Final Report from the informal Working Group on Strategic Objective 2 (SO2) of the Global Vaccine Action Plan (GVAP) to the Strategic Advisory Group of Experts (SAGE) of the World Health Organization GVAP Working Group

The Second Strategic Objective (SO2) of the Global Vaccine Action Plan (GVAP) is that “individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility.” It has been challenging for global partners to establish and agree upon indicators for monitoring progress in achieving GVAP SO2. Tentative indicators related to “vaccine hesitancy” were initially proposed, piloted and revised before the GVAP Secretariat called for the development of additional indicators related to the broader language of SO2. This report details the processes of a working group established by the United Nations Children’s Fund (UNICEF) and the World Health Organization (WHO) to develop a definition for “demand” and associated indicators for the monitoring of global and national progress regarding SO2.

April 2017
EXECUTIVE SUMMARY

Since its inception, the Global Vaccine Action Plan (GVAP) has been monitored via indicators that are a part of a monitoring, evaluation and accountability framework endorsed at the World Health Assembly (WHA) in May 2013. Implementation of the GVAP during the Decade of Vaccines (DoV) has entered year four, and the third annual GVAP assessment report was recently completed. At that time, only provisional indicators were provided for Strategic Objective 2 (SO2), with expected finalization to continue following pilot testing and the attainment of consensus by a working group of experts.

Concerned that progress made on SO2 was less clear than achievements in the other objectives, the Strategic Advisory Group of Experts on Immunization (SAGE) GVAP Working Group requested the GVAP Secretariat at WHO to develop a better understanding of the term “demand” in the context of this objective as well as potential indicators for monitoring and evaluating progress. Based on this request, an informal working group was established (SO2 IWG) in 2015, under the leadership of UNICEF. The IWG’s scope of work included: reviewing relevant literature, interpreting key terms used in the phrasing of SO2, and systematically assessing methods of monitoring progress towards achieving SO2.

The SO2 IWG first conducted a rapid literature review to explore and map existing academic resources on topics related to demand for immunization services. Following a process similar to that used by the SAGE Vaccine Hesitancy Working Group, the SO2 IWG used the results of this review to more clearly define the key term, “demand,” within the context of SO2. This definition was then used to underpin subsequent discussions about potential options for developing indicators. A paper detailing this systematic terminology review is currently being prepared for publication. Following this, a set of indicators were proposed, circulated for broad consultation, modified based on feedback, and one of the indicators was piloted with Expanded Programme on Immunization (EPI) managers in three regions.

Given that the term “demand” has many meanings, the IWG determined that an active (behavioural) definition of demand (e.g., individual demand as the behaviour of seeking services; community demand as social support for vaccination as a norm) was more relevant and useful than the passive form of demand commonly referred to as acceptance. The proposed definition for vaccine demand included verbs such as seeking, supporting, and advocating, and it was supplemented with accompanying statements that emphasized the variation in manifestations of demand according to context.

Demand is the actions of individuals and communities to seek, support and/or advocate for vaccines and vaccination services.

Demand is dynamic and varies by context, vaccine, vaccination services provided, time and place. Demand is fostered by governments, immunization programme managers, public and private sector providers, local leadership and civil society organizations hearing and acting on the voices of individuals and communities.
The working group concluded that a single global measure of “demand” was not feasible but that a combination of several measures, including national immunization programme (NIP) inputs as well as outcomes related to coverage, drop-out rate and timeliness, could provide a non-specific but meaningful sense of progress regarding GVAP SO2. The proposed indicators were not intended to be direct measures of demand but rather to reflect evidence of programme investments in fostering and sustaining demand along with indirect measures of programme success in reducing dropouts and improving timeliness of completion of the childhood vaccine schedule.

Both the proposed definition of demand and the indicator related to NIP investments in activities or processes to stimulate and sustain demand were subject to multiple rounds of feedback and revision with a variety of stakeholders. Events like EPI managers’ meetings, global and regional technical forums, and multi-agency immunization partners’ workshops were all used as opportunities to solicit input and feedback on the definition and indicator. The methodology and results of the process of developing the definition of vaccine demand are documented in a manuscript currently being prepared for publication. Two versions of Joint Reporting Form (JRF) questions related to the proposed indicator on programme inputs/activities were recently piloted in three WHO regions. Pilot testing of the proposed indicator began during the last quarter of 2015 and concluded in the first quarter of 2016. The results are currently being compiled and will be presented in a separate report.

In addition, SO2 working group outputs and recommendations have informed more recent work undertaken by immunization partners focused on developing a communication framework and associated tools as well as establishing a research agenda to enhance in-country demand for immunization. Examples include the Communication for Immunization Framework developed by partners at the Immunization Partners’ Meeting on Advocacy, Communication, and Community Engagement for Routine Immunization, hosted in New York, March 2016. The outputs and groundwork from this meeting have in turn informed the establishment in 2017 of an interagency technical advisory body, the Demand for Immunization Hub, co-chaired by UNICEF and WHO. Another example is the extension of the UNICEF partnership with the Harvard Opinion Research Program at the Harvard T.H. Chan School of Public Health to include in-country research on routine immunization. The results of a Harvard poll conducted in the first quarter of 2016 have been used to make fundamental changes in Uganda’s National Communication Strategy for Routine Immunisation, 2016–2020.

In other words, in recent months the work started by the SO2 working group has moved from questions of measuring progress towards SO2 to operationalizing in-country strategies and resources for achieving SO2.
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<th>ACRONYMS</th>
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<td>AEFI</td>
<td>Adverse event following immunization</td>
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<td>AFRO</td>
<td>WHO Regional Office for Africa</td>
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<td>BMGF</td>
<td>Bill and Melinda Gates Foundation</td>
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<td>DoV</td>
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<td>DTP3</td>
<td>diphtheria, tetanus and pertussis vaccine, third dose</td>
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<td>Department of Immunization, Vaccines, and Biologicals (WHO)</td>
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<td>National Immunization Technical Advisory Group</td>
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<td>Pan American Health Organization</td>
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<td>VH-WG</td>
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INTRODUCTION

Implementation of the Global Vaccine Action Plan (GVAP) during the Decade of Vaccines (DoV) has entered year four, and the third annual GVAP assessment report was recently completed. Ascertaining meaningful measures of progress for each of the GVAP strategic objectives has been a learning experience; the process of developing global-level measures has revealed the limited availability of consistent data across countries. Since its inception, the GVAP has been monitored via indicators that are a part of a monitoring, evaluation and accountability framework endorsed at the World Health Assembly (WHA) in May 2013. At that time, only provisional indicators were provided for Strategic Objective 2 (SO2), with expected finalization to occur following pilot testing and recommendations by a working group of experts.

In the last 40 years, the Expanded Programme on Immunization (EPI) has predominantly focused on vaccine technology, immunization supply-chain management and service delivery. Thus, efforts to monitor the progress of GVAP implementation have focused on measuring service-side readiness of immunization programmes and programmatic outcome measures of coverage and equity. Against the backdrop of a service-oriented focus, the GVAP’s SO2 stands out for highlighting additional factors and actors (often referred to as demand-side factors and actors) whose actions and characteristics are widely recognized as playing a role in shaping key immunization programme outcomes: coverage, completion of the immunization schedule, and equitable access to and uptake of vaccines. The process of identifying suitable indicators for these aspects requires drawing on a wide range of disciplines and expertise relevant to vaccine demand and social and behavioural sciences.

Concerned that the monitoring of progress related to SO2 was less clear than monitoring of other Strategic Objectives, the SAGE GVAP Working Group requested the GVAP Secretariat at WHO to develop a better understanding of key concepts related to demand and the development of potential indicators to evaluate progress with GVAP SO2. To address these concerns, an informal working group (IWG) was established in February 2015, under the leadership of UNICEF, to aid in refining the concept of demand and developing a framework and monitoring strategy for GVAP SO2. This report documents the background, methods, results and recommendations of the working group.
SECTION I

BACKGROUND

During the development of the Global Vaccine Action Plan (GVAP), the “Public and Political Support” working group identified the need to include communities as more than just the target of programmes or the passive recipients of services. As a result, the following objective (the second Strategic Objective, or SO2) is formulated in the GVAP as “individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility.” Established through wide consultation of the Decade of Vaccines (DoV) partners, SO2 was included in the GVAP endorsed by WHO Member States during the World Health Assembly (WHA) in May 2012 (the Sixty-fifth World Health Assembly).

As requested by the Member States at the WHA, WHO reports annually to the Strategic Advisory Group of Experts on Immunization (SAGE) on the progress made regarding the implementation of GVAP. As adopted by the WHA in 2013, the process is detailed in a Monitoring, Evaluation and Accountability framework. This framework includes indicators to measure progress for multiple objectives (WHO, 2011). At the time of its endorsement by the WHA in May 2013, the framework included only provisional indicators for SO2 that focused on tracking of vaccine confidence. However, following regional pilot testing, this indicator did not subsequently move on to the next stage of formalization.

From March 2012 through October 2014, a working group on “Vaccine Hesitancy” examined phenomena related to vaccine confidence, convenience and complacency; their primary drivers and characteristics; and their impact on goals of equitable immunization coverage. Early in the process, this group was tasked to operate under the auspices of SO2, and thus their findings were geared to include recommendations for indicators and monitoring strategies relevant to SO2. Given the complexity and variability by time, place and context of vaccine hesitancy, the group devised process indicators to monitor vaccine hesitancy but struggled to identify indicators at global level by which to assess SO2. The outputs of the Vaccine Hesitancy Working Group have resulted in a substantive and salutary contribution to the literature on demand-related determinants of vaccine uptake, but the group recognized that the discussion of vaccine hesitancy only addressed a limited aspect of the larger domain of “demand” for vaccines and vaccination services.

Strategic Objective 2

GVAP SO2 (pp. 38–42) calls for “individuals and communities [to] understand the value of vaccines and demand immunization as both a right and a responsibility” (WHO, 2011). The SO2 chapter recommends a range of actions related to engaging with clients or users of vaccination services in order to stimulate uptake of vaccines. Some of the topics discussed in the GVAP narrative include enhanced community engagement; the use of incentives; considerations of the risks and opportunities associated with digital media; and capacity building so that
individuals and communities might improve local ownership of and input in service delivery. The language of SO2 aspires for communities and individuals to understand the benefits and risks of vaccines, be encouraged to seek vaccine-related services, be empowered to make demands on the health system, and to participate in planning and implementing programmes within their local communities. Each of these desired actions entails the need for health-system actors and service providers to engage in dialogue and participatory planning with various segments of the population, particularly the underserved and most difficult to reach. SO2 also touches on how advocacy capacity should be developed and bolstered for long-term political commitment to EPI.

Recap on indicator development under SO2 from 2012 to 2014
The first set of indicators for SO2, from the original GVAP monitoring, evaluation and accountability framework, were developed by the Vaccine Hesitancy Working Group (SAGE GVAP Vaccine Hesitancy Working Group, 2014). These are:

- Percentage of countries that have assessed (or measured) the level of confidence in vaccination at subnational level
  - Question 1: Has there been some assessment (or measurement) of the level of confidence in vaccination at subnational level in the past?
  - Question 2: If yes, please specify the type and the year the assessment has been done.
- Percentage of un- and under-vaccinated in whom lack of confidence was a factor that influenced their decision
  - Question 1: What is the percentage of un- and under-vaccinated in whom lack of confidence was a factor that influenced their decision (this applies to all vaccines)?
  - Question 2: Was this percentage measured or estimated?
  - Question 3: Any comments or specific issues?

These questions were pilot-tested in the 2012 Joint Reporting Form (JRF) in the Americas (PAHO) and the European (EURO) regions as well as within a self-administered questionnaire distributed at the Inter-country Support Team South and East and Central African Regional Immunization Managers’ meetings in 2013 in the African (AFRO) region (SAGE GVAP Vaccine Hesitancy Working Group, 2014). Feedback from these pilots confirmed several concerns regarding the quality of data due to limitations of current surveys as well as limited understanding of the phenomena that these questions were meant to capture. This led to re-adjustment of the indicators. The results of pilot testing of the newly revised indicators in EURO in the 2013 JRF appeared to resolve some of these issues. Therefore, with minor adjustments, the revised indicators were included in the 2014 JRF within all WHO regions.

The revised SO2 indicators shifted from focusing on vaccine confidence to hesitancy. These indicators were:
• Percentage of countries that have assessed the level of hesitancy in vaccination at a national or subnational level
  o Question 1: Has there been some assessment of vaccine hesitancy or refusal among the public at national or subnational level?
  o Question 2: If yes, please provide assessment title(s) and reference(s) to any publication/report.
• Reasons for vaccine hesitancy
  o Question 1: What are the top three reasons for not accepting vaccines according to the national schedule in the last year?
  o Question 2: Is this response based or supported by some type of assessment, or is it an opinion based on your knowledge and expertise?

For the first GVAP Assessment Report 2013, the SAGE GVAP Working Group (WG) criticized these indicators for their narrow focus on vaccine hesitancy rather than demand, which is understood to be broader, more multifactorial and more directly relevant to the aspirations of SO2.

Creation and mandate of the GVAP SO2 IWG
The SAGE GVAP WG then requested the GVAP Secretariat to further develop the understanding of demand (definition, components and determinants) and to explore means for measuring progress under SO2 during the Decade of Vaccines. To carry out the tasks of directing next steps in understanding demand and its measurement, SAGE determined that UNICEF should most appropriately lead the effort, given its expertise in community engagement strategies and social and behaviour change communication for health and development. In addition, an expert was recruited by WHO to link WHO monitoring and evaluation efforts with UNICEF expertise. This consultant carried out background and formative research and proposed a preliminary conceptual framework and approach to clarify terminology for use by the group of experts.

Although they are generally recognized as important components for vaccine uptake and the overall coverage and equity aims of the GVAP, key terms of SO2 (i.e., value and demand) are used in multiple ways and are rarely clearly defined in the immunization literature. A primary task of the GVAP SO2 IWG was to identify indicators that could be used by WHO, UNICEF and National Immunization Programme managers to assess and track global and national progress in achieving SO2. To accomplish this, the group identified the need to first develop a working definition of demand in the context of SO2 in order to clarify the primary phenomena of interest. Based on a thorough review of the literature, the IWG concluded that no pre-existing operational definitions or indicators of demand have been developed and widely accepted in the context of vaccines/immunization that would allow for a standardized means of tracking progress related to SO2. The membership and terms of reference of the SO2 IWG were designed to address these initial needs and challenges, involving a broad range of expertise, professional backgrounds and roles, and institutional/sectoral affiliations.
IWG MEMBERSHIP

Benjamin Hickler, UNICEF New York headquarters [Chair, Technical Lead]
Holly Schuh, Johns Hopkins School of Public Health [consultant to WHO, coordinator]
Molly Abbruzzese, Bill and Melinda Gates Foundation
Narendra Arora, INCLEN Trust
Robb Butler, WHO EURO
Amy Dietterich, International Federation of the Red Cross and Red Crescent Societies
Michael Favin, Manoff Group/JSI
Rebecca Martin, US Centers for Disease Control and Prevention
Noni MacDonald, Dalhousie University
Sachiko Ozawa, Johns Hopkins School of Public Health, IVAC
Kamel Senouci, WHO HQ – IVB
Gillian SteelFisher, Harvard T.H. Chan School of Public Health
Grant Tudor, Populist

TERMS OF REFERENCE

1. Prepare for the SAGE GVAP Working Group a set of options for approaching measurement of progress regarding SO2
2. Construct a conceptual framework for SO2 to help with definitions, measurement and identifying knowledge gaps
   - Compile evidence (and maybe guidelines) around interventions to improve the demand for vaccines (noting when they may be generalizable). This may include things like standard operating procedures for media management, or a review of evidence around specific interventions.
3. Define the main phenomenon under SO2 (i.e., demand) and its components
   - Identify its main drivers, enablers and disablers (associated factors) for generating causal diagrams or similar models.
4. Link key partners to our group, define roles and outputs, and specify relevant disciplines/areas of inquiry
   - Identify and prioritize knowledge gaps.
   - Develop a research agenda.
5. Develop a larger set of indicators and questions that might together provide a more “granular” understanding of factors that shape immunization outcomes in multiple contexts (e.g., in the context of polling/opinion research)

The SO2 IWG operated primarily through teleconference calls and exchange of emails. A core subgroup held weekly and biweekly teleconference calls while the entire group connected via conference calls roughly once per quarter and met in person during two face-to-face meetings, one hosted in Geneva and one in New York.
Subgroups carried out (1) a review of literature on demand and (2) literature-supported conceptual framework development. Each sub-group used its own modus operandi for meetings and follow-up. Further discussion and feedback for the modification of these projects and their methods were then sought from the entire IWG. Each background/landscape activity is now being translated into manuscript form for publication.

SECTION II

APPROACH AND METHODS

To meet its objectives, the SO2 IWG began by exploring and describing the existing literature on relevant topics and relating them to the process and output of the Vaccine Hesitancy Working Group. The SO2 IWG then used the outcome of this literature and terminology review to more clearly define the term “demand” in order to develop a suitable monitoring approach, including potential indicators and data sources, for tracking progress towards the achievement of SO2. A set of indicators was then proposed, refined, circulated for several rounds of broad consultation, and modified.

Both the proposed definition of demand and the indicator related to NIP investments in activities or processes to stimulate and sustain demand were subject to multiple rounds of feedback and revision with a variety of stakeholders. Events like EPI managers’ meetings, global and regional technical forums, and multi-agency immunization partners’ workshops were all used as opportunities to solicit input and feedback on both the definition and proposed indicators. The methodology and results of the process of developing the definition of vaccine demand are documented in a separate manuscript currently being prepared for publication. Two versions of Joint Reporting Form (JRF) questions related to the proposed indicator on programme inputs/activities were recently piloted in three WHO regions. Pilot testing of the proposed indicator began during the last quarter of 2015 and concluded in the first quarter of 2016. The results are currently being compiled and will be presented in a separate report.

Guided by its terms of reference, the IWG carried out the following activities:

- A broad scan of the literature and production of background papers on the current landscape of SO2-related concepts, activities and measures in the existing evidence base for directing the IWG’s next steps;
- A rapid review of the literature to ascertain the primary intended uses of the term demand and related terminology;
- A review and interpretation of the experience and outputs from the Vaccine Hesitancy IWG to inform both the SO2 working group process and outputs;
- The development of a working definition of “demand” along with an interpretation of the intent and implications of GVAP SO2;
The development of a conceptual framework to link literature, outputs from the Vaccine Hesitancy Working Group, and demand-related concepts;

The identification of preliminary indicators and likely data sources for monitoring progress towards achievement of SO2;

The modification of provisional indicators, associated questions and data sources, based on multiple consultations with a broad range of external partners/stakeholders/experts;

Regional pilots of the proposed GVAP SO2 indicator and analysis and compilation of results.

Associated outputs of the SO2 Working Group include:

- The present report on GVAP SO2 Working Group background, process, findings, recommendations and next steps;
- A manuscript for publication on the results of the literature review on demand-related terms in the context of routine immunization;
- An informal summary of the results from the regional pilots of the SO2 indicator for information and decision by the GVAP Secretariat.

In addition, SO2 working group outputs and recommendations have informed more recent work undertaken by Immunization Partners focused on developing a communication framework and associated tools as well as establishing a research agenda to enhance in-country demand for immunization. Examples include the Communication for Immunization Framework developed by partners at the Immunization Partners’ Meeting on Advocacy, Communication, and Community Engagement for Routine Immunization, hosted in New York, March 2016. The outputs and groundwork from this meeting have in turn informed the establishment in 2017 of an interagency technical advisory body, the Demand for Immunization Hub, co-chaired by UNICEF and WHO. Another example is the extension of the UNICEF partnership with the Harvard Opinion Research Program at the Harvard T.H. Chan School of Public Health to include in-country research on routine immunization. The results of a Harvard poll conducted in the first quarter of 2016 are currently being used to inform Uganda’s National Communication Strategy for Routine Immunization, 2016–2020. In other words, the work has moved from questions of measuring progress towards SO2 to operationalizing in-country strategies, research, and resources for achieving SO2.

The working definition of demand and accompanying indicators for SO2 progress were combined into a succinct two-page document (see Annex 1). The IWG determined potential stakeholder and expert groups among which to circulate the two-page document in an extensive consultation process. The aim of this process was to determine face validity for a potential data collection tool to use in the future for monitoring and evaluation of SO2.

Expert groups that provided feedback on the definition and indicators before the regional pilots included:

- Canadian Pediatric Society (CPS), n=15 (June 2015)
- SEAR ITAG, n=11 (June 2015)
- Global Immunization Meeting, “Protect, Innovate, Accelerate,” Sitges, Spain (June 2015)
- GAVI civil society organization (CSO) Steering Committee (June 2015)
- UNICEF South Asia, West Central Africa, and East Southern Africa Regional Offices (Reviewed by four Communication for Development (C4D) specialists and Immunization Demand Promotion focal persons who manage demand promotion work carried out in GAVI-eligible countries in their regions. Immunization Advisers from the three regional offices as well as their C4D colleagues reviewed and commented on the two-pager, proposed definition, and indicators.)

Following this broad consultation process, members of the IWG further discussed and incorporated feedback into a revised two-page document. The IWG reported to the SAGE GVAP WG during their September 2015 session and outlined next steps for pilot testing of one of the revised indicators with EPI managers in three WHO regions. Pilot testing of the indicator began during the last quarter of 2015 and concluded in the first quarter of 2016. The results are currently being analysed and are presented in a separate report.
SECTION III – OUTPUT/OUTCOMES

BACKGROUND: KNOWLEDGE AND EVIDENCE BASE

Hesitancy: backdrop for demand work
The SAGE Vaccine Hesitancy Working Group (SAGE VH-WG) defined vaccine hesitancy as: “the delay in acceptance or refusal of vaccines despite availability of vaccine services. Vaccine hesitancy is complex and context specific, varying across time, place, and vaccines. It is influenced by factors such as complacency, convenience, and confidence.” (SAGE GVAP Vaccine Hesitancy Working Group, 2014)

As a starting point for definition development, the VH-WG determined that it is important to note that vaccine attitudes can be viewed on a continuum ranging from total acceptance to complete refusal, and that many vaccine-hesitant individuals fall in the middle of this continuum (Opel et al., 2011; SAGE GVAP Vaccine Hesitancy Working Group, 2014). Later in the report, the VH-WG shifts from this attitude-centred description of hesitancy to presenting vaccine hesitancy as a behavioural phenomenon. Under Section 3B in the report, it is maintained that vaccine hesitancy is a critical factor when vaccine acceptance in a specific setting is lower than would be expected given the availability of vaccine services. Additionally, the SAGE VH-WG presented a conceptual model outlining the interrelationship of confidence, complacency and convenience in hesitancy and developed a more comprehensive matrix of determinants of vaccine hesitancy. Since this time, attempts to define VH as a belief/attitude, behaviour, or a decision-making process that leads to a variety of behavioural outcomes have emerged in literature, as discussed in a 2015 paper (Peretti-Watel, Ward, Schulz, Verger and Larson, 2015). Additionally, behavioural economists have extended the 3-C model of hesitancy to include a behavioural aspect of “utility calculation” wherein users invest time and energy into determining the usefulness of vaccination on an individual basis (Betsch, Böhm and Chapman, 2015). The process of individual decision-making, or “calculation” in this case, may be more appropriately viewed as offering an element of complexity to the 3Cs since it shapes the variable combination.
of the 3Cs for every individual, which may take on more or less of a “calculating” character, or can be more or less prominent for each individual.

**Linking hesitancy to demand**
As the SAGE VH-WG definition specifies, *hesitation* can be viewed as an inherent step in the decision-making process that varies in duration and represents a “delay” in accepting or refusing vaccination. Hesitation or delay in making a decision is a natural part of the decision-making process for consumers, and delays in consumer decision-making, the reasons for their occurrence and reasons for subsequent delay-closures are explored in a growing body of consumer research (Greenleaf and Lehmann, 1995). While this process is widely recognized, less is known about the drivers for progression from delay to action. In the context of vaccination, we could suggest that this process is not followed every time as many parents in many contexts may have become passive compliers due to habituation, strong social norms, or compulsory legal environments. Moreover, while “acceptance” is a necessary condition for “demand,” demand for routine immunization services – as defined below – requires more than mere acceptance. Thus the schema of the vaccine hesitancy continuum presented in Figure 1 is misleading and requires modification to accurately reflect the relationship between hesitancy and demand. The modified schema in Figure 2 – in part informed by the terminology review described below – better reflects this understanding of the relationship between key concepts like refusal, hesitancy, acceptance and demand.

![Figure 2. Linking vaccine hesitancy continuum and continuum of demand](image)

**IWG interpretation of the GVAP SO2**
The IWG interpretation of the language of SO2 concentrates on the interplay between supply- and demand-side drivers, emphasizing the need to clarify the links that constitute their dynamic relationship (allowing for feedback) and on the exchange across actors on both sides of the conventional supply/demand or service/client distinctions. Some key points from initial working group conclusions are outlined below:
• The role of consumer-side factors cannot be isolated from service-side responsibility for stimulating and sustaining demand. Thus, we cannot assume that if one builds the system and provides the services, the demand of individuals and communities will naturally follow. It is therefore not helpful to blame the caregivers or clients for not adequately demanding vaccines and vaccination services. The weight of the literature supports the conclusion that in most cases – particularly among low-income populations and in lower-income countries – the most important contributors to patterns of un- and under-immunized children are related to service delivery issues, which in turn adversely suppress individual and community “demand” for services. There are of course exceptions, and further work is required to better understand how insights about “vaccine hesitancy” might fit within a broader understanding of demand and GVAP SO2.

• The responsibility for informing, engaging, and empowering individuals and communities to demand immunization belongs to supply-side actors such as programme managers and health-care professionals. High-functioning health systems encourage service uptake by creating opportunities to understand the priorities, perceptions and needs of their client populations. Attention should be given to the role of service provision in enabling consumers to act and the dynamic relationship between health workers and caregivers when and where they interact (e.g., point of service, joint micro-planning sessions, community meetings, etc.).

• In most contexts, health workers remain a trusted source of information about health-related issues, including vaccination. Situations where there are signs that health workers themselves have lost confidence in the value, safety or efficacy of vaccines should be treated with urgency as the populations they serve are clearly vulnerable to a broader erosion of public trust.

• Demand generation should serve the overarching goals of increasing coverage, reducing dropouts, and reducing inequities. Stimulating demand (e.g., for specific vaccines) may not be appropriate at all times or in all circumstances.

• Demand is a phenomenon that differs by context. In many of developed county contexts, individual choice rather than accessibility is becoming an increasingly important determinant of vaccine uptake (Bhattacharyya and Bauch, 2010). In most developing country contexts, many of the influencers of under- and non-vaccination status are service-related. In both contexts, scientific knowledge is less influential on vaccination status than experiences and perceptions of services, service delivery factors like performance and accessibility or convenience, and the quality of interpersonal communication between providers and caregivers/clients.

The SO2 IWG concluded that the intent behind SO2 is clear: all actors, including consumers, have a role in sustaining what works; cultivating resiliency so that setbacks that might compromise public trust in vaccines can be quickly addressed; and enhancing the likelihood of achieving key immunization outcomes related to coverage with equity. It is less clear how “demand-side” actors and dynamics should best be engaged to advance both GVAP and NIP objectives. There was consensus that situations relevant to SO2 are highly variable, both within and between higher- and lower-income countries, so we should not expect to arrive at a single
approach to achieving SO2, even as we leave open the possibility of developing a limited set of “global” indicators for tracking progress.

Key points:
- The SO2 work builds upon the findings and process of the SAGE WG on Vaccine Hesitancy.
- It is misleading to draw a clear distinction between system- or service-side dynamics and demand-related issues. The literature is clear that a primary determinant of demand (or lack thereof) is previous experience with or perceptions of services.
- In addition to informing and motivating the public on appropriate service use, vaccination programmes should consult with and listen to clients regarding their satisfaction with and perceptions of service accessibility, convenience, reliability and friendliness.
- The assumption cannot be made that if we make services accessible, community demand will follow.
- Situations relevant to SO2 are highly variable and exist in both higher- and lower-income countries. Thus, no single approach to enhancing demand will suffice in all contexts.

TERMINOLOGY RAPID REVIEW

During its tenure from 2012 to 2014, the SAGE Vaccine Hesitancy Working Group (VH-WG) confronted challenges with definitions. To carry out its mandate to explore vaccine hesitancy, the VH-WG had to define the phenomenon, propose options for its measurement and provide guidance on future priorities to address hesitancy and improve vaccine acceptance, a mandate that is similar to the mandate for the GVAP SO2 IWG. Vaccine hesitancy encompassed a broad content area that required engagement of multiple disciplines to agree on a definition of hesitancy and how to measure it.

The SO2 IWG determined that defining the term “demand” in the context of SO2 was similarly a key first step towards developing a global indicator to gauge SO2 progress. A rapid terminology review was conducted to begin to address this challenge. It was acknowledged that one of the most common definitions of demand is to equate it with the size of “the market” for a particular product, which is a measureable, patterned outcome of a complex combination of factors. The SO2 IWG rejected this macroeconomic definition of demand since, in the context of immunization, it would simply equate demand with coverage. Alternatively, we considered demand to be an important contributing factor among others that shape immunization outcomes.

Background
Often used as a counterpart to “supply,” the term demand first gained attention in public health and immunization literature several decades ago (Cook et al., 2009; Gilchrist and Nanni,
In the public health context, the term is commonly used to indicate an engagement level that needs to be increased and/or improved through various programme actions (Kochhar et al., 2013), and it often appears as a strategic area that programmes need to address in order to better engage with communities and individuals. Although commonly used, the term demand has not been well defined in the immunization literature, and direct measures of demand can be hard to interpret outside of macroeconomic definitions of supply and demand.

**Study aims and methodology**

The systematic rapid review (Ganann, Ciliska and Thomas, 2010) was conducted from December 2014 to January 2015. The review process employed a targeted search strategy and two reviewers during the application of inclusion/exclusion criteria, data extraction and quality assurance (National Collaborating Centre for Methods and Tools, 2010). The objective of the qualitative rapid review was to explore the breadth of the use of the term “demand” in immunization literature and to further explore a set of prescribed terms as they relate to the concepts of demand employed in the GVAP chapter on the Second Strategic Objective.

**Preliminary discussion on findings**

The IWG quickly recognized the need to distinguish between two meanings of the term, both of which are commonly used in the language of SO2: demand as “want” – a social-psychological variable – and demand as organized social or political action (i.e., “advocacy”). One is the want/desire to vaccinate along with a positive perception of vaccines and the other refers to action-oriented behaviours to access vaccines and vaccination services. The two components together comprise demand, and one without the other would make our understanding of demand incomplete in the context of SO2.

Five primary uses of the term “demand” in the literature review were identified as relevant to the discussion of the relationship between the two types of demand described above. These uses were categorized as either *individual-focused* or *community-focused* concepts including the following five forms of demand: 1) active, 2) passive, 3) motivation and intent, 4) negative and 5) collective.
Active and passive. In some of the literature, demand has been dichotomized into **active demand**, defined as “adherence to vaccination programmes by an informed public which perceives the benefits of and need for specific vaccinations,” and **passive acceptance**, defined as compliance or passive acceptance by a public which yields to expert recommendations, social pressure, or the reinforcing pressure of health workers and community leaders (Nichter, 1995). The IWG further described passive acceptance as a phenomenon that is shaped by both injunctive and descriptive norms (respectively, based on one’s perception of people’s behaviour versus based on one’s perception of whether a behaviour will be approved or disapproved of by people).

Merten et al. (2013) used Nichter’s term **active demand** in their cross-sectional study of the relationship between anticipated vaccine acceptance and illness perceptions as well as social and cultural implications of illness. They suggested that correct knowledge of cholera was positively associated with anticipated oral cholera vaccine (OCV) acceptance, although we know from other evidence that correct knowledge alone is not a primary driver of uptake. In their study, anticipated OCV acceptance was described as “percentage of participants confirmed that they would be willing to use an OCV” (Merten et al., 2013).

Similarly, Getrich et al. identified two vaccination decision-making models for the HPV vaccine: an encounter-based model and a process-based model (Getrich et al., 2014). In the encounter-based model, patients have little to no prior information/awareness/discussion on benefits and risks of HPV vaccine before they visit clinicians to get HPV vaccinations. In the process-based model, parents have greater exposure to information about the vaccine before the clinical encounter. **Active demand** could more likely occur in the process-based model and passive acceptance more often in the encounter-based model. In the encounter-based model, parents tend to have regret after the vaccination event while in the process-based model parents are less likely to subsequently regret the decision.

Acceptance can also be discussed among health-care workers, not just individuals and communities. Baron-Epel and colleagues indicated **passive acceptance** as an inhibitor of nurses

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### Five primary uses of the term “demand” in immunization literature

<table>
<thead>
<tr>
<th>Individual-focused</th>
<th>Community-focused</th>
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<tr>
<td><strong>Active demand</strong>: adherence to vaccination programs by an informed public which perceives the benefits of and need for specific vaccinations (Nichter, 1995)</td>
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<td><strong>Passive acceptance</strong>: lack of autonomy in making the decision regarding vaccinating themselves as well as low levels of trust in the public health authorities and positive attitudes (Baron-Epel et al., 2013)</td>
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<tr>
<td><strong>Motivation and intention</strong>: linked to intrinsic factors and subsequent vaccination behavior. Intentions can be with a users’ perceptions of barriers to vaccine access. Motivation has been assessed in relation to willingness (Garcia et al., 2014; Kang and Moneyham, 2011)</td>
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<tr>
<td><strong>Negative demand</strong>: parents’ delay or refusal of immunization due to vaccine-related doubts (Gilkey, McFlee, &amp; Brewer, 2013)</td>
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<td><strong>Collective demand</strong>: an agglomeration of individual characteristics, or as “social demand”, which refers to people requesting the provision of vaccinations or for improved service delivery (Harris et al., 2014)</td>
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receivin
g pertussis vaccines. *Passive acceptance* was defined as lack of perceived autonomy in healthcare workers’ decision to vaccinate themselves as well as low levels of trust in public health authorities (Baron-Epel et al., 2013).

**Motivation and intention.** Linked to decision-making, motivation and intention comprise underlying intrinsic and extrinsic factors that could be more closely linked to the actual action of vaccinating than individual, household, or community characteristics such as socioeconomic status or education status. García L. et al. used the two terms *demand* and *motivation* interchangeably in their study that measured parents’ motivation to vaccinate their children (García L. et al., 2014). Kang and Moneyham (2011) also described users’ *intention* to be vaccinated. They indicated that intentions for vaccinations were associated with users' perceptions of access barriers to vaccination. In their cross-sectional, descriptive, correlational and comparative study, they used one item to measure intention to receive the HPV vaccine, which is “I intend to receive the HPV vaccine.” This item is rated on a 5-point Likert scale, with higher scores indicating a greater intention towards vaccination (Kang and Moneyham, 2011). The study found users who have higher vaccination intentions usually perceived fewer barriers to vaccine access. Allison and colleagues also used *intention* in their cross-sectional study of factors associated with receipt. Respondents were categorized as *already immunized, intend to immunize, or no plans to immunize* (Allison et al., 2010).

*Importantly, positive attitudes towards vaccines or stated intention to vaccinate do not necessarily translate into the behaviour of seeking vaccination.*

Holte, Mæstad and Jani also examined *motivation* in conjunction with *willingness* in their study of demand for childhood vaccinations. The researchers used bivariate logistic regression analysis to examine the association between demand for vaccinations and coverage. Findings suggested that *trust* in distributors of information and vaccines can generate perceived benefits for vaccinations, and this *trust* in turn drives demand for vaccinations (Holte, Mæstad and Jani, 2012).

**Negative demand.** Gilkey, McRee and Brewer (2013) described *negative* demand as parents’ delay or refusal of immunization due to vaccine-related doubts. The authors designed the study to report on factors related to missed vaccinations. Inherently, the concept links to vaccine-related attitudes and vaccine hesitancy. Evidence suggests that missed vaccination is associated with healthy child feeding practices in addition to findings suggesting that temporary periods of relative vulnerability (such as a child being born before the due date or being ill at the time of a health-care visit) are associated with missed vaccination more than states of longer-term illness or disability (Gilkey, McRee and Brewer, 2013).

**Collective demand.** The concept of collective demand could be approached 1) as an agglomeration of individual characteristics (as an opinion poll would treat it) or 2) as “social demand,” which refers to people requesting the authorities or health services to provide vaccinations or to improve the quality of vaccination delivery (Harris et al., 2014). The second meaning connotes demand as a verb/action. The relationship between these two meanings of
collective forms of demand is not clear and deserves additional analytical attention and research.

The two forms of collective demand relate to the body of literature on social and cultural normative behaviour that describe social influences on decision-making (Bentley, O’Brien and Brock, 2014). Other researchers have found that parents often make their decisions based on what they think they should do as a responsible parent (Dore, Stone and Buchanan, 2014). Through modelling, imitation rates (following vaccine-scare events) have been found to shift vaccine acceptance (Bhattacharyya and Bauch, 2010). Other assessments have further categorized parents who take decisions on vaccination into those who rely mostly on general social norms and those who rely primarily on their own research (Brunson, 2013). The body of evidence on variations of collective demand continues to grow and offers a complementary perspective to individual-focused approaches to the subject of demand.

Status of work to date
Currently, data extracted from over 130 articles are being reviewed, coded and analysed for themes on the utility of the term demand. A draft manuscript is available and is currently being prepared for submission to a peer-reviewed journal.

Key points:
- Determining working definitions of demand is a necessary first step in the discussion about measurement and indicators. It is important to distinguish demand from related concepts such as hesitancy and to acknowledge that the literature deals with several distinct “types of demand.”
- Five thematic uses of the term “demand” were found in a rapid review of the literature: 1) active, 2) passive, 3) motivation and intent, 4) negative and 5) collective.
- Positive attitudes towards vaccines or stated intention to vaccinate do not necessarily translate into the behaviour of seeking vaccination.

DEFINITION OF DEMAND

Past working groups tasked to examine new areas or concepts related to immunization have struggled with achieving consensus about definitions. The IWG recognized this risk early on when it came to the commonly used term “demand.” By looking at different ways the term has been used in the context of immunization in the published literature, we narrowed our working definition of the term and focused the scope of discussion so that the SO2 goals would be clearer and so we, in turn, could identify or develop relevant indicators.

Roles and responsibilities associated with SO2 and demand
We consistently emphasized that when thinking about demand, the onus should not be on the consumer/client such that low uptake could reflexively be blamed on caregivers’ apathy.
Governments, partner agencies, private sector actors, civil society organizations and other advocates or champions of immunization have a role to play in cultivating and sustaining public demand for immunization and creating an enabling environment for that demand to translate into coverage with equity. Importantly, the IWG also emphasized that this includes preparedness and cultivating “resiliency” such that adverse events following immunization (AEFIs), rumours, misinformation, or disruptive events like conflict or political unrest do not significantly undermine public trust in and demand for immunization services.

The IWG described the characteristics of demand, its primary shapers/influencers, and the conditions in which it presents. The following observations influenced the final output of definition-focused discussions:

- Responsibility for immunization programme success includes service-side responsiveness to individual and community perspectives, which entails establishing mechanisms for community participation and input on key decisions in immunization service delivery;
- Demand must be considered within the context of immunization service provision and other supply-side characteristics that influence demand;
- Governments and supply-side actors are responsible for fostering demand in primarily two ways: “stimulating” and “sustaining”;
- Demand in the context of SO2 includes three primary actions: “seeking” (individual behaviour), “supporting” (expressing a social norm) and “advocating” (organized action to influence decision-makers);
- Demand is an action requiring more than “acceptance,” and it is not directly measurable as coverage.

The output from the discussion on vaccine demand definitions includes one succinct behavioural definition with an accompanying descriptive statement regarding the variability of contexts and manifestations of individual and community demand (or lack thereof). The following is the definition and statement that the IWG formulated based on the literature review and conceptual work outlined above. It is a working definition of demand for vaccines and immunization services, after several revisions based on input from WG face-to-face meetings, teleconference calls, and multiple consultations with a variety of experts and stakeholders.

*Demand is the actions of individuals and communities to seek, support and/or advocate for vaccines and vaccination services.*

*Demand is dynamic and varies by context, vaccine, vaccination services provided, time and place. Demand is fostered by governments, immunization programme managers, public and private sector providers, local leadership and civil society organizations hearing and acting on the voices of individuals and communities.*
It was agreed that the above definition will be used for upcoming regional pilot testing of the related indicators and upcoming initiatives focused on “demand generation” for immunization.

Key points:
- Responsibility for immunization programme success includes service-side responsiveness to individual and community perspectives.
- Individual and community demand has three primary forms: 1) seeking, 2) supporting and 3) advocating.
- Governments, programme managers and partners have the responsibility for fostering these in two primary ways: 1) stimulating and 2) sustaining.
- Demand is more than acceptance, and it cannot be directly measured as coverage.

CONCEPTUAL FRAMEWORK

Rationale for the development of the framework
Recent frameworks/models have emerged to conceptualize the phenomena of vaccine hesitancy (Peretti-Watel et al., 2015), collective behaviour (Bentley et al., 2014), immunization system behaviour (Varghese et al., 2014), and vaccine decision-making processes and influencers (Betsch et al., 2015). Each has been helpful in describing either conceptually or mechanistically the relationship among factors related to vaccination outcomes and between different groups and structures. An exercise to specifically conceptualize the link between vaccine attitude/belief and behaviour was undertaken in an attempt to further describe vaccine demand, what we can gather from evidence, and knowledge and practice gaps that might be addressed in the future. It was intended to visually capture this link and the variations in the degree of influence of attitude/belief in vaccination behaviour so that discussion and placement of examples of demand could be located within each of the four quadrants.

Process for the development of the framework
Two investigators examined 70 articles across the disciplines of: behavioural economics, social sciences, marketing research, immunization-specific literature, behavioural psychology, systems research and operational research. The investigators extracted data from the 70 articles and proceeded with open and axial coding, using grounded theory for the process of relating codes to determine the key drivers/influencers and components of demand.

From these codes, the framework includes basic influencers of the attitude/behaviour listed within the space of each of the four congruency–incongruency quadrants. Each was identified through a review of the literature and has since been included in a working manuscript focused on the underpinning theory of the framework, with its subsequent application described in country case studies.
Building on the first draft of the framework and its first set of factors, we expanded the list of influencers/shapers/modifiers of belief–behaviour relationships with respect to vaccination (still subject to change) (see Figure 3).

The original framework: a brief description
The first version of the framework (Figure 4) was designed to plot two analytical dimensions that represent: 1) the attitudinal/belief spectrum ranging from the extent to which an individual’s attitude/belief in vaccines/vaccination is strongly positive (accepting) versus negative (rejecting), and 2) the behavioural spectrum, ranging from completely vaccinated to completely unvaccinated status. The two axes form quadrants that represent areas of congruity of attitude/belief and behaviour as well as areas of incongruity of attitude/belief and behaviour. Congruity can be simply defined as “doing/behaving according to what we value/believe/think”, and incongruity as “not doing/behaving according to what we value/believe/think”. For example, quadrant one (top left) represents those who may reject the concept and/or importance of vaccines and vaccination but still have children who have almost-fully to fully vaccinated status.

Symbolically, the two axes are not placed to form quadrants of equal size but instead to reflect the potential congruent-incongruent attitude and outcome groups of parents. Congruence exists for consumers (in this case parents/caregivers) who completely accept vaccination services and fully vaccinate their children as well as for those who completely refuse vaccination and whose children are not vaccinated. Attitudes that manifest as hesitancy, passivity and habitual or normed behaviour (culturally, socially, etc.) likely exist along the attitudinal/belief spectrum, so it is unclear whether the extent to which they contribute to positive or negative vaccination outcomes. If there is little to no delay, then we might guess that the parents are compliers, the habit of vaccinating may have developed, or regulation supersedes any individual-level attitudes/beliefs.
Application: examples using the original framework

For this first scenario of congruence, structural barriers must be limited and good availability, quality of care and accessibility must exist in the immunization system. For the second scenario of congruence, structural barriers may or may not exist, but the underlying driver of outcome is an attitude/belief against vaccines/vaccination. In the areas of incongruence where attitude/belief does not match with outcome, those who have complete acceptance of vaccines/services may be met with structural barriers that limit their ability to have their children vaccinated, and those who have refusing attitudes towards vaccines/services may nevertheless have vaccinated children because of strong social norms or regulatory environment.
Figure 4. Model of congruence: Vaccine attitudinal/belief spectrum compared to a vaccination outcome spectrum
Status of work to date

As a part of the next steps, a small subgroup is revising both the framework and drafting a manuscript to consolidate supporting theory and evidence from literature. The group is also refining the current list of influencers to enable categorization and provide semi-structured themes by which country case studies can be presented. The manuscript is intended for submission to a peer-reviewed journal. Subsequent drafts of the framework include dimensions for actions in the working definition of demand: accepting, seeking and uptake.

Key points:

- A framework to help address the intention-behaviour gap and attitude/belief–behaviour link was developed based on a broad scan of the literature.
- There are areas of congruence in attitude and behaviour (e.g., I am a parent who values vaccination, and I have fully vaccinated children), and there are areas of incongruence in attitude and behaviour (e.g., I am a parent who agrees with vaccination, but I have fully vaccinated children).
- Demand (in the scope of service delivery) will differ within each area of attitude/belief–behaviour congruence or incongruence, and these scenarios can shift from one situation of congruence/incongruence to another over time.

MEASUREMENT: INDICATORS FOR MONITORING AND EVALUATION

Following discussion on demand terminology, the conceptual framework for demand and the development of a working definition for vaccine demand, the IWG focused on developing indicators for SO2. Demand for vaccination is not simple to measure because it is complex and context specific. Examples will be needed for supporting why context matters (place, time, vaccine) and how social determinants of health can sometimes be positive or negative forces. Because of the inherent complexity of demand, a model or framework would be helpful for directing working group steps and priorities as well as for discussing where knowledge gaps remain to be addressed by a research agenda.

Overarching themes from the discussion on measurement are as follows:

- Diagnostic measures (like those outlined in the Tailoring Immunization Programmes [TIP] tool resource) should first be employed before moving directly to tactics like “demand generation” (WHO Europe, 2013). First steps should include analysis of coverage data and segmentation of population groups at a granular level (wherever possible) to see where problems might exist.
- A single measure for “demand” or SO2 more generally is probably not useful. A panel or dashboard of indicators that collectively indicate where there might be problems or opportunities associated with demand-side dynamics may be more useful.
• The panel/dashboard of indicators might have a tiered structure that includes indicators at different “levels” (system levels may include: national, subnational/provincial, district, community and individual).
• Because adverse events following immunization often affect “demand” – at least temporarily – these events and associated (social) media fallout should be tracked to analyse the information spread and find effective ways to minimize damage.
• Identify interventions across low-, middle- and high-income countries that have been shown to facilitate consumer participation and uptake of services and develop meaningful ways of measuring their impact. For example:
  o Joint microplanning
  o Engaging with a wide range of stakeholders before introducing new vaccines, adjusting service delivery, or extending vaccines to new age groups, etc.

To measure progress towards SO2, and thus individual and community demand for vaccines, existing frameworks and evidence could be leveraged to understand relationships and factors with an open mind to different measurement methods, some new to the field of public health research. The IWG should also explore opportunities for measuring progress towards SO2 via existing data sources (e.g., Demographic Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), others).

**Indicators – process/input and outcome**

The IWG felt that a single global measure of “demand” was not feasible, but that a combination of several measures, including national immunization programme inputs as well as outcomes related to coverage, dropout rates and timeliness, could provide a non-specific but meaningful sense of progress regarding GVAP SO2. Such indicators are not expected to be direct measures of demand but rather provide evidence of programme investments in fostering and sustaining demand along with indirect measures of programme success in reducing dropouts and improving timeliness. The IWG considered feasibility, data source and reporting burden to arrive at the following proposed indicators:

**Proposed Global SO2 Indicator – Source: Joint Reporting Form (JRF)**

Number of countries whose annual immunization plans include budgeted activities to stimulate and/or sustain public demand for vaccines and vaccination services. Examples include health worker training in interpersonal communication, communication crisis plan development and standard operating procedures, health system mechanisms for individual and community feedback on immunization services, or partnering with local leadership and/or civil society organizations (CSOs) to meet community needs.

It is proposed to add three indicators for SO2, drawing on existing routine data where possible (no additional data collection process for countries):

1. **SO2 Indicator #2 – Coverage:** DTP3 and MCV1, **Source:** WHO/UNICEF Joint Estimates
2. **SO2 Indicator #3 – Dropout:** DTP1 compared to DTP3, **Source:** WHO/UNICEF Joint Estimates
3. **SO2 Indicator #4 – Timeliness**: Measles Containing Vaccine 1 (MCV1) vaccine given within 1 month after the time when the child becomes eligible according to the country’s immunization schedule, *Source*: MICS/DHS (to be determined)

**Feedback and further discussion**

Although the IWG would like to add an indicator to the JRF, it should be noted that doing so entails a lengthy process. The JRF revision committee meets every other year. If the addition of indicators for tracking progress of the SO2 is approved, the first round of data will be received in 2017 for 2016 data. This has implications for the next steps to take for validating and improving the above proposed indicators.

After review of the feedback following the broad consultation described in the Methods section of this report, the IWG discussed the addition or change to the above primary global indicator. Considering the initial data received for related vaccine hesitancy questions on the JRF, variations of the above indicator have been proposed to facilitate the understanding of the demand phenomenon and overall response rate to the questions by EPI managers who are completing the JRF. One proposed indicator to support the existing proposed global indicator is as follows:

> Last year, what did the country’s immunization programme do to promote or sustain public (individuals and communities) demand for vaccines and vaccination services? Please provide up to three main activities.

> These activities could have been implemented by any partner as long as they have been requested by the national immunization programme. Examples might include but are not limited to: health worker training in interpersonal skills, mechanisms for individual and community feedback on immunization services, partnering in with local leadership and/or civil society organizations (CSOs), crisis communication plan development, etc.

**Status of work to-date**

Steps are currently being taken to assure IWG consensus for varying formats of the indicators presented above and supporting background information like the definition for demand. UNICEF and WHO leads are working with regional office partnerships to prepare for pilot testing of the different formats/scenarios of indicator layouts and question wording, and feedback will be consolidated and prepared for review at the next SAGE GVAP WG.
Key points:

- A single measure for demand and the SO2 is not feasible, nor is it likely the best option. A dashboard of indicators to offer information about different aspects of demand will be more useful.
- The process for making additions to the JRF is time-consuming, and broad consultation and regional pilot testing work is needed to increase the likelihood of having changes approved.
- The demand-focused indicators are not meant to be direct measures of demand but rather evidence of programme investments in fostering and sustaining demand along with indirect measures of programme success in reducing dropouts and improving timeliness of vaccinations.
SECTION IV – MOVING FORWARD

NEXT STEPS

Measurement
Now that the indicators have been developed, steps are being taken to pilot test them in two or more regions. EURO, AFRO and/or SEARO regions are being considered. Additionally, EPI managers’ meetings and regional technical advisory groups will be considered as places where qualitative feedback on the indicators could be collected. Results are to be reviewed and compiled by the IWG and subsequent revisions will be made to the indicators, associated questions, means of data collection, etc.

Products/documents
Two manuscripts are currently being prepared for publication as peer-reviewed articles in journals in support of this work on demand. First, an article on the demand conceptual framework-building exercise based on a thorough review of the literature is being finalized. Second, the examination of the context and concept behind the current use of the term demand in immunization literature is being finalized through data review and thematic analysis, prior to drafting a manuscript. The aim is to: 1) submit the demand conceptual framework manuscript for peer review and 2) complete first draft and feedback activities of the demand-terminology manuscript with subsequent submission of the manuscripts for peer review. Thus far, the subgroups of the IWG are on track for meeting these aims.

A third manuscript, this final report on IWG progress for the monitoring and evaluation of the GVAP SO2, is to be the basis of a future manuscript for reporting on the background, process and output of indicator development from initial discussions on framing the definition of demand and formative research on demand terminology and conceptualization to the development of indicators and the result of their subsequent pilot testing in the regions. This will be updated once the results of the pilots are analysed.

Reporting for decision
After the process of pilot testing has been completed, the IWG intends to compile all background information, pilot testing data and technical decisions for presenting to the SAGE GVAP WG. Based on the pilot testing results, the SAGE GVAP WG will have enough information to decide the best way forward for the monitoring and evaluation of progress related to the second strategic objective of the GVAP. Based on feedback, subsequent recommendations to the JRF committee can be prepared and made during the next session.
RECOMMENDATIONS

Recommendations based on the results of the upcoming indicator pilot testing will be made after additional analysis and presentation of results is completed. Pilot testing of the proposed indicator began during the last quarter of 2015 and concluded in the first quarter of 2016. The results are currently being compiled and will be presented in a separate report.

Additional recommendations of the IWG will be based on these results and should include input on future research agenda in the areas of communication, behavioural and system sciences for immunization, the development of evaluation methods and tools for understanding impact of related interventions, preparation of diagnostic tools for country use and training materials, and guidance on application of interventions to address particular types of demand-related challenges at country level.

Perhaps most importantly, SO2 working group outputs and recommendations have informed more recent work undertaken by Immunization partners focused on developing a communication framework and associated tools as well as establishing a research agenda to enhance in-country demand for immunization. Examples include the Communication for Immunization Framework developed by partners at the Immunization Partners’ Meeting on Advocacy, Communication, and Community Engagement for Routine Immunization, hosted in New York, March 2016. The outputs and groundwork from this meeting have in turn informed the establishment of an interagency technical advisory body, the Demand for Immunization Hub, co-chaired by UNICEF and WHO. Another example is the extension of the UNICEF partnership with the Harvard Opinion Research Program at the Harvard T.H. Chan School of Public Health to include in-country research on routine immunization. The results of a Harvard poll conducted in the first quarter of 2016 are currently being used to inform Uganda’s National Communication Strategy for Routine Immunization, 2016–2020.

To summarize, the work started by the SO2 working group has increasingly moved from questions of defining the term “demand” and measuring progress towards SO2 to questions of operationalizing the SO2 Working Group’s definition of demand to inform global, regional and national programmatic work towards achieving SO2.
REFERENCES


Strategic Objective 2 of the Global Vaccine Action Plan (GVAP SO2) states “individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility.” SO2 differs from the five other Strategic Objectives as it focuses not only on the supply side, but also on the demand side – the role of the health-care system, communities and individuals in achieving and sustaining immunization programme objectives.

A primary task of the GVAP SO2 Working Group (WG) was to identify indicators that could be used by WHO, UNICEF and national immunization programme managers to assess and track global and national progress in achieving SO2. Since the intent of SO2 hinges in large part on the meaning of the term “demand,” the WG first completed a terminology review to help arrive at a definition of demand relevant to the GVAP SO2. Observations that influenced the development of this working definition are:

- Responsibility for immunization programme success includes service-side responsiveness to individual and community perspectives; this entails establishing mechanisms for community participation in key decisions and immunization service delivery;
- Demand must be considered within the context of immunization service provision and other supply-side characteristics as these influence demand;
- Governments and supply-side actors are responsible for fostering demand in primarily two ways: “stimulating” and “sustaining”;
- Demand includes three primary actions: “seeking” (individual behaviour), “supporting” (expressing a social norm) and “advocating” (organized action to influence decision-makers);
- Demand is an action requiring more than “acceptance” and is not directly measurable as coverage.

**Definition** – The SO2 WG proposed the following working definition and supporting statements:

*Demand is the actions of individuals and communities to seek, support and/or advocate for vaccines and vaccination services.*

*Demand is dynamic and varies by context, vaccine, vaccination services provided, time and place. Demand is fostered by governments, immunization programme managers, public and private sector providers, local leadership, and civil society organizations hearing and acting on the voices of individuals and communities.*

Next, the WG focused on developing indicators for SO2. Consensus was that a single global measure of “demand” was not feasible, but that a combination of several measures including national immunization programme inputs as well as outcomes related to coverage, dropout rate and timeliness could provide a non-specific but meaningful sense of progress regarding GVAP SO2. These are not meant to be direct measures of demand but rather evidence of programme investments in fostering and sustaining demand, along with indirect measures of programme success in reducing dropouts and improving timeliness of completion of the childhood vaccine
schedule. Feasibility, data source and reporting burden were criteria applied by the WG to arrive at the following proposed indicators:

**Primary Global SO2 Indicator** – *Source: To be added to the Joint Reporting Form (JRF)*

Number of countries that include in their annual immunization plans budgeted activities to stimulate and/or sustain public demand for vaccines and vaccination services. Examples include health worker training in interpersonal communication, communication crisis plan development and standard operating procedures, health system mechanisms for individual and community feedback on immunization services, or partnering with local leadership and/or civil society organizations to meet community needs.

Three options for the wording of the JRF question associated with the primary indicator are:

**JRF Question (Option 1)**

1a. In your country’s annual immunization plan, do you have distinct budgeted activities to stimulate and/or sustain public demand for vaccines and vaccination services?
   
   Yes    No

1b. Which of the following are included in your annual immunization plans?
   [Please circle all that apply]
   1. Health worker training in interpersonal communication,
   2. Communication crisis plan development and standard operating procedures,
   3. Health system mechanism for individual and community feedback on immunization services,
   4. Partnering with local leadership and/or civil society organizations,
   5. Other _______________________________

**JRF Question (Option 2)**

1a. In your country’s annual immunization plan, do you have distinct budgeted activities to stimulate and/or sustain public demand for vaccines and vaccination services?

For example, these might include health worker training in interpersonal communication; communication crisis plan development and standard operating procedures; health system mechanisms for individual and community feedback on immunization services; partnering with local leadership and/or civil society organizations; etc.]

   Yes    No

1b. If yes, please describe budgeted activities:

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

**JRF Question (Option 3)**

1. In your country’s annual immunization plan, which of the following activities have been budgeted to stimulate and/or sustain public demand for vaccines and vaccination services?
   [Please circle all that apply or select none]
1. Health worker training in interpersonal communication
2. Communication crisis plan development and standard operating procedures
3. Health system mechanism for individual and community feedback on immunization services
4. Partnering with local leadership and/or civil society organizations
5. Other
6. None

Other SO2 indicators draw on existing routine data where possible:

Other SO2 Indicator #1 – Source: WHO/UNICEF Joint Estimates
**Coverage**: DTP3 and MCV1

Other SO2 Indicator #2 – Source: WHO/UNICEF Joint Estimates
**Dropout rate**: DTP1 compared to DTP3

Other SO2 Indicator #3 – Source: MICS/DHS (TBD)
**Timeliness**: MCV1 vaccine given within 1 month after the time when the child becomes eligible according to the country’s immunization schedule
Annex 2

NOTES FROM THE FIRST AND SECOND FACE-TO-FACE MEETINGS: the decisions taken to arrive at the current working definition of vaccine demand and SO2 indicators

**Definition** – The SO2 IWG proposed the following working definition and supporting statements: *Summarizing the definition conversation AFTER the first face-to-face meeting*. A tentative definition that includes the main themes of our discussion is provided below and represents a first attempt at clarifying the scope of SO2, particularly as it relates to the term, “demand.”

Demand for vaccines and immunization services entails creating and sustaining enabling environments suitable for clients/consumers who are primed to seek, accept and advocate for vaccination services for themselves, their families and their communities. Demand stimulation entails reinforcing positive behaviours and cultivating resiliency to the effects of events that might adversely affect decision-making, public trust, and/or the enabling environment required to sustain and enhance immunization outcomes.

DISCUSSION POINT: Issue with the use of the word Demand.
A. *Point*: The word Demand is a part of our jargon problem; we should consider not using it.
   a. We should think about what the SO2 was intending when Demand was used. It could be interpreted as the sustainability of the “pull” side that comes from communities. Similar to discussion at the first face-to-face meeting in New York City (4–6 February 2015), it is recognized that we cannot and should not separate demand for immunization from Demand for health services.
B. *Counterpoint*: We cannot avoid the word Demand as it is appearing everywhere.
   a. This is ground we covered at the 4–6 February 2015 meeting. We need to keep the efforts to define Demand separate from the objective of measuring SO2-related progress (though they are not mutually exclusive). Here, we are really trying to foreground it. We do not want to sidestep the dialogue, even though we (and everyone) struggle with the use of the word “demand.”
C. *Output/decision*: A simple and clear definition of Demand is going to be the most helpful to us and to the greater practice and research communities. It is important to define Demand because we (practice, policy and research communities) have been using it, and this is the best space to do so.

DISCUSSION POINT: Issue of having the word “accept” in the definition. Are we interested in measuring demand including acceptance or without acceptance?
A. *Point*: It is important to include “accept” in the definition because it can represent the normative behaviour/habit/passive compliance that many consumers exhibit.
   a. If we have moved away from linking demand to coverage by eliminating “acceptance” from the definition...then we will have to grapple with the disconnect. How worthy is it to focus only on the advocacy-seeking parts of demand?
   b. It is worthy to examine those who “accept” versus seek/advocate because of our stagnating progress (coverage).
c. If you demand something, you are likely to accept it. If you accept something, it does not mean that you will demand it.

B. Counterpoint: The term “accept” is subtler than what the essence of SO2 reflects, and it is not what “demand” implies.
   a. In systems where more is expected/standard for consumers to uptake (e.g., parent has to go and get the vaccine and bring it to the physician for reasons linked to regulation (not receiving family allowances), would “accept” be an adequate term for giving up opportunity-related costs and for the underpinning “will” to pass barriers in order to have children vaccinated? Context does matter, and accept is likely too passive a term to include in the definition.
   b. If you go to get the vaccination, then some effort is needed to get it and opportunity costs are considered.

C. Output/decision: Exclude the use of the word “acceptance.” Setting the bar high by using just the words “seek” and “advocate” is more reflective of what SO2 implies than if we include the term “acceptance,” which may be captured by the already existing coverage measures.

DISCUSSION POINT: Issue with how to refer to the population discussed under the SO2.
A. Point: SO2 explicitly states “individuals and communities.”
   a. Keeping SO2 language may be the easiest way to go. The alternatives (e.g., consumers, clients, or beneficiaries) are jargon that may muddle our definition of Demand.
   b. When using communities in the definition, there is no clarity on what a community entails (i.e., the unit of measurement or description).
B. Counterpoint: Consumers is often a term given to the population discussed under the SO2 when discussing health service delivery and uptake.
   a. “Consumers” is a better term than clients or beneficiaries. It is succinct and reflects the idea of individuals and communities uptaking vaccines.
C. Output/decision: The SO2 language should remain (i.e. Individuals and Communities), and individuals and communities reflect the layers of Demand and the desired SO2 populations of interest.

DISCUSSION POINT: Issue with incorporating the LINK between supply and demand, as discussed during the 4–6 February 2015 face-to-face meeting at UNICEF headquarters in New York.
A. Point: Supply-side responsibility to create an enabling environment should be a part of the Demand definition.
   a. Supply cannot be separated from the community (Demand is the responsibility of and exists largely in part because of the efforts on Supply side). Demand for vaccination does not exist in a vacuum; it exists in the context of the supply side.
   b. Temporarily, governments/governance/supply side was added to the definition for Demand
B. Counterpoint: The definition becomes too complex when adding governments/governance, and consideration for all stakeholders would be missing in the definition.
   a. Including the LINK between supply and demand is important, though the definition may not be an appropriate place to include this. At the same time we want to accommodate scenarios that do not match, where supply-side readiness to deliver services is sufficient (i.e., where communities need to advocate for services that should be made available).
b. In most situations governments/governance is not sufficient, and problems with coverage can be associated with this insufficiency. One example of this occurrence is the all-too-common event of stock-outs. Another example relates to messaging/communication where the efforts to raise awareness and boost public demand for a new/continuing vaccine was not met by supply in the publicized time frame. This is twofold, where the negative outcome of unmet demand occurs and the positive outcome of galvanized political action follows.

C. Output/decision: Include the LINK in the definition and revisit to discuss.

DISCUSSION POINT: Issue with product/service distinction (vaccine/vaccination) in the definition.
A. Point: Advocacy-seeking is expected and needed for both product and service.
   a. Advocacy for vaccines should not result in too much public demand for vaccines that are not appropriate for the given setting.
B. Counterpoint: The term “vaccination” is sufficient to imply both product and actual point of service delivery.
   a. The addition of vaccine may complicate a succinct definition.
C. Output/decision: Include both and add a footnote to qualify seeking/advocating for vaccines that are “epidemiologically appropriate.”

DISCUSSION POINT: Issue with the term “value” that appears in the SO2. Should it also be in the definition of Demand?
A. Point: Value is the term that can connect attitude (or the Hesitancy work preceding our IWG) to the behaviour of uptake.
   a. Worth, trust, etc. are synonyms of value. Value can be something more than acceptance that is the first step towards Demand.
B. Counterpoint: Value is a different part of the SO2, and the definition of Demand is within the larger scope of SO2.
   a. One can value something but not demand it. By defining Demand we could be implying that individuals/communities value vaccines/vaccination.
   b. Value is another area of inquiry.
   c. If Value is included in the definition for Demand, then other determinants/factors of demand should be considered for the definition.
C. Output/decision: Value does not belong in the definition of Demand. It is related (part of the SO2) and should be included in the description of context.

Review of supporting statements and material for building description of context for Demand

Consider linking vaccines/vaccination services with other health services. The definition should be kept as simple as possible. Description to follow the definition can include all of development context. Keep the definition as simple as possible…and keeping individual and communities. In the context of all of development…this should be kept in mind.

Distinguishing between sustaining demand and stimulating demand. Factors associated with Demand/SO2 can be categorized as having a sustaining/stimulating effect on Demand. Some may qualify as a factor of both as well.
Community ownership should have its place in the discussion on SO2 progress. Linking services with communities through systematic dialogue and joint microplanning has been referred to effective means for creating community ownership of programmes.

Linking indicators/methods of measurement to a phenomenon that varies by context. This is the same challenge that the vaccine hesitancy faced when approaching similar terms of reference. Prefacing the conversation on measurement and indicators, we will need to place constraints on what we will be able to measure first without new primary data collection.

Firstly, the indicator(s) sought at this face-to-face meeting are not to provide direct measures of Demand but rather measures that evidence Demand being fostered, supported and/or propelled.

Secondly, additional efforts to more directly measure the actual manifestation of Demand and its change will be considered secondary and a part of future objectives for the group and for the research agenda (consider here efforts to measure vaccine confidence).

AFTERNOON SESSIONS

Review discussion on Demand definition (afternoon start)

There was a discussion about the inclusion of three parts to the Demand definition section of the report: definition, footnotes and then context/background in a narrative section. Regarding the context/background, themes could be organized into health systems-related issues and community engagement in the delivery system (e.g., communication strategies and other means to create resiliency (sustainable demand)).

Demand definition: status after Day 1

Members are in favour of the following definition:

“Demand exists where individuals, communities and governments value, seek and/or advocate for vaccines and vaccination services for themselves, their families and their communities.

Demand can vary by context, vaccine, services provided, time and place.”
Annex 3 – Revised Figure of Vaccine Demand Continuum. The Vaccine Demand Continuum Figure was revised to reflect that demand in the context of SO2 is best conceived as a complex state built on enabling pillars that are vulnerable to shocks, with active demand at a point beyond mere acceptance at the top. The risks of hesitancy or refusal increase when foundational enablers are not in place at the bottom (Figure 3).

Figure 3: Demand in the context of GWP SO2 – Promoting and sustaining demand works across all pillars and enablers to build support beyond vaccination acceptance only, and prevent or mitigate potential threats to broad-based demand.