



IMPLEMENTATION RESEARCH FOR IMMUNIZATION

**Summary Report
of Global Activities
supported by Gavi,
the Vaccine Alliance**

2015-2018

unicef 
for every child

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Implementation Research for Immunization

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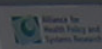
Implementation Research and Delivery Science Unit,
in collaboration with the Immunization Unit
UNICEF Programme Division – Health
New York

July 2018

APPLICATION AND IMPACT.

At the conclusion of the research, elaborate dissemination of the research findings to all the stakeholders is pending however, application of the research findings started in September 2017. This involved the sharing of the reports with the service providers and their supervisors in the two counties where the research was conducted. A follow up to assess the impact has since then been done in the two counties. The findings have been very encouraging. They include;

- i) Creation of child/baby friendly rooms to ensure privacy.
- ii) Micro teachings have been strengthened in 80% of the facilities to help fill up the knowledge gaps in immunization.
- iii) None pharmacological pain mitigation strategies e.g. Breastfeeding, shushing and distraction have been implemented where it was not being done.
- iv) Facilities that were immunizing their babies once a week are now immunizing daily. This minimizes on missed opportunities and subsequently improves on the coverage.
- v) To address under staffing hence increased work load which was compromising the quality of service provision, some facilities have recruited additional staff though still below the WHO staffing norms.



Decision-Maker Led Implementation Research to Address
Daily Health & Governance Weaknesses
Embedded Research/Innovation for Strengthening
Systems Towards Universal Health Coverage

23-24 April 2018
Nairobi, Kenya

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Acronyms

AHPSR	Alliance for Health Policy and Systems Research
BR4MNCH	Birth Registration for Maternal, Newborn and Child Health
CRVS	Civil registration and vital statistics
CSO	Civil society organization
DELIR	Decision-Maker Led Implementation Research
ECHDs	Enhanced Child Health Days
EPI	Expanded Programme on Immunization
HSA	Health Services Academy
IEC	Information, education and communication
IRDS	Implementation Research and Delivery Science
IRI Hub	Implementation Research Hub for Immunization
NGO	Non-governmental organization
PAR	Participatory Action Research
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive summary



UNICEF works through its country, regional and global offices to support governments to leverage funding from Gavi, the Vaccine Alliance to improve immunization and broader health programmes for women and children, particularly the most vulnerable and excluded. A key focus of this work is to improve the implementation of immunization policy and programming, including through implementation research.

Since 2015, Gavi has funded the Implementation Research and Delivery Science (IRDS) Unit, in collaboration with the Immunization Unit of UNICEF and other partners such as the World Health Organization (WHO) Alliance for Health Policy and Systems Research (AHPSR), to carry out both global and country-level implementation research initiatives. The actual approach used to carry out these initiatives to date has been determined by existing research capacity among local implementers (i.e., practitioners and decision-makers), as well as the need for analysis that has real-time responsiveness versus academic rigor. These factors determined whether the approach was largely led by implementers (with the meaningful engagement of researchers) or researchers (with the meaningful engagement of implementers). Key characteristics of the approach included continuous engagement across these two groups, and alignment of research activities with implementation, funding and policy cycles.

This report provides an overview of three key initiatives to improve implementation of policies and programmes designed to increase immunization coverage and equity as well as broader health programmes. These initiatives include: 1) the Decision-maker Led Implementation Research (DELIR) initiative; 2) the Pakistan Implementation Research for Immunization Programme; and 3) the Capacity Building Workshop on Implementation Research.

DELIR supports research that aims to generate knowledge to improve the effective implementation of immunization programmes within health systems. As part of this initiative, 14 projects from 10 countries (Chad, the Democratic Republic of the Congo, Ethiopia, India, Kenya, Nigeria, Pakistan, Somalia, Uganda and Viet Nam) received small grants and technical support to carry out research related to vaccination coverage, vaccine demand, health and delivery systems for



vaccines, and immunization programme management. The initiative is the result of a collaborative effort between UNICEF and AHPSR with funding from Gavi.

In 2016 – with the financial support of Gavi and in partnership with the Government of Pakistan – UNICEF and AHPSR launched an implementation research initiative to explore and assess health system and implementation bottlenecks facing the Pakistan Expanded Programme on Immunization (EPI). Ten projects were ultimately supported through the Pakistan Implementation Research for Immunization Programme. The research projects explored a diverse set of implementation challenges and solutions across districts and provinces in Pakistan, although immunization inequities were an issue in all the projects.

In September 2017, UNICEF undertook a learning workshop in Johannesburg, South Africa, that supported colleagues engaged with two UNICEF initiatives:

1. the Enhanced Child Health Days (ECHDs) projects to deliver vitamin A supplements and immunization in 15 countries in sub-Saharan Africa; and

2. the Birth Registration for Maternal, Newborn and Child Health (BR4MNCH) projects supporting birth registration, community health management information systems and interoperability in Ethiopia, Mali, Senegal and South Sudan.

The workshop aimed to build the capacities of UNICEF staff, government staff and partners to design, plan and conduct implementation research in their respective countries.

The DELIR, Pakistan Implementation Research for Immunization Programme and capacity building workshop experiences reflect that there is a large appetite for and appreciation of implementation research among implementers and policymakers. The emphasis on partnership between research teams and decision makers is broadly recognized as a positive approach.

A number of lessons were common across the research projects. There was a clear need to allow more time for each step in the process, with time built in for capacity-building activities and collaboration with local stakeholders. In addition, roles and responsibilities of all actors involved in implementation research –



including government stakeholders, non-governmental organization (NGO) partners and UNICEF staff – should be clearly defined from the outset of the project. The research projects and the capacity building workshop also highlighted the importance of partnerships with private-sector entities and academic institutions to leverage their research experience and technical capacities for implementation research. The experiences also reflected the importance of advocating for the inclusion of implementation research in regular programming, with dedicated programme budgets, as well as within standard monitoring and evaluation plans.

Moving forward, it will be critical to develop a plan for supporting research teams beyond the research process itself. Almost all participants indicated that they would appreciate additional support to complete key aspects of their projects such as data analysis, writing manuscripts, publishing articles in journals, disseminating policy briefs and identifying additional funding support to test proposed recommendations/interventions. Moreover, many participants expressed that they would need further support for the application and

dissemination of key findings to broader and global audiences.

UNICEF and AHPsR, with support from Gavi, are also seeking to develop and implement a research programme to enable the effective implementation of immunization programmes within another country's health system. Discussions are currently underway with Ethiopia as a possible country site. Research funded under this call is expected to focus on the generation of new strategies and knowledge that will enable more effective implementation of existing immunization programmes within the health system.

UNICEF is also in discussions with Gavi to set up an Implementation Research Hub for Immunization (IRI Hub). The goal of the IRI Hub is to support strengthened immunization systems in the context of primary health care and health systems strengthening to improve immunization coverage and equity. Ultimately, the aim will be to accelerate the adoption and dissemination of successful approaches that address identified priority immunization issues and to support Gavi's efforts to improve immunization coverage and equity.





I. Introduction

A. Background

Immunization is one of the most successful and cost-effective interventions to prevent child illness and save children's lives. It currently prevents between 2 and 3 million deaths every year.

Yet the effective implementation of immunization programmes and services (i.e., high coverage, equity, quality and sustainability of immunization programmes and services) remains a challenge in many low- and middle-income countries. Since 2010, the

percentage of children who received their full course of routine immunization has stalled at 86 per cent, with no significant changes in any country or region in the past year.¹ In 2016, nearly 1 in 10 infants, or 12.9 million infants, did not receive any vaccinations, putting them at serious risk of potentially fatal diseases.² An estimated 1.5 million children still die every year from vaccine-preventable diseases.³

UNICEF works with partners, such as the World Health Organization (WHO), through its country, regional and global offices, to support governments to leverage funding

¹ United Nations Children's Fund, '1 in 10 infants worldwide did not receive any vaccinations in 2016', UNICEF, New York, 17 July 2017.

² Ibid.

³ World Health Organization, 'Immunization coverage', Fact sheet, WHO, July 2017, www.who.int/mediacentre/factsheets/fs378/en/, accessed 14 June 2018.

from Gavi, the Vaccine Alliance to improve immunization and broader health programmes for women and children, particularly the most vulnerable and excluded. UNICEF is, therefore, well positioned to work with national governments to improve the implementation of immunization policy and programming, including through implementation research.

The UNICEF Implementation Research and Delivery Science (IRDS) and Immunization units (both within the UNICEF Headquarters in New York Programme Division – Health Section) have expertise in immunization programming, implementation science, quantitative and qualitative research methods, and monitoring and evaluation. The units work in close collaboration on a range of in-country and global initiatives, including exploring the use of innovative methods and new technologies for immunization data collection, analysis and use (e.g., small area estimation and geospatial information systems to improve immunization equity assessments, activities which have advanced through support from the Gavi Data Strategic Focus Areas (SFA); and collaborating to co-lead the global Equity Reference Group for Immunization.

B. Implementation research for immunization



UNICEF defines implementation research as “[t]he integration of research methods and approaches within existing health programme implementation and policy making cycles in order to improve service delivery and overcome bottlenecks.”



UNICEF incorporates implementation research into many of its programmes to better understand the factors that influence and improve implementation. In collaboration with colleagues across sectors, including child protection, HIV and nutrition, IRDS and Immunization Unit staff have supported government counterparts, implementing partners and UNICEF programme staff to carry out implementation research initiatives on immunization, birth registration, newborn health, HIV, community health and nutrition programmes. The immunization-related projects, both at the global and national levels, have utilized Gavi funding.

Since 2015, Gavi has funded the IRDS Unit and the WHO Alliance for Health Policy and Systems Research (AHPSR) to partner on the Decision-Maker Led Implementation Research (DELIR) Initiative to generate knowledge to improve the effective implementation of immunization programmes within health systems. In addition, the IRDS Unit,



Immunization Unit and AHPSR jointly supported UNICEF Pakistan and the Government of Pakistan to issue a request for proposals from in-country implementers and research institutions to conduct implementation research on priority immunization topics. In 2018, the DELIR and Pakistan research teams participated in dissemination workshops during which they shared their findings, recommendations and experiences relating to the work. Discussions are currently underway with in-country partners to apply research findings to immunization programmes, develop policy briefs and prepare manuscripts for publication.

The approach used to carry out these studies was determined by existing research capacity among local implementers (i.e., practitioners and decision-makers), as well as the need for analysis that has real-time responsiveness. These factors determined whether the approach was largely led by implementers (with the meaningful engagement of



researchers) or researchers (with the meaningful engagement of implementers). Key characteristics of the approach included continuous engagement across these two groups, and alignment of research activities with implementation, funding and policy cycles.

The implementation research approach generally followed several steps:

1. Stakeholders were sensitized on what implementation research is and its potential benefits
2. In collaboration with stakeholders, priority research questions and potential related implementation research studies were identified
3. A research team consisting of a partnership between national implementers and researchers was convened
4. Implementation research staff provided ongoing technical support and training to develop protocols, conduct studies and support the dissemination of results and recommendations.

In addition, in 2017, the health, nutrition and child protection sections in UNICEF Headquarters, the Eastern and Southern Africa Regional Office and the West and

Central Africa Regional Office, in collaboration with AHPSP, Helen Keller International, and the UNICEF Office of Research, developed and launched a one-week training workshop on implementation research. Ten country programmes participated, including participants from UNICEF country offices and government implementer counterparts from six Enhanced Child Health Days (ECHDs) grant countries. By the end of the week, each country had developed their implementation research question(s), discussed sampling frames, data collection, ethical considerations, budgets, logistics and planned analysis as an outline for protocol development. Following the workshop, each country held consultations and prepared protocols for submission to local ethics committees, with plans to undertake the research in 2018.

C. Structure of the report

This report provides an overview of DELIR, the Pakistan Implementation Research for Immunization Programme and the Capacity Building Workshop on Implementation Research. For each of these initiatives, the report provides an introduction and background, description of the overall process and lessons learned. In addition, the appendix includes an overview of study findings and results to date.





II. Decision-maker Led Implementation Research Initiative

A. Introduction

1. Background

DELIR supported research that aimed to generate knowledge to improve the effective implementation of immunization programmes within health systems. As part of this initiative, 14 projects from 10 countries (Chad, the Democratic Republic of the Congo, Ethiopia, India, Kenya, Nigeria, Pakistan, Somalia, Uganda and Viet Nam) received small grants and technical support to carry out research related to vaccination coverage, vaccine demand, health and delivery systems for vaccines, and immunization programme management. The initiative is the result of a collaborative effort between UNICEF and AHPSP with funding from Gavi.

Why decision-maker led implementation research?

Research that aims to address implementation demands an intimate understanding of the programme being implemented, as well as the health system and greater context that encompass it, to identify implementation barriers, ask relevant questions and provide feasible recommendations. For this reason, it is necessary that decision-makers play a central role in the conceptualization, design and analysis of the research projects. DELIR was designed to engage decision-makers in the research by requiring that the principal investigator be an individual directly involved in the implementation of an immunization programme. These decision-makers work in collaboration with researchers affiliated with

an academic or research institution to carry out the study.

The interface between research and practice is often fraught with challenges driven by a lack of understanding and poor communication between decision-makers and researchers that result in low uptake of research findings within health systems or programmes. In order to facilitate the use of knowledge generated through DELIR, research projects were embedded within existing immunization programmes to provide insight on issues that are especially relevant to decision-makers. The focus of this research was not on developing and testing new interventions, but rather the generation of strategies and knowledge that will enable more effective implementation of these programmes.

What are the expected outcomes?

The findings from this research will support decision-making for programme implementation to improve the effectiveness of immunization programmes. By engaging decision-makers in research on existing immunization programmes, these projects will also build their capacities to carry out studies on implementation and institutionalize research within existing programme activities. Further, the initiative will foster relationships between decision-makers and researchers to facilitate understanding of the implementation process and contributions of research to immunization programming.

2. The DELIR projects

The projects supported under DELIR address various aspects of system failures, implementation barriers and implementation strategies relating to immunization coverage and equity. Table 1 summarizes each project's objective.



Table 1: DELIR projects and objectives

Chad
More responsive immunization services through tailoring for hard-to-reach populations in Chad. Research teams and organizations: <ul style="list-style-type: none">• Fayiz Abakar, Institut de Recherche en Elevage pour le Développement (IREDE), N'Djamena, Chad.• Djimet Seli, Centre for Research in Anthropology and Human Sciences (CRASH), N'Djamena, Chad.
Identify potential strategies to tailor immunization services to reach the hard-to-reach communities in Danamadji District. <ul style="list-style-type: none">• Identify the factors that prevent nomads from accessing vaccination services.• Assess the feasibility and sustainability of integrating the One Health approach into existing vaccination services.• Explore potential communication channels between the health system and nomadic communities.• Document the process and results of tailoring vaccination services to meet nomadic communities' needs.
Democratic Republic of the Congo
Strengthening the health information system for immunization in the Democratic Republic of the Congo. Research teams and organizations: <ul style="list-style-type: none">• Guillaume Ngoie, National EPI Programme, Democratic Republic of the Congo.• Emile Okitolonda, Kinshasa School of Public Health (KSPH), Democratic Republic of the Congo.
Identify if data bottlenecks (including for immunization) exist and where, and identify elements that could improve and increase the promptness of health information systems (i.e., EPI) in real time. <ul style="list-style-type: none">• Map the various information systems used for the collection, analysis and transmission of health and immunization data.• Analyse data from all levels of the health system from all sources.• Analyse strengths, weaknesses, opportunities and threats associated with different sources.• Evaluate the difficulties of the system in relation to data quality and their root causes.• Develop strategies to strengthen the reporting system at each level.
Ethiopia
Linkages and feedback mechanisms, and mobility of caregivers among health facilities: A mixed-method study. Research teams and organizations: <ul style="list-style-type: none">• Thewodros Zewde Shay, MERQ Consultancy PLC, Arada Sub City, Ethiopia.• Diriba Bedada Hunde, MERQ Consultancy PLC, Arada Sub City, Ethiopia.
<ul style="list-style-type: none">• Determine how the linkages and feedback system of health facilities along with mobility of caregivers affect the follow-up in utilizing routine immunization services.
How can the use of data within the immunization programme be increased in order to improve data quality and ensure greater accountability. Research teams and organizations: <ul style="list-style-type: none">• Binyam Tilahun, Institute of Public Health, eHealthLab, University of Gondor Hospital, Ethiopia.• Alemayehu Teklu Toni, Institute of Public Health, eHealthLab, University of Gondor Hospital, Ethiopia.
<ul style="list-style-type: none">• Explore how immunization data is reported and used to improve immunization services.• Assess the role of supervisory visits to increase data use, improve data quality and ensure accountability in immunization programmes.• Explore interaction and feedback mechanisms within the health information system actors at district, facility and community levels.• Explore existing community-level engagement approaches that can be leveraged to increase data use, improve data quality and ensure accountability in immunization programmes.

Table 1: DELIR projects and objectives (continued)

India
Negative social media messages on vaccines: How can the resultant trust deficit between caregivers and health workers be overcome? A qualitative inquiry in Malappuram district of Kerala State in India.
Research teams and organizations: <ul style="list-style-type: none">• Anoop T Nair, Department of Health, Government of Kerala, India.• Muhammed Shaffi, Ministry of Health, Al Taif, Saudi Arabia.
<ul style="list-style-type: none">• Understand the role of anti-vaccine social media messages in influencing the relationship and trust between caregivers and health workers.• Understand how the deficit in caregivers' trust in health workers influences their decisions on childhood vaccination.• Evaluate the current communication methods (e.g., information, education and communication (IEC) materials, websites etc.) vis-à-vis the ability to address anti-vaccine messages.• Suggest modifications in the current communication and social media activities to improve the trust between caregivers and health workers and thereby improve vaccination coverage.• Develop a set of tools for health workers (leaflets, FAQs, social media messages) and educational materials which can help to counter anti-vaccine messages.
Kenya
Emerging hesitancy upon new vaccine introduction: Tackling a most unusual barrier.
Research teams and organizations: <ul style="list-style-type: none">• Chrysanthus Wanyama, AMUA-Sikhendu Medical Clinic, Sikhendu, Kenya.• Benson Wamalwa, University of Nairobi, Kenya.
Gain an understanding of the following points: <ul style="list-style-type: none">• The extent of parental, vaccinator and programme manager concerns about pain at vaccination.• The extent of vaccination dropouts due to pain during vaccination or later during the days after vaccination.• Health personnel and caregiver actions in relation to pain at vaccination or later during the days after vaccination.• Immunization policy recommendations in relation to reducing pain at the time of vaccination.
Nigeria
Participatory evaluation and action research to increase immunization coverage in Ogun State.
Research teams and organizations: <ul style="list-style-type: none">• Elijah Ayowole Oguniola, Ogun State Primary Health Care Development Board, Nigeria.• Ngozi Akwataghibe, Royal Tropical Institute (KIT), Netherlands.
<ul style="list-style-type: none">• Assess the usefulness of the Participatory Action Research (PAR) approach in strengthening community linkages to the Reaching Every Ward strategy and the effect of the collaboration of community members, health workers and local government officials in improving immunization utilization and coverage in the Remo-North local government area.

Table 1: DELIR projects and objectives (continued)

Nigeria (continued)
Potential role of civil society organization (CSO) engagement for increasing the demand for and uptake of immunization services in Odukpani Local Government Area of Cross River State.
Research teams and organizations: <ul style="list-style-type: none">• Aniekan Etokidem, University of Calabar Teaching Hospital, Calabar, Nigeria.• Festus Nkpoyen, University of Calabar Teaching Hospital, Calabar, Nigeria.
Identify the potential role of CSO engagement in increasing the demand for and uptake of immunization services in the Odukpani local government area of Cross River State of Nigeria. <ul style="list-style-type: none">• Identify and map CSOs active in health generally and in immunization specifically in the local government area.• Synthesize and document key learnings from the existing body of knowledge on CSO participation in increasing demand for and uptake of immunization services.• Document potential barriers to and facilitators of CSO engagement in increasing demand for and uptake of immunization services.• Propose a CSO intervention for increasing demand for and uptake of immunization services.
Use of social actors to address contextual barriers for utilization of immunization services among caregivers of under-five children in urban slums of Yobe State in the context of the Boko Haram insurgency.
Research teams and organizations: <ul style="list-style-type: none">• Mohammed Bello Kawuwa, Yobe State Ministry of Health and Social Services, Nigeria.• Mohammed Ashir Garba, University of Maiduguri, Maiduguri, Nigeria.
<ul style="list-style-type: none">• Assess the anti-vaccination messages in the urban slum of Yobe State.• Evaluate the sufficiency and coverage of IEC materials in addressing the anti-vaccination messages by social actors in the urban slum of Yobe State.• Identify the optimal role of social actors in addressing anti-vaccination messages in the urban slum of Yobe State.
Pakistan
Improving vaccine uptake in the urban slums of Karachi, Pakistan: Implementation research to explore and address supply- and demand-side barriers to routine immunization.
Research teams and organizations: <ul style="list-style-type: none">• Yasir Shafiq, VITAL Pakistan Trust (VPT), Karachi, Pakistan.• Maqbool Ahmed, Additional District Health Officer, Malir, Karachi, Pakistan.
Explore supply- and demand-side immunization barriers in peri-urban slums and ways to address them. <ul style="list-style-type: none">• Explore supply-side barriers related to immunization in the context of the EPI in the target slums.• Explore key community-level barriers related to immunization in the target slums.• Explore how these barriers can be addressed around a birth registry system.• Assess childhood vaccination status in the target slums using a representative sample in order to identify the pockets of poor vaccination coverage.
Somalia
Ministry of Health engagement to improve local capacity for demand generation in Puntland Somalia (Mudug, Bari and Nugal regions).
Research teams and organizations: <ul style="list-style-type: none">• Abdi Musse Kamil, Ministry of Health, Puntland, Somalia.• Abdirizak Hassan Isse, Ministry of Health, Puntland, Somalia.
<ul style="list-style-type: none">• Explore ways in which engagement of the Ministry of Health in planning and management of demand generation interventions can be improved and how improved engagement can be leveraged to facilitate development of local institutional capacity for demand generation interventions.

Table 1: DELIR projects and objectives (continued)

Uganda
Evaluating the role of leadership in transitioning vertical into integrated and sustainable district health programmes – a case study of immunization in Uganda.
Research teams and organizations: <ul style="list-style-type: none">• Francis Kyakulaga, Uganda Development and Health Associates, IGANGA, Uganda.• Peter Waiswa, School of Public Health, Makerere University, Uganda.
Evaluate the role of leadership strategies in facilitating the transition of successful vertical immunization programmes into integrated and sustainable district programmes in Luuka district, Uganda. <ul style="list-style-type: none">• Explore leadership strategies applied by various actors at the regional, national and district levels.• Evaluate how different actors engage with districts to integrate projects into district health services.• Explore the contextual factors that hinder or facilitate integration and sustainability of high performance.• Establish/test the acceptability of using different leadership engagement strategies.• Build consensus and validate key study findings, best practices and case studies.
Process evaluation of community health facility-based micro-plan development and implementation in Uganda.
Research teams and organizations: <ul style="list-style-type: none">• Henry Luzze, National EPI, Ministry of Health, Uganda.• David Kaawa-Mafigiri, University of Makerere, Uganda.
<ul style="list-style-type: none">• Establish the availability of micro-plans at the health facilities in the districts.• Examine the process of developing the micro-plan focusing on the knowledge, perceptions and involvement of those in charge of implementation.• Analyse the process of implementing the micro-plans where they exist.• Document the successes and challenges of developing and implementing the micro-plans.• Propose a strategy to improve micro-planning processes.
Viet Nam
Improving the effectiveness of immunization system management for children from 0-23 months in Viet Nam.
Research teams and organizations: <ul style="list-style-type: none">• Tran Tuan, Research and Training Centre for Community Development (RTCCD), Hanoi, Viet Nam.• Dang Dinh Thoang, Hanam Provincial Department of Science and Technology, Viet Nam.• Van Tat Pham, Hanam Provincial Department of Health, Viet Nam.
<ul style="list-style-type: none">• Describe and analyse the current immunization system, and its operational management towards equity and system efficiency.• Identify gaps of the system management and room for improvement in terms of system transparency, accountability and responsibility.• Measure households' access to and use of different types of immunization services for children 0-23 months old, and reasons for their preference and their acceptability for proposed changes.• Reach a consensus among stakeholders on the appropriate strategies to improve the immunization system in Viet Nam.



B. Overall process

The DELIR approach aims to enhance ownership of the research among implementers. Such collaboration is also designed to prioritize research on empirical questions of local relevance, generate feasible recommendations and integrate evidence into policy making and health system strengthening.

1. Call for proposals

Gavi, UNICEF and AHPSR solicited letters of intent from EPI programmes in Gavi Tier 1 or 2 countries for research seeking to enable the effective implementation of immunization programmes within health systems. Implementers – such as programme managers, district health officers, non-governmental providers, public or private practitioners, and front-line health workers – who were working with at least one researcher affiliated with an academic or research institution were eligible to submit proposals.

Calls for proposals were issued in two rounds between 2015 and 2016. Grants of US\$70,000–US\$100,000 were made available to support research studies of up to 12 months in duration.

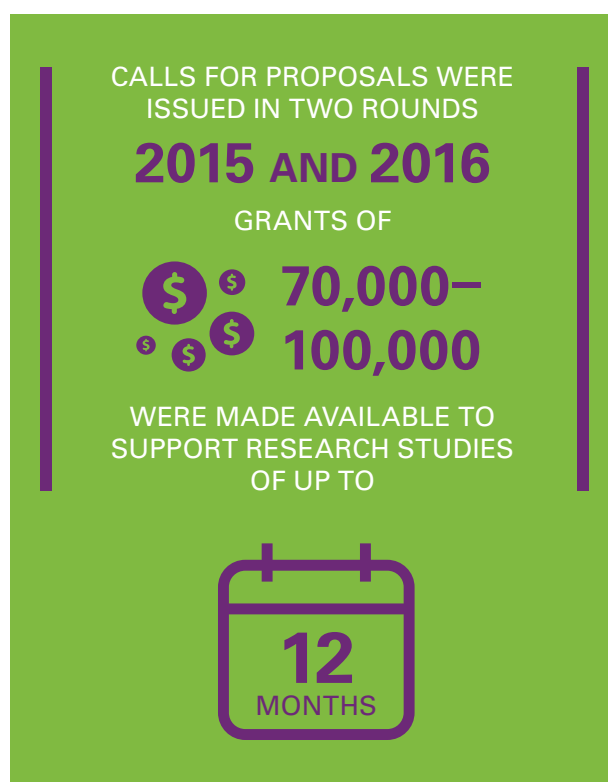


Figure 1: Call for proposals: Potential research areas

01



Health and immunization systems

- Specific barriers to immunization among children and/or their caregivers not reached by immunization services
- The use of evidence-based information to support vaccine policy-making
- Health workforce issues
- Integration between immunization and other health services within the health system

02



Demand and vaccine hesitancy

- Community engagement in demand generation for vaccines
- Perceptions about vaccine effectiveness and safety
- Strategies to address vaccine hesitancy

03



Vaccination and coverage

- Strategies for reducing missed opportunities and dropout rates
- Measures to supplement routine EPI in capturing children at risk for non-vaccination and/or poor compliance
- Adapting/tailoring vaccination services to increase coverage of unreached and/or specific populations
- Use of health and immunization cards as cost-effective monitoring tools to track service delivery, improve vaccination coverage, and as communication tools

04



Programme management, monitoring and evaluation strategies

- Use of information and communication technologies and their impact on improving the quality of immunization programmes and vaccination coverage
- Strategies and tools to improve data quality and strengthen routine immunization data systems

2. Process and criteria used to select projects

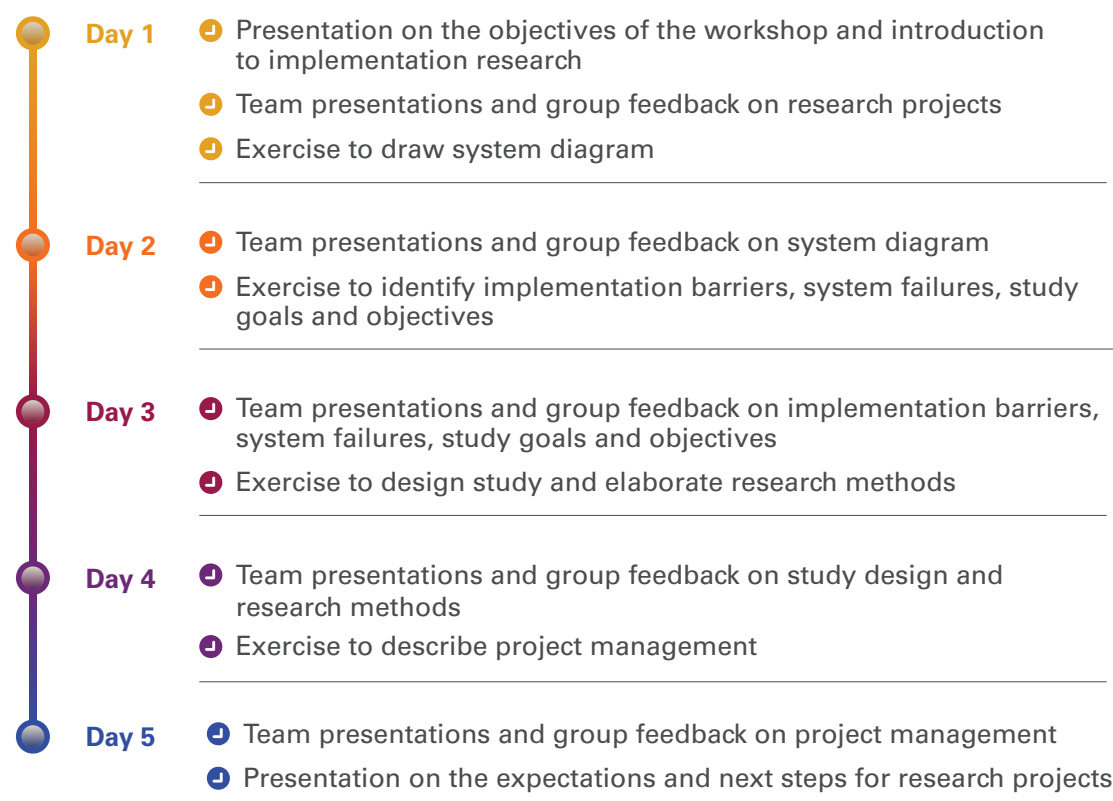
Letters of intent were judged on the potential of the research to make a difference in the delivery of immunization programmes. Other criteria

that were taken into account included value for money, institutional capacity and diversity of issues. An external committee of independent experts assessed the proposals according to the key criteria depicted in Figure 2.

Figure 2: Selection criteria for implementation research projects



Figure 3: Protocol development workshop daily activities



3. Protocol development workshops

Following each round of selection, a protocol development workshop was held to facilitate the translation of proposals into draft research protocols. The workshop focused on the development of relevant and feasible research questions, objectives and methods, as well as clear directions for each project that could be further developed after the workshop. Workshop activities involved a series of exercises, team presentations and group feedback that addressed each section of the research protocol, including background and rationale, study goals and objectives, study design and methods, and project management. The major activities that took place each day of the workshop are summarized in Figure 3.

Participation

At the 2015 workshop, 12 participants representing 6 project teams carrying out research in Chad, the Democratic Republic of the Congo, Kenya, Nigeria, Uganda and Viet Nam gathered in Montreux, Switzerland, for five days from 17-21 August. The workshop

was facilitated by Dr. Nhan Tran of AHPSR and Dr. Theresa Diaz from the Knowledge Management and Implementation Research Unit at UNICEF.

At the 2016 workshop, 20 participants representing 11 project teams carrying out research in Argentina, Ethiopia, India, Kenya, Nigeria, Pakistan, Somalia and Uganda gathered in Montreux, Switzerland, for five days from 22–26 August. The workshop was facilitated by Dr. Nhan Tran and Arielle Mancuso of AHPSR; Drs. Theresa Diaz, Kumanan Rasanathan and Richard Duncan from UNICEF; and Dr. Chung Won Lee from Gavi. The team from Argentina was not part of the initiative, but was invited to attend as they were looking to incorporate an implementation research component into their ongoing trial and would benefit from the training.

Overall, in addition to the programme implementers, implementation research capacity was built in 12 academic or research institutions, 11 of which were south-based institutions.



4. Data analysis and dissemination workshop

From 23–27 April 2018, research teams convened for a five-day workshop in Geneva, Switzerland, to work towards the dissemination and application of the research findings. The purpose of the workshop was to strengthen the capacity of the research teams in the interpretation, dissemination and application of their research findings to improve programme implementation. The workshop also provided an opportunity for research teams to promote the embedded approach to donors and other interested actors, thus contributing to the sustainability of the initiative.

The specific objectives of the workshop were:

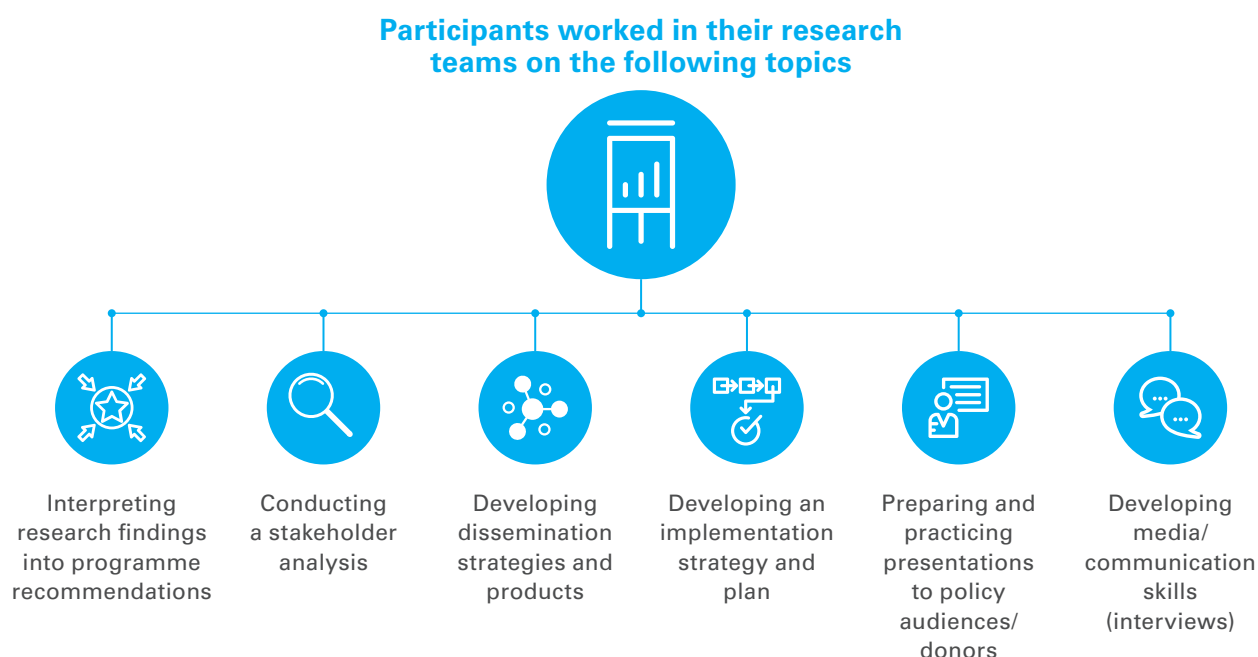
1. To strengthen the capacity of decision-makers and researchers in data interpretation and refining their research findings.
2. To facilitate decision-makers and researchers to formulate programme recommendations, conduct a stakeholder analysis, identify dissemination products and methods, and develop a research utilization or implementation plan.

3. To present the findings and planned application of the research to donors and other stakeholders interested in the embedded approach.

Of the 14 research teams funded under the DELIR initiative, 12 teams attended the five-day workshop in Geneva. Ten of the teams included both a researcher and an implementer, resulting in a total of 22 participants from eight countries (Chad, the Democratic Republic of the Congo, Ethiopia, India, Kenya, Nigeria, Pakistan and Uganda).

Two of the five days of the workshop were primarily based on group work focused on building specific skills (*see Figure 4*). Key deliverables for each team by the end of the workshop included developing a succinct programme summary and a short slide presentation covering the title, background aim/objectives/methods, learnings and recommendations, dissemination plan and application to date. On the final day, the focus was to share information about the embedded implementation research approach with interested donors, partners and stakeholders. The majority of participants reported strong satisfaction with the quality, content and organization of the workshop.

Figure 4: Data and dissemination workshop skills-building sessions



5. Integration of research recommendations into policy and programmes

Most of the research teams have completed their projects very recently and are in the process of disseminating research findings, and advocating for programme and policy integration. Therefore, demonstration of medium- and long-term impact of the DELIR

initiative requires additional time and follow-up. However, several teams did well in ensuring utilization of research findings into EPI policies and programmes. At the time of the data and dissemination workshop, four research teams – from Chad, Ethiopia, India and Nigeria – shared how they had made strong progress towards influencing immunization programming and policy through their implementation research.

CASE 1: CHAD

The project from Chad, 'More responsive immunization services for nomadic communities', sought to identify and test potential strategies to tailor immunization services to reach nomadic communities in Dnamadji health district. A key recommendation that emerged from the research was to augment the use of existing services by integrating a tailored communication strategy into routine immunization programmes. Ultimately, the research team developed a tailored communications strategy for the Joint Human and Animal Vaccination "One Health" programme, which was adopted by the *Projet d'Appui aux Districts Sanitaires au Tchad*. The team plans to integrate the same strategy into district-level routine immunization and scale the strategy to other districts with nomadic communities

CASE 2: ETHIOPIA

One of the projects from Ethiopia, 'Improving data quality, use and creating shared accountability', sought to identify opportunities to improve data quality and use within the existing health information system, including through community engagement. A key recommendation that emerged from the research was to engage the community in data use and verification to create shared accountability and strengthen the capacity of performance review teams in data quality, verification and use. Based on this recommendation, the team used their research findings to develop guidance on the use of community health data for shared accountability.



CASE 3: INDIA

The project from India, 'Countering anti-vaccine social media propaganda – IEC strategies to improve immunization coverage in Kerala, India', sought to understand the role of anti-vaccine social media messages and explore how to improve IEC strategies. Recommendations that emerged from the research included to revise the communication strategy and tools, initiate social mobilization efforts, and formulate a social media cell. In line with the recommendations, the research team created a mobile application designed to counter anti-vaccination propaganda; a shareable short video/audio clips to counter myths and propaganda; and a short manual to help health workers answer common questions and counter myths/anti-vaccine propaganda.

CASE 4: NIGERIA

One of the projects from Nigeria, 'Increasing utilization of immunization using participatory action research', sought to identify problems and provide context-specific solutions to improve access to and the utilization of immunization. The team demonstrated how integration of the participatory action research approach into existing social mobilization structures increased immunization demand and tackled immunization service delivery bottlenecks in areas with pockets of unimmunized children. Based on the research findings, the research team developed policy and supporting documents to guide policy makers in this effort.

6. Development of manuscripts

At the time of writing this report, the decision-maker-led teams were developing manuscripts for eventual publication in academic peer-reviewed journals to share their findings with a broader audience and contribute to scientific evidence. UNICEF and AHPSR intend to publish a selection of these manuscripts as part of a journal supplement to bring greater attention and awareness to the findings generated through DELIR and the merits of an embedded implementation research approach.

in conducting and promoting embedded implementation research within their countries to address key challenges and accelerate progress towards the Sustainable Development Goals.

A key achievement of DELIR was that it successfully brought researchers and EPI implementers together under one platform. Both facilitators and participants reported strong team work between these two groups, which helped to bridge the gap between them and focus the expertise of each side on important implementation challenges in immunization programming.

C. Lessons learned

1. Successes

Participants found the DELIR initiative to be a positive and innovative experience, and an excellent platform for identifying real EPI implementation bottlenecks and solutions for improving immunization coverage. For many EPI implementers, the initiative was their first opportunity to participate in research related to their programmes. It helped participants build new skills in implementation research that they will be able to apply beyond immunization programmes, and even produced new advocates for implementation research in different regions. Both implementers and researchers indicated their continued interest



The DELIR Initiative is innovative and provides an important platform for addressing difficult barriers. The collaboration between implementers and researchers is useful and necessary for sustainable results."

DELIR data analysis and dissemination workshop participant



“

As a clinician, this was my first research project I worked on. It gave me a good opportunity to learn from others. I got motivation and started to work more on research. Thank you is not enough."

DELIR data analysis and dissemination workshop participant

2. Challenges

Research teams faced several challenges during the implementation of DELIR. Administrative challenges, in particular, delays in the flow of funds and obtaining ethical clearance, were mentioned by several participants. One participant described the difficulty of bringing policy makers on board during the initial stage of the research as they were very busy. Moreover, lack of timely support from local partners to conduct research, difficulties of data collection during rainy seasons and dropout of research assistants were mentioned as key challenges.

Both facilitators and participants reported that research application and dissemination were challenged by project time constraints. Several data analysis and dissemination workshop

participants suggested that it is critical to develop and maintain a specific timeline for all activities to conduct implementation research and application of research findings. Specific suggestions included building in activities such as a mid-project evaluation, more frequent meetings and workshops with research teams, and more collaboration with local stakeholders.

Another challenge was the research teams' lack of experience with research broadly and research utilization and dissemination specifically. Many participants expressed the need for further support for the implementation and dissemination of key findings, particularly to broader and global audiences. There were requests to organize an additional workshop towards this end.

3. Recommendations and next steps

1. **Create a more detailed and expanded timeline for all research activities**, from initiation to application, and build in additional time for capacity-building activities and collaboration with local stakeholders.
2. **Schedule the dissemination workshop after the research is completely finished** to facilitate more productive discussion of next steps.
3. **Follow up on the implementation research projects** after the projects have ended to ensure findings are applied and disseminated, gather best practices and demonstrate medium- and longer-term impacts.
4. **Refine and harmonize implementation research methodologies and approaches** across all actors involved in the projects.
5. **Invest in building the capacities of national institutions and other involved stakeholders** for implementation research, including application and dissemination.
6. **Advocate for the inclusion of implementation research in regular programming** and dedicated programme budgets.



III. Pakistan Implementation Research for Immunization Programme

A. Introduction

1. Background

In Pakistan, increasing immunization coverage remains a challenge, in part due to a lack of knowledge on the barriers to improving and scaling vaccination programmes, particularly in the most deprived settings. Implementation research aims to produce the information needed to bridge this knowledge gap by exploring key challenges in programme and policy implementation.

In 2016 – with the financial support of Gavi and in partnership with the Government of Pakistan – UNICEF and AHPSR launched an implementation research initiative to explore and assess health system and implementation bottlenecks facing the Pakistan EPI. UNICEF and AHPSR provided overall technical support to the research teams and the Pakistan Health Services Academy (HSA) provided administrative and logistical support to conduct the research and disseminate the findings. A steering committee comprised of representatives of all the stakeholders oversaw the project.



The implementation research project had the following objectives:

- Identify current gaps and challenges in the implementation of immunization programmes in Pakistan and review existing knowledge on these issues
- Orient, sensitize and engage decision-makers and implementers of the immunization programmes in implementation research
- Formulate, prioritize and conduct implementation research based on the barriers and challenges identified by decision-makers
- Develop implementation research capacity among local collaborators with governments as well as collaborating academic/research institutions and individuals

2. Projects supported

Ten projects were supported through the Pakistan Implementation Research for Immunization Programme. The research projects explored a diverse set of implementation challenges and solutions across districts and provinces in Pakistan, although immunization inequities were an issue in all projects. For example, whereas vaccine hesitancy was a key implementation challenge in districts of Punjab, lack of supportive supervision was the priority bottleneck in Sindh. Therefore, it is likely that multiple strategies are required to tackle various EPI implementation barriers throughout Pakistan. Table 2 presents the project's key findings and recommendations.

**Table 2: Pakistan Implementation Research for Immunization Programme:
Project findings and recommendations**

Project title, research teams and organizations	Key findings and recommendations
<p>Developing three-dimensional narrative to counter polio vaccine refusal in Charsadda. Sheraz Ahmad Khan, Department of Health (DoH), Khyber Pakhtunkhwa (KP) Province, Pakistan. Ayaz Ayub, Institute of Public Health and Social Sciences, Khyber Medical University, Peshawar, KP, Pakistan.</p>	<ul style="list-style-type: none"> Addressing polio refusals should include active correction of misleading nomenclature and control of social media use by militants against the polio programme. The polio programme should make active use of social media and cellular networks. Balance the use of force with judicious restraint.
<p>Addressing community barriers to immunization in Rajanpur district. Muhammad Younas, Punjab Health Department EPI Cell, Lahore, Pakistan. N Rehan, Research Associates Lahore, Pakistan.</p>	<ul style="list-style-type: none"> Integration of social mobilization strategies into the EPI, community involvement, and utilization of lady health workers trained on social mobilization can effectively address barriers to immunization.
<p>Exploring opportunities to strengthen supportive supervision of EPI services in Sindh. Dure-Samin Akram, Health, Education and Literacy Programme (HELP), Karachi, Pakistan. Lubna A. Baig, APPNA Institute of Public Health, Jinnah Sindh Medical University, Karachi, Pakistan.</p>	<ul style="list-style-type: none"> Supportive supervision of immunization services is crucial to ensuring the safe and effective delivery of vaccines. Revision of the EPI policy is required to include specific strategies/guidelines for the recruitment and training of supervisors. There should be adequate provision of logistics, particularly transportation, for supervisory visits. Feedback and incentive mechanisms should be strengthened to enhance accountability.
<p>Immunization supply chain and management performance system. Agha Muhammad Ashfaq, EPI Sindh, Pakistan. Arshad Altaf, Frontier in Public Health Research and Education, Karachi, Pakistan.</p>	<ul style="list-style-type: none"> The introduction of a dedicated quality improvement team is an effective way to address capacity issues at the local level related to data analysis and decision-making about inventories and data entry into the Vaccine Logistic Management Information System.
<p>Addressing EPI vaccination demand through mHealth in Quetta City, Balochistan. Ejaz Ahmed Khan, Health Services Academy, Islamabad, Pakistan. Muhammad Ishaque Panezai, EPI Balochistan, Quetta City, Pakistan.</p>	<ul style="list-style-type: none"> An artificial intelligence-based mHealth initiative was shown to create demand and increase vaccination coverage. The initiative was effective even with respect to the least addressed vaccine.
<p>Social mobilization campaign and immunization hesitancy: A Case study of districts Sargodha and Khushab. Tariq Saleem, Health Department Punjab, Pakistan Muhammad Nauman Malik, University of Sargodha, Pakistan.</p>	<ul style="list-style-type: none"> Fear of fever and needles, lack of awareness, and religious and cultural beliefs are key reasons for vaccine hesitancy and refusal. Involvement of lady health workers to provide information in hard-to-reach areas, communication committees at divisional level, improved health worker communications skills and availability of context-specific materials were all found to diminish vaccine hesitancy.
<p>Community health workers' based referral system for improving the EPI coverage. Syed Zafar Ahmed Fatmi, Aga Khan University, Pakistan. Siraj Ahmed, Department of Health, Sukkur, Pakistan.</p>	<ul style="list-style-type: none"> A traditional birth attendant-based referral system can improve immunization coverage and completion of vaccination in rural areas with provision of minimal incentives. Traditional birth attendants are acceptable to communities/parents and the formal health system. Long-term sustainability of traditional birth attendant involvement in immunization requires additional financial resources.

Table 2: Pakistan Implementation Research for Immunization Programme:
Project findings and recommendations (continued)

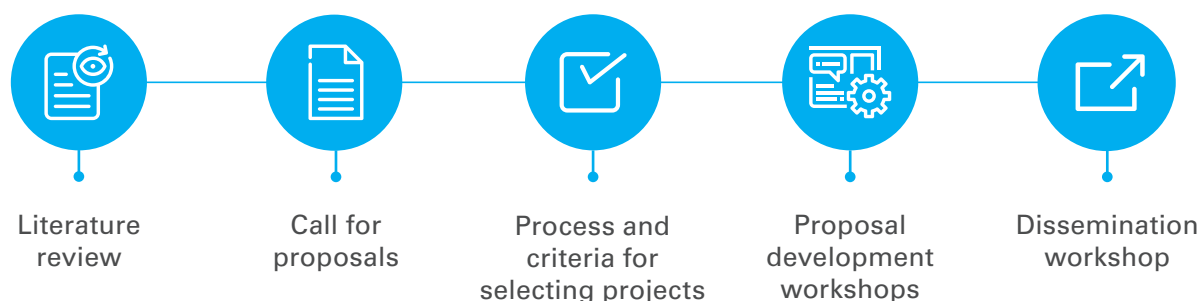
Project title, research teams and organizations	Key findings and recommendations
Understanding accountability apropos human resources in EPI, Balochistan. Aftab Kakar, N-STOP(FELTP) Team Lead Balochistan, Pakistan. Zaeema Naveed, University of Nebraska Medical Center, Omaha, Nebraska, USA.	<ul style="list-style-type: none"> Effective strategies to increase and strengthen human resource accountability in Balochistan included having a clear job description for EPI staff, regular and periodic trainings on immunization, and improving supportive supervision systems through GPS or phone technologies.
E-Vaccs: Qualitative assessment of the barriers and enablers in implementation. Munir Ahmed, Director General Health Services, Punjab, Pakistan. Shehneela Mazhar, Consultant Researcher.	<ul style="list-style-type: none"> Implementation of E-Vaccs, an android-based performance management system, can be strengthened by having an active mobile network, training for newly hired vaccinators, a unique identification for every child, and facility-based E-Vaccs devices to ensure digitization of data and inclusion of the option of work status of the vaccinator.
Examining the mechanisms and effectiveness of multi-tiered, EPI-polio synergy in Pakistan. Zaeem Ul Haq, Johns Hopkins Centre for Communication Programme, Islamabad, Pakistan. Arshad Karim Chandio, Expanded Program on Immunization, Islamabad, Pakistan. Shamsa Rizwan, Child Health Advocacy International, Islamabad, Pakistan.	<ul style="list-style-type: none"> A central oversight mechanism and consensus document/framework can enhance EPI-polio synergies around micro-planning, monitoring and surveillance for zero-dose children.

Overall, in addition to the programme implementers, implementation research capacity was built in 11 academic or research institutions, 10 of which were Pakistan-based institutions.

B. Overall process

At the outset, key milestones and a timeline of the project were developed. Figure 5 presents an overview of the process used for the initiative.

Figure 5: Overview of process used for the Pakistan Implementation Research for Immunization Initiative





1. Literature review

To initiate the project, the Ministry of National Health Services Regulation and Coordination commissioned an exploratory study to identify the information gaps about system-level barriers impeding the optimal delivery of immunization services to the children of Pakistan. The study started with a detailed literature review of peer-reviewed articles, government reports, EPI documents, and WHO, UNICEF and Gavi reports, along with some grey literature to document what had already been published about the topic.

The review revealed a stagnant or declining immunization status in Pakistan. Examined through a systems lens, several factors seemed responsible for the failure of the EPI to achieve its set targets, including in the areas of service delivery, programme management, monitoring and evaluation, logistics control, human resources management and financing, as well as an inability to understand and respond to community health-seeking behaviours and other demand-side issues. These issues were discussed with immunization programme stakeholders at both the federal and provincial levels.

2. Call for proposals

The HSA solicited proposals for research seeking to enable the effective implementation of immunization programmes in Pakistan. The call was issued through the HSA website and local newspapers,⁴ and shared via email with well-reputed academic and research institutions and CSOs in the country. As with DELIR, implementers who were working with at least one researcher affiliated with an academic or research institution were eligible to submit proposals in response to the call.

The call for proposals was issued in March 2017. Grants of up to US\$20,000 were made available to support research studies for up to 6 to 9 months in duration. Ultimately, a total of 32 proposals were received.

3. Process and criteria for selecting projects

The proposals were assessed by an external committee of independent experts engaged in implementation research using the same criteria outlined for the DELIR project (*see Figure 2*). The scores were shared with the internal steering committee, which held a series of tele-conferences to shortlist the proposals. Ten proposals were ultimately selected, ensuring a strong mix of topics and geographical representation of the teams.

⁴ The call for proposals was launched at <www.hsa.edu.pk/?p=3866>, accessed 8 June 2018.

4. Proposal development workshops

A protocol development workshop was conducted at the HSA from 10–12 May 2017 for expert facilitators to provide technical assistance to the selected teams on further refining their proposals. Protocols submitted by the 10 selected teams were thoroughly reviewed ahead of the workshop.

All 10 teams, each comprising a researcher and an implementer, participated in the workshop and presented their research questions and planned methodologies. Facilitators from AHPSR, UNICEF and the HSA provided detailed feedback to the participants on their research questions; and best practices and examples from other similar research projects were also shared. In addition, participants discussed teams' financial agreements with the HSA, timelines for financial disbursements, deadlines for submission of key deliverables, and memoranda of understanding with the respective provincial departments of health.

Between the protocol development workshop and deadline for final protocol submission, the health system consultant provided guidance to research teams through emails and phone calls on various aspects of the protocol. Subsequently, the revised data collection methodology of all the teams was shared with the technical review committee.

5. Dissemination workshop

A dissemination and advocacy seminar was held at the HSA on 29 March in Islamabad, in collaboration among UNICEF, AHPSR and the HSA. Participants included representatives of implementing partners, federal and provincial EPI programmes, NGOs, donors, academia, research scholars and CSOs. The seminar had two objectives:

1. To disseminate the main findings of the research to the relevant audience and stakeholders; and
2. To inform and sensitize top policy makers through advocacy messages on the health system issues affecting the immunization programme in Pakistan.



On the first day of the seminar, teams made detailed presentations and received feedback from the steering committee members on refining their advocacy messages. The second day was chaired by the Federal Minister of Health and was well attended by a range of stakeholders. Each team's presentation was followed by a discussion on how the research findings can strengthen immunization programme implementation in Pakistan.

All of the teams agreed that the implementation research findings could contribute to the EPI programme if the issues highlighted in the research were used in policy and decision-making. The research teams felt that the process to ensure the use of implementation research findings to improve EPI requires both comprehensive follow-up and a significant time commitment. Table 3 outlines various strategies advanced by research teams to ensure the uptake of implementation research findings for improving EPI in Pakistan.

The teams also reported that they require further technical and financial support to ensure the use and application of the research findings in practice. Most teams suggested coordinated efforts by Gavi, UNICEF, WHO, AHPSR, HSA, provincial authorities and other CSOs to facilitate the research uptake process. Two research teams suggested that UNICEF Pakistan should take the lead in this change process. In addition, four teams requested funding for additional research and scale-up of some of the innovations identified as promising solutions (i.e., VAN approach, E-Vaccs).

Table 3: Strategies to consider to ensure the use and application of implementation research findings in EPI policies and programmes

Topic of the implementation research	Strategies to consider future use and application of implementation research findings
Examining the mechanisms and effectiveness of multi-tiered, EPI-polio synergy in Pakistan: A policy and programme exploration.	<ul style="list-style-type: none"> • Consider a localized approach, share implementation research findings with provincial-level EPI stakeholders such as the provincial EPI manager, Director General of Health, Health Secretary, representatives from Gavi, WHO, CSOs and NGOs working on EPI. • Organize roundtables in provinces to discuss key findings. Use social media to report positive and negative aspects of immunization and the EPI programme. • Publish implementation research results in peer-reviewed journals. • Develop frameworks to share resources and knowledge between EPI and polio programmes at the district, provincial and federal levels.
Intervention for enhancement of EPI coverage through the involvement of community-based workers.	<ul style="list-style-type: none"> • Advocacy with district and provincial level stakeholders to generate funds for scaling up the approach. • Research findings showed that the involvement of community-based workers improves immunization coverage. However, due to the project's time constraints, the duration of the intervention and number of study participants were not adequate. Therefore, more robust implementation research (i.e., experimental design) is needed on this topic for a longer period of time to come up with a concrete action plan and scale-up strategy.
Understanding accountability apropos human resources in EPI Balochistan: Perspectives from government officials at the provincial and district levels.	<ul style="list-style-type: none"> • Share results with different policy makers at the provincial level, develop action plans and ensure those plans are taken into consideration to ensure human resource accountability for EPI. • Ensure the development of clear job descriptions and terms of reference for new staff members with the support of the provincial health authority. This must be preceded by a proper needs assessment within each district based on the geography, distribution of already present immunization staff and the population. • Foster the development of comprehensive community mobilization programmes and ensure the implementation of these through support from provincial-level policy makers.
Developing a three-dimensional narrative to counter polio vaccine refusal in Charsadda.	<ul style="list-style-type: none"> • UNICEF should take the lead to sensitize provincial-level stakeholders, and advocate that the study recommendations are implemented by the polio emergency operations centre and the federal government. • There needs to be a discrete set of actions, either in a project mode or through programmatic arrangements to enact the proposed recommendations.
Social mobilization campaign and immunization hesitancy: A case study of districts Sargodha and Khushab.	<ul style="list-style-type: none"> • Share implementation research findings with clear policy recommendations with officials from Gavi, WHO and provincial-federal level EPI authorities. • Ensure the use of electronic media/public service messages/brochures/pamphlets for raising awareness and diminishing mistrust and hesitancy towards vaccine and immunization. • Convince and bring CSOs on board for social mobilization as they can be of assistance due to their penetration in local areas in terms of their social capital links and relations with the local community.
Immunization supply chain and management performance system.	<ul style="list-style-type: none"> • UNICEF should support and advocate for providing more technical support and funds to EPI to handle the vaccine logistics management information system.

Table 3: Strategies to consider to ensure the use and application of implementation research findings in EPI policies and programmes (continued)

Topic of the implementation research	Strategies to consider future use and application of implementation research findings
E-Vaccs: Barriers and enablers in implementation through a consolidated framework for implementation research lens.	<ul style="list-style-type: none"> • Apply a local approach. Share findings with district- and provincial-level EPI policy makers with clear actions plan.
Addressing EPI vaccination demand through mHealth in Quetta City, Balochistan: A feasibility study.	<ul style="list-style-type: none"> • Share findings and sensitize district- and provincial-level EPI stakeholders to ensure their active participation in the uptake of proposed recommendations to increase demand for and use of vaccines.
Addressing community barriers to immunization in Rajanpur district.	<ul style="list-style-type: none"> • Share findings in an accessible format (i.e., in the form of a policy brief) with district and provincial health authorities. • Give due importance to the communication and social mobilization component of EPI to ensure that funds for regular training and refresher programmes for field staff are required.
How can the implementation of supportive supervision of EPI services in Sindh be strengthened?: A case study of EPI Sindh.	<ul style="list-style-type: none"> • There should be wide sharing of results, and their implications and application for future strategies. • Support researchers and partners to publish their results in peer reviewed journals. This should be done on a fast track if the findings are to remain topical.

6. Subsequent support

Following completion of the implementation research projects, research teams will develop policy briefs and journal articles based on the research findings and recommendations with the support of UNICEF and AHPSR. Implementation research findings and recommendations will also feed into Pakistan's next joint appraisal in August 2018. UNICEF will organize in-country policy dialogues or roundtable discussions based on a subset of the implementation research recommendations and monitor and document how implementation research findings and recommendations are applied to EPI policies and practices in Pakistan.

C. Lessons learned

1. Successes

All teams worked hard to complete the project within the given timeframe. The teams felt that the overall process (including literature review, orientation workshop, call for proposals,

finalization of study designs, conducting of research and dissemination of findings at a final workshop) was very successful. The research teams reported that the ongoing support they received from the local consultant, as well as guidance from the UNICEF team, was integrated throughout and helped to ensure the timely and successful completion of the studies and submission of the final project reports.

Although three of the research teams noted that it was challenging for them to complete their study within the six- to nine-month duration, all implementation research teams were able to identify potential strategies to address important implementation barriers for EPI. The potential scope of the research areas was broadly defined, and the research projects that were prioritized by the teams touched on almost every knowledge gap faced by EPI in Pakistan. The fact that the implementation research teams were able to finish their research projects within a relatively short period of time and with limited budgets was seen by the teams themselves as a great success. Moreover,

all studies were finished successfully with clear recommendations for EPI policy and programmatic decisions.

Ultimately, the implementation research conducted in Pakistan was an excellent example of how implementer-led research projects, with support from partner researchers, can inform EPIs. Much like DELIR, involving implementers from the start enabled the implementation research projects to focus on priority implementation challenges in the EPI and effectively explore EPI implementation bottlenecks and solutions with the support of researchers. It also helped researchers identify the most appropriate respondents to engage in interviews and ask the right questions. EPI implementers/managers, researchers and policy makers worked together to address problems, bridge knowledge gaps, and advocate for the benefits of evidence-based EPI programming. The involvement of EPI managers in particular facilitated greater access to data, built ownership of the research, and enabled the research teams to identify feasible and practical solutions to problems and their potential for scaling up.

The project also facilitated the capacity building of different provincial- and federal-level researchers and implementers to conduct and use implementation research, while generating new implementation research advocates in Pakistan. The similarities in research project contexts and topics enabled strong collaboration among the teams.

The overall concept and execution of the initiative was fully supported by the Ministry of National Health Services, Regulations and Coordination, which facilitated the acceptance of the initiative by all stakeholders and acted as a key factor for successful completion of the studies. The presence of the Minister of Health and other federal-level EPI policy makers during the dissemination workshop also proved to be a success.

“

I always thought that research is for academics... being involved in this study right from identifying a relevant research question to synthesizing findings for policy makers, I am finding the research useful for me too.”

A front-line vaccinator involved in the Pakistan Implementation Research for Immunization Initiative

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Every year, three to five thick reports with a long list of recommendations are brought to my table; I seldom get a chance to skim through them. But this time, I am co-producing the required knowledge.”

An EPI policy maker involved in the Pakistan Implementation Research for Immunization Initiative

The Minister of Health shared her appreciation of the implementation research work and the involvement of the Pakistan EPIs. She expressed the Ministry's interest in considering how the implementation research recommendations could be incorporated into EPI in Pakistan, and highlighted the importance of support from provincial- and district-level stakeholders and other ministries to achieving success.



2. Challenges

Although a few teams reported that they did not experience any difficulties conducting the implementation research project, most of the teams did report some challenges. Collection of data, identifying respondents, communication with the communities and partnerships with local NGOs and other organizations were mentioned as key challenges by several research teams. One team mentioned that collection of data was challenging due to the ongoing activities of lady health workers and health supervisors in some districts. These included concurrent rotavirus vaccine introduction training sessions as well as unexpected medical emergencies. Moreover, due to polio campaign related activities it was difficult to get data from lady health workers and supervisors.

Another research team mentioned that the reluctance of the community to participate in their study was a challenge. Moreover, research teams faced difficulties while interviewing people on the sensitive topic of immunization in some areas. Time constraints, security issues and inaccessibility in security compromised and hard-to-reach areas were also mentioned by several of the implementation research teams.

In addition, multiple teams cited the short duration of the project and difficulty extrapolating results within such a short

time. There were also challenges tied to the different skill levels of the research teams. Some teams were more equipped to execute the research projects, whereas some lacked any experience on implementation research. Most of the research teams struggled to present their research findings effectively and lacked experience with research dissemination and policy communications. That said, most of the research projects were highly relevant across provinces and even beyond Pakistan, and the research teams generally produced very useful findings on how to tackle implementation barriers of EPI in Pakistan.

From the outset, there was a lack of clarity and coordination among AHPSR, HSA, UNICEF Headquarters and UNICEF Pakistan on the implementation of the project, and UNICEF Pakistan was not well integrated into the overall process. In particular, there was some confusion over who held operations/management and technical support roles (e.g., shortlisting projects, financial management of grants, financial flows, managing workshops, etc.). At the end of the project, it was not clear who would support the dissemination process (i.e., policy briefs, journal supplements) and programme integration/follow-up. The roles and responsibilities of each actor should have been more clearly defined for the entire project period.



3. Recommendations

1. **Expand the duration of implementation research projects** to give more time to each step in the process.
2. **Clarify the roles and responsibilities of all involved actors** at the outset of the project, including the specific contributions of UNICEF at the global, regional and country levels.
3. **Involve the UNICEF country and regional offices from the beginning of the project.** The country office should take the lead on implementing the implementation research project with headquarters and regional support.
4. **Develop partnerships with private-sector entities** to leverage their research experience and technical capacities for implementation research.
5. **Continue to facilitate integrated partnerships** among research teams (implementers and researchers), government counterparts and CSOs.
6. **Employ a local research consultant** with implementation research skills and knowledge of the local context to coordinate implementation research projects at the country level.
7. **Ensure the neutral selection of implementation research project teams** and involve provincial and federal level managers in the process.
8. **Advocate for the inclusion of implementation research as a core component of EPI** and allocate a budget for it.
9. **Ensure the timely dissemination and use of the findings and recommendations** of the implementation research studies, at provincial level as well as the federal level, including through the development of an action plan and progress tracking.
10. **Facilitate more frequent and greater collaboration among implementation research teams** to enable knowledge sharing and learning.



Participants of the Johannesburg Implementation Research Workshop held on 11–15 September 2017

IV. Capacity building in implementation research

A. Objective of capacity-building activities in implementation research

UNICEF traditionally contracts with outside institutions or individuals to carry out research and evaluation. These contractors generally come and conduct the research independently of programming, with UNICEF, government counterparts and partners playing an oversight role.

Consistent with an increasing focus on operational and implementation research both within UNICEF and globally,⁵ and in line with UNICEF's revised approach to knowledge management, the organization is exploring a new approach whereby operations and implementation research are embedded

in ongoing programming. There are good opportunities for integrating implementation research into programmes and their design, and in some circumstances the research can be done in a way that can provide relatively quick feedback to adjust programme design in real time. The latter can only be facilitated if the implementers (usually assisted by researchers) are directly involved and guide the research in real time as part of programming.

To achieve this approach, capacity building is needed at the country and regional levels so that UNICEF staff and partners can plan, conduct and use operational and implementation research within their own programming. Although this activity was not directly funded by GAVI, as many of the projects include immunization and the effort

⁵ See Ghaffar, Abdul et al., 'Strengthening health systems through embedded research', *Bull World Health Organ*, vol. 95, no. 87, 2017; and AHPSR et al., 'Statement on Advancing Implementation Research and Delivery Science', available at: <<http://healthsystemsglobal.org/the-irds-statement/>>, accessed 25 June 2018.

contributes to our overall implementation research agenda, we have included it in this report. Also, the lessons learned are valuable for our Immunization Implementation Research Programme and contribute to recommendations for future work in this area.

B. South Africa Implementation Research Workshop

1. Workshop objectives

In September 2017, in collaboration with AHPSR, UNICEF undertook a learning workshop in Johannesburg, South Africa, to build capacity on implementation research and the development of research protocols and plans for colleagues engaged with two initiatives:

1. the Enhanced Child Health Days (ECHDs) programmes to deliver vitamin A supplements and immunization in 15 countries in sub-Saharan Africa; and
2. the Birth Registration for Maternal, Newborn and Child Health (BR4MNCH) projects supporting birth registration, community health management

information systems and interoperability in Ethiopia, Mali, Senegal and South Sudan.

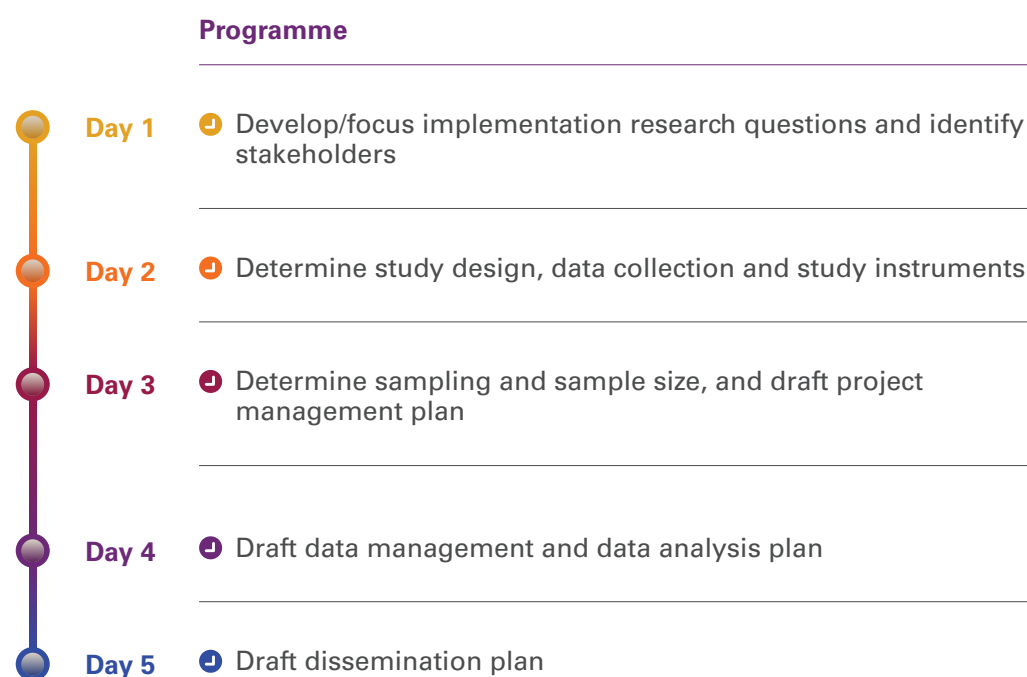
The workshop aimed to build the capacity of UNICEF staff, government staff and partners to design, plan and conduct implementation research in their respective countries; and key outputs included draft protocols, including research questions, study design and research plans.

While not funded by Gavi, the learnings from this capacity building effort will be applied to future related efforts to build implementation research capacity to improve immunization policies and programmes.

2. Course contents

The workshop included plenary presentations and discussions, and dedicated time each day for practical sessions to support the development of an implementation research protocol to answer programme-/demand-driven implementation research questions. The workshop days were organized by deliverables, as depicted in Figure 6.

Figure 6: South Africa Implementation Research Workshop daily activities



3. Target participants and facilitators

Participants included nutrition, immunization, child protection and health (implementation research and monitoring and evaluation) focal points from UNICEF Headquarters in New York, the Eastern and Southern Africa Regional Office, the West and Central Africa Regional Office and the Benin, Burkina Faso, Cote d'Ivoire, Ethiopia, Madagascar, Malawi, Mali, Mozambique, Senegal and South Sudan country offices. At the global level, participants and co-facilitators included Helen Keller International and AHPSR/WHO; and from each participating country, government representatives and local implementing partners (where applicable).

4. Selection of implementation research project topics

For the ECHDs Initiative operational/ implementation research is planned to take place in two to three countries per region (Eastern and Southern Africa, and West and Central Africa regions), so in four to six of the 15 ECHDs project countries. Countries were selected for implementation research based on a mix of the following criteria:

- Strong interest in conducting implementation research, as expressed by UNICEF programme staff, government counterparts, implementing partners and other key stakeholders;
- Representation of a mix/range of programme implementation strategies/ delivery platforms (use of Reach Every District/Reach every Child approaches, community platforms, child health days and other contact opportunities);
- Willingness to participate in capacity-building/training opportunities;
- Gender specialist available to assist with incorporating gender dimensions into operational/implementation research in at least one country chosen in each region;
- Stable security situation;
- Availability of local research institutes to support implementation research, if needed.

In total, six countries were selected through a collaborative process/consultation. Table 4 describes the preliminary thematic area(s) and programme outcomes selected by each country. These are being further refined through in-country consultations, following the workshop and prior to the start of the research.

For BR4MNCH, there was no selection process as all four countries in the project planned implementation research. At an earlier mid-term meeting an overall theme for the implementation research had been decided on to assure some cross-country commonalities, and then each country further defined their studies prior to and during the workshops. Essentially this common theme approach was similar to agenda setting seen in the Gavi projects, except that the teams developed their priorities based on experiences within the BR4MNCH, which was conducting the implementation research in the last quarter of the project. Table 5 shows the overall approach and details from each country. The overall theme of these projects was interoperability across health and birth registration systems, with sub-areas of i) local solutions, ii) ICT solutions and iii) special populations.

5. Course materials

Between 2013 and 2016 UNICEF and AHPSR conducted a series of one-week training courses for country/local-level implementers to assist them to develop an implementation research protocol to answer a demand-driven implementation research question from their own programme. Since 2013, this programme has trained and supported 26 implementation research projects in 15 low- and middle-income countries. The implementation research training plan was based on this successful model, and a training curriculum was developed based on two related training manuals used for the AHPSR/UNICEF training: 'Implementation Research in Health: A Practical Guide' (WHO, 2013) and 'TDR Implementation Research Toolkit' (TDR/WHO 2014).

Table 4: ECHDs countries conducting implementation research in 2017–2018

Region	Country	Preliminary research themes and outcomes
Eastern and Southern Africa	Madagascar	Delivering vitamin A supplementation through the integration of vitamin A supplementation into routine immunization services and the use of community health workers (feasibility, acceptability and adoption).
	Malawi	Delivering vitamin A supplementation through the integration of vitamin A supplementation into routine immunization services at facility/static and community/outreach clinics (feasibility and coverage outcomes).
	Mozambique	Assess and identify barriers to achieving high coverage of full dose of vitamin A in routine health services and explore possible solutions to improving coverage.
West and Central Africa	Benin	Use of community registers to facilitate the mobilization of women and the adherence of health workers and improvement of coverage of vitamin A and immunization among children under 12 months (feasibility and coverage).
	Burkina Faso	New strategy of using community platforms to deliver vitamin A and other child health days interventions by community health workers (acceptability, feasibility and adoption).
	Cote d'Ivoire	Use of community platforms to provide vitamin A to children aged 6 to 59 months, and use of SMS reminders to generate demand for vitamin A and immunization through routine services.

Table 5: BR4MNCH implementation research topics for 2018-2019

Country	Ethiopia	Mali	Senegal	South Sudan
Project	1. Civil registration and vital statistics (CRVS), and community health management information systems (CHMIS) in pastoralist communities 2. Health Extension Workers (HEW) and civil registration interoperability at the community level	Agents de Santé Communautaire (ASC) as birth notifiers at community level	Use of Rapid Pro to support interoperability	Boma Health Initiative and CRVS interoperability
Area	1. Special populations 2. Local solutions	Local solutions	ICT solutions	Local solutions
OR/IR Outcomes	1. Acceptability, feasibility, coverage 2. Feasibility, fidelity	Acceptability, feasibility (workload and motivation)	Acceptability, feasibility, sustainability	Acceptability, feasibility

An online portal was prepared in advance of the training, containing the following materials:

- Background materials: agenda, participant list, administrative note and meeting concept note.
- Implementation research reference materials and guides.
- Presentation materials for plenary sessions.
- Exercises/materials for country offices to put into practice what was covered in plenary.
- Country presentations for the country office team reports.

All materials were provided in both English and French. Simultaneous translation was offered so participants could present/report in their language of choice.

C. Lessons learned

1. Successes

Overall, participants rated the workshop very highly. The content presented was considered useful and relevant, and participants appreciated the opportunity to apply the learnings from the plenary sessions in the morning during the afternoon working sessions.

The use of the online portal/SharePoint site to support the sharing and dissemination of collaboration and workshop materials (i.e., reference materials, presentations, exercises and participants' workshop outputs) worked very well and helped to facilitate/streamline the process of working through a large amount of material across a large number of countries in a short amount of time. The one drawback was that the portal was developed on a UNICEF site, which was only accessible to those with UNICEF login credentials. Access should be improved for future trainings.

An important lesson learned was that countries with a local university researcher in attendance, alongside the government and UNICEF programme counterparts, were able to move very quickly to initiate the research following the completion of the workshop. However, countries that began the process of identifying a local researcher for support following the workshop, finalization and submission of research protocol, took several months longer.

UNICEF country offices expressed enthusiasm regarding opportunities for implementation research to enhance results/strengthen programming. To support the mainstreaming/institutionalization of implementation research in standard monitoring and evaluation processes, they highlighted the importance of getting buy-in and institutional support at the level of senior management. They also noted the importance of having implementation research included within the UNICEF country office monitoring and evaluation and research workplan/databases.

2. Challenges

As implementation was a new topic for many of the participants, some expressed that they would have appreciated receiving background materials, references and presentations in advance, so they could have had some time to prepare before the workshop, including considering potential research topics. Participants also noted that for some of the more technical sessions, they would have appreciated even more detail on methodology and concrete country examples of implementation research at work.

Given the large number of countries (10) attending the training, the duration of presentations and question and answer sessions had to be kept short to allow time for countries to present on each of the topics covered every day. For future workshops, the number of countries presenting on a particular topic on a given day should be limited to allow for more in-depth sharing, discussions and questions/answers, and more time for group work and technical assistance in the afternoon.



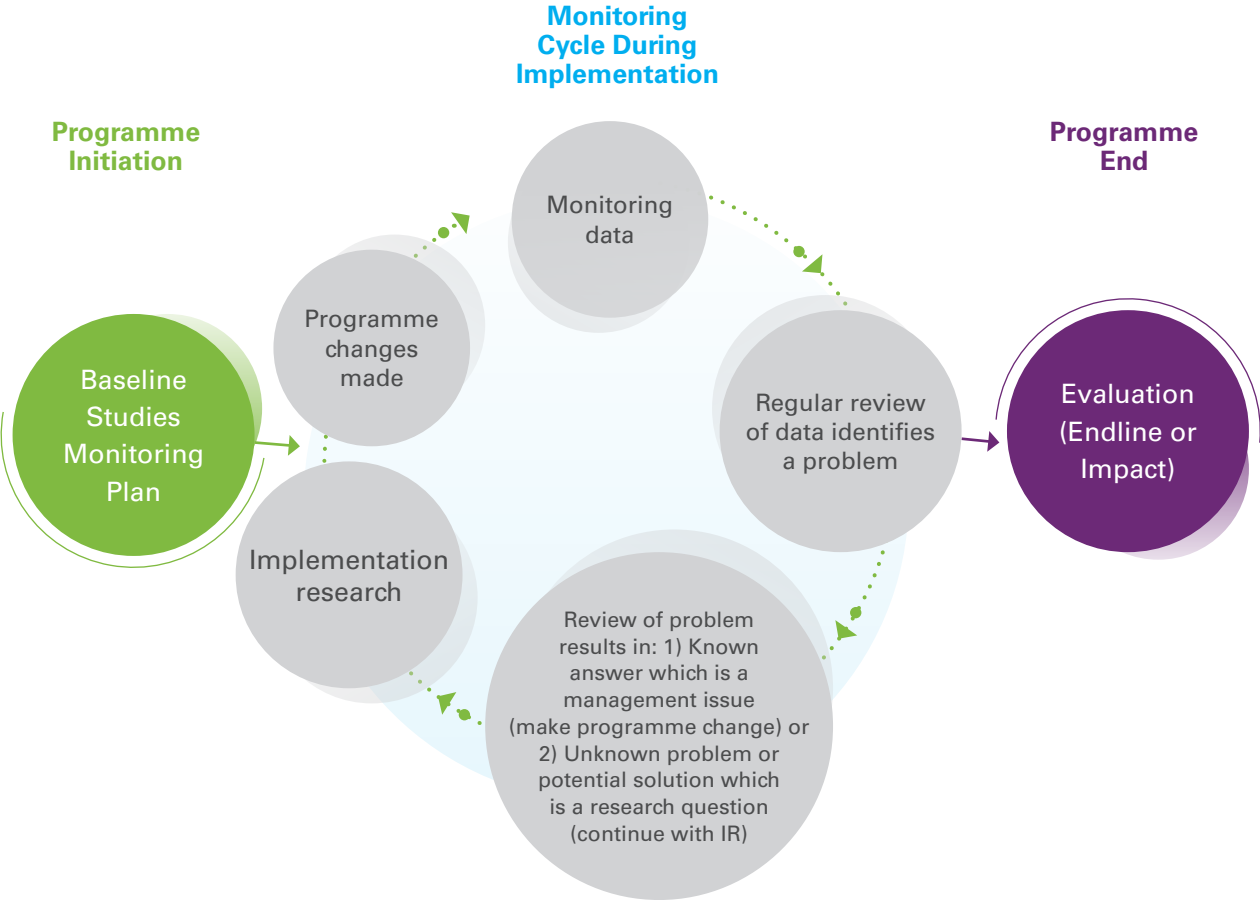
A one-week training is not sufficient to capacitate implementers (UNICEF country office staff, government representatives and partners) to conduct a basic operational/implementation research project. Therefore, as with the AHPSR/UNICEF project, there will be a post-training support plan for assisting the planning, conduct, analysis and dissemination of the operational/implementation research in-country. Two approaches will be used simultaneously:

1. UNICEF Headquarters and the regional office will provide technical assistance to each country during critical phases of the operational/implementation research, including on-site visits, as requested/required.
2. A short-term consultant (three to four months) will be hired in-country to provide technical support for operational/implementation research. The terms of reference for this consultant will be to facilitate and build the capacity of UNICEF country office staff and partners to conduct the research. Required qualifications will include experience in health systems research or operational/implementation research and training/capacity building.

3. Recommendations

1. **Include practical exercises during the training**, and include as many real-world case studies and examples during the training as possible.
2. **Make use of digital tools to support learning and exchange**, during and after the training, and ensure access for all participants.
3. **Develop partnerships with local universities** to leverage their research experience and technical capacities for implementation research.
4. **Include implementation research as part of standard monitoring and evaluation plans**, so it is given the same level of support, visibility and prioritization of other types of monitoring and evaluation and research (*see Figure 7*).
5. **Make a plan for continued technical assistance**, following the capacity building workshop, as one week of training is not sufficient.
6. **Employ a local research consultant** with implementation research skills and knowledge of the local context to support implementation research projects at the country level; where possible have this individual participate in training alongside the country team engaged in capacity building.

Figure 7: Embedding implementation research as part of project monitoring and evaluation cycles





Group discussions in the workshop on barriers and facilitators to possible PAR policy adaptation and adoption

V. Conclusions and recommendations for future work plans

The DELIR, Pakistan Implementation Research for Immunization Programme and capacity building workshop experiences reflected that there is a large appetite for and appreciation of implementation research among implementers and policymakers. The emphasis on partnership between research teams and decision makers was broadly recognized as a positive approach.

A number of lessons were common across the two research projects. There was a clear need to allow more time for each step in the process, with time built in for capacity building activities and collaboration with local stakeholders. In addition, roles and responsibilities of all actors involved in implementation research – including government stakeholders, NGO partners and UNICEF – should be clearly defined from the

outset of the project, and implementation research methodologies and approaches should be refined and harmonized among actors.

The research projects and the capacity building workshop also highlighted the importance of partnerships, not only between implementers, researchers, government counterparts and CSOs, but also with private-sector entities and academic institutions to leverage their research experience and technical capacities for implementation research. The experiences also reflected the importance of advocating for the inclusion of implementation research in regular programming, with dedicated programme budgets, as well as within standard monitoring and evaluation plans.

In comparing the two research initiatives, there is general agreement that the Pakistan model worked better. In Pakistan, the similarities in topics and contexts facilitated greater coherence among the teams in terms of the depth of group discussions and synergies. This was less the case for the DELIR Initiative, as teams were exploring vastly different contexts and topics. The Pakistan model also facilitated broader in-country networking, which in turn enabled wider in-country dissemination, greater visibility of research findings, strong engagement with a range of stakeholders and productive policy dialogues. As a result, the research resulting from this approach may have been more meaningful, useful and cost-effective.

Moving forward, it will be critical to develop a plan for supporting research teams and workshop participants after project activities have concluded. Almost all research participants indicated that they would appreciate additional support to complete key aspects of their projects such as data analysis, writing manuscripts, publishing articles in journals, disseminating policy briefs and identifying additional funding support to test proposed recommendations/interventions. Moreover, many participants expressed that they would need further support for the application and dissemination of key findings to broader and global audiences. Workshop participants also requested that technical assistance continue after the capacity building workshop was complete.

AHPSR and UNICEF, with support from Gavi, are also seeking to develop and implement a research programme to enable the effective implementation of immunization programmes within another country's health system. Discussions are currently underway with Ethiopia as a possible country site. Research funded under this call is expected to focus on the generation of new strategies and knowledge that will enable more effective implementation of existing immunization programmes within the health system.

Decision-makers and implementers of Ethiopia's immunization programme who are working in collaboration with researcher counterparts will be the main target audience. Grants for research studies of 12 months will be of up to US\$25,000. Consistent with the approach described above, this research programme envisages:

- Enhanced knowledge creation to inform better implementation of existing programmes;
- Strengthening the capacity of decision-makers (implementers) to generate and use research as a means of addressing implementation problems that they face in the field;
- Fostering a culture of research generation and use within the routine immunization programme.

In line with these aims, selected teams will be provided with active training and ongoing technical support by expert facilitators organized through AHPSR and UNICEF, along with country offices, to further develop their ideas using appropriate implementation research methods.

UNICEF is also in discussions with Gavi to set up an Implementation Research Hub for Immunization (IRI Hub) to improve immunization coverage and equity. The goal of the IRI Hub is to support strengthened immunization systems in the context of primary health care and health systems strengthening to improve immunization coverage and equity. The specific objectives are:

1. To promote and support quality implementation research that informs immunization programmes on key thematic areas of immunization inequity;
2. To build the capacities of in-country and regional stakeholders on implementation research methods and applications using immunization as an entry point to strengthen service delivery;



3. To promote sharing of information on implementation research studies and collaborations relevant to immunization coverage and equity, as well as health systems strengthening.

Activities undertaken during the first year will establish the IRI Hub to improve local capacity to analyse information and take actions to improve immunization coverage and equity, and map existing resources that can support countries. The vision for longer-term activities

is that the IRI Hub will promote and support implementation research projects of varying scope and length based on the defined research priorities and research questions within each country. Ultimately, the aim of these implementation research activities will be to accelerate the adoption and dissemination of successful approaches that address identified priority immunization issues and to support Gavi's efforts to improve immunization coverage and equity.

Appendix 1:

Decision-maker Led Implementation Research Initiative project summaries

UNICEF is working in collaboration with the WHO's Alliance for Health Policy and Systems Research to support research teams to prepare manuscripts based on the studies below to submit as a Special Issue of a peer-review journal. For more information about any of these DELIR projects or to see short presentations made by the research teams, please visit: <https://sites.google.com/view/delir-workshop-2018/home>.

More responsive immunization services through tailoring for hard-to-reach populations in Chad.

Objectives	<ul style="list-style-type: none"> • Identify potential strategies to tailor immunization services to reach the hard-to-reach communities in Danamadji District. • Identify the factors that prevent nomads from accessing vaccination services. • Assess the feasibility and sustainability of integrating the One Health approach into existing vaccination services. • Explore potential communication channels between the health system and nomadic communities. • Document the process and results of tailoring vaccination services to meet nomadic communities' needs.
Key findings and recommendations	<ul style="list-style-type: none"> • Mistrust due to lack of information was the most important barrier for nomadic communities. • Tailored communication campaigns helped mitigate perceived barriers to vaccination among nomadic communities. • JHAV programme is not financially sustainable at the health district level despite being widely accepted and adapted. • One round of joint human and animal vaccination (JHAV) would consume up to 60% of the total district health budget. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Integrate tailored communication strategy into routine immunization services. 2. Integrate tailored communication strategy into JHAV to augment the use of existing health services. 3. Explore the use of mobile technology to maintain contact with nomadic communities.
Use of findings for EPI policy and programmes	<p>The research team developed a tailored communications strategy for the JHAV "One Health" programme, which was adopted by the <i>Projet d'Appui aux Districts Sanitaires au Tchad</i>. The team plans to integrate the same strategy into district-level routine immunization and scale the strategy to other districts with nomadic communities.</p> <p>The team is also exploring the use of mobile technology to maintain contact with nomadic communities.</p>

Strengthening the health information system for immunization in the Democratic Republic of the Congo.

Objectives	<ul style="list-style-type: none"> • Identify if data bottlenecks (including for immunization) exist and where and identify elements that could improve and increase the promptness of health information systems (i.e. the Expanded Programme on Immunization (EPI)) in real time. • Map the various information systems used for the collection, analysis and transmission of health and immunization data. • Analyse data from all levels of the health system from all sources. • Analyse strengths, weaknesses, opportunities and threats associated with different sources. • Evaluate the difficulties of the system in relation to data quality and their root causes. • Develop strategies to strengthen the reporting system at each level.
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Key findings and recommendations	<ul style="list-style-type: none"> • Discordance in collected data at each level. • Barriers are multiple and include: supervision and capacity of staff; document management; multiple sources of tools for data collection; lack of technology available and accountability and feedback. • Most facilities at the lower levels do not have standard operating procedures (SOPs); most health care workers at lower levels not always aware of SOPs at national level. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Develop a national plan for improving quality of immunization data. 2. Integration of data to the Ministry of Health National Information System – a single data management tool. 3. Monthly meetings for data validation – with feedback for improving services and data quality. 4. Active collection of immunization data during supervision visits and local Data Quality Self-Assessment (DQS). 5. Need for modern infrastructure to implement digital entry at health zone and health centre level (phased approach).
Use of findings for EPI policy and programmes	<p>Research was used to develop “National Strategic Plan for Improving Quality of Immunization Data”</p> <p>Meeting held at national level to discuss implementation of “National Strategic Plan for improving quality of immunization data”</p> <p>Policy brief targeting external partners and MOH.</p> <p>Distribution of materials to be implemented to lower levels.</p>

Linkages and feedback mechanisms, and mobility of caregivers among health facilities: A mixed-method study, Ethiopia.

Objectives	Determine how the linkages and feedback system of health facilities along with mobility of caregivers affect the follow-up in utilizing routine immunization services.
Key findings and recommendations	<ul style="list-style-type: none"> • Most transfers of caregivers were from the four hospitals; Most transfers are out of Lideta sub-city and to unknown places. • Most caregivers did not know the names and addresses of nearby health centres • Several of the vaccinators did not know and check the vaccination schedule of other health facilities. • Vaccinators did not have any system to check arrival of caregivers, continue follow-up and feedback. • Some health centres did not provide the routine immunization services for out of catchment caregivers. • During the project, health facilities in the study area started using transferal slip which resulted in improved documentation and reporting of immunization programme. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. The Federal Ministry of Health (FMOH) in collaboration with stakeholders should develop a transferal form and guide to improve the transferal processes.
Use of findings for EPI policy and programmes	<p>Local dissemination workshop; report for local implementers, presentation to Advocacy Experts Panel (AEP), policy brief for the FMOH.</p> <p>Developing guidelines and transferal forms.</p> <p>Capacity building to utilize the guideline and forms.</p>

How can the use of data within the immunization programme be increased in order to improve data quality and ensure greater accountability, Ethiopia.

Objectives	<ul style="list-style-type: none"> • Explore how immunization data is reported and used to improve immunization services. • Assess the role of supervisory visits to increase data use, improve data quality and ensure accountability in immunization programmes. • Explore interaction and feedback mechanisms within the health information system actors at district, facility and community levels. • Explore existing community level engagement approaches that can be leveraged to increase data use, improve data quality and ensure accountability in immunization programmes.
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Key findings and recommendations	<ul style="list-style-type: none"> • Opportunities to improve data quality and use exist. <p>Community-level: Low data quality, especially at community-level reports; established Health Development Army and Health Extension Program, however limited use of data.</p> <p>District-level: Culture of using data for decision making largely absent; district-level Performance Review Teams for data verification and use, but limited capacity and functionality.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Engage the community in data use and verification to create shared accountability. 2. Strengthen the capacity of District Performance Review Teams in data quality, verification and use.
Use of findings for EPI policy and programmes	<p>Research was used to: develop Use of Community Health Data for Shared Accountability Guidance (available at: https://www.measureevaluation.org/resources/publications/tr-18-238); leverage support for the initial pilot test of guide; further refine the Guidance.</p> <p>Presentation of the guidance document to FMOH is planned.</p> <p>Meetings with FMOH on strategies to improve capacity of Performance Review Teams are planned.</p>

Negative social media messages on vaccines: How can the resultant trust deficit between caregivers and health workers be overcome? A qualitative inquiry in Malappuram district of Kerala State in India.

Objectives	<ul style="list-style-type: none"> • Understand the role of anti-vaccine social media messages in influencing the relationship and trust between caregivers and health workers. • Understand how the deficit in caregivers' trust in health workers influences their decisions on childhood vaccination. • Evaluate the current communication methods (e.g. information, education and communication (IEC) materials, websites etc.) vis-à-vis the ability to address anti-vaccine messages. • Suggest modifications in the current communication and social media activities to improve the trust between caregivers and health workers and thereby improve vaccination coverage. • Develop a set of tools for health workers (leaflets, FAQs, social media messages) and educational materials which can help to counter anti-vaccine messages.
Key findings and recommendations	<ul style="list-style-type: none"> • IEC materials and handbooks only include general information. • Past negative experiences/failures and side effects. • Patriarchal society; religious leaders and alternate practitioners. • Health workers not trained to counter propaganda. • Social media messages/anti-vaccine portals in the west. • High access to internet and social media – WhatsApp most popular. • Trust deficit. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Revise the communication strategy and tools to counter the propaganda and to address the concerns of parents. 2. Initiate social mobilization efforts. (involve local influencers ~Polio) 3. Train health workers. 4. Formulate social media cell to monitor and follow up; initiate positive campaigns.
Use of findings for EPI policy and programmes	<p>District and state-level workshops.</p> <p>Development of a mobile app to counter the anti-vaccination propaganda.</p> <p>Develop short video/audio clips – easily shareable – to counter the myths and propaganda.</p> <p>Develop a short manual – for the use of health workers – to easily answer common questions and counter myths/anti-vaccine propaganda.</p>

Emerging hesitancy upon new vaccine introduction: Tackling a most unusual barrier, Kenya.

Objectives	<p>Gain an understanding of the following points:</p> <ul style="list-style-type: none"> • The extent of parental, vaccinator and programme manager concerns about pain at vaccination. • The extent of vaccination dropouts due to pain during vaccination or later during the days after vaccination. • Health personnel and caregiver actions in relation to pain at vaccination or later during the days after vaccination. • Immunization policy recommendations in relation to reducing pain at the time of vaccination.
Key findings and recommendations	<ul style="list-style-type: none"> • 96% of parents concerned about pain at vaccination; drop outs are a problem. • Vaccinators (98%) interviewed had not received adequate educational training. • Pain-related side effects impacted negatively in intra-household relationships and livelihoods. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Directors of County and the Unit of Vaccines and Immunization (UVIS) should ensure availability and usage of comprehensive guidelines for pain mitigation. <ul style="list-style-type: none"> • Incorporate of pain mitigation strategies in the training curriculum of all health personnel. • Guidance on use of analgesics. 2. Directors of Country and UVIS should provide comprehensive list of cost-effective methods of mitigating pain. 3. Community sensitization should be done through health workers and media related to vaccine safety, pain mitigation etc. to ensure compliance.
Use of findings for EPI policy and programmes	<p>A bottom up approach to disseminate implementation research (IR) findings with different levels of stakeholders has already been started through meetings with county level stakeholders; i.e., Director of Health; sharing findings with sub-county level stakeholders; i.e., sub-county MOH.</p> <p>Policy brief shared with county and sub-county directors of health. (great interest was shown; some recommendations already implemented)</p> <p>Article publication in process for broader audiences.</p>

Participatory evaluation and action research to increase immunization coverage in Ogun State, Nigeria.

Objectives	<p>To assess the usefulness of the Participatory Action Research (PAR) approach in strengthening community linkages to the Reaching Every Ward (REW) strategy and the effect of the collaboration of the community members, health workers and local government officials in improving immunization utilization and coverage in Remo-North local government area.</p>
Key findings and recommendations	<ul style="list-style-type: none"> • Coverage increased from 60.7% to 90.9%. • Ward Development Committees revitalized and strengthened. • Spill-over effects – health systems strengthening, geographical. • The PAR approach can be sustainable. It was decision-maker led, embedded in the National Programme on Immunisation, community members are committed, and beyond transport reimbursement, no financial incentives were given for participation. <p>Recommendations:</p> <p>Integrate PAR approach into existing REW social mobilization structures across the eight local government areas with pockets of unimmunized children.</p>

Use of findings for EPI policy and programmes	<p>The research team developed policy and supporting documents to guide policy makers in this effort.</p> <p>At policy level: Potential development of policy and supporting documents to guide implementation of the PAR approach.</p> <p>At community level: The PAR approach has been used to address other issues: measles campaigns, monkey pox rumours.</p> <p>Policy Dialogue held in August 2017 with national, state and local governments, communities, NGOs, media and partners.</p> <p>Memorandum given to the National Council on Health on PAR approach in health interventions. (May 2018)</p> <p>Presented at the National SDG conference (Abuja, Nov 2017) with decision makers and developmental partners.</p> <p>Dissemination meeting to the South West region (6 states) planned.</p>
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Potential role of civil society organization (CSO) engagement for increasing the demand for and uptake of immunization services in Odukpani Local Government Area of Cross River State, Nigeria.

Objectives	<ul style="list-style-type: none"> • Identify the potential role of CSO engagement in increasing the demand for and uptake of immunization services in Odukpani local government area of Cross River State of Nigeria. • Identify and map CSOs active in health generally and in immunization specifically in the local government area. • Synthesize and document key learnings from the existing body of knowledge on CSO participation in increasing demand for and uptake of immunization services. • Document potential barriers to and facilitators of CSO engagement in increasing demand for and uptake of immunization services. • Propose a CSO intervention for increasing demand for and uptake of immunization services.
Key findings and recommendations	<ul style="list-style-type: none"> • CSOs have capacity for advocacy, communication and social mobilization. (ACSM) • Myths and misconceptions exist. (people believe they will not need vaccines) • There are role models among CSOs and non-CSO community members. (Role Model Mothers, Role Model Fathers, Role Model Husbands) <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Train CSOs/vaccinators. 2. Introduce immunization into school curriculum. 3. Use pro-vaccine advocates in CSOs and communities as change agents. 4. Engage alternative care providers. 5. Engage traditional and religious leaders.
Use of findings for EPI policy and programmes	<p>Partnership with CSOs for ACSM.</p> <p>Partnership with pro-vaccine community members.</p> <p>Partnership with role models/change agents.</p> <p>Briefs to inform and influence policy.</p>

Use of social actors to address contextual barriers for utilization of immunization services among caregivers of under-five children in urban slums of Yobe State in the context of the Boko Haram insurgency, Nigeria.

Objectives	<ul style="list-style-type: none"> • Assess the anti-vaccination messages mitigating against uptake of immunization in the urban slum of Yobe State. • Evaluate the sufficiency and coverage of IEC materials in addressing the anti-vaccination messages by social actors in the urban slum of Yobe State. • Identify the optimal role of social actors in addressing anti-vaccination messages in the urban slum of Yobe State.
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Key findings and recommendations	<p>Lack of knowledge and benefits of immunization were the major barrier at all levels; Low status of health and immunization of women and children in the local culture; Denial of permission, dominance of decision-making by mother-in-law or a male in the family on health-related matters.</p> <p>Recommendations: Production of better communication and community engagement strategies for publicity and learning [including presentation, Town Hall Meeting, print and media] by the State Ministry of Health (SMOH) and State Primary Health Care Board (SPHCMB) to be delivered in partnership with social actors.</p> <p>Most of the caregivers of unimmunised children are young mother, had no formal education and without any income generation activities; lack of transport or money for transport and competing social demands occasioned by insurgency [poverty, displacement and loss of means of livelihood] is contributing to poor immunization uptake.</p> <p>Recommendations: Integrating empowerment activities with health programmes/social security packages such as food and nutrition programmes to be linked with immunization through inter-sectoral collaboration with empowerment ministries and agencies.</p> <p>There was no special routine immunization service targeting slums; Lack of health workers understanding of social dynamics of slums and IDPs.</p> <p>Recommendations: Outreach and mobile services to deliver key interventions including immunization targeting this special group.</p>
Use of findings for EPI policy and programmes	<p>Town Hall meetings to present findings and to discuss and agree on best way forward for demand creation with social actors.</p> <p>Presentation of finding to key stakeholders to ensure outreach and mobile services to deliver key interventions including immunization targeting this special group.</p> <p>Engaging partners, ministries, departments and agencies to foster integration and intersectoral collaboration in delivery of immunization with other social security packages.</p> <p>Developing factsheet and policy memos for intersectoral collaborations and integration of service.</p> <p>Producing relevant IEC material for demand creation.</p> <p>Planned trainings for health workers and social actors on interpersonal communication skills and community engagement activities.</p> <p>Working to secure resources for special outreach and mobile services.</p>
Improving vaccine uptake in the urban slums of Karachi, Pakistan: Implementation research to explore and address supply- and demand-side barriers to routine immunization.	
Objectives	<ul style="list-style-type: none"> • Explore supply- and demand-side immunization barriers in peri-urban slums and ways to address them. • Explore supply-side barriers related to immunization in the context of the EPI in the target slums. • Explore key community level barriers related to immunization in the target slums. • Explore how these barriers can be addressed around a birth registry system. • Assess childhood vaccination status in the target slums using a representative sample in order to identify the pockets of poor vaccination coverage.

Key findings and recommendations	<p>Underutilized and underreported immunization coverage data from Lady Health Workers.</p> <p>Recommendations: The integration of a birth registry system with EPI activities for improved immunization coverage and tracking.</p> <p>Interference of campaigns with RI contributing to low RI uptake and adherence.</p> <p>Recommendations: Increased synergy and sharing of resources between routine immunization and campaigns.</p> <p>Underperformance of frontline EPI staff stemming from a lack of training, accountability and monitoring mechanisms.</p> <p>Recommendations: Use of technology for frontline staff for improving data collection and real-time reporting to increase accountability, accompanied by staff training on SOPs and clarity of roles.</p>
Use of findings for EPI policy and programmes	<p>Development of a validated implementation framework that addresses barriers in limited-resource settings with the involvement of government stakeholders from the Ministry of National Health Services, Regulation and Coordination (NHSRC), federal/provincial EPI and district/town health.</p> <p>Adoption of the validated framework by public and private-sector immunization programmes for effective implementation and increased coverage.</p> <p>Conducting Phase 2 Interviews with senior government stakeholders.</p> <p>Policy dialogue and workshops with key federal and provincial government stakeholders, CSOs and donor agencies.</p> <p>Open-to-the-public panel discussion with key stakeholders to discuss the main findings and resultant implementation framework, covered by major news outlets and social media.</p>

Ministry of Health engagement to improve local capacity for demand generation in Puntland, Somalia. (Mudug, Bari and Nugal regions)

Objectives	Explore ways in which engagement of Ministry of Health in planning and management of demand generation interventions can be improved and how improved engagement can be leveraged to facilitate development of local institutional capacity for demand generation interventions.
Key findings and recommendations	Progress on this project has been delayed by ethical review and approval, as well as security issues.
Use of findings for EPI policy and programmes	Progress on this project has been delayed by ethical review and approval, as well as security issues.

Evaluating the role of leadership in transitioning vertical into integrated and sustainable district health programmes – a case study of immunization in Uganda.

Objectives	<ul style="list-style-type: none"> • Evaluate the role of leadership strategies in facilitating the transition of successful vertical immunization programmes into integrated and sustainable district programmes in Luuka district, Uganda. • Explore leadership strategies applied by various players at the regional, national and district levels. • Evaluate how different actors engage with districts to integrate projects into district health services. • Explore the contextual factors that hinder or facilitate integration and sustainability of high performance. • Establish/test the acceptability of using different leadership engagement strategies. • Build consensus and validate key study findings, best practices and case studies.
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Key findings and recommendations	<p>Learning: District leadership not engaged in planning, management and evaluation of immunization Parallel district structures.</p> <p>Recommendations:</p> <p>Leaders: engage in annual priority setting for immunization.</p> <p>District Health Team (DHT): participate in annual and planning budgeting process.</p> <p>Planner: integrate immunization in all line sector plans.</p> <p>Learning: Cultural/political leaders are influential. (e.g., consumption of immunization services)</p> <p>Recommendations:</p> <p>Chief Prince (Luuka cultural leader), the Busoga Parliamentary Caucus, and the Speaker of Parliament to advocate for prioritization and additional funding for immunization services.</p>
Use of findings for EPI policy and programmes	<p>District level workshop. (CSOs, DHT, Technical Planning Committee, District Executive Committee)</p> <ul style="list-style-type: none"> • Report for implementing partners. • Report/meetings. (Ministry of Health) • Seminars/conferences. • Scientific manuscript. <p>Data validation meetings with key stakeholders.</p> <ul style="list-style-type: none"> • Present key findings. • Policy briefs/policy memos on key learnings. • Signed commitment for immunization. <p>Documentation of best practices.</p> <p>Scale up the learnings from study.</p>

Process evaluation of community health facility-based micro-plan development and implementation in Uganda.

Objectives	<ul style="list-style-type: none"> • Establish the availability of micro-plans at the health facilities in the districts. • Examine the process of developing the micro-plan focusing on the knowledge, perceptions and involvement of those in charge of implementation. • Analyse the process of implementing the micro-plans where they exist. • Document the successes and challenges of developing and implementing the micro-plans. • Propose a strategy to improve micro-planning processes.
Key findings and recommendations	<ul style="list-style-type: none"> • 43% of health facilities did not have updated immunization micro-plans; 57% of health facilities had updated immunization micro-plans, but did not use them routinely. • 70% of participants reported that the micro-plan tool was complex and tedious to fill in. • No standard guidelines on micro-planning; limited understanding of what micro-planning is, process, and what it is meant to achieve. • 73% of health workers reported that they did not have skills to develop and implement micro-plans. • Limited updated/accurate data to construct micro-plans. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Review the micro-plan tool, reduce number of pages. 2. Develop standard guidelines for completing micro-plan tool. 3. Train health workers on revised micro-plan tool and guidelines.
Use of findings for EPI policy and programmes	<p>Stakeholder consensus/Presentation to EPI Technical Working Committee.</p> <p>Development of policy brief, revision of tool.</p> <p>Presentation to Uganda Ministry of Health Communicable Disease Control Technical Working Group.</p> <p>Presentation to Uganda Ministry of Health Senior Management Committee.</p>

Improving the effectiveness of immunization system management for children from 0-23 months in Vietnam.

Objectives	<ul style="list-style-type: none"> • Describe and analyse the current immunization system, its operational management towards equity and system efficiency. • Identify gaps in system management and room for improvement in terms of system transparency, accountability and responsibility. • Measure households' access to and use of different types of immunization services for children 0-23 months old, reasons for their preference and their acceptability for proposed changes. • Reach a consensus among stakeholders on the appropriate strategies to improve immunization system in Vietnam.
Key findings and recommendations	<ul style="list-style-type: none"> • There is no fundamental legal framework, policies to implement immunization to meet global objectives nor lack of regulatory framework for monitoring and financial monitoring. • Immunization schedule (LTC) is not updated. Lack of quality management systems for EPI. • Public health facilities are the main sources for vaccines. Most community members are concerned about adverse reactions after vaccination. When a disease is well understood, the rate of children getting vaccine for that disease on-time is high. • Immunization policy in Vietnam requires two laws: Immunization Law and Medical Injury Accident Law (and Compensation). Basic health insurance package includes immunizations for all diseases for children aged 0-23 months. • Important to ensure independent consulting and monitoring system in place. • More international and regional cooperation with different donors, international organizations and the private sector are needed.
Use of findings for EPI policy and programmes	<p>A policy brief has developed by the team to be shared with respective government stakeholders.</p> <p>Publication of a manuscript in a peer-reviewed journal for broader policy and programme audiences is in progress.</p>

Appendix 2:

Pakistan Implementation Research for Immunization Programme project summaries

UNICEF is planning to incorporate learnings from these projects (particularly those relating to the priority areas identified in-country) into Pakistan's Joint Assessment in the fall of 2018. UNICEF is also working with research teams to prepare manuscripts to submit to peer-review journals as well as a larger compendium which will include all study reports, and chapters on process, lessons learned and next steps. In addition, UNICEF Headquarters and UNICEF Pakistan are working with the research teams to do additional sub-national dissemination of findings and recommendations, as well as strategic planning for implementation of the recommendations. For more information about any of these implementation research projects or to get relevant documents, please visit: <https://sites.google.com/view/pakistanirforepi/home>.

Developing three-dimensional narrative to counter polio vaccine refusal in Charsadda, Pakistan.

Objectives	To explore the root causes of community mistrust in polio vaccination in district Charsadda and explore the gaps in current community trust building measures with regards to polio eradication.
Key findings and recommendations	<ul style="list-style-type: none"> • Addressing polio refusals should include active correction of misleading nomenclature and control of social media use by militants against the polio programme. • The polio programme should make active use of social media and cellular networks. • Balance the use of force with judicious restraint.
Use of findings for EPI policy and programmes	Sensitization of provincial level stakeholders and take-up the implementation research findings at the polio emergency operations centre and to the federal government.

Addressing community barriers to immunization in Rajanpur district, Pakistan.

Objectives	To explore strategies for social mobilization in Rajanpur district for improving immunization coverage.
Key findings and recommendations	Integration of social mobilization strategies into the EPI, community involvement, and utilization of female health workers trained on social mobilization can effectively address barriers to immunization.
Use of findings for EPI policy and programmes	<p>Policy brief to share findings with district and provincial health authorities.</p> <p>Consideration of communication and social mobilization activities to ensure funds for regular training and refresher programmes for field staff.</p>

Exploring opportunities to strengthen supportive supervision of EPI services in Sindh, Pakistan.

Objectives	To assess the supportive supervision system for routine immunization services in Sindh and to document barriers and facilitators for improved supportive supervision systems.
Key findings and recommendations	<ul style="list-style-type: none"> • Supportive supervision of immunization services is crucial to ensuring the safe and effective delivery of vaccines. • Revision of the EPI policy is required to include specific strategies/guidelines for the recruitment and training of supervisors. • There should be adequate provision of logistics, particularly transportation, for supervisory visits. • Feedback and incentive mechanisms should be strengthened to enhance accountability.
Use of findings for EPI policy and programmes	Currently developing strategies to promote sharing of results and their implications and application for future strategies; working towards development of a manuscript to publish results in a peer reviewed journal.

Immunization supply chain and management performance system, Pakistan.	
Objectives	To assess effectiveness, barriers and enablers of the Visibility Analytics Network (VAN) approach in improving the supply and availability of stocks by comparing the situation in intervention and non-intervention districts.
Key findings and recommendations	The introduction of a dedicated quality improvement team is an effective way to address capacity issues at the local level related to data analysis and decision-making about inventories and data entry into the Vaccine Logistic Management Information System.
Use of findings for EPI policy and programmes	Support and advocate for providing more technical support and funds to EPI to handle vaccine logistics management information system.
Addressing EPI vaccination demand through mHealth in Quetta City, Balochistan, Pakistan.	
Objectives	To explore the use of artificial intelligence (AI) through mHealth initiative for addressing demand and increase in vaccination coverage in Quetta, Balochistan.
Key findings and recommendations	<ul style="list-style-type: none"> • An AI-based mHealth initiative was shown to create demand and increase vaccination coverage. • The initiative was effective even with respect to the least addressed vaccine.
Use of findings for EPI policy and programmes	Share findings and sensitize district and provincial level EPI stakeholders to ensure their active participation in the uptake of proposed recommendations to increase demand for and use of vaccines.
Social mobilization campaign and immunization hesitancy: A Case study of districts Sargodha and Khushab, Pakistan.	
Objectives	To identify the causes of immunization hesitancy and assess existing Social Mobilization Campaign (SMC) in terms of acceptability, appropriateness and fidelity.
Key findings and recommendations	<ul style="list-style-type: none"> • Fear of fever and needles, lack of awareness and religious and cultural beliefs are key reasons for vaccine hesitancy and refusal. • Involvement of lady health workers to provide information in hard-to-reach areas, communication committees at divisional level, improved health worker communications skills and availability of context specific materials were all found to diminish vaccine hesitancy.
Use of findings for EPI policy and programmes	<ul style="list-style-type: none"> • Share findings with clear policy recommendations with officials from Gavi, WHO and provincial federal level EPI authorities. • Ensure the use of electronic media/public service message/brochures/pamphlets for raising awareness and diminishing mistrust and hesitancy towards vaccine and immunization. • Convince and bring CSOs on board for social mobilization as they can be of help and assistance due to their penetration in local areas in terms of their social capital links and relations with local community.
Community health workers' based referral system for improving the EPI coverage, Pakistan.	
Objectives	To explore feasibility of involvement of TBAs and determine the improvement in EPI vaccination coverage in hard-to-reach areas in rural Sindh.
Key findings and recommendations	<ul style="list-style-type: none"> • A traditional birth attendant-based referral system can improve immunization coverage and completion of vaccination in rural areas with provision of minimal incentives. • Traditional birth attendants are acceptable to communities/parents and the formal health system. • Long-term sustainability of traditional birth attendant involvement in immunization requires additional financial resources.

Use of findings for EPI policy and programmes	<ul style="list-style-type: none"> • Advocacy with district and provincial level stakeholders to generate funds for scaling up the approach. • Research findings showed that the involvement of community-based workers improves immunization coverage. However, due to the project's time constraints, the duration of the intervention and number of study participants were not adequate. Therefore, more robust implementation research (i.e. experimental design) is needed on this topic for a longer period to come up with a concrete action plan and scale-up strategy.
Understanding accountability apropos human resources in EPI, Balochistan, Pakistan.	
Objectives	To determine perspectives of health officials on human resource accountability challenges at various levels of government, hindering immunization service delivery and identification of governance strategies for management of inefficiency, demotivation and absenteeism.
Key findings and recommendations	Effective strategies to increase and strengthen human resource accountability in Balochistan included: having a clear job description for EPI staff, regular and periodic trainings on immunization, and improving supportive supervision systems through GPS or phone technologies.
Use of findings for EPI policy and programmes	<ul style="list-style-type: none"> • Share results with different policy makers at the provincial level, develop action plans and ensure those plans are taken into consideration to ensure human resource accountability for EPI. • Ensure the development of clear job descriptions and terms of reference for new staff members with the support of the provincial health authority. This must be preceded by a proper needs assessment within each district based on the geography, distribution of already present immunization staff and the population. • Foster the development of comprehensive community mobilization programmes and ensure the implementation of these through support from provincial level policy makers.
E-Vaccs: Qualitative assessment of the barriers and enablers in implementation, Pakistan.	
Objectives	To investigate different barriers and enablers for the implementation of E-Vaccs in Pakistan.
Key findings and recommendations	Implementation of E-Vaccs, an android-based performance management system, can be strengthened by having an active mobile network, training for newly hired vaccinators, a unique identification for every child, facility-based E-Vaccs devices to ensure digitization of data and inclusion of the option of work status of the vaccinator.
Use of findings for EPI policy and programmes	Apply local approach. Share findings with district and provincial level EPI policy makers with clear action plan.
Examining the mechanisms and effectiveness of multi-tiered, EPI-polio synergy in Pakistan.	
Objectives	To examine current status of Polio-EPI synergy including the barriers and facilitators, along with documenting its community-level implementation and perceived effectiveness in Pakistan.
Key findings and recommendations	A central oversight mechanism and consensus document/framework can enhance EPI-polio synergies around micro-planning, monitoring and surveillance for zero-dose children.
Use of findings for EPI policy and programmes	<ul style="list-style-type: none"> • Consider a localized approach, share implementation research findings with provincial-level EPI stakeholders such as provincial EPI manager, Director General of Health, Health Secretary, representatives from Gavi, WHO, CSOs and NGOs working on EPI. • Organize roundtables in provinces to discuss key findings. Use social media to report positive and negative aspects of immunization and EPI programme. • Publish implementation research results in peer-reviewed journal. • Develop framework to share resources and knowledge between EPI and polio programme at the district, provincial and federal levels.



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