Measuring and assessing effectiveness in preventive nutrition and public health programmes: a closer look at the global vitamin A supplementation programme

Project report
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Contents

Acknowledgement

Acronyms

COVID-19	Corona Virus Disease
DHS	Demographic Health Survey
DTP	Diphtheria, Tetanus and Pertussis
EPI	Expanded Programme on Immunization
GHO	Global Health Observatory
INGOs	International Non-Governmental Organizations
IU	International Units
KAP	Knowledge, Attitudes and Practices
LMICs	low- and middle-income countries
LQAS	Lot quality assurance sampling
MICS	Multiple Indicator Cluster Survey
PHC	Primary Health Care
PHCPI	Primary Health Care Performance Initiative
UN	United Nations
UNICEF	United Nations Children's Fund
VADD	Vitamin A Deficiency Disorder
VAS	Vitamin A Supplementation
WHO	World Health Organization

Executive summary

A core component of health system strength is the ability of a system to deliver essential preventive health and nutrition services, such as the vitamin A supplement, and to respond effectively to disease outbreaks. In the post-COVID era, effectiveness in delivery becomes perhaps more important as service delivery is scaled back up and health systems are built-back-better. But what do we mean by 'delivery effectiveness'? Public health and nutrition programmes typically rely on coverage when assessing and evaluating performance, and coverage continues to be used by decision makers for programme planning as the default parameter of service delivery effectiveness. This is because of the clear advantages of using coverage to measure programme performance. Coverage data are relatively widely available, can be compared at national and subnational level, and are in most cases accepted as relevant by all stakeholders.

The effectiveness of community-based health and nutrition interventions to improve maternal, neonatal, and child health and nutrition is well documented, and such interventions contribute significantly to reducing morbidity and mortality. What is also clear, however, is that many community-based interventions are insufficient in scale-up and reach. The benefits of many delivery programmes do not reach enough children, and often systematically miss children who are most exposed to health risks, such as infections. Although as a summary measure of overall programme performance, coverage reflects a range of delivery system strengths and weaknesses, it offers limited means to identify exactly what those strengths and weaknesses are. High overall coverage may thus mask poor service delivery performance in specific target populations, whereas low overall coverage provides scarce indication as to where changes in service delivery need to be made for course correction. Significant gaps therefore remain in our understanding of whether and why some community-based interventions are delivered more effectively than others. To address such gaps, we need operational clarity on what constitutes an effective intervention delivery strategy. A first step towards that goal is a more granular understanding of performance in preventive nutrition and public health programs.

Effectiveness parameters and measures

The aim of UNICEF's Health Care Delivery Effectiveness project is to go beyond coverage and explore ways to dissect the notion of service delivery effectiveness into its constituent parts – or effectiveness parameters. In the project, delivery effectiveness parameters are defined as an element of the public health and nutrition delivery system that is sufficient and necessary when identifying that system, and when evaluating its performance, status, and condition. The premise is therefore, that the performance of a health and nutrition service delivery programme can be broken down into discrete functions or outcomes that can subsequently be measured and analysed.

Good effectiveness parameter measures enable delivery programmes to assess and improve effectiveness, through the development of delivery strategies and/or through monitoring and assessment of programme delivery. From the perspective of programmes, measures of effectiveness must pass two tests to be helpful. First, the measure must capture all relevant aspects and interpretations of its corresponding parameter; and second, the measure must enable a distinction between a programme that is effective and one that is not effective, in relation to the effectiveness parameter that is measured. The effectiveness measure must also have sufficient relevant data available to enable analysis.

Although the question of effectiveness measures beyond coverage is relevant to a wide range of public health and nutrition programmes, this project explores relevant delivery effectiveness parameters in global vitamin A supplementation (VAS) programmes.

VAS is one of the world's largest public health programs, which reaches approximately 250 million children who are at increased risk of vitamin A deficiency across almost 70 countries every year. Supplementing children aged 6-59 months with a high dose of vitamin A is a highly effective public health intervention in deficient populations – and saves millions of lives every year. However, because supplementation does not address underlying causes of deficiency, it must be repeated every four to six months – or until dietary intake of vitamin A is sufficient.

VAS was chosen as the focus of the analysis because it is a community-focused delivery programme that showcases many of the advantages and limitations of coverage-based measurements of effectiveness. Regular administration of high-dose supplements to children 6-59 months old every four to six months reduces the risk of child mortality by 12-24% in communities where vitamin A deficiency is prevalent.

The project

The project followed a comprehensive process to explore the literature and ask practitioners and decision-makers what they find are the most important parameters of effectiveness, in addition to coverage. In developing a comprehensive set of effectiveness parameters, the project started by looking at what is arguably the best conceptual framework for service delivery through the health system – the Primary Health Care Performance Initiative (PHCPI) conceptual framework. Based on this framework, relevant parameters were identified. These key parameters were then explored for relative importance in a review of the literature and in a comprehensive public consultation exercise. The consultation exercise also aimed to identify the most common challenges or barriers to using effectiveness parameters of effectiveness beyond coverage in decision-making. For the most important parameters, suggested measures were identified for the analysis of mass VAS programmes.

Key findings

Through our scoping review that included a stakeholder consultation, we were able to identify 11 relevant parameters of service delivery effectiveness beyond coverage. Core services delivery effectiveness parameters are summarised in the table below in order of importance:

Parameter	Definition
Equity	Children who are missed with the services and interventions are not experiencing other deprivations.
Access	The programme ensures access to services and interventions, and minimizes physical, logistic, social, cultural, or financial barriers that can prevent community participation in service delivery.
Sustainability	Supply of, or benefits from, the delivery program continue over time without interruption; program funding is from domestic (government) sources).
Availability	Sufficient, appropriate commodities and healthy workers are available in a timely manner.
Community acceptance	Community members are willing to use services and interventions delivered through the programme, ranging from active demand to active refusal.
Resilience	The programme absorbs shocks and sudden disruptions; it continues or resumes core functions quickly. Also referred to as robustness.
Responsiveness	The delivery program is able to pivot to the changing circumstances and needs of the population.
Efficiency/ cost-effectiveness	The programme maximizes the reach and uptake of services and interventions from available resources.
Clinical outcomes	The programme achieves a reduction in mortality, morbidity, and/or is improving quality of life.
Community awareness	Community members know about the service, why it is being delivered, and when it is taking place.
Service quality	Services and interventions are provided safely, in a timely manner and in a way that is people-centred.

Literature review

The literature review found that access, equity, and efficiency to be the most frequently reported parameters in included studies. Quoted less frequently were service quality and sustainability. The review found that the least reported parameters were community awareness, community acceptance, availability, resilience, and responsiveness. The last parameter, clinical outcomes, was not included in the review search terms because it was found to shift the focus towards effectiveness of interventions and away from effectiveness in service delivery. However, since clinical outcomes are critical for programmatic purposes, they were included in subsequent stakeholder consultations.

Stakeholder consultation

When asked to rank parameters according to importance, decision-makers prioritized availability, access, equity, service quality, sustainability, clinical outcomes, and community acceptance. Community awareness, efficiency, resilience, and responsiveness were perceived as relatively less important. Notable differences were seen in parameter ranking between respondents working with a global focus compared

with those with a non-global focus to their work (e.g., national, subnational). Service quality and clinical outcomes were thus ranked higher by those working at the global level than those working with a non-global focus. Conversely, non-global respondents ranked community acceptance highly, whereas global respondents tended to rank it lower. Surprisingly, resilience and responsiveness did not feature prominently in the stakeholder consultation, particularly considering COVID-19 related service disruptions at the time of the survey.

Prioritisation of parameters

Based on the literature review and stakeholder consultations, equity, access, sustainability, availability, and community acceptance were identified as service delivery effectiveness parameters of prime importance for decision makers. Resilience, responsiveness, efficiency, community awareness, and service quality were identified as parameters of potential importance, but that so far have not been given much attention. These effectiveness parameters are presented in the conceptual framework below.

Conceptual framework to assess delivery effectiveness of health and nutrition services

The minimum parameter to measure in health and nutrition service delivery coverage is coverage with consideration of Tier 1 parameters and Tier 2 parameters as programmes evolve based on available resources and local situations. The conceptual framework is a guide for decision-making at the national or sub-national level, and the importance of certain parameters over others is context-specific.

Source: Vitamin A delivery effectiveness survey results, 2021.
Notes: This illustration represents the first version of the conceptual framework.

The consultation exercise identified challenges in generating and obtaining data on specific parameters; challenges in analysing and using data; and challenges in prioritization and planning according to effectiveness parameters and measures as the most common barriers to using effectiveness parameters of effectiveness beyond coverage in decision-making. To explore linkages between effectiveness parameters and programme operations, the project explored the availability and use of data at the national and subnational levels and how these parameters could be measured. This was done with a specific focus on VAS programmes and five of the most important parameters: access, availability, community acceptance, equity, and sustainability.

The analysis of these five parameters found that effectiveness measures depend crucially on data availability. A limitation of this study is that it focused on data that are available globally and therefore found relevant data to be missing for some of the effectiveness parameters. There were shortfalls in globally available data in areas such as community acceptance. However, data may be available for these parameters at local level. Other parameters (e.g., availability) had better global data availability, from surveys, administrative coverage data, and global disease burden data.

Conclusion

This study established that it is possible to break down the performance of nutrition and public health preventive programmes into distinct parameters, and thereby assess and measure their effectiveness. We specified 11 effectiveness parameters, which seem to capture most or all that we would consider relevant in such an assessment. However, although the analysis of VAS programmes presented here suggests a particular approach to assessing delivery effectiveness, key knowledge gaps remain. One such gap relates to uncertainty about definitions and practical implications of specific parameters and accompanying measures. Knowledge gaps also exist around the way in which information on effectiveness parameters is used in strategy-setting, programme related decision-making, and monitoring of activities.

The VAS analysis suggests that the solution to both these problems may be found in national and subnational data, which could facilitate both selection and prioritization of parameters and their measures, and the use of the information in decision-making.

The results of this analysis are an initial step towards identifying aspects of intervention and service delivery beyond coverage. However, the analysis presented here is high-level and adopts a global perspective, and at the same time, it is programme-specific, with its focus restricted to VAS.

Future analysis may further explore linkages between effectiveness parameters and operational realities in countries, including 'deep dives' into country contexts.

Chapter

1

Introduction, background, and rationale

Key messages in this chapter

- Programme delivery requires a better understanding of what constitutes effective delivery of public health and nutrition programs.

- Programme effectiveness can be broken down into discrete performance parameters.

- Vitamin A supplementation (VAS) is one programme that has not looked beyond coverage in crests to optimize performance.

Since the Declaration of Alma-Ata in 1978 on primary health care (PHC) and the updated declaration in Astana in 2018, low- and middle-income countries (LMICs) have started to reform health systems to deliver essential health and nutrition services at the most local level, the community, to accelerate progress toward public health goals.[1] The effectiveness of community-based health and nutrition interventions to improve maternal, neonatal, and child health and nutrition is well documented, and such interventions contribute significantly to reducing morbidity and mortality.[2] What is also clear, however, is that many community-based interventions are insufficient in scale-up and reach. The benefits of many delivery programmes do not reach enough children, and often systematically miss children who are most exposed to health risks, such as infections. Significant gaps remain in our understanding of whether and why some community-based interventions are delivered more effectively than others. To address such gaps, we need operational clarity on what constitutes an effective intervention delivery strategy. A first step towards that goal is a more granular understanding of performance in preventive nutrition and public health programs.

Public health and nutrition programmes typically have a singular focus on coverage – the percentage of a target population reached with a service or intervention during a specific period of time – as the ultimate measure of the effectiveness. Coverage is one summary measure of overall programme performance, reflecting a wide range of delivery system strengths and weaknesses; however, as an effectiveness measure, it offers no means to identify what exactly those strengths and weaknesses are. High overall coverage may mask poor service delivery performance in specific target populations thereby allowing disease burden to remain high despite high coverage, whereas low coverage may not provide sufficient evidence for programme planning. Despite these challenges, coverage remains the main measure

of service delivery performance and continues to be used by decision makers for programme planning as the default parameter of service delivery effectiveness. To better understand why health and nutrition service delivery is effective – or not, more nuanced measures of delivery system performance are needed for policy and strategic evidence-based decision-making.

Parameters and measures of effectiveness

The aim of UNICEF's Health Care Delivery Effectiveness project is to explore ways to dissect the notion of delivery effectiveness in public health programmes, and to break it down into its constituent parts, or parameters. Parameters are features or characteristics that we can use to describe the public health delivery system and draw conclusions about its effectiveness. Specifically, we define delivery effectiveness parameters as follows:

A delivery effectiveness parameter is an element of the public health service delivery system that is sufficient and necessary when identifying that system, and when evaluating its performance, status and condition.

This project explores relevant delivery effectiveness parameters in addition to coverage, with a particular focus on global vitamin A supplementation (VAS). The project also suggests measures that will enable the tracking of effectiveness, vis-à-vis each identified effectiveness parameter. Ultimately, once relevant parameters and accompanying measures and data are identified, programme analysis can be used to diagnose barriers to delivery, track progress and assess the effectiveness of corrective action. This project includes only the initial steps towards that vision, however, and additional investigation is needed to develop the approach and make it relevant in the country context. Future work should include

further exploration of how to recognize, interpret and prioritize effectiveness parameters within the country and subnational context, identify locally available data, define context-relevant measures and apply findings within a decision-making process for planning and delivery.

Vitamin A supplementation

Mass VAS was chosen as the focus of the analysis of delivery parameters because it is a community-focused delivery programme that showcases many of the advantages and limitations of coverage-based measurements of effectiveness.

The World Health Organization (WHO) recommends that children aged 6–59 months receive two age-appropriately timed doses of VAS (100,000 international units (IU) for infants aged 6–11 months and 200,000 IU for children aged 12–59 months) every 4–6 months until the last dose is administered between 54 and 59 months of age. Repeated dosing is required because supplementation does not address the underlying causes of deficiency. Prior to the COVID-19 pandemic, VAS programmes reached approximately 250 million children annually in about 70 countries. In 2018, UNICEF classified 64 of these as at high-risk of deficiency. In the high-risk countries, the supplement is delivered using a mix of strategies, which can be categorized as either mass campaign events, or based on the routine health system, for example routine childhood immunization sessions, and other visits to a clinic or health post. Countries often use more than one delivery mode. Primarily as a result of a diminishing number of polio vaccination campaigns, which were previously used as a campaign vehicle for co-delivery of VAS, a gradual shift from delivery through campaigns to routine delivery is expected in many countries.

The benefits of VAS in populations at risk of vitamin A deficiency, primarily a significant reduction in mortality in those aged under 5 years, are well established.[3] However, at least globally, coverage remains the principal measure of effectiveness of supplementation programmes. This is because data

on vitamin A status and vitamin A deficiency-related mortality and morbidity are scarce and severely limited. The vitamin A status of children can only be assessed in micronutrient surveys using serological biomarkers. These surveys are few and far between. Dietary data are more complicated to interpret and challenging to link to deficiency, and mortality estimates typically rely on mathematical modelling that draws exclusively on VAS coverage because of absent or lacking national vital registration systems. In addition, for both biomarker and dietary analyses, multiple, sometimes contradictory, indicators are used to evaluate varying aspects of vitamin A status, which makes understanding burdens challenging, even in data-rich contexts. Moreover, data on inputs, for example supply and workforce statistics, are also typically too crude on which to base conclusions about a programme's effectiveness.

Therefore, at a global level, we are left primarily with coverage as a useful measure of effectiveness, although within individual countries, other context-relevant data may be available. Global coverage data suggest that VAS programmes are failing. Across all countries that have national VAS programmes, coverage with the required two annual doses of the supplement has stagnated at about 60 per cent in recent years – and experienced a large drop in 2020 following service disruptions in the aftermath of the COVID-19 pandemic. Moreover, administrative data that inform assessments of two-dose coverage are often of varying and unknown quality.

One plausible explanation for longer-term suboptimal coverage in VAS programmes is the success of other strategies for addressing vitamin A deficiency in younger children, including the promotion of a sufficiently diverse diet that will supply adequate quantity of vitamin A or industrial fortification. The last 20 years have seen under-5 mortality rates drop significantly globally, which one would expect to be, in part a result of reduced vitamin A deficiency. It might be argued that the success of strategies to address deficiency may have diminished the need for supplementation, and that programmes are reflecting this by reducing intensity in implementation. However, the assumption that other strategies are doing away

with a need for supplementation is questionable and strong indications exist that VAS programmes are still needed. In LMICs, almost three in four (72%) children aged 6–23 months are not fed a minimum diverse diet to meet their nutrient needs and are at high risk of not meeting their vitamin A requirements.[4]

To compensate for these shortcomings, some countries have introduced industrial fortification of commonly consumed food items and condiments (e.g., oil, sugar, rice, maize flour, wheat flour, bouillon cubes) with vitamin A, intended to broadly fill gaps in vitamin A requirements throughout populations. Well-implemented industrial vitamin A fortification programmes have the potential to increase vitamin A intake to adequate levels. However, limitations to industrial fortification programmes may leave some vulnerable groups at continued risk for vitamin A deficiency. First, industrial fortification programmes have demonstrated lower coverage and dietary contributions for populations with the lowest vitamin A intake, notably rural populations of low socioeconomic position who have poorer access to fortified foods. Second, children have disproportionately lower consumption patterns of some vitamin A-fortified foods compared with adults, suggesting that industrial fortification may not be as effective at reaching children. For children not obtaining adequate vitamin A intake from their diet or from industrial fortification, VAS will remain a necessary intervention.

Both the inadequate contributions from the diet and the limited effectiveness of industrial fortification programmes suggest a continued need for VAS in at least some countries. No doubt the debate on continuation of VAS will continue; however, regardless of the success of other strategies, current coverage estimates suggest that VAS programmes generally are not optimally effective. It is not known from the coverage estimates what exactly causes suboptimal performance. In a particular country, is coverage low because of the supplementation programme's inability to ensure supply of the supplement, engage communities or reach the most disadvantaged children? The present project aims to put decision makers in a better position to answer such questions.

Health care delivery effectiveness project

The project follows a comprehensive process to ask practitioners and decision-makers what they find are the most important parameters of effectiveness, in addition to coverage. From the 11 delivery effectiveness parameters identified, we select the five that are found to be particularly important: access, availability, community acceptance, equity and sustainability. For each of these five parameters, we then identify suggested measures to enable the analysis of mass VAS programmes. We propose that such measures, in the form of additional parameters of delivery effectiveness, can be applied alongside coverage in a comparative assessment of the effectiveness of delivery strategies. To our knowledge, this is the first synthesis of evidence focused on parameters of health care delivery effectiveness beyond coverage.

The project report is organized as follows. This first chapter introduces and discusses the need for ways to assess and monitor the performance of public health programmes, looking beyond the coverage of interventions in the population. Chapter 2 is an account of the outcomes of a scoping review, consisting of a review of current uses of effectiveness parameters in the published literature, as well as a comprehensive stakeholder consultation exercise in the form of an online survey and one-on-one interviews. Five core parameters are identified from an initial list of 11 effectiveness parameters: access, availability, community acceptance, equity and sustainability. Chapter 3 describes suggested measures for each of the five core parameters and discusses their strengths and weaknesses. In Chapter 4, we explore these measures using national-level population-based survey data in 13 countries and identify knowledge gaps related to the parameters and their measures in Chapter 5. We conclude in Chapter 6 by suggesting steps for prospective next phases of the work on delivery effectiveness.

Chapter

2
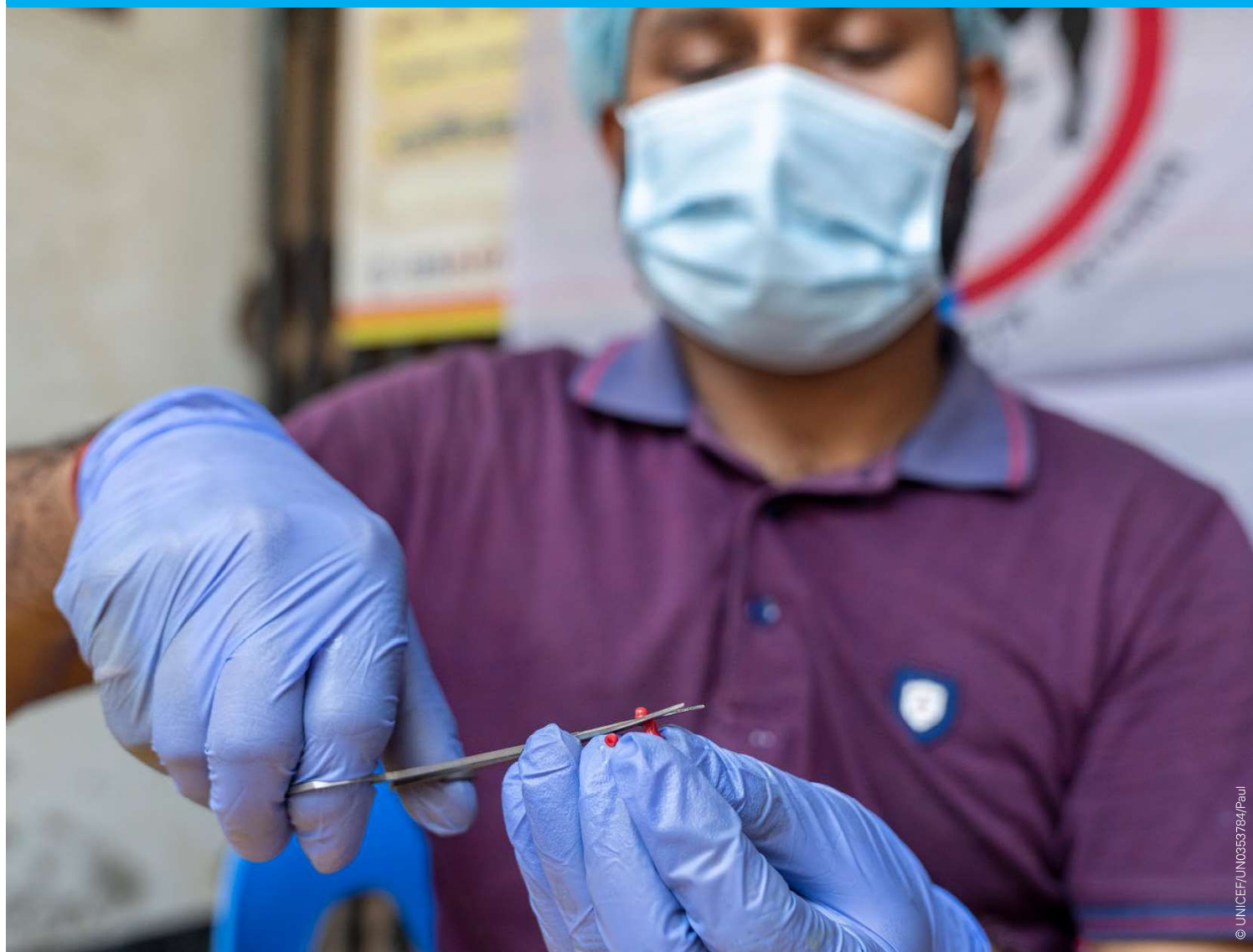
Identification of effectiveness parameters beyond coverage

Key messages in this chapter

- A review of the literature and an online consultation identified 11 core effectiveness parameters.

- The parameters availability, access, equity, sustainability, community acceptance, clinical outcomes, and service quality were found to be highly important in the assessment of delivery effectiveness.

- Parameters, community awareness, efficiency, resilience, and responsiveness were less important to stakeholders.

Overview

To start bridging the knowledge gaps on what constitutes an effective intervention delivery strategy, a scoping review was undertaken to explore current perceptions and use of service delivery effectiveness parameters in community nutrition and health programmes in low- and middle-income countries (LMICs).[5] Scoping reviews provide a structured approach to exploring and reviewing health research.[6] Our scoping review, which encompassed both a review of relevant studies as well as a stakeholder consultation, aimed to answer the following question: What are the most commonly used parameters of effectiveness of community nutrition and health service delivery in LMICs, beyond coverage?

First, through the literature review, we were able to identify several parameters of service delivery effectiveness beyond coverage. We used these preliminary findings as a foundation from which to inform a stakeholder consultation. Through the consultation, we explored the knowledge, the attitudes and practices of practitioners involved in delivery of a range of health and nutrition service delivery programmes to validate the parameters found in the literature review and identify knowledge gaps. The consultation comprised an online survey followed up by interviews with a subset of survey respondents to gather more nuanced perspectives from key practitioners.

Parameter identification

An iterative process was used to identify the parameters included in the scoping review. The process began with a mapping exercise to understand existing frameworks, leading us to the 2016 Primary Health Care Performance Initiative (PHCPI) conceptual framework of an effective primary health care (PHC) system. The PHCPI framework informs the development and measurement of strong PHC systems, with service delivery at its core (Figure 1).[7] The framework also references earlier health system models, such as Tanahashi's model of health system coverage, which includes measures of acceptability, access and availability as well as effective coverage,[8] and Starfield's key characteristics of high-performance PHC systems (including access, equity, sustainability and quality).[9] Additionally, the PHCPI framework integrates the WHO health systems framework, which includes service delivery as one of its six building blocks.[10] The WHO compendium of indicator definitions for health and nutrition services, which is

part of the WHO Global Health Observatory (GHO), was also included in parameter mapping.[11] These WHO references include indicators for access, equity, sustainability, quality, and efficiency.

The PHCPI framework follows a left-to-right logical framework model and illustrates the relationship between five components or domains. The parameters selected for the scoping review align with two of the PHCPI domains: 'service delivery' and 'outcomes'. These domains were identified as central to the scoping review. 'System' and 'inputs' domains were considered too distal and broad for the review. Some aspects of the 'inputs' domain were also considered as potentially overlapping with the 'service delivery' domain. Hence, 'system' and 'inputs' domains were not included in the review. Additionally, the 'outputs' domain refers primarily to coverage of key services, while this review focused on identifying parameters beyond – or in addition to – coverage; hence, the 'outputs' domain was also excluded from the review.

Figure 1 UNICEF adaptation of the PHCPI framework to identify vitamin A service delivery effectiveness parameters

Eleven indicators were identified using the Primary Health Care Performance Initiative (PHCPI) conceptual framework
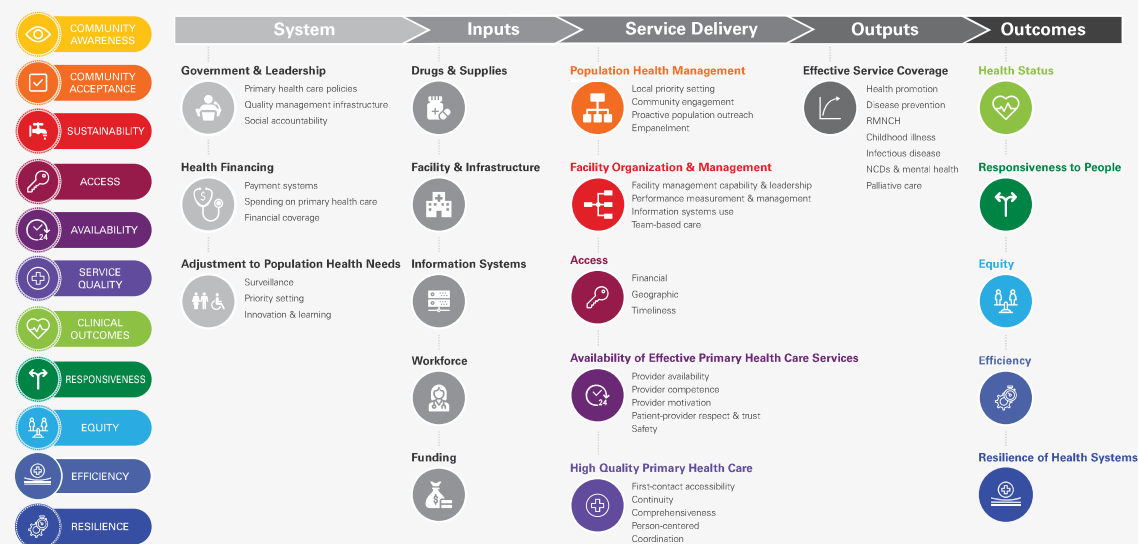
RMNCH: Reproductive, maternal, newborn and child health; NCD: Noncommunicable diseases.
Source: Vitamin A delivery effectiveness survey results, 2021

The parameters included in the scoping review were based primarily on the PHCPI conceptual framework. Parameters from the PHCPI 'service delivery' and 'outcomes' domains were compared with the other models and indicators and searched to understand the language and terminology used in published and unpublished literature. The parameters were then refined using more appropriate language and terminology to maintain consistency with the PHCPI framework and reiterated to identify appropriate terms for the review.

The following subsections describe the linkages between the 'service delivery' and 'outcomes' domains of the PHCPI framework, and the parameters of delivery effectiveness included in the scoping review (Table 1).

Service delivery domain

The PHCPI centres around the 'service delivery' domain, which comprises supply and demand components and focuses on a people-centred approach. The domain is divided into five sub-domains: 1) population health management (the parameters of community acceptance and community awareness were identified for this sub-domain), 2) facility organization and management (the parameter of sustainability was identified for this sub-domain), 3) access (no change from the PHCPI framework), 4) availability of effective PHC services (no change) and 5) high-quality PHC (service quality).

Outcomes domain

Outcomes are divided into the following five sub-domains: 1) health status (the parameter of clinical outcomes was identified for this sub-domain), 2) responsiveness to people (no change), 3) equity (no change), 4) efficiency (no change, also identified as cost-effectiveness) and 5) resilience of health systems (no change).

Ten of these 11 parameters are the same as those derived in the literature review: community acceptance, access, availability, community awareness, efficiency (cost-effectiveness), equity, responsiveness, resilience, service quality and sustainability. The 11th parameter – clinical outcomes – was not included among the parameters that were searched in the literature review; however, this was not because of a lack of interest or relevance. Including clinical outcomes in the search was found to shift the focus towards effectiveness of interventions and away from the main exploratory topic of the review: effectiveness of service delivery. As clinical outcomes are a critical parameter for programmatic purposes, they were included in subsequent stakeholder consultations on this topic.

Once parameters were identified, we screened eligible studies that referred to coverage or service delivery to explore whether these parameters are referred to in the literature. To capture all potential references to effectiveness parameters, synonyms were also included in the search terms. These included 'disparities', 'inequalities' and 'wealth' for equity, 'robustness' for resilience, 'long term' for sustainability, as well as any root terms and variations in spelling. Refer to Annex 1 for more detail.

A stakeholder consultation (Annex 2) in the form of an online survey on parameters of health and nutrition service delivery effectiveness was conducted to follow up and build on the information extracted from the study selection. Following the literature review and parameter mapping exercise, 11 proposed parameters were identified for inclusion in the consultation survey: community acceptance, access, availability, community awareness, clinical outcomes, efficiency (cost-effectiveness), equity, responsiveness, resilience, service quality and sustainability.

Table 1 Parameters of health and nutrition service delivery effectiveness included in the review and related components of the PHCPI conceptual framework[12]

Parameter	Definition	Related PHCPI component	Questions related to PHCPI component
Community awareness	Community members know about the service, why it is being delivered, and when it is taking place.	Population health management	Are local populations engaged in the design and delivery of health services to ensure that their needs and priorities are met?
Community acceptance	Community members are willing to use services and interventions delivered through the programme, ranging from active demand to active refusal.	Population health management	Are local populations engaged in the design and delivery of health services to ensure that their needs and priorities are met?
Sustainability	Supply of, or benefits from, the delivery program continue over time without interruption; program funding is from domestic (government) sources).	Facility organization and management	Are PHC facilities organized and managed to promote team-based care provision, use of information systems, support staff, and performance measurement and management to drive continuous improvement?
Access	The programme ensures access to services and interventions, and minimizes physical, logistic, social, cultural, or financial barriers that can prevent community participation in service delivery.	Access (No change)	Do patients have financial, geographic, and timely access to PHC facilities?
Availability	Sufficient, appropriate commodities and healthy workers are available in a timely manner.	Availability (No change)	Are the staff of primary care facilities present and competent, and motivated to provide safe and respectful care?
Service quality	Services and interventions are provided safely, in a timely manner and in a way that is people-centred.	Quality (No change)	Are PHC services of high quality, meeting peoples' needs, and connected to other parts of the health system?
Clinical outcomes	The programme achieves a reduction in mortality, morbidity, and/or is improving quality of life.		
Responsiveness	The delivery program is able to pivot to the changing circumstances and needs of the population.	Responsiveness (No change)	Does the PHC system respond quickly to the needs of the population?
Equity	Children who are missed with the services and interventions are not experiencing other deprivations.	Equity (No change)	Are health outcomes equitably distributed across society, by geography, education and occupation?
Efficiency/ cost-effectiveness	The programme maximizes the reach and uptake of services and interventions from available resources.	Efficiency (No change)	Are resources used optimally to improve health outcomes?
Resilience	The programme absorbs shocks and sudden disruptions; it continues or resumes core functions quickly. Also referred to as robustness.	Resilience (No change)	Is the PHC system able to continuously deliver health care, regardless of political or environmental instability?

The consultation survey explored key decision maker and influencer views on what makes an effective public health and nutrition delivery programme, taking the suggested parameters from the scoping review as a starting point. Consultation respondents were purposefully selected decision makers and influencers in government, academia, bilateral donor organizations, relevant UN agencies and INGOs. A total of 70 respondents completed the online survey across 20 different organizations, with 51% working at global level and 49% at non-global level (regional, national, or sub-national). Almost half (47%) of those who completed the survey work in immunization, 40% work in nutrition, and 27% work in maternal and newborn health. Respondents were first asked to select which parameters they found to be of importance in assessment of effectiveness of delivery programmes. They were subsequently asked to rank selected parameters by importance. To gain a more in-depth understanding of the responses from the online survey, follow-up interviews were conducted with a small subset of twelve survey respondents: three working at global level, and nine at non-global

level. The interviews provided another opportunity to engage with stakeholders and gain further insight into current perceptions and use of parameters of delivery effectiveness beyond coverage. The full consultation report is available in Annex 2.

What did we find?

The scoping review: patterns in parameters of effectiveness

The identified parameters measuring the effectiveness of service delivery were described using three categories based on the frequency reported by the included articles: 'most common' (access, equity and efficiency), 'moderately common' (sustainability, service quality) and 'least common' (community awareness, community acceptance, availability, resilience and responsiveness) (Figure 2, Table 2).

Figure 2 Frequency of mention of parameters of effectiveness in the literature. A total of 589 articles were found on the topics of service delivery, child health and nutrition interventions and low- and middle-income countries.

Parameters of effectiveness in the literatur

Delivery effectiveness parameters were infrequently noted in the 589 articles reviewed to characterize parameter distributions and refine parameter definitions. Access, equity and efficiency were found most frequently; resilience appeared in 2 (0%) articles and responsiveness and clinical outcomes did not appear in any reviewed articles.

Frequency of mention in literature (n=589)
Percent of articles

Access
25%

Equity
23

Efficiency/Cost-effectiveness
22

Service quality
19

Sustainability
16

Community awareness
9

Community acceptance
6

Availability
5

Resilience
0

Responsiveness
0

Clinical outcomes
0
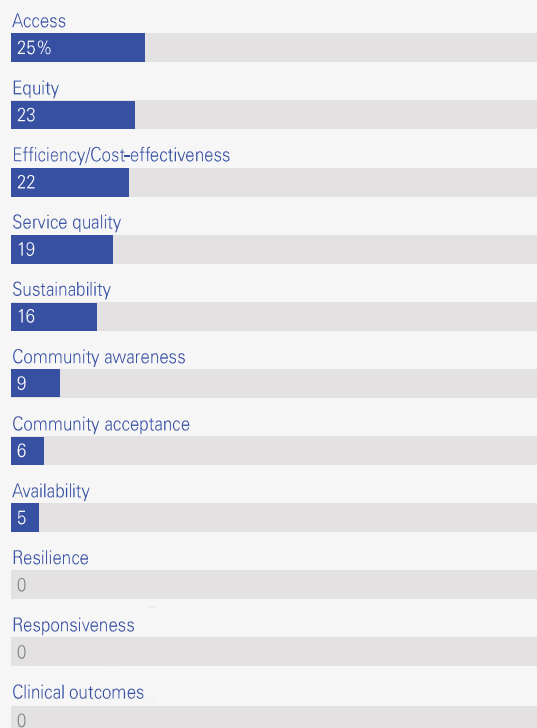
Table 2 Three categories of parameters based on their frequency in the literature

Category	Parameters
Most common	Access, equity, and efficiency
Moderately common	Sustainability and service quality
Least common	Community awareness, community acceptance, availability, resilience, and responsiveness

Access, equity and efficiency were reported most frequently in the studies included in the literature review; access is included as a target for health in the SDGs and improving access is often linked with improving equity. The increase in performance-based financing for health and nutrition services in LMICs and general constraints on health and nutrition budgets could explain the high frequency of efficiency in this review.[13]

The mid-frequency parameters in this review were service quality and sustainability. It has been posited that coverage of interventions potentially overestimates the benefits of health and nutrition services and that a dimension of quality should be added to the measurement of intervention coverage.[14] Donors are also increasingly concerned about the sustainability of health and nutrition services.[15] However, defining and measuring both quality and sustainability of health and nutrition service delivery remains a challenge, as it does for some of the lower frequency parameters.

The lowest frequency parameters were community awareness, community acceptance, availability, resilience and responsiveness. Community awareness, community acceptance and availability are not new concepts; they are included in well-established frameworks of coverage and as characteristics of primary health care. However, they are not reflected with importance in the reviewed community-based interventions. It is not clear whether this stems from a lack of documentation or from other reasons. The least frequent parameters – resilience and responsiveness – have only recently been included in narratives on health service delivery; this may help explain their low frequency in this review, including the complete absence of reference to responsiveness.

It is evident that coverage is not the only parameter that is used to examine the effectiveness of health and nutrition service delivery. Parameters such as access, equity, efficiency, service quality and sustainability are interconnected and are used to quantify and describe what it really means to have effective health and nutrition service delivery for children in LMICs. However, the current literature is insufficiently developed to allow for strong conclusions on which additional parameters could be used to describe the effectiveness of health and nutrition service delivery strategies, other than coverage and equity.

Further exploration was required to improve our understanding of the linkages between this scoping review and the operational reality in LMICs regarding identification of parameters of service delivery effectiveness beyond coverage, refining parameter definitions, and understanding practicalities such as availability and usefulness of data for decision-making.

The stakeholder consultation (online survey): Some parameters are more important than others

When asked to identify which of the 11 parameters of service delivery effectiveness is important for decision-making, all parameters were selected by at least half of respondents. On average, each respondent identified eight parameters, although some chose as few as two.

Overall, in order from most to least frequent, the following parameters were identified as helpful to assess and improve programme performance: equity (90%), quality (84%), access (80%), sustainability (77%), community acceptance (73%), availability (66%), clinical outcomes (66%), efficiency (cost-effectiveness) (66%), responsiveness (63%), community awareness (60%) and resilience (54%). No differences were found in parameter selection between respondents from different administrative levels apart from community acceptance, which was selected by more global than non-global respondents. Respondents did not suggest any specific parameters in addition to the 11 proposed parameters listed in the survey.

Availability, access and equity were the parameters ranked most highly by stakeholders. Service quality, sustainability and community acceptance were ranked as important by more than two-thirds of respondents. Community awareness, efficiency, resilience and responsiveness were ranked as relatively less important by both global and non-global responders. Notable differences were seen in parameter ranking between respondents working with a global focus compared with those with a non-global focus to their work (e.g., national, subnational). Service quality and clinical outcomes were ranked higher by those working at a global level, but mostly in the bottom half by respondents working with a non-global focus. Conversely, non-global respondents ranked community acceptance in the top half, whereas global respondents tended to rank it in the bottom half.

Surprisingly, resilience and responsiveness did not feature prominently in the stakeholder consultation, particularly considering the current COVID-19 pandemic and related service disruptions. However, responses may reflect that these parameters of effectiveness were not given much prominence in decision-making prior to the pandemic, their definitions were not well understood or that they are difficult to measure, hence difficult to monitor in a programme. The experience of the global pandemic, as well as sizable disruptions to public health and nutrition service delivery may mean that, in the future, resilience, responsiveness and efficiency will have a more prominent role in decision-making.

In the survey, respondents were also asked to indicate the main challenges to using parameters of effectiveness in decision-making. Three overarching themes were identified: 1) challenges in prioritization and planning, 2) challenges in data generation and supply and 3) challenges in data analysis and usage. Specific challenges included robustness of data systems, limited financial resources for data collection and analysis, missing government acceptance of data and/or parameters, data collection (including frequency and timeliness), data use (including lack of capacity for analysis and interpretation and centralization of decision-making based on data) and lack of understanding and agreement on definitions of parameters of effectiveness. Digitization of data was underlined as a means to address challenges in data generation and supply, for integration of services across administrative levels and sectors, and to improve reporting and data usage during programme delivery.

A separate challenge identified by some respondents related to parameter definitions, and several improvements to proposed parameter definitions were provided by respondents. These included suggestions to clarify the distinctions between responsiveness and resilience and between accessibility and availability. Other suggestions included specifying granularity in the definition of equity and sustainability: namely including potential target groups for equity and placing emphasis on financial sustainability of service delivery.

Finally, one overarching consideration for parameters of service delivery effectiveness was highlighted by respondents in the survey: the importance of context at national and subnational levels. Follow-up interviews with survey respondents provided an opportunity for further insight and granularity into the consideration of contextualization and the specific perceptions of parameters of effectiveness that were not obvious from survey data.

The stakeholder consultation (interviews): Context determines the relative importance of parameters

Overall, coverage was viewed as a necessary but insufficient parameter. There was consensus among interviewees on the need to identify and use more nuanced parameters of delivery effectiveness beyond coverage and that these different parameters would be useful in the context of their programmes. The 11 parameters of effectiveness were seen as helpful to adjust to community needs, barriers and gaps in service delivery – to identify why service delivery is effective or not effective. Use of additional parameters beyond coverage was also indicated as being important for working towards positive long-term outcomes, for example to be able to follow and tease out progress throughout a programme life cycle and to adapt future programmes accordingly.

Interviewees also highlighted challenges in using additional parameters beyond coverage. These challenges reflected those identified in the online survey. Challenges with, or uncertainty about, the availability of data and ensuring the right frequency and sources of data were highlighted. Some parameters were identified as interesting and possibly useful but difficult to monitor (e.g., quality, sustainability, responsiveness), and others were perceived to be more useful for decision makers at higher administrative levels rather than programme managers. Data availability, how this relates to the local context and subsequent use of the data for decision-making, as well as supporting improvements in digitization of data collection and collation, were also flagged as challenges by several interviewees. Lack of a common language when speaking about parameters of delivery effectiveness was also identified as an important challenge, highlighting the need to clarify parameter definitions.

Contextual relevance, or identifying an appropriate frame or point of view, was deemed most important when selecting and prioritizing parameters of effectiveness. The most relevant and feasible parameters were ranked highest, and the least accessible or feasible were ranked lowest. The parameters were generally not seen as endpoints, but as a means to an end – to measure the capacity of a platform or programme to deliver services and improve clinical outcomes. Clinical outcomes were not, however, always selected as a top-ranked parameter; this does not diminish their importance but suggests that they play different roles in various types of service delivery. For example, polio programmes will likely give more prominence to clinical outcomes because programme effectiveness can be measured directly through clinical outcomes (i.e., number of polio cases). Other programmes may not provide such immediate feedback on their clinical effectiveness.

It was evident from discussions that a one-size-fits-all list of parameters would not be useful in all contexts. Moreover, it would not necessarily be helpful to present all parameters at the same level of importance, and interviewees expressed the need for some core and secondary parameters (and subsequent metrics). There was a clear desire to adapt and adopt relevant parameters to be measured systematically in various contexts. A tiered approach to using parameters based on various factors including relevance, time frame of service delivery and administrative level of work could be more useful from a programmatic perspective.

Proposed conceptual framework

The scoping review and stakeholder consultation provided an opportunity for further exploration and refinement of proposed parameters of service delivery. Through this process, some parameters of effectiveness were identified as being more relevant and important than others, while no additional parameters were found or suggested. The importance of context when deciding on parameters of service delivery effectiveness was also strongly highlighted in the review as a key factor in decision-making. Our scoping review and identification of parameters were undertaken with a broad view of service delivery – it was not specific to any one context. This suggests that the list of parameters for delivery effectiveness is comprehensive, but that it also could be tiered or prioritized.

The parameters identified most frequently through the literature review were access, equity, efficiency, service quality and sustainability. In the stakeholder consultation, at least three-quarters of key practitioners who responded to the online survey identified four of the five most frequent parameters from the literature review – access, equity, service quality and sustainability – as important and helpful to assess and improve programme performance. Efficiency (cost-effectiveness) was not among the most important parameters identified through the survey, while, conversely, community awareness was identified as important by almost three-quarters of respondents. When asked to rank their selected parameters, access, equity as well as availability were most frequently ranked as important for decision-making.

At least two distinct tiers of parameters appear from the scoping review and consultation. A first tier (Tier 1) is composed of parameters of prime importance for decision makers: equity, access, sustainability, availability, and community acceptance. Availability was not identified frequently in the literature; however, it was ranked among the top three parameters by key practitioners in terms of importance. Hence, availability was included in Tier 1. A second tier (Tier 2) contains parameters of potential importance, but that so far have not been given much attention: resilience, responsiveness, efficiency, community awareness and service quality. While service quality was identified frequently in the

scoping review, other factors were considered when including this parameter in Tier 2 – namely, the real or perceived lack of data availability for that parameter. The second group also includes clinical outcomes – a parameter that varies widely across programmes, and for which no immediate or granular data or potential to generate actionable data exist at the programme level, depending on timescale and impacts of interventions.

The two tiers form a proposed conceptual framework for further assessment of delivery effectiveness (Figure 3)

The conceptual framework could evolve into a tool to help guide decision-making at national and subnational levels by facilitating the assessment of delivery effectiveness of health and nutrition services. It was not developed to highlight the importance of certain parameters over others nor to predict service delivery outcomes. Indeed, it is highly likely that the relative

importance of different parameters will vary across programmes and circumstances. For example, the Global Polio Eradication Initiative might choose 'clinical outcomes' as a core effectiveness parameter because polio cases potentially are an important indicator of polio campaign effectiveness. Similarly, emergencies and other temporary shocks to delivery systems may change programmes' prioritization of parameters, at least temporarily. For example, following severe drought and hunger, responsiveness in delivery may be prioritized higher than sustainability, even if sustainability is a core parameter for the programme outside of an emergency. The framework is therefore necessarily flexible, and depending on context and circumstances, decision makers may want to move parameters between Tier 1 and Tier 2. It is also possible that future versions may be reconceptualized and modified based on information that is not currently available or has not been incorporated into its development so far.[16]

Figure 3 Conceptual framework to assess delivery effectiveness of health and nutrition services

The minimum parameter to measure in health and nutrition service delivery coverage is coverage with consideration of Tier 1 parameters and Tier 2 parameters as programmes evolve based on available resources and local situations. The conceptual framework is a guide for decision-making at the national or sub-national level, and the importance of certain parameters over others is context-specific.

Source: Vitamin A delivery effectiveness survey results, 2021.
Notes: This illustration represents the first version of the conceptual framework.

In this version, the conceptual framework is presented in concentric circles to help prioritize certain parameters over others. The minimum parameter to measure in health and nutrition service delivery is coverage. As a programme evolves, and more resources are available, Tier 1 parameters (equity, access, sustainability, availability and community acceptance) should be considered (in dark blue). Further, if more resources are available, or if they are more appropriate to local context, then Tier 2 parameters (in light blue) should be considered: resilience, responsiveness, efficiency, community awareness, service quality and clinical outcomes.

A key question is how we take forward the parameters included in Tier 1 in a way that will inform decision-making and choice of delivery strategy at the national and subnational levels. Data availability and granularity plays an important role in answering this question. If data are not available in a form that enables planning and course-correction, then decision-making is likely to remain without a solid evidence base. Global-level stakeholders were generally pessimistic about the availability of relevant data, but national and regional respondents saw this differently. Their responses suggested that data might be available in relation to all 11 parameters of effectiveness at national and local levels. Even if that is the case, countries will require support to identify relevant and context-specific data, and to collect and analyse these data in a way that enables evidence-based decision-making.

The challenges for Tier 2 parameters are different. Potentially, decision makers at national and regional levels have not paid much attention so far to resilience, responsiveness, efficiency, community awareness and service quality as parameters for delivery effectiveness. It is possible that these Tier 2 parameters are perceived as more distal to immediate service delivery compared with those in Tier 1, and that they are less immediately relevant to decision makers. Therefore, for these parameters, decision makers are one step further removed in terms of readiness for use. Clear parameter definitions are important but will not be sufficient. The parameters should be introduced at a national level alongside advocacy for their importance. Clinical outcomes are likely only useful in programmes in which the clinical outcomes of delivery are relatively easy to identify and measure (e.g., incidence of measles or polio or treatment of acute malnutrition). Disease manifestation may progress unnoticed for many years for other programmes such as prevention of vitamin A deficiency, for which there may be long periods of time between onset and morbidity or mortality. Hence, clinical outcomes were also included in Tier 2.

Linking parameters and reality

Gaps remain in our understanding of how to make practical use of the parameters of service delivery effectiveness. To enable linkages between the parameters and the operational reality, an additional step is to explore the availability and use of data at the national and subnational levels and how these parameters could be measured.

It is encouraging that stakeholders at subnational, national, and regional levels generally found that data on the effectiveness parameters would not only be useful in decision-making but also readily available. This indicates that local decision makers know of context-specific information that is helpful in assessing the effectiveness of their programmes, vis-à-vis the parameters of effectiveness. A good parameter and associated measure of effectiveness must reflect the context and circumstances of a particular country or programmatic area. It is possible that continuing this work at national level could be a good next step for subsequent exploration into service delivery parameters of effectiveness. This could be useful, in particular, for building on the generic definitions of parameters, which could be tailored depending on context and help with the prioritization of parameters of service delivery effectiveness.

Chapter

3

Measurement of effectiveness

Key messages in this chapter

- To inform policy and programme decisions, effectiveness parameters must be paired with meaningful measures.

- Effectiveness measures should capture all relevant aspects of a parameter, and distinguish between effective and ineffective programme delivery.

- To meet both these tests, measures must be context - specific and relevant, which is challenging when quality health and nutrition data are scarce.

- There may be disagreement on the relative importance of an effectiveness parameter, and on the appropriate measure to be used. This underlines the importance of a deliberative process. Implementation research can help to prioritize parameters and define measures.

A comprehensive overview of the parameters of delivery effectiveness, such as that presented in Chapter 2, is an important step towards full appreciation and utilization of effectiveness to improve programme performance. However, for countries to assess the effectiveness of their primary health care programmes, reliable measures are required to accompany these parameters.

Parameter-measure pairings are likely to be required to fully inform planning and implementation decisions to optimize performance. Clearly defined effectiveness parameters and measures can enable country programmes to a) assess current programme performance, b) identify barriers and bottlenecks towards improved effectiveness, c) track progress of any corrective action and d) compare strategies for delivery (e.g., delivery in routine and mass campaigns).

It is important to be clear about what cannot be achieved by even the best-defined parameters and accompanying measures. Although good parameter-measure pairings are necessary for decisions relating to planning and implementation, by themselves they are insufficient to determine those decisions. In other words, a relevant and well-defined set of effectiveness parameters and measurements pairings will not provide an algorithm by which decisions are made. Important aspects will be missing. Parameters and measures will, for example, not provide the relative weight that decision makers should place on each parameter, or how to resolve apparent conflict between parameters (such as between access and sustainability). This requires trade-offs between parameters, and for that we need a deliberative (and possibly political) process to determine overarching priorities for the programme and community. Such a process lies beyond the current project but must form the basis for future work to equip countries to optimize

effectiveness in delivery.

As detailed in Chapter 2, from the list of 11 parameters that were deemed relevant, to a varying degree, by decision makers in the consultation survey and interviews, five were selected as Tier 1 parameters: access, availability, community acceptance, equity and sustainability. In this chapter, we explore possible measures to accompany the five core parameters as they relate to vitamin A supplementation at the global level. As noted earlier, other global delivery programmes would potentially prioritize a different set of core parameters and emergencies and other temporary shocks to delivery systems may also change priorities and thus focus parameters.

What is required from delivery effectiveness measures?

The reason for exploring delivery effectiveness measures is to enable programmes to assess and improve their effectiveness through, either the development and adaptation of strategies for delivery, or monitoring and assessment of programme delivery. From the perspective of a programme manager or strategic decision maker (be that at country regional or global level), measures for effectiveness perimeters must pass at least two tests to be helpful in strategy development and in the planning and delivery. First, the measure must capture all relevant aspects and interpretations of its corresponding parameter. For example, a measure of availability should focus on both human resources and commodities for vitamin A supplementation, if both are perceived as important in the country context and current circumstances. The second test is that the measure must enable a distinction between a programme that is effective and one that is not effective. The measures we define for vitamin A supplementation must meet both these tests, as well as have sufficient relevant data available to enable the analysis and determine the level of effectiveness.

In this analysis, we look at effectiveness parameters across 13 countries using relevant population-based surveys (DHS) and administrative data for vitamin A supplementation. This selection of data sources restricts measurement definition to a global level.

At country level, and possibly also at subnational level, there will likely be local data available that might enable more refined and context relevant measures. However, here we set out to make country comparisons, which require data that are standardized across contexts. It is worth bearing in mind for future work that there may be a richness of data at a more local level that could be tapped into by national decision makers. In addition to not necessarily being relevant at the national level, DHS data suffer from the weakness of being somewhat irregular and in collection and analysis. Administrative data can have weaknesses in terms of quality and reliability.

Access

In Chapter 2, access was defined as an effectiveness parameter of the extent to which the delivery programme ensures access to services and interventions by minimizing physical, social, cultural or financial barriers that can prevent community participation in service delivery. This definition is broad, potentially requiring a very large number of specific measures (e.g., covering specific cultural and social practices, as well as affordability, etc.). Therefore, for a prospective measure to meet the first test (i.e., capture all relevant aspects of the parameter), a broad proxy indicator is required that reflects all barriers to access, including all physical, social and financial obstacles. One option is to focus on the uptake of another intervention, which is known to have good access and for which adequate data exist (e.g., the first vaccine dose in the routine childhood immunization programme) and calculate what proportion of children accessing this service/intervention are also accessing vitamin A supplementation.

A problem using a measure such as this, which summarizes many diverse aspects of the effectiveness parameter, is that we might lose sight of the underlying reasons for inaccessibility. Essentially, if the measure tells us that the programme is ineffective in ensuring access to vitamin A supplementation, we might want to ask if communities are unable to access services because of cultural norms or financial barriers? With a relatively crude measure of effectiveness in ensuring access, it simply is not possible to answer the question. However, that is the price we have to pay in this analysis, as we want to make cross-country comparisons and therefore are unable to integrate

context-specific (local or national) perspectives and priorities, which might provide the answer.

Also, the measure might not fare well on the second test, that is a measure's ability to distinguish between effective and ineffective delivery, vis-à-vis the effectiveness parameter, in this case access. It is an underlying weakness in this suggested measure that it relies on access to vaccines as a reference point. In cases in which access to childhood immunization is under par, but most children reached with vaccines are also reached with the supplement, the measure might suggest that access to vitamin A supplementation is excellent. But that may not be the case as both immunization and vitamin A supplementation are performing poorly in terms of access. This potential weakness emphasizes the importance of reporting and considering coverage achieved in the reference programme, in this case immunization.

Availability

In the scoping review, we defined the availability parameter of effectiveness as the extent to which the delivery programme provides services and commodities in a sufficient and timely manner. The delivery of vitamin A supplementation relies on the uninterrupted availability of a) quality vitamin A supplements, most often in the form of capsules, from manufacturer to service delivery points, and b) a skilled health care workforce to administer doses to children. It is important for the delivery programme to have continuous visibility of vitamin A capsule supply levels as well as human resource availability, and a measure of effectiveness that captures both these aspects of availability will likely pass the first test.

Where obtainable, the availability measure may draw on data that track vitamin A supplement delivery at the community level using, for example, district-level administrative data. In some countries there will also be administrative data on recent training and the placement of frontline staff in health facilities able to provide vitamin A supplementation. Based on such data, the effectiveness measure will be able to meet the second test. It will be possible for programme managers and decision makers to make a judgement regarding the overall performance of the programme, vis-à-vis the availability parameter, and possibly also to diagnose underlying reasons for underperformance. Unfortunately, this level of detail, particularly that related to the trained health workforce, is not available in all settings.

Community acceptance

When exploring effectiveness parameters in the scoping review, community acceptance was defined as the extent to which community members are willing to use services being delivered. Arguably, community acceptance can be seen on a continuum with active demand at one extreme and active refusal at the other and is an important component of community participation and empowerment. However, this parameter presents significant challenges when identifying appropriate measures, mainly because of a dearth of meaningful, comparative data across countries.

The multifaceted and context-specific nature of community acceptance makes this effectiveness parameter ideal for qualitative study. Ideally, community acceptance is measured through direct observation, in-depth interviews, focus group discussions or from surveys such as the 'Knowledge, Attitudes, and Practices' (KAP) survey.[17] These data collection modalities offer the opportunity to ask caregivers direct questions about their understanding of vitamin A deficiency disorders, their understanding and perceptions of the vitamin A supplement and supplementation programme, and their willingness to engage. However, they are very context-specific data sources as limited standardization of questions and methods exists across and within countries. The reason for the lack of a standardized measure could be that community acceptability is highly context-specific and relies on social norms and circumstances. However, the possibly unresolvable challenges involved in quantifying and comparing the community acceptance parameter across countries (as we aim to do in this analysis) does not imply that it would have no value at the country and subnational levels.

The ideal measure to assess the effectiveness parameter relating to community acceptance will necessarily rely on qualitative methods, such as focus group discussions or qualitative questions included in surveys. Questions could relate to community members understanding and support for the aims of the vitamin A supplementation programme and the benefits derived from the supplement; they could also ask about reasons for potential hesitancy in receiving the vitamin A supplementation.

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Equity

In this project, equity was initially defined rather traditionally as the extent to which a delivery programme minimizes disparities in either access or health and nutrition outcomes. Health care equity is either horizontal, requiring health care to give equal attention to equal need, or vertical implying preferential treatment to those with greater needs.[18] A health care programme that adopts a vertical understanding of equity will actively look for those who need the health services and interventions the most; whereas a horizontal understanding of equity will lead health care programmes to try to ensure that no one with a need is missed. Arguably, the initial definition of the equity parameter presented in the scoping review in Chapter 2 stresses a horizontal understanding of equity. However, as became apparent from the interviews, decision makers lean towards a more vertical understanding of equity.

Moreover, existing measures of health care equity, horizontal as well as vertical, typically focus on absolute or relative differences in outcomes, usually coverage, across distinct characteristics of the population. Although this provides useful information, this kind of equity measure fails to capture several important aspects of equity. First, analytic stratification by educational attainment, geography, wealth and other measures of socioeconomic status in isolation tends not to account for the fact that the most disadvantaged children often suffer multiple deprivations (by 'deprivation', we mean not receiving a service or intervention that is needed), and that the relationships between these deprivations are complex and not uniform. A disadvantaged child who

does not receive vitamin A supplementation will typically also miss out on the benefit of other services, such as immunization. Arguably, it is the experience of multiple deprivations that determines the degree of disadvantage.

To meet the first test (i.e., capture all relevant understandings of the parameter), the measure must better reflect a vertical understanding of equity and introduce the notion of inequity as multiple deprivations. An alternative definition of equity was therefore articulated: the vitamin A supplementation programme's effectiveness in promoting equity is reflected in the extent to which children missed with vitamin A supplementation are not experiencing other deprivations. If many of the children that the vitamin A programme misses are also experiencing several other deprivations, we might conclude that the programme is ineffective when it comes to promoting equity.

This extended definition of the equity parameter suggests a specific effectiveness measure for equity, which accounts for the coexistence of multiple deprivations among children that are missing out on vitamin A supplementation. In practice, the equity measure would count the number of deprivations experienced by each child in the population. To explore the accumulation of deprivations, the measure assigns each deprivation a value of one (1) in the presence of the deprivation (zero in the absence) and summarizes the number of deprivations for each child. All children can then be divided into groups depending on the number of deprivations experienced. The measure estimates the percentage of children not receiving a dose of vitamin A in the six months (zero-dose vitamin A supplementation)

and examines the differences in the prevalence of zero-dose vitamin A children between groups of children experiencing no deprivation, two deprivations, three deprivations, etc. Using DHS data, the measure will also give us information about the number of children who miss out on vitamin A supplementation but experience no other deprivations, the number of children experiencing one deprivation, etc.

Three pieces of information from the measure will enable us to make judgements regarding a vitamin A programme's effectiveness in promoting equity. First, we look at the prevalence (percentage) of zero-dose children in each of the deprivation groups. Second, we look at the difference in zero-dose vitamin A between the lowest deprivation group (children that experience no deprivations) and the highest deprivation group (in our analysis, typically children experiencing five deprivations); and third, we look at the number of zero-dose vitamin A children experiencing more than three deprivations. Arguably, the equity measure therefore also passes the second test mentioned above, that is, it will enable us to draw conclusions regarding the effectiveness of the vitamin A supplementation programme in promoting equity.

Sustainability

The scoping review defined sustainability as the extent to which the delivery programme maintains operations without interruption over an extended period of time. However, as for equity, there is a risk that the sustainability definition fails to capture all relevant understandings of the parameter, and thus does not meet the first test. One challenge of this parameter is that sustainability is an integrated and interconnected concept, and, as such, definitions and subsequent measurement depend on perspective. The scope of sustainability can refer to a wide range of issues including financial or economic, social, environmental or institutional capacity that support long-term benefits. Although sustained, high coverage is undoubtedly an important aspect in common understandings of sustainability as the concept relates to health systems, so is a notion of long-term affordability (or financial sustainability as it is sometimes referred to) to both health systems and to individuals (some indirect costs to caregivers and communities are captured under the access parameter). An effectiveness measure for sustainability needs to capture both aspects.

For sustainability understood as sustained coverage, the measure of effectiveness can be relatively straightforward administrate coverage over a set number of years. Measuring financial sustainability is more challenging, as our understanding of vitamin A supplementation delivery programme financing is poor. To our knowledge, standardized budgetary information on programme financing is unavailable at national and global levels. A further complication is that the two understandings of sustainability may come into conflict. This is the case when sustained high coverage comes at the cost of longer-term unaffordability, for example, when external development partners fund vitamin A supplementation campaigns but fail to commit resources for multi-year planning.

Challenges and solutions

For any delivery program, the availability of precise and actionable measures on relevant effectiveness parameters that reflect its performance is an obvious advantage. Where such data are frequent, they can be used to inform microplanning, tracking delivery and course correction. However, even when context relevant effectiveness parameters and corresponding measures are not frequent, they may be used in the development of mid- to long-term strategies. For practical reasons, the analysis presented in this report was focused at a global level, rather than in the national context, to enable cross country comparisons. In order for the parameter-measure parings to be fully applicable, priorities and data must be ascertained at the national level. This will in most cases involve a process to define parameters and select accompanying measures, based on national and subnational priorities for the programme as well as data availability.

In the country context, there may be disagreement on the importance of a given effectiveness parameter, as well as on the appropriate measure(s) to be used (which may result from vested interests and efforts to avoid accountability). This underlines the importance of a deliberative process to support priority setting and definitions of effectiveness parameters and their measurement. Implementation research may help inform this process.

Chapter

4

Applications of effectiveness parameter measures

Key messages in this chapter

- In Vitamin A supplementation, effectiveness measures depend crucially on data availability.

- A limitation of this study is that it focused on data that are available globally and therefore found relevant data to be missing for some of the effectiveness parameters.

- There were shortfalls in globally available data in areas such as community acceptance. Data may be available at the local level.

- Other parameters (e.g. availability) had better global data availability, e.g. survey and administrative coverage data and global disease burden data.

An early step in the process of rethinking effective and efficient vitamin A supplementation (VAS) delivery strategies involved the identification of VAS delivery-related data that might provide some insights into the different dimensions of programme effectiveness beyond VAS coverage highlighted in previous chapters. Before recommending new data collection systems to specifically measure the effectiveness of national VAS programmes, it is important to map relevant, pre-existing sources of data to understand the insights that can already be drawn from these data and reduce the risk of duplicating data collection efforts. In addition to identifying existing data sources for secondary data analysis, particular attention should be given to any assumptions, limitations and gaps in the identified data.

In this chapter, we explore applications of the measures described in Chapter 3 for each of the five core effectiveness parameters using secondary data

available in the public domain relevant to VAS. These preliminary analyses will generate insight into how to use the five core effectiveness parameters to further VAS programme insight beyond national coverage estimates, as well as highlight gaps in knowledge and potential alternative sources of data to meet these requirements.

Data sources

Data sources were mapped for each of the 64 UNICEF priority countries between 2010 and 2019. Identified data sources included national-level surveys (e.g., Demographic Health Surveys (DHS), Micronutrient Surveys, Household Consumption & Expenditure Surveys), VAS programmatic data, and modelling tools and analyses. Relevant indicators extracted from these data sources included target population estimates,

prevalence of vitamin A deficiency using biomarkers, modelled data on the prevalence of vitamin A deficiency disorder (VADD), VADD-related morbidity and mortality data, administrative VAS coverage data, vitamin A capsule stockouts, population-based survey data on VAS coverage, and community knowledge, attitudes and practices. Additionally, because of an absence of data in some areas of interest, VAS-related data were complemented with immunization service delivery data to serve as a proxy for primary health care system capacity to deliver child interventions. A detailed description of the data mapping process and identified data sources can be found in the Annex 3.

Data gaps existed for each of the 64 UNICEF priority countries across at least one of the domains. For example, only 39 of the 64 countries reported semester-specific administrative VAS coverage data for each year. While 60 of the 64 countries conducted at least one Demographic Health Survey or Multiple Indicator Cluster Survey (MICS) between 2010 and 2019, only 11 countries conducted at least one post-campaign coverage and knowledge, attitudes and practices survey – one of the only sources of population-based data on community awareness of VAS by caregivers and health care workers.

As described in Chapter 3, equity dimensions in VAS were explored. Monitoring inequity in routine VAS through administrative data is fraught with challenges (see Annex 3). As a result, we turned to population-based surveys to better understand patterns in VAS. Each of the 49 countries that conducted a DHS from 2010 through 2019 impart important lessons to be learned, however time and resources were limited. As a result, a subset of countries was selected that balanced the current burden of vitamin A deficiency in terms of mortality and disability-adjusted life years (DALYs) and changes in the burden of disease over time as well as the prevalence of vitamin A deficiency, availability of other programme performance-related data and regional representation. A detailed description of the subset selection is provided in the Annex 4. Of the 13 selected countries, 11 became a primary focus for further inquiry because of the availability of recent data (completed since January 2010) with a final DHS report available at https://dhsprogram.com.

Access

To gain some understanding of access to VAS service delivery, this project used population-based VAS coverage data in combination with a proxy indicator that reflects multiple barriers to access to health services more broadly.

VAS coverage was estimated using data from national DHS systems, in which the standardized questionnaire asks whether, in the last 6 months,

VAS was administered to children between the ages of 6 and 59 months among surveyed participants. This DHS indicator, which is standardized across all nations in which DHS data exist, is commonly used to estimate national- and subnational-level coverage of VAS programmes. While this DHS indicator can provide useful insight into the reach of programmes, the sole use of VAS coverage data as a measure of access has limitations. First, DHS are generally conducted in nations once every five years but best reflect the VAS programmatic activities that occur during the year the survey was conducted. The results are likely to be highly specific to that year and may not reflect acute alterations in programme operations, such as problems with stockouts or changes in the implementation of periodic campaigns. Responses can be sensitive to the timing of survey field work vis-à-vis the timing of campaigns. Second, data from DHS are collected using long multi-indicator household recall questionnaires, which may lead to additional errors and uncertainty in survey responses. While DHS data remain a valuable resource when evaluating access to VAS programmes, it is important to be cognizant of these data quality limitations and issues of generalizability when interpreting these data.
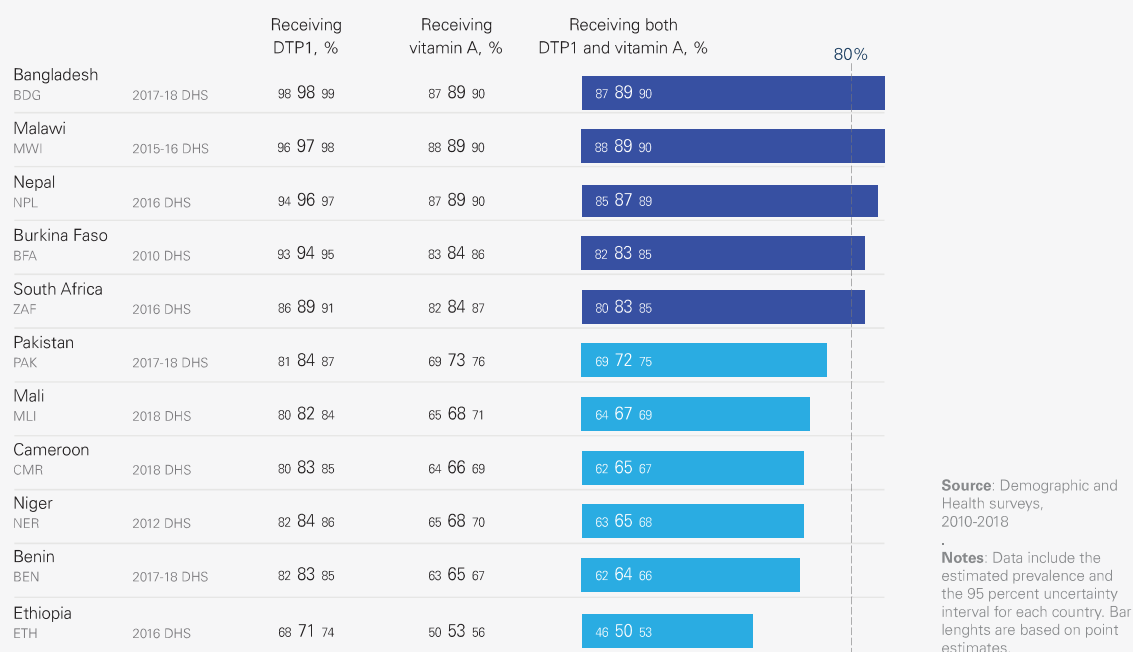
To expand understanding of the maximum potential coverage of VAS programmes under a country's current health service delivery system, proxy indicators using national Essential Programme on Immunization (EPI) data can be used. For instance, the diphtheria-tetanus-pertussis containing vaccine is a multidose vaccine regimen recommended for young infants (starting at two to three months), which is commonly used as an indicator to measure EPI programme coverage. Coverage of the first dose of the diphtheria-tetanus-pertussis containing vaccine (DPT1) can provide insight into the general reach of a country's health service delivery system and evaluate the potential reach of VAS programmes if adequately interwoven into a country's EPI system. Although DTP1 only measures the coverage of a single dose of a vaccine and does not adequately represent VAS dosage guidelines (current WHO guidelines recommend that children between 6 and 59 months receive a dose every six months), further exploitation of other EPI data systems, where they exist, could provide a useful signal and perhaps additional insight into the accessibility of a country's current primary health service delivery system in the absence of higher resolution VAS data.

Among the 11 selected priority countries, the proportion of children who received both a first dose of DTP1 and a recent dose of VAS was greatest in Bangladesh, Malawi and Nepal, and lowest in Ethiopia. Data suggest that nearly all 11 countries satisfy absolute minimum (i.e., >50 per cent) accessibility levels for primary care services as reflected by the percentage of children aged 9–35 months who received a first dose of DTP containing vaccine (DTP1) (recommended at 6 weeks or 2 months after birth and most often delivered through routine immunization services) and a recent dose of vitamin A supplement (vitA) (recommended as two age-specific, appropriately spaced doses each year from 6 to 59 months of age) (Table 3). Data suggest that routine health service delivery is successful in reaching more than four-in-five children with DTP1 in all countries except Ethiopia. However, the percentage of children receiving both DTP1 and vitA is >80 per cent in only 5 of the 11 countries – Bangladesh, Malawi, Nepal, Burkina Faso and South Africa. Data further indicate the importance of early access to (and use of) primary care – in this case using DTP1 coverage as a proxy. For example, in Burkina Faso, although more than 90 per cent of children receive DTP1, the majority of those for whom this primary care service is not available or accessible are not reached later in life with vitA (1520%28 vs. 8789%90). Note that while receipt of DTP1 and vitA may occur later than recommended, an assumption is made that children tend to receive DTP1 before they receive vitA. In Ethiopia, where less than three-quarters of children received DTP1, those who did were more likely to receive vitA compared with children who did not receive DTP1 (6771%73 vs. 810%13).

While coverage of VAS and proxy indicators using EPI data provides some insight into the access of health service delivery, coverage as a sole indicator is inadequate to understand drivers that serve as enablers or barriers to access. By triangulating coverage data with other variables that may affect access (e.g., distance to health facilities, total health expenditures, age and/or education of mother, etc.), more insight can be drawn to identify and potentially alleviate barriers to VAS delivery.

Table 3 DTP1 and vitamin A coverage as a measure of VAS programme access

The estimated percentage of children aged 9 to 35 months who received both a first dose of DTP-containing vaccine (DTP1) and a dose of vitamin A during the prior 6 months was at least 80% in five of 11 countries

		Receiving DTP1, %	Receiving vitamin A, %	Receiving both DTP1 and vitamin A, %
Bangladesh BDG	2017-18 DHS	98 **98** 99	87 **89** 90	87 **89** 90
Malawi MWI	2015-16 DHS	96 **97** 98	88 **89** 90	88 **89** 90
Nepal NPL	2016 DHS	94 **96** 97	87 **89** 90	85 **87** 89
Burkina Faso BFA	2010 DHS	93 **94** 95	83 **84** 86	82 **83** 85
South Africa ZAF	2016 DHS	86 **89** 91	82 **84** 87	80 **83** 85
Pakistan PAK	2017-18 DHS	81 **84** 87	69 **73** 76	69 **72** 75
Mali MLI	2018 DHS	80 **82** 84	65 **68** 71	64 **67** 69
Cameroon CMR	2018 DHS	80 **83** 85	64 **66** 69	62 **65** 67
Niger NER	2012 DHS	82 **84** 86	65 **68** 70	63 **65** 68
Benin BEN	2017-18 DHS	82 **83** 85	63 **65** 67	62 **64** 66
Ethiopia ETH	2016 DHS	68 **71** 74	50 **53** 56	46 **50** 53

80%

Source: Demographic and Health surveys, 2010-2018
.
Notes: Data include the estimated prevalence and the 95 percent uncertainty interval for each country. Bar lenghts are based on point estimates.

Availability

Delivery of VAS relies on the uninterrupted availability of (1) quality vitamin A supplements, most often in the form of capsules, from manufacturer to service delivery points and (2) a skilled health care workforce to administer doses to children. It is important for programme managers to have visibility of vitamin A capsule supply levels at all times and at all levels. While vitamin A programmes report national-level vitamin A supply disruptions to UNICEF as part of an annual data collection exercise, this useful information has limitations as subnational stockouts may occur in the absence of stockouts at the national level. At present, UNICEF does not collect information on the occurrence of subnational vitamin A capsule stockouts, a knowledge gap that requires attention. In addition, it is unclear how many countries have the end-to-end visibility of the vitamin A supply chain which would be necessary to report subnational

stockouts should this be required in future. Table 4 shows that national-level vitamin A capsule stockouts are common among a subset of countries.

Programme managers must also ensure a skilled health care workforce is available to administer vitamin A capsules. Information on recent training and the placement of frontline staff in health facilities able to provide VAS is important. It is not known whether programme managers maintain this information; if not, staff shortages could go unnoticed and potentially limit the availability of VAS delivery.

In addition to monitoring supply levels and the health care workforce, programme managers can track vitamin A supplement delivery at the community level using local (i.e., district)-level administrative data. For example, administrative data that reflect a non-zero number of vitamin A doses administered or a non-zero number of children who received vitamin A within

a district, provide a signal that services are being delivered. With this kind of information, a programme manager could enumerate the districts with no services and take appropriate action.

UNICEF does not collect district-level VAS administrative coverage data from countries. In the absence of this information, we used unweighted, aggregate cluster-level results from a population-based survey as a proxy for VAS availability. While appropriate for our purposes, this approach would not be useful for a programme manager because surveys are not frequent enough to support real-time or on-demand monitoring.

Using this approach, we assumed that selected survey clusters reflect a random sample of all possible survey clusters and that the collection of clusters reflects communities that are representative of the whole of the country (i.e., the survey stratifies the sample by state or province and then selects clusters within each, such that clusters are selected in each state or province). We believe this to be a safe assumption based on survey protocols. Clusters in which no children (aged 9–35 months) had evidence of receiving vitamin A would indicate that VAS services were unavailable in that cluster. If we identify some but not all clusters in which children received a dose

of vitamin A in the six months prior to the survey, then we conclude that VAS services were available in some but not all communities of the country. Care must be taken not to ascribe a quantitative value (e.g., 95 per cent of communities) based on the cluster-level results; rather, we suggest a qualitative assessment (i.e., none, some, all).

Some limitations were identified in using this approach to evaluate the availability of VAS service delivery. First, communities that are systematically missed by the sampling frame and have no VAS service delivery risk being underestimated or unidentified. The proxy measure may conclude that VAS is available in all communities when, in fact, it is only available in some communities. Second, the proposed classification uses a stringent criterion of zero children with evidence of VAS. A less stringent criterion, for example, one to two children, or some threshold percentage of interviews in a cluster, would increase the chances of identifying clusters that did not have VAS available.

A programme manager could use rapid field monitoring approaches, including Lot Quality Assurance Surveys (LQAS), to accomplish a similar quick scan to identify zero-dose community clusters.

Table 4 Vitamin A supplementation service availability based on a review of cluster-level survey results

Available Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) showed suggest that supplementation is available across most communities in the majority of countries.

		Vitamin A supplementation availability across communities	Vitamin A capsule stockouts				
			2015	2016	2017	2018	2019
Bangladesh BDG	2017-18 DHS	All	✓	✗	✓	✗	✗
Benin BEN	2017-18 DHS	All	✓	✓	✓	✓	✓
Burkina Faso BFA	2010 DHS	All	✓	✓	✓	✓	✓
Cameroon CMR	2018 DHS	All	✓	✓	✓	✓	✓
Central African Republic CAF	2018-19 MICS	Not reported	✓	✓	✓	✓	✓
Ethiopia ETH	2016 DHS	Some	✓	✓	✓	✓	✗
Madagascar MDG	2018 MICS	Not reported	✓	✓	✓	✓	✓
Malawi MWI	2015-16 DHS	All	✓	✓	✓	✓	✓
Mali MLI	2018 DHS	All	✓	✓	✓	✓	✓
Nepal NPL	2016 DHS	All	✓	✓	✓	✓	✓
Niger NER	2012 DHS	Some	✓	✓	✓	✓	✓
Pakistan PAK	2017-18 DHS	All	✓	✓	✓	✓	✓
South Africa ZAF	2016 DHS	Some	NR	UNK	UNK	UNK	✓

Source: Demographic and Health Surveys and Multiple Indicator Cluster Surveys, 2015

Notes: For vitamin A supplementation across communities: All, survey data suggest vitamin A supplementation is available across all communities in the country; Some, survey data suggest vitamin A supplementation is available across some, but not all, communities in the country; None, survey data suggest vitamin A supplementation is not available across communities in the country. For stockout reports: √, Yes; X, No; UNK, Unknown; NR, No report.

Community acceptance

Community acceptance of VAS and other health services requires a variety of qualitative data describing caregivers' s knowledge, attitudes and practices related to uptake of child health services. One challenge in building insight into this parameter is that qualitative data are highly context-specific, and those generated under specific circumstances may not be generalizable when applied to a programme operating at a national level. Within a country, VAS programmes would benefit from studies using qualitative data from a sample of communities across a variety of contexts, where results could be triangulated with the quantitative data used to measure the other four effectiveness parameters. Without adequate data infrastructure in place to systematically collect qualitative data on the acceptance of VAS delivery within communities, programmes are left to rely on current independent qualitative research conducted by academic and other research institutions. In addition, community acceptance could be better understood by ensuring that programmes are owned and operated by country national staff who can provide cultural context when conducted appropriately.

Equity

Understanding equity dimensions of national VAS programmes requires the use of subnational-level data to define health service deprivations, vulnerable subpopulations within nations and their relationship to VAS uptake. Subnational data exist in a variety of forms to describe vitamin A deficiencies, dietary inadequacies and VAS programme effectiveness. However, an approach that harmonizes these varying sources of information is necessary to understand whether a VAS delivery system is adequately reaching the country's most vulnerable children with the greatest needs.

This project focused on one dimension of equity of VAS service delivery, for which we quantified health service deprivations to isolate populations that may not be adequately addressed by the current service delivery system. Empirically, this means estimating what proportion of children with poor access to VAS have multiple health service deprivations compared with children with few or no deprivations. Health service deprivations in this analysis are defined by characteristics such as being more rural, having poorer access to clean water and sanitation, having lower educational attainment and having poorer access to

health services. Children with several health service deprivations are expected to have higher risks for vitamin A deficiencies with poorer-quality diets and lower access to other interventions aimed at increasing vitamin A intake.
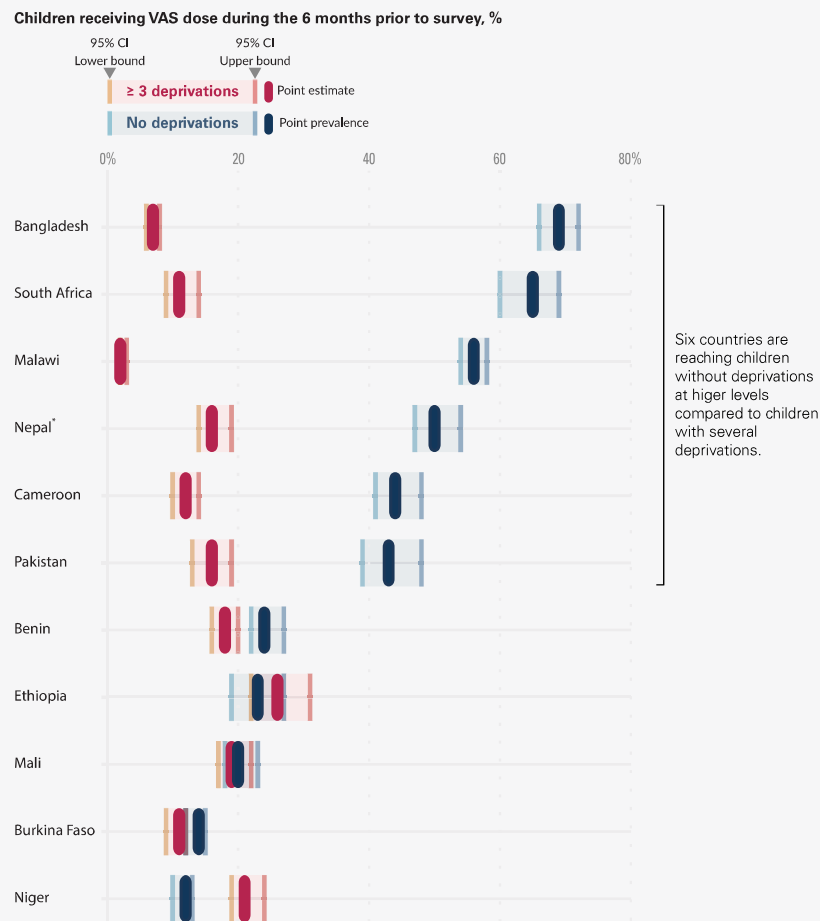
Figure 4 presents gaps in VAS coverage within a nation between children with zero service deprivations compared with those with several. National VAS programmes can be grouped into two distinct categories based on trends identified in this figure. The first group are nations in which VAS programmes are reaching children with zero service deprivations at disproportionately higher levels compared with children with several service depravations. In these nations (Bangladesh, Cameroon, Malawi, Nepal, Pakistan, South Africa), VAS programmes inequitably discriminate against children with more health service deprivations, where children with several deprivations have far lower levels of VAS coverage (<20 per cent) compared with those without any deprivations (>40 per cent). Closing this gap will require the diversion of current resources to areas that would benefit deprived children the most, such as focusing on rural regions and isolating populations of low socioeconomic position. Moving forward, the VAS strategy in these nations should focus on specifically identifying and targeting the most vulnerable children with several health service deprivations, even if these populations are harder to reach.

The second group are nations in which VAS programmes operate at suboptimal levels for all children, where low coverage exists for both children without and with several health service deprivations (Benin, Burkina Faso, Ethiopia, Mali, Niger). In these nations, coverage stratified by health service deprivations is consistently low for all groups, where programmes are only reaching approximately 20 per cent of the country's children. The VAS strategy in these nations should be to improve the overall effectiveness of EPI and other health service delivery programmes, with attention focused on ensuring that children with several health service deprivations are benefiting the most.

This analysis of equity dimensions of VAS programmes would be improved if combined with data describing the vitamin A needs of children (e.g., biomarkers, dietary assessment). While it is important to increase overall VAS coverage, eventually the programmes must transition from an approach that increases coverage for all children to one that targets children whose vitamin A needs are not addressed by other interventions. As more nations adopt industrial vitamin A fortification

Figure 4 Health deprivation as an indicator of equity

Available Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) showed suggest that supplementation is available across most communities in the majority of countries.

Children receiving VAS dose during the 6 months prior to survey, %

Six countries are reaching children without deprivations at higer levels compared to children with several deprivations.

programmes as a cornerstone of their national vitamin A strategy, reduction of disparities in access to VAS interventions will require identification of children in whom broad industrial fortification does not meet vitamin A needs and who require more targeted interventions such as VAS. Indicators evaluating these dimensions of equity can inform programme managers and policymakers on whether their package of vitamin A interventions, including VAS, is equitably addressing children with the greatest vitamin A needs or if current nutrition and health service delivery systems exacerbate existing gaps between more and less vulnerable groups.

Sustainability

The sustainability parameter of health service delivery programmes evaluated the extent to which the delivery programme maintains operations without interruption over an extended period. As a proxy measure for the sustainability of vitamin A supplementation delivery, we reviewed reported administrative semester coverage data for each of the 64 priority countries for each year during 2010–2018.

For each year, we identified the maximum value of the two reported semester values and tagged the country-year value if the maximum coverage was >80 per cent. As shown in Table 5, 39 countries were identified with a maximum administrative semester VAS coverage value >80 per cent for 5 or more of the 9 years during 2010–2018. Of the 15 countries with sustained high levels of VAS coverage for all 9 years, 12 (80 per cent) countries used a predominantly non-routine delivery strategy and 3 (20 per cent) used a mixed delivery strategy; there were no countries with sustained high administrative semester VAS coverage using a predominantly routine delivery strategy.

With sufficient financial resources, national strategies that supplement routine VAS activities with periodic campaigns can achieve sustained levels of high VAS coverage. Health care resources are scarce, however, creating a very real challenge for VAS delivery programmes in the future as ongoing campaigns are not financially sustainable. At some point in the future, VAS delivery programmes will also need to achieve financial sustainability, meaning they will need to minimize (if not eliminate) dependence on external/foreign funding sources while also increasing country ownership of the programme.

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Unfortunately, our understanding of VAS delivery programme financing is poor. Standardized information on vitamin A programme financing is not currently collected by UNICEF (or others, to the best of our knowledge). In the absence of this information, we turned to information collected by WHO and UNICEF on government contributions towards routine immunization to use as a proxy for vitamin A programme expenditures. While many differences in the absolute expenditures for vaccines and vitamin A capsules exist, we assume here that government contributions towards routine immunization expenditures are a reasonable proxy in relative terms for contributions towards VAS. If this holds, it is possible that patterns in the reported percentage of total expenditure on routine immunization financed by government funds (obtained from the WHO/UNICEF Joint Reporting Form) provide a useful signal regarding the financial commitment and sustainability for vitamin A programming. (It is important to note that the quality of reported data on government financing is unknown at the present time.)

A review of government financing of routine immunization for the 64 UNICEF priority countries suggests that government funds accounted for more than half (>50 per cent) of total expenditures in 16 (25 per cent) countries and accounted for >80 per cent of expenditures in just 11 countries. In contrast, data suggest that government funds account for less than one-quarter of total expenditures in 22 countries.

When we examined patterns in government contributions towards routine immunization expenditures across VAS delivery strategies, expected patterns emerged. Among priority VAS countries, those using predominantly non-routine VAS delivery strategies relied far more often on external funds compared with those using routine delivery strategies. In eight (89 per cent) of the nine countries using a routine VAS delivery strategy, government funds accounted for more than half (>50 per cent) of routine immunization total expenditures. In contrast, among those priority countries using mixed (6/22, 27 per cent) and non-routine (2/31, 6 per cent) strategies, we observe far fewer countries where government funds account for more than half of total expenditures.

If routine immunization financing data provide a reasonable proxy for vitamin A supplementation, the observation of greater reliance on external funding sources among countries leveraging campaigns and Child Health Days to delivery of vitamin A supplements makes intuitive sense. Although commodity costs within routine immunization and vitamin A supplementation differ greatly, these patterns provide a useful signal for further study within vitamin A programme financing. Table 5: Vitamin A supplementation coverage by country, 2010-2018

What share of delivery cost is covered by domestic funding sources?

Standardized information is not currently collected. As mentioned above, in the absence of this information, government contributions towards routine immunization may serve as a proxy for vitamin A programme expenditures. If this assumption holds, it is possible that patterns in the reported percentage of total expenditure on routine immunization financed by government funds could be a signal for financial commitment and sustainability for vitamin A supplementation programming (Figure 5, Figure 6).

Table 5 Vitamin A supplementation coverage by country, 2010-2018

Fifteen countries reported complete administrative data and sustained high' levels of vitamin A supplementation coverage for ate least one semester each year, 2010–2018. Of the 15 countries with sustained coverage for all years, 12 (80%) used a non-routine and 3 (20%) used a mixed delivery strategy; no countries sustained high admin semester VAS coverage using a routine delivery strategy.

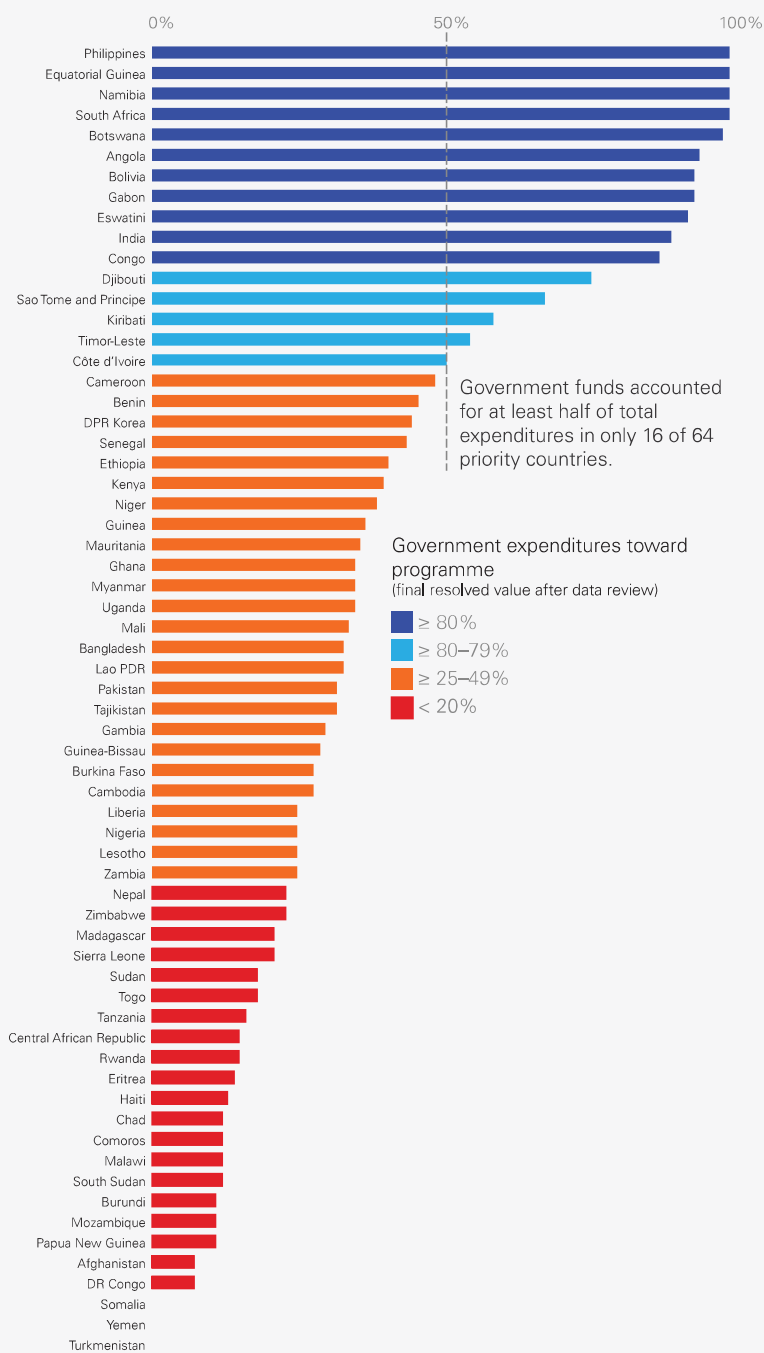|		Strategy	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sustained, complete high VAS coverage	BFA	NR	99	99	99	99	99	99	99	98	99
	BEN	NR	99	99	99	99	99	97	99	99	99
	PRK	NR	99	99	99	98	99	99	99	98	99
	BGD	NR	99	97	99	98	99	99	99	99	99
	MLI	MIX	99	99	99	99	99	89	99	99	99
	SLE	MIX	99	99	99	99	99	99	99	98	83
	MOZ	MIX	99	99	99	99	99	99	99	99	81
	MDG	NR	96	96	96	96	99	97	98	97	96
	PAK	NR	88	98	99	96	99	99	98	96	96
	CMR	NR	98	99	91	99	99	99	83	98	95
	TZA	NR	99	98	98	95	99	88	92	87	99
	TJK	NR	88	90	98	88	99	99	98	94	98
	MMR	NR	95	97	86	94	94	96	96	93	85
	NPL	NR	97	92	97	99	99	81	84	84	84
Sustained, incomplete high VAS coverage	GNB	NR	99	99	99	99	99	96	ND	99	97
	AFG	NR	99	99	ND	99	99	99	99	98	94
	ZMB	NR	99	99	ND	99	ND	ND	99	99	99
High but unsustained or incomplete VAS coverage	NER	NR	99	98	99	99	95	99	99	99	77
	LBR	NR	99	99	98	90	64	86	97	97	98
	MWI	MIX	97	99	63	99	86	89	97	99	80
	RWA	NR	96	76	60	87	97	98	96	99	99
	COD	NR	92	99	99	99	99	99	50	74	80
	NGA	NR	96	82	79	74	82	81	82	86	93
	BDI	NR	94	89	88	78	70	72	81	79	93
	MRT	NR	97	99	99	99	92	92	75	0	91
	ETH	NR	89	89	74	80	72	77	79	88	61
	CAF	NR	99	72	96	40	42	74	97	83	41
	GHA	MIX	94	95	17	98	97	63	44	50	82
	ZWE	MIX	93	88	84	52	49	89	42	52	45
	KEN	MIX	63	65	99	50	99	41	46	45	69
	GIN	NR	99	91	99	ND	28	80	99	89	99
	KHM	NR	96	99	99	99	71	70	73	74	ND
	TCD	NR	68	ND	76	99	96	88	84	78	92
	BWA	R	92	83	ND	99	89	63	80	86	88
	SDN	NR	99	ND	97	98	99	99	65	55	55
	LAO	R	82	95	91	90	92	90	ND	65	ND
	PHL	MIX	92	91	90	90	85	77	74	ND	ND
	TGO	MIX	99	91	93	97	ND	6	29	91	93
	YEM	MIX	15	83	84	88	83	82	83	ND	67
	SSD	NR	ND	78	86	82	90	ND	99	61	77
	COG	MIX	88	ND	52	ND	99	99	85	99	10
	GMB	MIX	99	99	53	ND	93	27	88	34	30
	SEN	MIX	99	ND	ND	99	96	85	ND	63	80
	AGO	MIX	88	85	49	84	94	99	ND	5	8
	DJI	MIX	95	95	89	69	ND	83	80	ND	ND
	NAM	MIX	14	99	91	77	ND	ND	54	31	49
	COM	MIX	84	ND	ND	ND	15	54	86	23	12
	LSO	MIX	17	38	ND	99	67	ND	ND	44	ND
	PNG	N/A	14	12	99	ND	ND	ND	ND	ND	78
Suboptimal VAS coverage	IND	NR	60	60	57	62	69	58	77	ND	65
	TLS	R	51	80	49	60	ND	61	67	66	74
	UGA	NR	52	69	73	68	67	ND	ND	28	38
	HTI	MIX	31	50	79	63	32	24	52	19	22
	SWZ	R	42	34	40	77	47	ND	43	37	42
	ERI	MIX	41	40	39	39	49	51	ND	ND	81
	STP	R	38	38	36	59	ND	44	48	33	43
	BOL	R	35	21	41	53	ND	ND	53	40	58
	SOM	MIX	66	33	ND	ND	31	67	21	12	64
	ZAF	R	ND	44	ND	44	ND	ND	51	50	52
	GAB	MIX	2	ND	49	ND	ND	ND	ND	68	0
	KIR	R	ND	ND	ND	ND	ND	ND	ND	75	ND
	GNQ	R	ND	ND	ND	ND	ND	ND	ND	7	8
	TKM	N/A	ND	ND	ND	ND	ND	ND	ND	ND	ND

Source: Demographic and Health Surveys, 2010 to 2018.
Notes: Delivery strategy: **R**, routine delivery strategy; **NR**, nonroutine delivery strategy; **MIX**, mixed delivery strategy; **ND**,no reported administrative data.
* Reported administrative semester data were reviewed for each country and year; the maximum value of the two reported semester values was flagged if the max coverage was >80%; 39 countries had a maximum admin semester VAS coverage value >80% for at least 5 of the 9 years.

Figure 5 Median percentage of total expenditures of routine immunization that is financed by government funds, 2017-2019
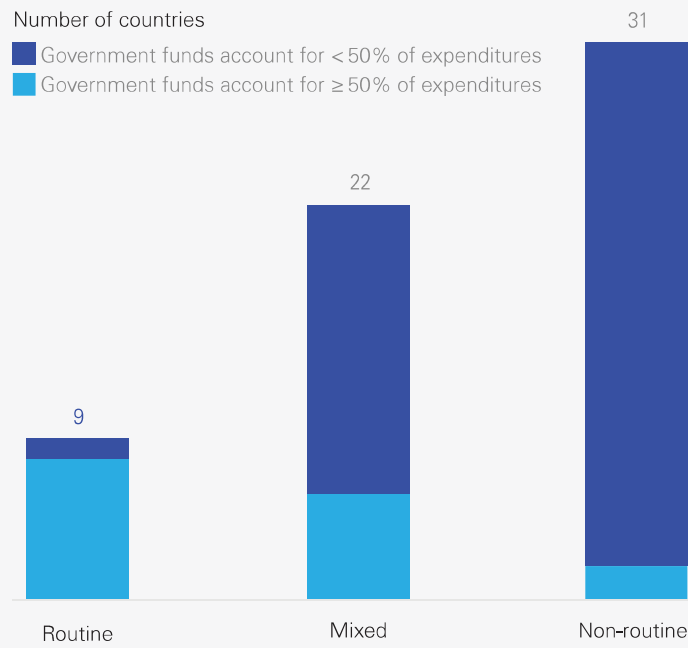
This proxy for government contributions to vitamin A supplementation suggests that few countries are responsible for more than half of programme costs.

Government funds accounted for at least half of total expenditures in only 16 of 64 priority countries.

Government expenditures toward programme
(final resolved value after data review)

- ≥ 80%
- ≥ 80–79%
- ≥ 25–49%
- < 20%

Figure 6 Government financing of routine immunization as a proxy for contributions toward vitamin A supplementation programming

Countries that used predominantly non-routine VAS delivery strategies more often relied on external funding than countries that used routine delivery strategies.

Number of countries
■ Government funds account for < 50% of expenditures
■ Government funds account for ≥ 50% of expenditures

	Routine	Mixed	Non-routine
Total	9	22	31

Chapter

5

Using parameters for improved service delivery effectiveness: what knowledge gaps need to be filled?

Key messages in this chapter

- A key knowledge gap in the measurement of effectiveness relates to uncertainty about definitions and practical implications of specific parameters and accompanying measures.

- Knowledge gaps also exist around the way in which information on effectiveness parameters is used in strategy setting, programme decision-making, and monitoring of activities.

- The solution to both these problems may be found in national and subnational data, which could facilitate both selection and prioritization of parameters and their measures, and the use of the information in decision-making.

Vitamin A supplementation programmes in low- and middle-income countries will have a different role in the future. The success of multiple strategies in addressing vitamin A deficiency in broad segments of the population, falling child mortality in most countries and potential scarcity of resources for the implementation of mass supplementation events mean that vitamin A supplementation programmes need to be targeted towards the children that need the supplement the most. This is a radical shift for many programmes, which until recently, focused primarily on reaching all eligible children. These shifts also emphasize the importance of effectiveness measures to capture relevant aspects of vitamin A

delivery beyond coverage. A key question is how the effectiveness of programmes can be assured in these new circumstances?

This project has explored how we can identify and measure clearly defined parameters of delivery effectiveness to improve programme performance. In the next phase of this work, these measures and the concepts behind them will be taken to country programmes to better understand how they can be used to a) assess current programme performance, b) identify barriers and bottlenecks towards improved effectiveness, c) track progress of any corrective action and d) compare strategies for delivery. In this

first phase, existing sources related to vitamin A supplementation delivery were explored as a means of pressure testing existing data sources while reducing the risk of duplicating data collection efforts in countries. It is clear, however, that existing data sources are broadly not fit-for-purpose in directing programme decisions.

Two types of knowledge gaps are apparent from the analysis presented in this project: a first set of gaps concerns specific parameters and accompanying measures, for which we either do not have data or uncertainty remains regarding definitions and practical implications (understanding parameters). A second set of knowledge gaps exists around the overall approach to measuring and analysing effectiveness, and how information on effectiveness parameters is used in strategy development and in programme decision-making and monitoring of activities (using parameters) (Table 6).

Understanding parameters

As was apparent in the previous chapters, gaps remain in our understanding of some parameters, mainly because limited consensus exists on definitions and implications of these parameters. Within the parameters that we analysed for vitamin A supplementation, equity and sustainability stood out as ambiguous in terms of how they are perceived and understood by decision makers and practitioners. In previous chapters, we presented an alternative definition and measure of equity (equity as multiple deprivations); as well as a combined definition of sustainability (sustainability as sustained coverage and sustainability as long-term programme affordability). Knowledge gaps relating to both these definitions (and accompanying measures) exist, as we do not know if these definitions are sufficiently specific (reflecting political buy-in and circumstances on the ground) and comprehensive.

Table 6 Knowledge gaps related to parameters of delivery effectiveness

Issue 1: Understanding parameters		
Knowledge gap	**Gap description**	**How to address**
Parameter definitions	Uncertainty regarding definitions and practical implications (e.g., are definitions specific and comprehensive enough)	Exploration and engagement of programme teams at all administrative levels of the health system (global, regional, country, and subnational levels), with a focus on parameters that do not feature prominently in discussions about health system strength and effectiveness (e.g., resilience, responsiveness) or parameters for which adequate data infrastructure is not in place (e.g., community acceptance)
Data availability to measure parameters	Gaps in the current understanding of programme uptake related to data availability (collection, analysis or synthesis) across space and time (e.g., subnational vitamin A capsule stockouts and standardized information for vitamin A programme financing)	Prioritize the use of existing data and explore possible uses of proxy measures as useful signals when direct data for parameters are unavailable (e.g., government contributions towards routine immunization as a proxy for vitamin A programme expenditures)
Issue 2: Using parameters		
Knowledge gap	**Gap description**	**How to address**
Selection and prioritization of parameters	Overall approach to measuring and analyzing effectiveness (e.g., selection and prioritization of effectiveness parameters and measures and how they are used within specific contexts and circumstances)	Describe and eventually support a country-level process of parameter prioritization to better understand how information on effectiveness parameters is used in strategy development and in programme decision-making and monitoring of activities
Parameter use in the decision-making process	How data on parameters are presented and how the data inform decision-making processes (e.g., differences between data used for monitoring of an existing programme or for the development of new delivery strategies)	Explore how various types of data could be useful for decision-making processes (e.g., modelling of different strategic options in terms of impact for strategy development or use of timeseries data for monitoring)

Addressing such knowledge will require exploration and engagement of programme teams at all administrative levels of the health system (global, regional, country and subnational levels). This project identified 11 effectiveness indicators, which each urgently require discussions of specificity and comprehensiveness. However, arguably, the most significant knowledge gaps of this kind relate to parameters that have so far not featured prominently in discussions about health system strength and effectiveness. Whereas parameters such as access, availability, efficiency and to some extent equity (notably not using the definition of equity that we have put forward in this project), are frequently referred to in descriptions of health system effectiveness, concepts such as resilience and responsiveness are used less often – and, consequently, are not as conceptually developed as other parameters.

Major weaknesses in other parameters do not relate to their definition but rather to the lack of meaningful data on which to base effectiveness measures. As was discussed in the preceding chapters, distinct data-based knowledge gaps relating to parameters were identified. These included community acceptance and to a lesser extent community awareness (which was not analysed here), which arguably rely primarily on more qualitative than quantitative data. However, perhaps surprisingly, this type of knowledge gap also relates to other parameters, which are not necessarily as reliant on qualitative data. In vitamin A supplementation at least, data on 'clinical outcomes' are not easy to ascertain because the main effect of supplementation is on all-cause mortality, and hence is difficult to isolate in the short- to medium-term. Clinical manifestations of vitamin A deficiency, such as night blindness, also take time to show up in surveillance and in some countries, administrative data systems do not properly use standardized disease coding schemes. In the analysis here, we have relied on population-based surveys (mainly DHS) and administrative data from the vitamin A programme that are collected at, or reported from, a national level. Whereas this has been sufficient for the analysis we presented in previous chapters, data are lacking on effectiveness parameters at sub-national levels. For example, we lacked data on subnational administrative coverage, vitamin A programme financing, and on supply chain visibility including subnational stockouts of vitamin A capsules; we know these data exist in country, but we were not able to access the data for our analysis. We also lacked data on human resources delivering vitamin A,

for which we do not know whether data are available. Moreover, data may be insufficient to capture changes across at-risk subgroups over time. If it turns out that sufficient relevant data at the national and subnational levels are available, are there ways to standardize the data sufficiently to enable intercountry analysis? Note that such comparisons may not be needed if population-based survey data can be used for global analysis.

Using parameters

Another set of knowledge gaps that emerges from this work relates to the way decision makers will perceive and make use of delivery effectiveness parameters. The health care decision-making process is an area of analysis in its own right and decision analysis has not been a primary focus in our project. However, a natural next step as we explore the use of effectiveness parameters in public health programme delivery is an account of how decision makers select and prioritize effectiveness parameters and measures, and how they are used within specific contexts and circumstances. As mentioned in Chapter 3, this is a distinct process that will reflect political priorities as much as programmatic considerations. Thus, some countries may choose to prioritize parameters that showcase the strengths of a programme and play into a political narrative about successful delivery, for example by highlighting availability over equity. In other contexts, perhaps where service delivery is less of a political focus, programmes may choose parameters and measures that spotlight programme weaknesses and areas for improvement. Emergencies and other temporary shocks to delivery systems may also change the prioritization of parameters, at least temporarily. For example, following severe drought and hunger, responsiveness in delivery may be prioritized higher than sustainability, even if sustainability is a core parameter for the programme outside of an emergency.

The analysis we have presented here raises several questions relating to the decision-making process: First, how do countries go about selecting parameters that are relevant within their circumstances? Second, how are relevant and appropriate measures selected to inform the parameters? A third question regards the prioritization and relative weight of parameters (and accompanying measures) that have been selected towards actual decisions on delivery strategy

and in programme implementation. Should they all be considered equally important? The implicit assumption made in this work is that they all carry the same weight – but in practice that is unlikely to be the case, at least for most programmes. As mentioned above, depending on political, social and cultural priorities, some parameters will be deemed more important than others, even when the parameters under consideration are all considered relevant. Through a selection and ranking exercise, the online consultation, which formed part of the scoping analysis presented earlier, provided a sense of what parameters will be selected (deemed relevant) and given priority; but this analysis involved only a (small) number of respondents that came from a range of programmatic programmes and contexts. It is a globally amalgamated picture that may not apply in any country. However, even though the ultimate prioritization of parameters for delivery strategy development and monitoring will likely vary from country to country, presumably the process by which country decision makers arrive at a prioritized list of parameters can be objectively described and eventually supported. Currently, our visibility on this process is severely limited.

Another set of central questions, which follow on from the questions on parameter selection and prioritization, relate to how data on parameters are presented and how they enter decision-making processes. Thus, there may be differences in what decision makers require from parameters and measures depending on whether these will be used for monitoring an existing programme or for the development of new delivery strategies. For example, would modelling of different strategic options in terms of impact, be helpful for strategy development, whereas consistent timeseries of data would be more important for monitoring?

Although we currently do not have answers to these questions, it is likely that the availability of national and subnational data will facilitate both the selection and prioritization of parameters and their measures, and the use of the information in decision-making. In the scoping review, stakeholders at subnational, national and regional levels believed that data on effectiveness parameters would be readily available. As mentioned earlier, this is promising because it could indicate that local decision makers are aware of context-specific information that would be helpful in assessing the effectiveness of their programmes vis-à-vis the parameters of effectiveness, as well as on dimensions not considered here. Use of local effectiveness parameters and data might present challenges at the regional and global levels, but the extent to which this is the case is another knowledge gap that needs to be addressed.

Chapter

6

Next phase of the delivery effectiveness

Key messages in this chapter

- This project is an initial step towards identifying aspects of intervention and service delivery beyond coverage.

- The analysis presented here is high-level and adopts a global perspective, and at the same time is programme-specific (focus restricted to vitamin A supplementation).

- Future analysis may further explore linkages between effectiveness parameters and operational realities in countries, including 'deep dives' into country contexts.

This project has taken an important step towards identifying aspects of intervention and service delivery beyond coverage that may have influence on the effectiveness of public health programmes. We have explored definitions of effectiveness parameters and discussed some specific measures that could be used in the development of delivery strategies and tracking of progress towards programmatic goals. However, the work that has been reported here is only the initial phase in developing analytical tools that country and global decision makers can use to optimize the effectiveness of programme delivery.

Despite the significant advances made in this first phase, the analysis is, on the one hand, high-level and global, and on the other hand, programme-specific. The scoping review that identified important parameters took a global perspective and elicited views and perspectives from respondents from

a number of countries and regions as well as from the global level. What resulted was what we might call a 'helicopter view', or an aggregated global average of what are considered important effectiveness parameters for decision-making, as well as their relative importance. The data analysis was also multinational, looking at a subset of countries, but focused on one programme, vitamin A supplementation, looking specifically at globally available data for the effectiveness parameters that are relevant to vitamin A supplementation.

Further exploration is required to help improve our understanding of the linkages between the proposed parameters and the operational reality in LMICs regarding additional parameters of service delivery effectiveness. Subsequent phases of the work on delivery effectiveness need to have a clear focus on individual country contexts, to explore specific

priorities at national and subnational levels, as well as the differences that exist across countries and their particular circumstances (for example low- and middle-income, emergency affected, etc.). It is likely that a deeper dive into country contexts would only be possible within a subset of countries, and care must be taken to select countries that reflect a broad range of contexts and programmatic backgrounds. Availability and access to data on effectiveness parameters at national and subnational levels are also likely to affect country selection.

As a first step to take the delivery effectiveness work into the next phase, we require identification of appropriate measures for the remaining six parameters that were not the initial focus in the analysis (i.e., clinical outcomes, community awareness, efficiency, responsiveness, resilience and service quality). This would help to build on the generic definitions of the parameters, tailoring them dependent on context, and help with the prioritization of parameters of service delivery. Part of this exercise is to gain a better idea of what data are available at national and subnational levels, for all

11 parameters. Data availability and granularity will play an important role in how we take forward the effectiveness parameters in a way that will inform decision-making and choice of delivery strategy at the national and subnational levels. If data are not available in a form that enables planning and course-correction, then decision-making is likely to remain without a solid evidence base. Regional, national and subnational stakeholders were generally positive about the availability of relevant data. Their responses suggested that data might be available in relation to all 11 parameters for effectiveness at national and local levels. Even if that is the case, countries will have to be supported in identifying relevant and context-specific data and collecting and analysing these data in a way that enables evidence-based decision-making. The next phase of the work should therefore include mapping and audit of national data, vis-à-vis data requirements for all 11 parameter-measure pairings. A need for improved data at regional and global levels to enable comparative analyses has also been identified, and the next phase of the work should also map this out.

Clear parameter definitions and their measures will be important but will not be sufficient. The parameters should be introduced at a national level alongside advocacy for their importance. In parallel with parameter definitions and data mapping at national, regional and global levels, as we argued in preceding chapters, what is also needed is the analysis and subsequent strengthening of a country-based process by which relevant effectiveness parameters and their accompanying measures are identified, prioritized, analysed and used for decision-making. This will require a structured approach and the development of clear steps that could be tested in small groups and through subsequent national-level consultations. This focus on the use of effectiveness parameters in decision-making will be an important component of future phases of the delivery effectiveness work.

As we go through the next phases towards a practical model for the study of programme effectiveness in countries, one option is to keep a clear focus on vitamin A supplementation programmes. Obvious advantages in doing so include retaining focus and limiting the number of relevant stakeholders. However, in due course, other programmes, such as immunization and neglected tropical disease programmes will have to be engaged, and findings from the study of vitamin A programmes tested and applied in these other programmes. We see this as forming part of the very last stages of the delivery effectiveness project. What we propose for the immediate next phase is a project to continue the focus on vitamin A supplementation programmes, with two components:

1. One component continues the work at the global level to:
   - further development and refinement of definitions and measures for the suggested 11 effectiveness parameters specific to vitamin A supplementation programmes (i.e., refine definitions and improve measures for access, availability, community acceptance, equity and sustainability presented in the first phase; and refine definitions and identify measures for clinical outcomes, community awareness, efficiency, responsiveness, resilience and service quality)
   - perform analyses using vitamin A data available in global databases on the 11 parameters in a subset of countries.

2. In parallel, the second component involves country case-studies consisting of deep dives in five or six countries, which have been purposefully selected. The deep dives will have two objectives and involve, for each country:
   - understanding current programme thinking around delivery effectiveness and related decision-making from programme managers' perspectives. The objective is to help inform future communication and advocacy as programmes consider the new expanded set of 11 effectiveness parameters
   - mapping and reviewing data available nationally and subnationally to inform measures for 11 parameters and explore what is necessary to fill existing data gaps
   - a study to characterize and analyse the process for the prioritization of effectiveness parameters and the selection of parameter measures
   - in-country analysis using national and subnational data relating to the 11 parameters
   - synthesis and comparison of experiences across the five or six countries (to be confirmed).

As was noted at the outset of the current project, a fresh look at how delivery effectiveness parameters beyond coverage are recognized, interpreted and prioritized is needed. Despite progress through the initial phase of this work, it is evident that this need remains. As an effectiveness parameter, coverage is insufficient on its own. Programme effectiveness is far more complex and requires a new approach at global, regional, national and subnational levels. We also require a better understanding of how to make use of these effectiveness parameters and include considerations of context and of community involvement. The proposed conceptual framework could be developed into a tool to help guide decision-making at national and subnational levels by facilitating the assessment of delivery effectiveness of health and nutrition services. This current project has provided a strong foundation on which to build future work; we have identified 11 parameters of delivery effectiveness and, using national data analyses, have developed related measures for a subset of these parameters. Although our understanding of the complexities of programme effectiveness remains incomplete following this initial work, we embrace the challenges ahead.

Endnotes

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