Zero-Dose Analysis Card

Key Concepts and Definitions

"Zero-dose children" are those that have not received any routine vaccines. For operational purposes, Gavi defines "zero-dose children" as children who have not received a first dose of diphtheria-tetanus-pertussis containing vaccine (DPT1).

"Missed communities" are home to clusters of zero-dose and under-immunised children. These communities often face multiple deprivations and vulnerabilities, including socio-economic disparities and lack of access to health services, which can be further exacerbated by gender-related barriers.

"Under-immunised" are those who have not received a full course of routine vaccines. For operational purposes, Gavi defines "under-immunised" children as those who have not received a third dose of diphtheria-tetanus-pertussis containing vaccine (DTP3).

"Equity" is the organising principle of the Alliance's 2021-2025 strategy, whose vision is "leaving no one behind with immunisation." This entails a laser focus on using all Gavi levers to sustainably reach missed communities and zero-dose children with routine immunisation.[1]

Purpose

Assist with and/or consolidate analyses to help countries identify and design service delivery approaches to sustainably reach zero dose children and missed communities with a full course of vaccines. This guidance aligns with the IRMMA framework and builds on existing country-level programme reviews, assessments, and studies. In some cases, it may need to be supplemented by primary data collection.

Pro-equity Tools and Resources

The Analysis card includes a link to **Pro-equity Tools and Resources** to guide Gavi investments. Through a collaborative effort from WHO, UNICEF, Gavi, CDC, and JSI, a database of technical resources is being made available to help countries improve Coverage and Equity (C&E).

This database will iteratively be updated as more resources are developed, and others retired, as we continue to receive feedback from countries and partners. It is currently organised as a user-friendly excel workbook and efforts are underway to convert to an online searchable database in the future. The database is currently organised in three ways based on the needs of the user:

- By topic: Comprehensive list organised by system topic (monitoring, service delivery, demand, human resources, governance, supply chain)
- By question: Comprehensive list organised by question (e.g., how to assess C&E; how to identify barriers to C&E; how to address barriers; etc)
- By IRMMA framework for zero dose: Targeted list organised by IRMMA (identify, reach, measure and monitor, advocate)

The excel workbook can be downloaded from TechNet. The sections below on Key Resources/ Data sources have drawn from this comprehensive repository. Links to additional Gavi resources are also provided.

[1] WHO Equity definition. Cross refer to Programme Guidance

Identify

Find and describe (i.e., whom, where, and how many)

A clear understanding of how many zero-dose children and missed communities there are, who and where they are, and why they have not been reached. **Ultimately, this is to arrive at an understanding of which barriers need to be prioritised and addressed using Gavi support.**

Before zero-dose children and missed communities can be identified, it is important to have a robust understanding of the "real" target or zero-dose population, both in terms of number and localisation of zero-dose children, at the most decentralised level. Once the zero-dose population has been assessed, then it is important to understand the distribution of zero-dose children and missed communities.

Key Questions

Are population estimates used for planning immunisation services at sub/national levels, including the community, up-to-date and accurate? What data sources and assumptions can be used to refine target population estimates?

- Are there some communities and/or settlements which are not captured by these estimates (e.g., mobile/nomadic populations)?
- Do you have information regarding these communities and/or settlements which are not captured by these estimates?
- Do the available target population estimates allow to ascertain the size of the catchment area population?

How many zero-dose and under-immunised children are estimated?

- Are they geographically concentrated or evenly distributed?
- Which regions have high numbers of zero-dose children and which regions have low immunisation coverage (noting high coverage areas with dense populations can have large numbers of zero-dose children)?
- What is the proportion of zero-dose and under-immunised children living in different settings, especially urban, remote rural, and fragile/conflict
- Who and where are the remaining proportion of zero-dose and under-immunised children who do not live in urban, remote rural, and fragile / conflict settings, contexts where the majority tend to live?

Areas for Gavi Support

Technical Assistance

- Data collection, analysis, and triangulation for ascertaining accuracy of denominators as well as distribution of zero-dose and under-immunised children in the population. Main data sources to be considered are listed below.
- Centralise and map data sources relating to denominators (e.g., denominators used by both Routine Immunisation [RI] and Polio programmes) to facilitate the visualisation of population data

Health Systems Strengthening*

Activities to improve routine data systems

- Strengthen linkages between the Health Management Information System (HMIS) and Civil Registration and Vital Statistics (CRVS), including birth notification and community registries
- Scale-up and/or strengthen use of a Geographic Information System (GIS) to update boundaries of catchment areas and health facilities via digitised maps

One-off investments in activities

- Use of satellite imagery to identify missed settlements
- Community headcounts (facilitated by community actors)
- Use of surveys, including post-campaign surveys, to identify zero-dose children and missed communities (with geotagging)
- Capacity building/training activities

**The Identify step should be completed using HSS and/or Targeted Country Assistance (TCA) support in advance of applying for Equity Accelerator Funding (EAF). However, EAF funding may be used in exceptional circumstances where HSS/TCA funding is unavailable.*

Key Analyses and Resources[2]

At minimum, the following analyses should be used; those analyses may already be included in existing reports, studies and/or assessments. The mapping of resources for improving coverage and equity can also be used to frame this process.

- Comparing different data sources of denominators as well as health facility data to ascertain the accuracy of population estimates
- Distribution of zero-dose and under-immunised children by administrative units as well as specific settings especially urban, rural remote, fragile/conflict and other areas
- Mapping immunity gaps – *specific analyses are defined in the CDC Triangulation Guidance Annex on Immunity Gaps*

Key Data Sources

Comparison of denominators:

- Routine immunisation sources such as administrative/LMIS data, electronic immunisation registries (wherever available)
- Projections generated by the National Bureau of Statistics
- Polio/measles campaign enumeration data

Distribution of zero-dose and under-immunised children should draw from the following data sources:

- Routine immunisation sources such as administrative/LMIS data, coverage surveys, electronic immunisation registries (wherever available)
- Post-immunisation campaign survey (for identifying antigen-specific zero-dose children)
- Triangulation efforts should include use of disease outbreak and surveillance, population, service delivery, and other health data sources used by polio, nutrition, malaria, humanitarian, and primary health care programmes
- Vaccine-preventable disease surveillance data for mapping immunity gaps

Identify

Understand and listen (i.e., why)

A clear understanding of how many zero-dose children and missed communities there are, who and where they are, and why they have not been reached. **Ultimately, this is to arrive at an understanding of which barriers need to be prioritised and addressed using Gavi support.**

Once areas and/or populations with higher number of missed children have been identified, it is important to reflect upon barriers to these children being reached by immunisation and primary health care more generally. These barriers can be associated with supply (service accessibility and friendliness; supply chain; and human resources for health) and demand (behavioural and social determinants of vaccination uptake; gender-related barriers and socio-economic barriers) related considerations. This step draws from both quantitative and qualitative research methods.

Key Questions

Who are zero-dose, under-immunised, and missed children and their respective communities?

- Do they belong to any specific/special sub-populations?

Why have zero-dose and under-immunised children not been vaccinated?

- What social, cultural, political, or gender-related barriers might they or their families face to accessing services?
- What inclusion and/or disability related considerations are important?
- How do the reasons differ by urban, remote rural, and fragile settings or by geography/community?

Specifically, what are the **barriers relating to the supply of immunisation services** (e.g. distance to the health facility, low frequency of immunisation sessions, frequent stock-outs, and long waiting time) that prevent zero-dose and under-immunised children from being vaccinated?

- Are these supply-related barriers already addressed by existing interventions/support? If so, what are some of the existing gaps?

Specifically, what are the **demand-related barriers** (e.g., confidence in vaccine benefits, family referral and/or recommendations, service quality) that prevent zero-dose and under-immunised children from being vaccinated?

- Are these demand-related barriers already addressed by existing interventions/support? If so, what are some of the existing gaps?

What proven interventions exist that are required to overcome these barriers and **where are the gaps where new interventions might be needed?**

How do all those identification-related analyses culminate in the country's Theory of Change (ToC) for Gavi support?

- What is the relative importance/weight of each bottleneck?
- Which areas or population groups have the most missed children? Where will interventions need to be targeted?
- What interventions are already being used in other areas/populations or health programmes that might help reach these population groups? Where are innovative interventions needed?
- How can these approaches support the achievement of expected outputs and outcomes as made explicit in the ToC?
- Where do other partners and donors intervene? How are their investments complementary to proposed Gavi investments?

Country Ambition / Target Setting: considering the answers to the above questions, what proportion of zero-dose children do you anticipate targeting?

Areas for Gavi Support

Technical Assistance

- Secondary analyses of existing quantitative data collected through routine systems (e.g., data sources included in the DHIS 2 Bottleneck Analysis [BNA] application)
- Conducting coverage surveys targeted to specific information needs for zero-dose (e.g., sub-nationally representative, targeted to specific areas (urban, very remote), in association with other preventive health/disease programmes
- Triangulation across different sources (e.g., use of Health Facility Assessment data) to uncover reasons for non-vaccination due to barriers relating to the supply of immunisation services
- Qualitative assessment (e.g., BeSD/KAPB surveys, coverage and equity assessments, gender toolkit/ analysis, Human Centered Design process/toolkit) to better understand barriers to immunisation and primary health care (e.g. use of the BeSD survey tool integrated into an existing survey; UNICEF ROSA tool for conducting a gender analysis; UNICEF HCD Toolkit; TIP 2.0 to inform the development of programmatic strategies)

Health Systems Strengthening/EAF

- Establish and/or strengthen online and offline social listening related interventions to understand beliefs, perceptions, and intent for vaccination
- Strengthen use of triangulation through automated dashboards
- Strengthen use of the DHIS 2 BNA application
- Implementation research
- Application of TIP 2.0 tool to inform tailoring of interventions

Key Analyses and Resources

The list of analyses below is meant to help distinguish supply versus demand related barriers.

Supply-related challenges:

- Mapping of target population overlayed with:
  - health facilities – fixed site clinics/outreach services
  - vaccine stock and/or cold availability and functionality
  - healthcare worker availability
- Fund flow related analyses to assess whether routine immunisation services were either limited and/or interrupted owing to lack of timely funding

Analyses relating to **demand-related challenges** should unpack perceptions and experiences relating to all steps of the caregiver journey: (1) knowledge and awareness; (2) intent; (3) preparation; (4) cost and effort; (5) point of service; and (6) after service. UNICEF's "Demand for Health Services Field Guide" *provides an overview of the caregiver journey and the underlying analyses and key questions*

Key Data Sources

Supply-related data sources:

- Geo-enabled Master Facility Lists
- Health Facility Assessments including SARA, HeRAMs, etc.
- Assessments and/or studies relevant to some or all pillars of the health system (e.g., Effective Vaccine Management [EVM] assessment, HR-related assessment, in-depth data quality assessments, health financing analyses, etc.)

Demand-related data sources:

- Knowledge Attitude Practice/Behavioural and Social Determinant surveys to understand vaccine motivation, acceptance, and behaviour
- Human-Centered Design toolkit
- Social listening tools including Vaccine Misinformation Field Management Guide
- Community needs, perceptions, and demand: community assessment tool

Reach (Tailor strategies, integrate and sustain)

Develop and implement tailored and sustainable strategies to address supply and demand-side barriers from the identify step to ensure zero-dose children and missed communities are reached with immunisation in different settings (urban, remote rural, fragile, and others) and to serve as a platform for broader integrated PHC over the life course.

Key Questions

Demand Side Barriers

- Are available services trusted and sought by communities to complete immunisation schedules on time?
- How can programmes build communities' trust, confidence, and understanding of immunisation?
- How can programmes partner with community organisations and leaders to build trust, confidence, and demand among caregivers?
- What are the best strategies to motivate caregivers and communities to bring children for immunisation?
- How can community engagement enhance social accountability for immunisation services?
- Is there a strategy to track dropouts or defaulter tracing?
- Are health workers fully equipped with skills and tools to provide people-centred quality immunisation services?

Supply Side barriers:

- How can service delivery approaches be tailored to sustainably reach zero-dose children and missed communities in specific contexts (e.g., urban settings, conflict, remote rural)?
- How can immunisation services be better designed to meet the needs of caregivers? Are services available where and when needed? How can strategies be adapted to overcome gender and other socio-economic barriers?
- Which CSOs, humanitarian agencies, private for-profit sector, and non-health sector actors have a comparative advantage in reaching these communities? Are there suitable mechanisms in place to engage them?
- How can immunisation be better integrated with delivery of other PHC services (e.g., bed-nets, Vit A, nutrition supplements, etc.) to increase reach and sustainability?
- Are sufficient health workers available in targeted communities to provide regular immunisation services?
- How will cold chain capacity needs, distribution, and deployment plans prioritise these communities?
- Are there systems in place to reliably distribute the full set of vaccines to these communities and are replenishment intervals optimised to serve the needs of these communities?
- What innovations are needed to strengthen access to zero-dose children and missed communities in the long term?
- Are there gaps in capacity to develop effective plans to reach zero-dose communities and a performance management system to track progress, working with communities?
- How can interventions align with other non-health donors (e.g., IOM in conflict settings, women and youth-led CSOs in urban settings) for service delivery?

Areas for Gavi Support

Technical Assistance

- Design and pilot new approaches to improve service quality
- Collecting and using sub-national/ community-based data for increasing reach of immunisation systems
- Test new approaches to address vaccine hesitancy
- Build capacity to orient management and assist in developing participatory approaches to ensure community participation in planning, managing, and monitoring services
- Build capacity for strategic use of data for management decisions to improve EPI performance
- Build capacity to manage new partnerships
- Facilitating TA provider access to previously inaccessible areas with the aim of ensuring vaccine supply and service delivery
- Adapting communications to local gender dynamics, languages, and cultures
- Build capacity to ensure that critical resources (HR, vaccines, and funds) are available to deliver reliable and quality services to the community

Health Systems Strengthening/ EAF/ other funding levers

- Deliver tailored and gender responsive service delivery models with CSOs and private sector partnerships to address specific country/local context
- Support strategies to reach zero-dose children and missed communities with regular and reliable services. Recurring activities such as microplanning, PIRI, mobile, and outreach services can be supported in the short-term with clear long-term planning for how to sustainably strengthen services.
- Support to ensure functional national and subnational Logistics Working Groups (LWGs)
- Tailor supply chain interventions including appropriate forecasting accounting for missed populations; alternate vaccine delivery; increased distribution points with appropriate cold chain and related equipment and adequate storage capacity; engaging private and third sector actors for last mile delivery and CCE maintenance; improved management of vaccine stocks
- Support deployment of qualified health workers to missed and underserved communities for immunisation and community mobilisation
- Invest in reliable data (e.g., electronic immunisation registry)
- Enhancing service experience for increased access, with the use of behavioural interventions for HCW and caregivers
- Investments in innovative mechanisms to transform leadership and management approaches to reach zero-dose communities
- Support mechanisms to institutionalise local, community-based partnerships

Technical Guidance

Global Routine Immunisation Strategies and Practices (GRISP): a companion document to the Global Vaccine Action Plan (GVAP) (WHO 2016)

Microplanning for immunisation service delivery using the Reaching Every District (RED) strategy (WHO/UNICEF 2009)

WHO guidance on COVID response, recovery and maintenance plan

Improving immunisation coverage and equity through the effective use of geospatial technology

UNICEF ROSA Practical guidance on gender and immunisation

Immunization Supply Chain Interventions to Enable Coverage and Equity in Urban Poor, Remote Rural and Conflict Settings

Tailoring Immunization Programmes (TIP)

Missed Opportunities for Vaccination (WHO)

Periodic Intensification of Routine Immunization

Vaccination in Acute Humanitarian Emergencies

WHO guidance for planning and implementing catch-up vaccination

Working together – an integration resources guide for immunization services throughout the life course

Gavi Guidance

Gavi Application Materials: Theory of Change Instrucuctions

Gavi Alliance Programming Guidelines (Demand, Gender, Urban, Human Resources for Health, Leadership, Management and Coordination)

Use of Gavi Support to Maintain, Restore, and Strengthen Immunisation in the Context of COVID-19

Gavi Innovations catalogue

Tools

Technical Resources for Improving Immunization Coverage and Equity

Revised C&E toolkit from UNICEF/WCARO/ESARO

Urban Immunization Toolkit

Second Year of Life (2YL) Resources

Monitor

Ongoing monitoring to assess (1) if programmatic strategies, as defined in the REACH step, are achieving the objectives and outcomes in the country's ToC and (2) which course correction measures need to be implemented.

At a minimum, analyses and visualisations used in this step should speak to the ToC and focus on the following:

- Programmatic and financial progress for Gavi-supported activities (i.e., Gavi workplan and budget)
- Progress against the Gavi strategy, core, and supplementary (if any) indicators
- Address the learning questions put forward in the Monitoring & Learning (M&L) plan

Key Questions

How will you monitor whether programmes are on track to reach zero-dose children and missed communities as per the ToC?

- Progress towards intermediate results as described in the ToC?
- Progress towards immunisation outcomes as described in the ToC?
- Whether Gavi-supported programmatic areas contributing to reaching zero-dose populations?

What monitoring/data systems do you need to establish and/or improve to asses whether **demand-related pro-equity strategies** are effective?

- How will you integrate community-centred insights from users, beneficiaries, and CSOs into your monitoring system?

What monitoring/data systems do you need to establish and/or improve to asses whether **supply-related pro-equity strategies** are effective?

What processes do you need to establish and/or improve the **use of data for action?**

- How will you ensure that data is available in a timely manner and used to design, monitor, course correct, and learn from programme implementation?
- How will you track the implementation of course correction measures?

Areas for Gavi Support

Technical Assistance

- Strengthen capacity to analyse, consolidate, and use programmatic data for decision-making supported by dashboards
- Design community-centred monitoring system
- Use of implementation research for addressing learning questions listed in the M&L plan

Health Systems Strengthening

- Monitoring Gavi financial and workplan activities
- Strengthen data systems such as HMIS, Electronic Immunisation Registries (EIRs), LMIS (including the temperature monitoring, track and tracing functions), operational data, etc.
- Real-time campaign monitoring
- Establish and/or strengthen community monitoring systems
- Establish and/or strengthen linkages between monitoring, accountability, and learning
- Implementation research

Measure (and Learn)

Evaluation of effectiveness and efficiency of immunisation programmes in reaching zero-dose children and missed communities.

Key Questions

How will you measure the **effectiveness and cost-efficiency** of selected pro-equity strategies in:

- Reaching and reducing the number of zero-dose children and missed communities
  - At the subnational level and in specific settings (i.e., remote rural, urban, conflict, and mobile populations)?
- Addressing **gender-related barriers**?
- Addressing **supply-related barriers**?
- Addressing **demand-related barriers**?

Areas for Gavi Support

Technical Assistance

Activities that strengthen routine country data systems

- Comprehensive approach to strengthening local capacity for monitoring, learning, and evaluation
- Perform an evaluability assessment at the programme design phase if a country-level evaluation is proposed
- Approaches to temporarily bolster collection, analysis, and use of operational data (e.g., local data collector networks, mobile phone reporting, sentinel sites with more robust data collection methods)
- Implementation research
- Process evaluation
- Cost effectiveness and cost-per-reach rapid learning assessments and studies

Activities which leverage existing surveys

- Ensure objectives in targeted surveys (i.e., subnational, urban areas) and serosurveys are aligned with ToC measurement
- Optimise campaign surveys to ensure analyses are supporting the assessment of cost effectiveness and efficiency

Activities that rely on modelling

- Plan and pilot use of geostatistical modelling at subnational level
- Combine geographic modelling with socio-economic indicators, including gender-related barriers, to reveal areas of inequity and identify underlying causes and potential solutions

Health Systems Strengthening

- Implementation research
- Replicate and scale-up innovations / strategies pilot tested in Gavi Learning Hubs

Technical Guidance

- Implementation research data base and guidance (forthcoming)
- Targeted survey (forthcoming)
- Evaluability assessment guide
- Evidence-based learning guide
- Implementation research database and guidance

Additional Resources

Technical Guidance

- WHO Guide on Implementation Research
- TDR Implementation Research Toolkit

Gavi Guidance

- Gavi Programme Funding Guidelines

Advocate

Use evidence to make a case for political attention and resources. Secure commitment to prioritise reaching zero-dose children and missed communities with immunisation services by national, subnational, and community leaders, civil society and development partners, and ensure that this commitment is reflected in policies, planning, and domestic resources for immunisation.

Key Questions

Policies and Planning: Is reaching zero-dose children and missed communities a clear priority reflected in National Health policy and/or National Immunisation Strategy and related national and subnational operational plans?

- Is an advocacy strategy needed to secure such commitment?
- What changes are necessary in the mandate, membership, and scope of governance committees (ICC/HSCC) to provide effective oversight to ensure that the programme is reaching these communities?
- How can sub- and national EPI and PHC management enable and promote effective local social accountability mechanisms?

Political will: Are national, subnational, and community leaders, including civil society and development partners in and beyond immunisation, committed to prioritising zero-dose children and missed communities? Are other programmes and funders prioritising zero dose communities for other services?

Budgets and Services: Are there functioning mechanisms in place to direct and manage resources to sub-national/community level to address key barriers to immunisation, including gender-related barriers?

Single Platform for Zero-Dose Efforts: Are relevant donors, humanitarian and development partners in the country participating on a single Primary Health Care (PHC) platform coordinated by the Ministry of Health at national and sub-national levels to address equity challenges?

Areas for Gavi Support

Technical Assistance

- Design a targeted advocacy and engagement strategy to engage national, sub-national, humanitarian, and civil society stakeholders in the zero-dose agenda
- Develop advocacy planning and engagement tools and content in support of the zero-dose agenda
- Identify and leverage opportunities to integrate approaches to zero-dose children and missed communities into relevant national policies and plans
- Evaluate sustainability of domestic financing for immunisation and support countries to design budgets to target resources to specific approaches, geographies, and populations necessary to reach zero-dose populations.

Additional Resources

Gavi Guidance

- Gavi Gender-Related Barriers to Immunisation Funding Guidelines
- Gavi Demand Generation Funding Guidelines
- *Gavi Civil Society and Community Engagement Approach (forthcoming)*

Other Resources

- *Relevant political commitments to support advocacy, e.g.,* UHC Declaration (2019; all UN Member States); Astana Declaration on Primary Health Care (2018; all WHO Member States); Global Compact on Refugees (2018; all UN Member States); Addis Declaration on Immunisation (Africa)