

COVERAGE AND EQUITY

Introduction and value proposition

Coverage, the proportion of a population that has received a vaccine by a certain age, and equity, the absence of unfair differences in vaccination outcomes between population groups, are intricately linked indicators of immunization performance. At the global level, immunization equity is concerned with all countries having fair access to safe and effective vaccines, vaccination supplies and technologies consistent with vaccine-preventable disease (VPD) epidemiology, domestic capacities, human resources, and ability to pay for vaccines and service provision. At the country level, immunization equity is concerned with health system and programme interventions that address inequities in access or utilization of services by the population based on their geographical location or social factors such as socio-economic status, education level, gender or ethnicity.

In the coming decade, there is a need to reach more under-immunized and 'zero-dose' children, and to ensure that each person receives recommended vaccinations throughout their lives. In 2018, an estimated 19.4 million children were not fully vaccinated, including 13.5 million (70%) who did not receive even the first dose of DTP-containing vaccine, the indicator for zero-dose children.¹ The challenges of "reaching more and reaching wider" will be further emphasized when programmes have to respond rapidly to regional outbreaks (e.g. Ebola, measles) and pandemics (e.g. influenza, COVID-19). These bring additional coverage and equity challenges, such as those resulting from targeting wide age groups and initial vaccine supply limitations.

Enhancing coverage and equity is central to the commitment to universal health coverage. Although immunization is a primary health care (PHC) service with one of the highest and most equitable uptakes, large differences in coverage rates

1. Blas E, Sivasankara Kurup A, WHO (Eds). Equity, Social Determinants and Public Health Programmes. 2010. Geneva: WHO. Available at: <https://apps.who.int/iris/handle/10665/44289>

persist in many countries.^{2,3,4} Differences in coverage rates between population groups are associated with a range of factors, including socio-economic status, education level, physical access to services, and religious and cultural beliefs. Distance from facilities is a straightforward factor affecting vaccination coverage, while others, such as gender-related barriers, ethnicity and cultural and religious beliefs, are more complex and challenging to address. While vaccination refusal and hesitancy is a growing problem in some populations, globally an overwhelming majority of parents want to vaccinate their children, and they will do so if given equitable opportunities to use vaccination services.

Investments to improve coverage and reduce inequities for scheduled vaccines and in response to outbreaks or pandemics contribute to prevention of diseases in individuals often disproportionately affected by infectious and other diseases. Improved coverage will contribute to greater overall health, economic and social development through reduced population disease burden, as well as supporting reductions in preventable hospitalization, disability and mortality, particularly for disadvantaged populations. More equitable coverage will help to break cycles of ill-health and poverty, with vaccination disproportionately benefiting the most economically disadvantaged.⁵ Population-wide benefits make it essential that governments continuously progress towards high, equitable coverage, which includes prioritizing the needs of the hardest to reach or most vulnerable.

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2. WHO. Explorations of Inequality: Childhood immunization. 2018. Geneva: WHO. Available at https://www.who.int/gho/health_equity/report_2018_immunization/en/
 3. Barros AJD, Victora CG. Measuring Coverage in MNCH: Determining and Interpreting Inequalities in Coverage of Maternal, Newborn, and Child Health Interventions. *PLOS Med.* 2013;10(5): e1001390. <https://doi.org/10.1371/journal.pmed.1001390>
 4. WHO. Global Health Observatory (GHO) data: Interactive data visualizations: Inequalities in reproductive, maternal, newborn and child health. https://www.who.int/gho/health_equity/interactive_data_visualizations/en/
 5. Chang AY, Riumallo-Herl C, Perales NA, Clark S, Clark A, Constenla D et al. The equity impact vaccines may have on averting deaths and medical impoverishment in developing countries. *Health Aff (Millwood)*. 2018;37(2):316-324.

Strategic Priority Goal and Objectives

Objective

Everyone has access to safe and effective vaccines regardless of their geographical location, age, socioeconomic status, or any gender-related or other obstacle impeding their opportunity to gain the full benefits of vaccination.

Goals

- Reach high and equitable immunization coverage nationally and in all districts.
- Increase vaccine coverage among the most disadvantaged populations.
- Extend immunization services to regularly reach under-immunized and 'zero-dose' children.

Context and Challenges

Although the Global Vaccine Action Plan (GVAP) aimed to achieve high national coverage and geographical equity, with goals of 90% national coverage and 80% coverage in every district for all vaccines, these goals have not been achieved. During the past decade, ambitious coverage goals have been particularly challenging for fragile and conflict-affected countries. While high and equitable coverage is core to IA2030, it is recognized it will take longer for some countries to achieve than others. All countries should aim to achieve high national and subnational coverage as rapidly as possible, although this will inevitably take longer in fragile states and those with under-developed health systems. Achieving coverage and equity targets will require political will to prioritize immunization and mobilize the needed resources, as well as adaptation of programmatic activities to different social settings and geographic locations.

Inequities are a major barrier to achieving high coverage in many countries. Key underserved populations include the urban poor, remote rural, and conflict-affected populations, as well as mobile populations such as migrants, internally displaced persons, refugees, nomads and pastoralists. In such contexts, traditional geographical targeting of services is not enough to improve inequities in coverage.

Many countries with low coverage have poor data on population sizes, and limited civil registration and vital statistics. Surveys are rarely carried out to assess coverage rates and generally lack granularity, and there is limited monitoring of inequalities. As a result, disadvantaged groups are rarely identified, and national programmes generally do not implement strategies that prioritize under-reached population groups.

It can be challenging to identify under-immunized children (especially if transient or marginalized), to capture data from private providers, and to accurately assess catchment areas and population sizes in urban slums. Weak health systems in remote rural settings have limited capacity to identify eligible children and provide services. Fluctuating populations due to seasonality, migration and frequent ad-

ministrative boundary changes lead to inaccurate estimations of population sizes and unreliable vaccine forecasting, contributing to frequent stockouts.

In conflict-affected settings, disrupted health systems are compounded by security challenges and difficulties in identifying target populations that are mobile or seeking concealment. Displacement can also lead to the loss of belongings, including identification documents and vaccination cards. In outbreak settings or pandemics, PHC services for disadvantaged communities may be closed or limited due to insufficient protective equipment, vaccine shortages may lead to challenging social and public health trade-offs, and time-sensitive decisions may favour those with the loudest voices or most resources.

Health services in all countries have limited capability to communicate the benefits of vaccination to ethnic minority groups and other communities with little knowledge of immunization, or that mistrust health systems generally and vaccination services specifically. Gender-related barriers to service utilization are significant in many countries but few strategies have been developed to address them.

Immunization services are well established in most countries but may also be less conducive to adaptation to rapid demographic and social changes such as urbanization, migration, the ageing population, fragility and conflict, expansion of modern media and communications, and increasing emphasis on gender equity. All these social changes require flexible responses by health systems and programmes. Over the next decade, a growing proportion of the world's children will be born in resource-constrained countries and contexts where vaccination coverage is low. By 2030, most of the world's under-vaccinated children will live in disadvantaged communities in middle-income countries.

Strategies and interventions that have been proven to improve equity are often not deployed at scale. Successful strategies include needs-based deployment of cold chain systems, service delivery strategies such as Reaching Every District and Reaching Every Community, and integrated service delivery models. Other equity-related interventions that could be deployed at scale include community engagement strategies, ensuring equitable availability of trained providers, and use of technology for communication, information and surveillance purposes. The issue of reduction in inequities is relevant across all country income groupings, including high-income countries, where social marginalization relating to location and socio-economic status has the effect of reducing access to, or utilization of, immunization and related PHC services.

Key Areas of Focus

Disadvantaged Populations

Identify and address low levels of coverage throughout the entire life course of the poorest and most disadvantaged individuals and communities

Key Evidence and Gaps

Over the next decade, increasing numbers of children will be living in urban areas, middle-income countries and sub-Saharan Africa. Moreover, with rapid urbanization, disparities both among and within urban areas are likely to grow.

Humanitarian crises, including armed conflict and natural disasters, are expected to become more common. Today, approximately two-thirds of unvaccinated children live in conflict-affected countries, many of them in a few large countries. Climate change is likely to impact human health, both directly, due to changing disease patterns, and indirectly, through environmental and social changes resulting from migration and displacement.

Adapting to these external threats will require a host of flexible managerial and service delivery interventions that need to be guided by a stronger focus on equity through health planning and monitoring. Rapid social and environmental changes will also require models of community engagement that enable rapid risk detection and operational responses to gaps in coverage. Adapting such flexible responses will be reliant upon programme capacity to identify accurate data on numbers and locations of populations eligible for vaccination. Reducing inequities will also require developing programme processes to better understand behavioural and community barriers to services, so that programme managers can adapt service delivery and communication strategies to local contexts.

Strategic interventions

Immunization strategies need to be tailored to reach under-vaccinated children, including those in remote rural communities, affected by conflict and insecurity, and living in urban slums. Strategies need to target disenfranchised and socially marginalized populations as well as the geographically remote. Rights-based approaches need to be adopted to prioritize underserved populations.

Countries need to commit to vaccination of all, and systematically use equity indicators during planning, service delivery, and monitoring to track progress in equitable service delivery. Vaccination stakeholders must identify, understand and address the determinants of vaccination inequities, and remove cost-related barriers to vaccination. Service provision and demand promotion need to be tailored to the needs of different population groups and the specific barriers they face.

Improved engagement by health providers and other stakeholders with communities will contribute to increased awareness of the right to health as well as deeper knowledge of vaccination and its benefits. As well as improving physical accessibility, programmes need to apply behavioural science techniques and human rights approaches to improve coverage and equity.

There is also a need to increase global and country knowledge of pro-equity policy, frameworks and monitoring systems, as well as country capacity to develop and translate such policies into practice. Such initiatives need to be fully integrated into national health policies and plans.

Assumptions and Risks: Achieving gains in immunization coverage in disadvantaged populations assumes that these communities and populations can be identified, are targeted by strategies appropriate to their specific community contexts, and that political and societal will is present to drive this process.

Barriers to Immunization

Identify barriers to uptake of immunization services based on age, location, social and cultural, and gender-related factors, and use evidence-based approaches to overcome these barriers to achieve high, equitable coverage.

Key Evidence and Gaps

Barriers impeding uptake of vaccines span multiple areas, including health systems, demand, characteristics of households and caregivers, and knowledge.⁶

System-related barriers include vaccine stockouts, missed opportunities, constraints on vaccine supplies, and the lack of robust systems to identify and track recipients. The costs of vaccination, including opportunity costs, logistics costs such as travel and vaccine costs, especially at private facilities, may also present financial barriers to access. These financial barriers to access relate to community factors, but also to overlapping health system factors such as availability of services and frequency or quality of outreach services. Wider PHC barriers include distance to services, lack of integration of immunization with other services, and the availability and attitudes of health workers. Lack of infrastructure, insufficient health care workforce, and weak programme leadership and governance can all limit the availability or quality of services.

Demand-related barriers include communication and information issues such as inaccurate or insensitive delivery of information from health workers, lack of interaction between vaccination programmes and the community, social disconnect or language barriers, and ineffective social media messaging. At the *family or household level*, factors associated with low immunization coverage include low caregiver education, poverty, family composition, ethnic or minority religious identity, conflict or insecurity, migratory lifestyle, family factors such as single-parent families and lack of day care. Gender-related and financial barriers can also limit access to PHC services. Barriers related to *caregiver attitudes and knowledge* include a lack of knowledge about the role of vaccination in disease prevention, fear of adverse events, cultural or religious beliefs, and more general mistrust of the health system. These barriers are interrelated and are compounded by weak data systems at subnational level to inform decision-making.⁷

6. Bosch-Capblach X. Assessment of Determinants of Unreached Children in Immunizations: Analysis of Survey Data. 2009. Basel, Switzerland: Swiss Tropical and Public Health Institute (unpublished report)

7. Rainey J, Watkins M, Ryman T et al. Reasons related to non-vaccination and under-vaccination of children in low- and middle-income countries: Findings from a systematic review of the published literature, 1999–2009. *Vaccine*. 2011;29(46):8215–21.

Strategic interventions

Immunization programmes need to map and understand the broader social and environmental determinants of under-vaccinated status. This understanding can be developed through community engagement strategies to identify barriers to immunization from a community perspective, and by identifying the social factors associated with under-vaccinated status. This information can be used to tailor vaccination services.

Because barriers to immunization are interrelated, a multi-pronged approach is needed. Context-specific approaches will require structured data systems to inform decision-making and programming. In addition to improving performance of service facilities, other system interventions must include improving vaccine supply, health worker and caregiver education, promptly identifying and addressing adverse events, improving planning and implementation processes to capture disadvantaged communities in urban, rural and conflict settings, and reducing missed opportunities for vaccination.

Demand-related interventions will be required to address parental education, cultural norms, gender-related barriers, and religious beliefs that may have an impact on a community's acceptance of vaccination. Political and community engagement to ensure both national and community leadership will be necessary to sustain commitment and acceptance of vaccination programmes.

Communication and demand promotion can make an important contribution to equity. Attention needs to be given to health workers' attitudes and interactions with caregivers, which influence demand and the likelihood that caregivers return for further services. However, demand-side initiatives cannot compensate for supply-side shortcomings. Measures to strengthen immunization programme performance are covered in IA2030 Strategic Priority 1, which identify the opportunities and benefits of closer integration of immunization with PHC systems to support universal health coverage.

In addition to proven strategies that have not yet been deployed at scale, new innovations have the potential to improve immunization coverage and equity, particularly in the areas of information and communication systems. New digital technologies will support monitoring and tracing of under-vaccinated children, use of reminder systems, and promoting school-checks of vaccination status. GIS technologies could be used more widely to map and target under-vaccinated populations. Electronic immunization registries need to be used to capture socio-economic determinants of vaccination in e-records.

More people-centred models of service delivery, outreach and communication need to be developed. This will include strengthening of community linkages, community-based services and community reporting, and use of behaviour change interventions. Civil society organizations (CSOs) need to be more involved in the design and delivery of vaccination services to marginalized populations.

Assumptions and risks: The main assumption is that identification of under-vaccinated populations, and understanding why they have not been vaccinated, is critical to the development of tailored interventions to achieve high and equitable

coverage. The main sustainability risks include an over-reliance on external support to implement tailored interventions, as well as implementation of immunization-specific approaches that are not integrated with other PHC services.

Gender-responsive strategies

Understand the role of gender in accessing immunization services, and implement gender-responsive strategies to overcome barriers faced by recipients, caregivers, service providers, and health workers.

Key evidence and gaps

Improvements in coverage and equity will require an understanding of how gender affects access to immunization services and gender-responsive strategies to overcome barriers faced by recipients, caregivers and health workers. Maternal education, age, agency, empowerment and access to services all affect the likelihood of immunization.⁸ Gender issues relating to the health workforce (e.g. recruitment, training, retention, remuneration, security, and promotion of women in the health workforce) also need to be considered, given that women form the backbone of successful community health systems.^{9, 10} Women and girls are the main beneficiaries of human papillomavirus (HPV) vaccination due to the public health impact of reduction in rates of cervical cancer. Expansion of access to immunization services to young people also provides the opportunity for wider access to treatment services, health screening, health education and other adolescent health programmes and services. It also provides opportunities for cross-sectoral communications and community engagement, and integration of immunization programmes into PHC services across the life-course.¹¹

Strategic interventions

Promising strategies to overcome gender-related barriers to health interventions have been identified. These include: widening the audience for information, education and communication strategies; strengthening and sustaining social mobilization in under-immunized communities; encouraging fathers' greater participation in children's health care; making adjustments to service provision based on community perspectives of quality; and increasing local support and promoting a shared sense of purpose and accountability (for example, with women's groups).

Engagement of female health workers can improve the provision of PHC services in the community and better meet the health needs of women and children for family planning, antenatal care and services such as immunization. There is some evidence that employment of female community health care workers has improved health coverage and the health status of local populations.¹²

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8. Feletto M, Sharkey AB. The influence of gender on immunisation: using an ecological framework to examine intersecting inequities and pathways to change. *BMJ Glob Health*. 2019;4:e001711. doi:10.1136/bmjgh-2019-001711.
 9. Mumtaz Z, Salway S, Waseem M, Umer N. Gender-based barriers to primary health care provision in Pakistan: the experience of female providers. *Health Policy Plan*. 2003; 18:261–9. doi.org/10.1093/heapol/czg032.
 10. Boniol M, McIsaac M, Xu L, Wuliji T, Diallo K, Campbell J. Gender equity in the health workforce: Analysis of 104 countries. 2019. Geneva: WHO. Available at <https://apps.who.int/iris/bitstream/handle/10665/311314/WHO-HIS-HWF-Gender-WP1-2019.1-eng.pdf>
 11. Feletto M, Sharkey A, Rowley E et al. A Gender Lens to Advance Equity in Immunization. 2018. New York: Equity Reference Group for Immunization
 12. Jalal S. The lady health worker program in Pakistan—a commentary. *Eur J Public Health*. 2011; 21(2), 143–144. <https://doi.org/10.1093/eurpub/ckq199>

A core set of indicators are needed to enable countries to identify and monitor gender-related barriers to immunization and to assess the impact of interventions to address them.

Expansion of immunization across the life-course raises gender and equity issues. Additional recommendations of the Equity Reference Group on Immunization¹ include assessing context-specific household decision-making dynamics and key influencers within communities to plan, implement and monitor immunization services for the most vulnerable. Rollout of HPV vaccination illustrates that new delivery platforms (including school-based vaccination) and more tailored strategies may be required, since adolescent health is not yet recognized as a specific target for health programming at scale¹³ Integration of immunization services with a broader package of primary care services will provide an opportunity to expand access to other priority interventions such as family planning, essential obstetric care, nutrition services and management of the sick child.

Existing funding opportunities need to be used to support pro-gender demand and supply-related strategies and interventions. With the support of global partners and donors, countries need to explore opportunities for transformative approaches to influence social norms that drive gender inequality. Gender should be incorporated into broader equity-focused analyses and strategies. In addition, greater attention to 'intersectionality' (the need to consider gender with other dimensions of inequality such as poverty, ethnicity and age) is likely to enhance the impact of gender-related strategies to address access barriers.

Assumptions and Risks: The success of gender equity approaches will rely on adequate investments being made to increase the awareness of gender equity among stakeholders, so that gender can form an integral part of the design and delivery of immunization and PHC programmes and services. The main risk in applying a gender perspective to immunization programme planning, services and communication strategies is that these perspectives can run counter to prevailing institutional and social norms.

Measles as a tracer

Use measles cases and outbreaks as a tracer to identify weaknesses in immunization programmes, and guide programmatic planning to identify and address these weaknesses.

Key Evidence and Gaps

Historically, immunization programmes have relied on DTP coverage as the main indicator of coverage and immunization programme performance. While DTP3 coverage is useful for describing the ability of routine immunization programmes to reach children multiple times in their first year of life, it tends to reflect mostly services in the first six months of life. A more complete view of immunization programme performance is provided by looking at the ability of a programme to deliver two doses of measles-containing vaccine (MCV1, MCV2).

13. Feletto M, Sharkey AB. Broadening the perspective on gender equity in immunization: the unique contributions of human papillomavirus vaccination. *Vaccine* 2019;37:5920–2.

Reducing the number of zero-dose and under-vaccinated children will become a critical performance measure for the reduction in immunization and PHC inequities and attainment of universal health coverage. Given its high levels of infectivity and the visibility of outbreaks, measles can serve as a tracer of zero-dose children and missed communities. Measles and rubella incidence can therefore serve as additional indicators of immunization programme performance.

Coverage, surveillance and outbreak data can enable managers to target specific geographical areas or populations to reach missed children and communities. Measles outbreaks provide opportunities to identify causes of under-vaccination so corrective actions can be implemented.

Strategic interventions

If measles is to serve as tracer, increased investments are required to strengthen measles and rubella surveillance. For measles outbreaks to be used as an opportunity for system improvement, assessments need to occur within communities to determine root causes of under-immunized status. Follow-up investments and corrective measures can then be made to address the identified system weaknesses.

Assumptions and Risks: For measles to work as a tracer, effective surveillance systems for measles and rubella require universal reach and extension to remote geographical areas and within disenfranchised communities. Weakness of surveillance systems in many settings, particularly related to laboratory systems, will be a risk to success. Success is also dependent on the ability to triangulate surveillance and outbreak data with coverage data to identify subnational priorities for immunization programme management. However, countries that have separated these functions (immunization, surveillance, outbreak response) may be less able to successfully coordinate activities.

Learning from Disease-Specific Initiatives

Use the experiences from disease eradication and elimination initiatives in reaching the most marginalized populations, integrating successful strategies for delivery and accountability into the full immunization programmes.

Key Evidence and Gaps

Global disease-specific initiatives, such as for polio eradication, measles and rubella elimination, and maternal and neonatal tetanus elimination, have generated evidence on use of equitable strategies and interventions to improve reach and coverage. The Global Polio Eradication Initiative (GPEI) was founded on the principle of reaching every child everywhere with the polio vaccine. Equity-centered strategies have been required to reach populations underserved by national immunization and health systems, such as those living in areas of conflict, in urban slums, internally displaced populations, and mobile populations such as nomadic and pastoral populations.

Strategic interventions

There are opportunities to draw on GPEI experience and expertise to strengthen national immunization and health systems, for example to improve governance and leadership, policy development and strategic planning, and management and coordination of partnerships.

Much can also be learned in the areas of information management and surveillance, drawing on the GPEI's focus on oversight and independent monitoring and evaluation, research and innovation, monitoring of programme accountability and performance, real-time disease surveillance, response capacity and data analysis.

Programmes can also learn from the way that the GPEI has addressed other coverage and equity-related issues such as reaching children in conflict-affected areas and investing in communication and community engagement to mobilize community support for vaccination. Detailed community-level microplanning has been used to identify under-vaccinated children. Community approaches have included use of social and behavioural data gained through community engagement to improve vaccine demand and uptake, as well as use of data gathered by community networks for defaulter and drop-out tracking. Other important approaches include delivery of integrated campaigns, including support for emergency programmes such as responses to measles, Ebola and cholera outbreaks within GPEI activities.

Assumptions and Risks: A key assumption underlying success of disease control initiatives is that there is strong programmatic oversight and linkages are established between disease eradication and elimination initiatives, and that programme frameworks ensure these key strategies and lessons are transferred and integrated across the wider immunization programme. However, even with these innovations in place, there is a risk that programmatic siloing of disease initiatives, along with reduced access to financial and technical resources, will limit the capacity of wider immunization programmes to absorb and implement the required reforms and innovations.

Context-specific initiatives

Develop, evaluate, and scale up innovative, locally tailored, evidence-based, and people-centred approaches to reach poorly served populations.

Key Evidence and Gaps

The development of effective strategies to reach underserved populations, address issues of vaccination acceptance/hesitancy and foster demand for immunization services requires an understanding of the specific social and psychological determinants of the vaccination decisions of different populations, and how these determinants relate to the context in which people live and interact with health services.^{14,15}

14. Butler R, Habersaat KB. Commentary: Embracing social sciences to improve population health. *Vaccine*. 2019;37(35):4835-4837. doi: 10.1016/j.vaccine.2019.01.042.

15. Thomson A, Vallée-Tourangeau G, Suggs LS. Strategies to increase vaccine acceptance and uptake: From behavioral insights to context-specific, culturally-appropriate, evidence-based communications and interventions. *Vaccine*. 2018;36(44):6457-6458.

Social and behavioural research will provide evidence to tailor the design of more people-centred immunization services to marginalized and underserved populations. Characterization of the underlying drivers of vaccine uptake can inform service delivery design, quality and accountability, development of effective social and behavioural change communication strategies, and guide resource allocation to improve the availability and appropriateness of services. The concept of people-centred PHC also implies a stronger role for community stakeholders in policy development and implementation, planning, management and monitoring of service delivery.¹⁶

Strategic interventions

Pro-equity programming will require countries to develop capacities to characterize vulnerable and underserved populations and make actionable to ensure that service delivery is aligned with specific local community characteristics. This will require immunization programmes, particularly at the subnational level, to better understand barriers to service use among the populations they serve, and inform the development of interventions that are more tailored to the needs of these communities. It will also be important for evaluating the effectiveness of interventions. In this way, strategic interventions will be more evidence-informed, multi-pronged, and involve multi-stakeholder initiatives tailored to local realities.

A re-assessment of the role of new and traditional media and broader engagement of other local stakeholders regarding their roles in developing, evaluating and scaling up innovative behaviour change strategies that are adapted to local contexts will also be necessary. Communication and service delivery strategies for underserved populations must be enabled through local research that will provide the basis for more evidence-based and people-centred health care services.

Assumptions and Risks: The main assumption underlying successful implementation of context-specific strategies is that ministries of health and national immunization programmes, in collaboration with international and local research institutes and partners, commit to extending programme capacity and services to underserved groups. Primary risks to be managed are: (1) lack of political will at national or subnational levels such that pro-equity strategies, actions and resources are not adequately integrated into national immunization plans and service delivery strategies; and (2) uneven or inadequate commitment and/or capacity, especially at the subnational level, to generate the necessary contextual, social and psychological insights to characterize the needs of underserved communities and develop tailored approaches to increase community uptake of services.

16. WHO. WHO Framework on integrated people-centred health services. <https://www.who.int/servicedeliverysafety/areas/people-centred-care/en/>

Implementation research

Strengthen local capacity to conduct implementation research to identify factors affecting the equity of immunisation coverage, interventions that enhance coverage and equity and to promote use of the results to implement locally tailored and context-specific interventions and innovations to address inequalities.

Evidence and Gaps

Implementation research can accelerate the implementation and scale-up of evidence-informed policy and practice.^{17, 18, 19, 20}

When decision-makers and programme implementers are embedded in the process of research, it is more likely to focus on understanding and solving implementation challenges relevant to local contexts. Research is also more likely to be aligned with local planning, funding and policy cycles, and to generate actionable recommendations. Local priority setting and participation in research by communities and implementers will provide greater opportunities for innovation and create a greater sense of ownership of solutions.

Research can generate insights into the programmatic and community factors affecting access, acceptance or use of services. Based on these insights, research can also be used to evaluate the effectiveness of redesigned services to determine whether they are more responsive to the needs of socially marginalized or hard-to-reach populations. Implementation research can also identify practical challenges and implementation barriers and how they can be overcome.

Strategic interventions

The main strategic interventions are increased participation of stakeholders in research, capacity building in implementation research, and enhanced translation of research findings into policy and practice.

By engaging governments, service providers and communities so that research focuses on their priority questions, research will be more responsive to implementers' and community needs, and research findings are more likely to be translated into practice and implementable at scale. This approach requires capacity building to enable implementers and communities to engage in the research process, and to ensure that they can integrate research findings and recommendations into programme activities. Capacity building at local research institutions may also be required. These activities need to happen at the level at which decision-making about programmatic changes can occur (i.e. at the appropriate level of decentralization within a country).

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17. Theobald S, Brandes N, Gyapong M, El-Saharty S, Proctor E, Diaz T et al. Implementation research: new imperatives and opportunities in global health. *Lancet*. 2018;392(10160):2214-28.
 18. Alonge O, Rodriguez DC, Brandes N, Geng E, Reveiz L, Peters DH. How is implementation research applied to advance health in low-income and middle-income countries. *BMJ Glob Health*. 2019; 4:e001257.
 19. Rubenstein LV, Pugh J. Strategies for promoting organizational and practice change by advancing implementation research. *J Gen Int Med*. 2006; 21 Suppl 2:S58-64.
 20. Ghaffar A, Langlois EV, Rasanathan K, Peterson S, Adedokun L, Tran NT. Strengthening health systems through embedded research. *Bull World Health Org*. 2017;95(2):87.

Assumptions and Risks: A key assumption is that decision-makers will be motivated and competent to use implementation research to improve programme performance. There is also a need for funders to commit to supporting implementation research. A main risk is that insufficient resources are mobilized to support research capacity building for government, service providers and community organizations.

Resources

- Equity Reference Group (ERG) discussion papers, available at: <https://sites.google.com/view/erg4immunisation/discussion-papers>
- Missed Opportunities for Vaccination, available at: https://www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/
- Gavi gender policy, available at: <https://www.gavi.org/sites/default/files/document/gavi-alliance-gender-policy.pdf>
- Gavi programme guidance for data, available at: <https://www.gavi.org/sites/default/files/document/programming-guidance---datapdf.pdf>
- Gavi programme guidance on urban immunization, available at: <https://www.gavi.org/sites/default/files/document/programming-guidance---urban-immunisationpdf.pdf>
- Global Routine Immunization Strategies and Practices (GRISP), available at: https://www.who.int/immunization/programmes_systems/policies_strategies/GRISP/en/
- Global Vaccine Action Plan (GVAP) 2011-2020, available at: https://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/
- Human-centered design for health, available at: <https://www.hcd4health.org/>
- SAGE DoV GVAP Assessment report 2019, available at: https://www.who.int/immunization/documents/who_ivb_18.11/en/
- Urban immunization toolkit, available at: <https://www.technet-21.org/en/library/main/5059-urban-immunization-toolkit>
- WHO Regional Office for Africa. Reaching Every District (RED) 2017 Edition. A guide to increasing coverage and equity in all communities in the African Region. Available at <https://www.afro.who.int/publications/reaching-every-district-red-guide-increasing-coverage-and-equity-all-communities>
- WHO Regional Office for Europe. The Guide to Tailoring Immunization Programmes (TIP). Available at <http://www.euro.who.int/en/health-topics/communicable-diseases/poliomyelitis/publications/2019/tip-tailoring-immunization-programmes-2019>
- Feletto M, Sharkey A, Rowley E et al. A Gender Lens to Advance Equity in Immunization. 2018. New York: Equity Reference Group for Immunization. Available at <https://sites.google.com/view/erg4immunisation/discussion-papers>
- WHO. Working Together: WHO integration resource guide for immunisation services throughout the life course. https://www.who.int/immunization/documents/ISBN_9789241514736/en/

- WHO. Vaccination in Acute Humanitarian Emergencies. A framework for decision making. Vaccination in Acute Humanitarian Emergencies. Implementation guide. https://www.who.int/immunization/documents/who_ivb_17.03/en/
- Global Health Observatory Health Equity Monitor Interactive Data Visualization https://www.who.int/gho/health_equity/interactive_data_visualizations/en/
- WHO Global Health Observatory Explorations of inequality: Childhood immunization on the WHO Global Health Observatory (GHO). https://www.who.int/gho/health_equity/report_2018_immunization/en/
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