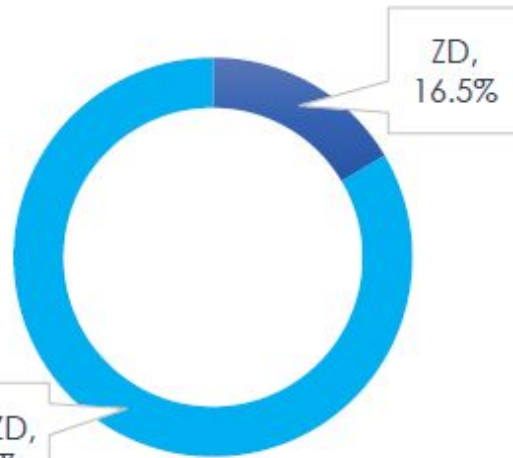## (Apr 8, 2019 - Jul 02, 2023)

Reaching and vaccinating Zero-Dose children in rural, remote, unreached areas through Mobile Immunization Vans and linking them to ZM-EIR

108,374
Children Vaccinated

ZD, 16.5%

Non-ZD, 83.5%

ZD defined as children who did not receive any dose of Pentavalent by 12 months of age

Thank you

mch@ird.global
www.ird.global

SECTION 04

Recommendations

Four Recommended Actions

The analysis identified **four high-level actions** for advancing information systems and tools to improve the identification, reach, and monitoring of zero-dose and under-immunized children, as well as **suggestions for what to do in the short, medium, and long term**.

Each sub-action is tagged according to which actors are best positioned to take action.

Improve accuracy of immunization program denominators

Expand use of data and systems to locate missed children

Move toward comprehensive tracking of vaccination status

Strengthen routine immunization monitoring systems

WHO CAN TAKE ACTION TO ADVANCE VACCINE EQUITY THROUGH DATA SYSTEMS AND TOOLS?

Government decision-makers
- National EPI program managers and their supporters
- Ministries of health
- Agencies responsible for health information systems

Funders
- Funders of health information systems and tools for immunization and civil registration and vital statistics

Partners
- UN agencies and multilaterals
- Implementing partners

Spotlight on actions that **government decision-makers** can take to advance vaccine equity through data systems and tools *in the short term*

Improve accuracy of immunization program denominators

- Consider approaches for adjusting sub-national population estimates.
- Invest in community mapping and enumeration.
- Invest in coverage and equity surveys using approaches such as oversampling, lot quality assurance sampling (LQAS), and data triangulation.

Expand use of data and systems to locate missed children

- Improve use of existing data to detect communities and individual children who missed immunizations.

Move toward comprehensive tracking of vaccination status

- For countries using DHIS2 Tracker for COVID-19 and do not have an EIR, explore its feasibility for routine immunization.
- Invest in data capacity skills among health workers at community and facility levels.
- Explore systems and tools to help integrate and triangulate information across health programs.
- Strengthen the use of client communication systems to notify caregivers of vaccinations.

Strengthen routine immunization monitoring systems

- Invest in tools that facilitate data analysis and use.
- Explore systems and tools for collecting different kinds of data (e.g., client feedback and surveillance).
- Consider rapid survey tools such as LQAS to supplement routine coverage monitoring.

Discussion/Q&A

Download the Landscape Analysis Brief

Download the full report

What does the report provide?
- Analysis of 11 types of immunization systems or tools.
- Actionable recommendations for using the systems and tools.
- Challenges to and opportunities for implementing and scaling up.
- Considerations for how to invest in strengthening health information systems.
- Country case studies on using the systems and tools.

Evaluation

Please scan the QR code below to share your feedback on today's webinar.

THANK YOU

@USAID_MOMENTUM

@USAIDMOMENTUM

USAID MOMENTUM

USAID MOMENTUM