

Behavioural and social drivers of vaccination

Tools and practical guidance for achieving high uptake



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Foreword

The tools in this guide were developed, tested and validated through a rigorous, evidence-based process with support from a global working group. The outputs of this effort were presented to the WHO Strategic Advisory Group of Experts on immunization (SAGE) at its meeting in October 2021. In a subsequent report SAGE recognized the importance of measuring factors that contribute to low uptake and took note of the evidence-informed framework with four domains for measuring behavioural and social drivers (BeSD). SAGE recommended the systematic gathering and use of data on BeSD to assess the reasons for low uptake, for routine tracking of trends, and for monitoring and evaluation of interventions.

The full SAGE recommendations appeared in the *Weekly epidemiological record*, 17 December 2021, <https://apps.who.int/iris/handle/10665/350649>.

Purpose of the document

This guidebook supports the use of the BeSD of vaccination tools to understand what drives uptake of vaccines. It is intended for immunization programme managers, research advisors and others who are collecting, analysing and using data for immunization programme planning and evaluation. Routine tracking of BeSD data will offer insights into how to continually improve programme implementation.

Using the validated tools presented here will equip programmes and partners to understand the reasons for low vaccine uptake, track trends over time and reduce coverage inequities by gathering and using data to systematically design, implement and evaluate tailored interventions.

To enable the World Health Organization (WHO) and partners to gather feedback and any lessons on the use of these tools, any comments or queries can be shared through this [contact form](#).

Acknowledgements

Special thanks are due to all members of the WHO working group on measuring behavioural and social drivers of vaccination (BeSD) who guided the development of this document and all BeSD tools. The BeSD working group was active from November 2018 to January 2022, chaired by Julie Leask (University of Sydney, Australia) with deputy chair, Noel Brewer (University of North Carolina, United States of America). Members providing research support include Gilla Shapiro (University of Toronto, Canada), Kerrie Wiley (University of Sydney, Australia) and Nisha Gottfredson (University of North Carolina, United States).

Other BeSD working group members include Neetu Abad (Centers for Disease Control and Prevention, United States [US CDC]); Sohail Agha (the Bill & Melinda Gates Foundation [BMGF], United States); Helena Ballester Bon (United Nations Children's Fund [UNICEF]); Cornelia Betsch (University of Erfurt, Germany); Vinod Bura (WHO, Indonesia); Ève Dubé (Laval University, Canada); Michelle Dynes (UNICEF); Melissa Gilkey (University of North Carolina, United States); Monica Jain (International Initiative for Impact Evaluation, India); Abdul Momin Kazi (Aga Khan University, Pakistan); Saad Omer (Yale University, United States); Anna Lisa Ong-Lim (University of the Philippines, Philippines); Deepa Risal Pokharel (UNICEF); Dimitri Prybylski (US CDC); Jennifer Requejo (UNICEF); Aaron Scherer (University of Iowa, United States); Holly Seale (University of New South Wales, Australia); Nick Sevdalis (King's College London, United Kingdom); Smita Singh (Gavi, the Vaccine Alliance, Switzerland [Gavi]); Riswana Soundardjee (Gavi); Gillian SteelFisher (Harvard University, United States); and Charles Shey Wiysonge (South African Medical Research Council, South Africa).

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This document was developed by Lisa Menning and Francine Ganter-Restrepo of the Demand and Behavioural Sciences team of the Department of Immunization, Vaccines and Biologicals, World Health Organization.

Conflicts of interest

For the development of this document, a global and multidisciplinary group was established by WHO consisting of individuals with expertise across multiple areas of specialization and regional representation (see above list of names and affiliations). Declarations of interest have been collected from all external contributors and assessed for any conflicts of interest. Potential conflicts of interest have been managed according to WHO's policies and procedures.

Terms of reference for the group described the required set of duties and contributions of the members, in addition to scope, objectives and expected outputs. All procedures were followed in accordance with ethical standards. The document was developed via an iterative, open and transparent process of development and review, with the full working group being offered the opportunity to comment at the end of each round of revisions.

All working group members contributed in their individual capacity, and no one member was ever given added preference. At each stage of content development, inputs were collectively reviewed by the working group or a subgroup of the broader group. It was expected that group members acted honestly and fairly in the interests of WHO, as was the case. Discussions were managed by the working group chair in a manner to ensure that scientific integrity, process and reputation were sustained.

These actions together helped to ensure that working group members brought their best experience, expertise and commitment to the discussions.

Abbreviations

BeSD	behavioural and social drivers of vaccination
BMGF	Bill & Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CI	confidence interval
COVID-19	coronavirus disease
DHS	Demographic and Health Surveys
DTP1	first dose of diphtheria toxoid, tetanus toxoid and pertussis vaccine
EPI	Expanded Programme on Immunization
Gavi	Gavi, the Vaccine Alliance
GIS	geographical information systems
GPS	Global Positioning System
IHR	International Health Regulations
MICS	Multiple Indicator Cluster Surveys
NGO	nongovernmental organization
NITAGs	National Immunization Technical Advisory Groups
ODK	Open Data Kit
OR	odds ratio
UNICEF	United Nations Children's Fund
VPD	vaccine-preventable disease
WHO	World Health Organization
SAGE	Strategic Advisory Group of Experts on Immunization

Glossary

Behavioural and social drivers: Vaccination-specific beliefs and experiences that programmes may be able to modify to boost vaccine uptake

Confidence: Belief that vaccines are effective, safe, and part of a trustworthy medical system. Low vaccine confidence is distinct from, but may contribute to, vaccine hesitancy

Hesitancy: Motivational state of being conflicted about, or opposed to, getting vaccinated; includes intentions and willingness

BeSD framework domains:

Thinking and feeling: Cognitive and emotional responses to vaccine-preventable diseases (VPDs) and vaccines

Social processes: Social experiences related to vaccines, including social norms about vaccination and receiving recommendations to be vaccinated

Motivation: Readiness to vaccinate, including vaccination intentions, willingness and hesitancy, but not reasons for vaccination

Practical issues: Experiences people have when trying to get vaccinated, including access barriers

1. Introduction



This guidebook supports the use of the behavioural and social drivers (BeSD) tools to understand what drives uptake of vaccines. It is intended for immunization programme managers and others collecting, analysing and using data for vaccine programme planning and evaluation. Routine tracking of BeSD data will offer insights into how to continually improve programme implementation.

The guide follows a three-step process (**plan, investigate and act**) and includes:

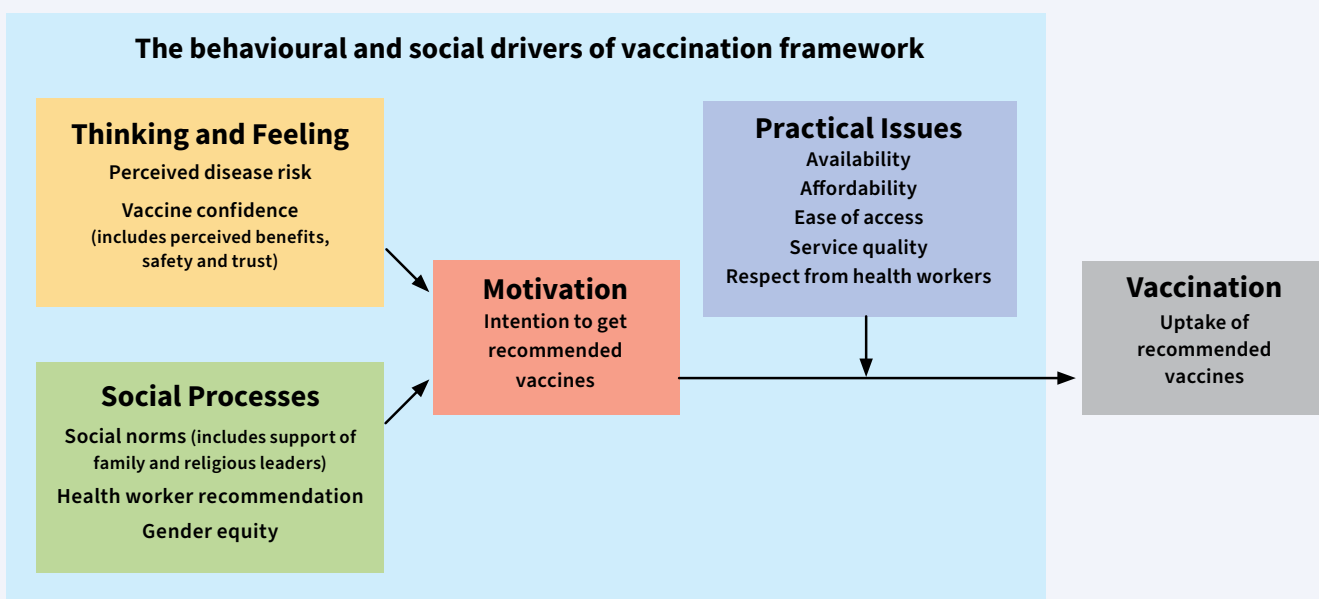
- **A quick start guide** –, an overview on how to gather, analyse and use BeSD data;
- **An explanation of each step** and best-practice recommendations; and
- **Tools** to measure the drivers of vaccine uptake:
 - **Childhood vaccination** surveys and interview guides ([Annex 1](#)); and
 - **Adult COVID-19 vaccination** surveys and interview guides ([Annex 2](#)).

The behavioural and social drivers (BeSD) of vaccination are defined as beliefs and experiences specific to vaccination that are potentially modifiable to increase vaccine uptake. The behavioural and social drivers of vaccination can be grouped and **measured in four domains** (Fig. 1) (1-5):

1. **Thinking and feeling** about vaccines
2. **Social processes** that drive or inhibit vaccination
3. **Motivation** (or hesitancy) to seek vaccination
4. **Practical issues** involved in seeking and receiving vaccination

While many factors affect uptake, the BeSD tools focus primarily on proximal factors that are measurable in individuals, specific to vaccination and potentially changeable by programmes. Behavioural and social drivers do not directly include broader influences such as literacy, political views and socio-economic status, all of which can be explored using the BeSD qualitative tools.

Fig. 1. The BeSD Framework



The BeSD working group. Based on Brewer et al. Psychol Sci Public Interest. (2017).

A quick-start guide: assessing reasons for low uptake

This summary shows the process of using the BeSD tools to assess and address behavioural and social drivers.

PLAN



MAKE A PLAN

Set a specific goal such as “understanding the drivers and barriers to vaccination in [country] to improve uptake”. Establish a team that includes key stakeholders and representatives of the participating population. Consider the research methods, any funding needs, timelines and ethics requirements. Develop a plan, timeline and budget. See [section 3.1 Key steps in planning](#) for more guidance.



CHOOSE YOUR TOOLS

Decide on the tools to match your goal. See [section 3.3 Select data collection tools](#) for an overview of the BeSD tools. Translate or adapt them as needed. Always include BeSD priority questions, and do not change the wording of those questions. Guidance for integration with other assessments and adaptation is available in [section 3.4](#) and [section 3.5](#). Identify sample and data collection protocols and obtain any necessary approvals.

INVESTIGATE



COLLECT AND ANALYSE DATA

Collect, clean and analyse data. Report findings, including data resulting from at least the five BeSD priority questions. Tools and guidance for analysing and presenting quantitative and qualitative BeSD data are available in [section 4. Investigate the drivers](#).

ACT



USE FINDINGS TO DESIGN INTERVENTIONS

Develop an intervention plan, including indicators for monitoring and evaluating processes and outcomes. Recommendations for interventions to increase intentions and uptake are available in [section 5.2 Planning interventions](#).

CONTINUE TO MONITOR AND IMPROVE

Repeat BeSD data collection as needed. Routinely monitor drivers and barriers, and track trends and the long-term impact of interventions, using at least the five BeSD priority questions. This will build an understanding of which interventions work well and can be sustained over time.

2. What is measured?



2.1 Priority questions and indicators

The BeSD surveys include priority questions that programmes can use to calculate priority indicators. Together, the questions and indicators support regular collection of standardized, quality data for monitoring trends over time. Table 1 shows the minimum requirement for use. The complete BeSD tools are available in [Annex 1](#) (childhood vaccination) and [Annex 2](#) (COVID-19 vaccination). All countries should integrate the BeSD priority questions into the appropriate routine or ad hoc data collection processes. This can include, for example, coverage surveys, Expanded Programme on Immunization (EPI) reviews, Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS) and other nationally representative surveys. **To preserve their meaning and the comparability of resulting indicator data between settings and time periods, the priority questions and response options should not be changed.**

Table 1. BeSD priority questions and indicators

Domain/ construct	Childhood vaccination survey		COVID-19 vaccination survey	
	Priority question	Priority indicator	Priority question	Priority indicator
Thinking and feeling Confidence in vaccine benefits	How important do you think vaccines are for your child's health? Would you say... <input type="checkbox"/> Not at all important <input type="checkbox"/> A little important <input type="checkbox"/> Moderately important, <i>or</i> <input type="checkbox"/> Very important?	% of parents/caregivers who say that vaccines are "moderately" or "very" important for their child's health	How important do you think getting a COVID-19 vaccine will be for your health? Would you say... <input type="checkbox"/> Not at all important <input type="checkbox"/> A little important <input type="checkbox"/> Moderately important, <i>or</i> <input type="checkbox"/> Very important?	% of adults/health workers who say a COVID-19 vaccine is "moderately" or "very" important for their health
Social processes Family norms	Do you think most of your close family and friends want you to get your child vaccinated? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of parents/caregivers who say most of their close family and friends want their child to be vaccinated	Do you think most of your close family and friends want you to get a COVID-19 vaccine? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say most of their close family and friends want them to get a COVID-19 vaccine

Table 1. BeSD priority questions and indicators

Domain/ construct	Childhood vaccination survey		COVID-19 vaccination survey	
	Priority question	Priority indicator	Priority question	Priority indicator
Motivation Intention to get vaccine	[COUNTRY NAME] has a schedule of recommended vaccines for children. Do you want your child to get none of these vaccines, some of these vaccines or all of these vaccines? <input type="checkbox"/> NONE <input type="checkbox"/> SOME <input type="checkbox"/> ALL	% of parents/caregivers who say they want their child to get “all” of the recommended vaccines	Do you want to get a COVID-19 vaccine? Would you say... <input type="checkbox"/> You do not want to, <input type="checkbox"/> You are not sure, <input type="checkbox"/> You want to, or <input type="checkbox"/> You are already vaccinated?	% of adults/health workers who say they want to get a COVID-19 vaccine
Practical issues Know where to get vaccination	Do you know where to go to get your child vaccinated? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of parents/caregivers who say they know where to get their child vaccinated	Do you know where to go to get a COVID-19 vaccine for yourself? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say they know where to get a COVID-19 vaccine for themselves
Practical issues Affordability	How easy is it to pay for vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say... <input type="checkbox"/> Not at all easy <input type="checkbox"/> A little easy <input type="checkbox"/> Moderately easy, or <input type="checkbox"/> Very easy?	% of parents/caregivers who say vaccination is “moderately” or “very” easy to pay for	How easy is it to pay for vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say... <input type="checkbox"/> Not at all easy <input type="checkbox"/> A little easy <input type="checkbox"/> Moderately easy, or <input type="checkbox"/> Very easy?	% of adults/health workers who say vaccination is “moderately” or “very” easy to pay

2.2 Summary of constructs measured in BeSD surveys

The full BeSD surveys measure the constructs (themes) shown in Tables 2 and 3. Constructs are categorized as priority, main or are optional, based on the outcomes of the validation process. The priority questions (corresponding to priority indicators) were the best performing questions across the domains and most strongly associated with vaccine uptake. The complete BeSD tools are available in [Annex 1](#) (childhood vaccination) and [Annex 2](#) (COVID-19 vaccination)

Table 2. Childhood vaccination survey

Thinking and feeling	Motivation	Social processes	Practical issues
<ul style="list-style-type: none"> ● Confidence in vaccine benefits 	<ul style="list-style-type: none"> ● Intention to get child vaccinated 	<ul style="list-style-type: none"> ● Family norms 	<ul style="list-style-type: none"> ● Know where to get vaccination
<ul style="list-style-type: none"> ● Confidence in vaccine safety 		<ul style="list-style-type: none"> ● Health worker recommendation 	<ul style="list-style-type: none"> ● Affordability
<ul style="list-style-type: none"> ○ Confidence in health workers 		<ul style="list-style-type: none"> ● Peer norms 	<ul style="list-style-type: none"> ● Took child for vaccination
		<ul style="list-style-type: none"> ● Community leader norms 	<ul style="list-style-type: none"> ● Received recall
		<ul style="list-style-type: none"> ○ Religious leader norms 	<ul style="list-style-type: none"> ● Ease of access
		<ul style="list-style-type: none"> ○ Mother’s travel autonomy 	<ul style="list-style-type: none"> ● Reasons for low ease of access
			<ul style="list-style-type: none"> ● Vaccination availability
			<ul style="list-style-type: none"> ● Service satisfaction
			<ul style="list-style-type: none"> ● Service quality

- Main survey question
- Priority question in main survey
- Optional question

Table 3. COVID-19 vaccination survey for adults and health workers

Thinking and feeling	Motivation	Social processes	Practical issues
● Confidence in COVID-19 vaccine benefits	● Intention to get vaccinated	● Family norms	● Know where to get vaccination
● Confidence in COVID-19 vaccine safety	● Vaccine confidence – brand	● Peer norms	● Affordability
● COVID-19 vaccine –see friends and family	● Willingness to recommend vaccine to others	● Religious leader norms	● Received recall
○ Perceived risk – self		● Community leader norms	● Ease of access
○ Confidence in health workers		● Health worker recommendation	● Reasons for low ease of access
		○ Workplace norms	● Service satisfaction
		○ Gender equity – travel autonomy	● Service quality
● Main survey question			○ On-site vaccination
● Priority question in main survey			
○ Optional question			

3. Plan to use the tools



Why assess the behavioural and social drivers of vaccination?

To increase vaccination coverage, it is vital to know *why* uptake is low. Immunization programmes should collect data on what people are thinking and feeling, their motivation, and the social processes and practical issues that drive or hinder vaccination to develop evidence-informed strategies that increase uptake. This process enables programmes to design, target and evaluate interventions to achieve greater impact with more efficiency, and to examine and understand trends over time.

3.1 Key steps in planning

Before starting to use the tools, immunization programmes should:

- Establish a small stakeholder team of immunization staff, partners and expert advisors with research expertise. Involve this team and local community representatives throughout the process, being sure to include persons with disadvantage or disability.
 - Involvement of stakeholders from the outset is key, and will facilitate access to the target population, local permissions and ethics approvals.
 - If a dedicated research group will conduct the data collection and analysis, the small stakeholder team will still carry out planning and coordination among the researchers and other stakeholders.
- Develop a research question.
- Select data collection tools ([see section 3.3](#) for details).
- Develop a data collection and analysis plan.
- Establish realistic timelines for each phase of work, factoring in additional time needed for possible delays. Phases may include protocol development and ethics review, data collection and analysis, recommendations and dissemination.

Immunization programmes should also consider policies on data ownership and sharing. Obtain the required permits and ethical approvals prior to data collection, anonymize all data and respect local principles of data privacy and protection. Refer to the ethical principles of the [Helsinki Declaration](#) for medical research involving humans, and consider the guidance on respect for research participants; protection of health, rights and dignity; the right to self-determination; and the privacy and confidentiality of personal information collected. Follow the local and international ethical, legal and regulatory norms and standards.

3.2 Develop a research question

It is important to develop a research question to focus the investigation. The following are examples of research questions related to vaccination:

- *Which social and behavioural drivers predict vaccine uptake among X population?*
- *What are the barriers to and enablers of vaccine uptake among X population?*
- *How are vaccination services experienced among X population?*

In some cases, it may be useful to develop up to three or four research questions. Research questions help guide how data are collected (e.g., population, methods, sample size).

For example, questions with the words “predict” or “associated” are often best answered by quantitative methods with larger sample sizes that represent the population. Questions with words such as “describe” and “experience” are often best answered by qualitative methods, or a combination of quantitative and qualitative methods.

Resources that may assist in **developing a research question**:

- Mitchell RD, O’Reilly GM, Phillips GA, Sale T, Roy N. Developing a research question: a research primer for low-and middle-income countries. *Afr J Emerg Med.* 2020;10:S109–14.
- Wyatt J, Guly H. Identifying the research question and planning the project. *Emerg Med J.* 2002;19(4):318–21.

3.3 Select the data collection tools

BeSD tools are available to understand the drivers of uptake for childhood vaccines and adult COVID-19 vaccines. The BeSD surveys and in-depth interview guides can be implemented as stand-alone assessments or integrated into other data collection activities (see Table 4 and [section 3.4](#)). Priority indicators for tracking can be found in the annexes above the relevant survey.

BeSD tools for childhood vaccination – [Annex 1](#)

- [Childhood vaccination priority indicators](#)
- [Childhood vaccination survey for caregivers](#)
- [Childhood vaccination in-depth interview guide for caregivers](#)
- [Childhood vaccination in-depth interview guide for health workers](#)
- [Childhood vaccination in-depth interview guide for community influencers](#)
- [Childhood vaccination in-depth interview guide for programme manager](#)

BeSD tools for adult COVID-19 vaccination – [Annex 2](#)

- [COVID-19 vaccination survey priority indicators](#)
- [COVID-19 vaccination survey for adults and health workers](#)
- [COVID-19 vaccination in-depth interview guide for adults and health workers](#)

Table 4. Main differences between the surveys and interview guides

Surveys	Qualitative interview guides
<p>Fixed questions quantify topics related to pre-identified drivers and barriers.</p> <p>Large and representative sample surveyed at one point in time or over time.</p> <p>Yield categorical summaries with numerical frequencies and associations.</p>	<p>Flexible and open-ended questions guide an interview that explores the participant’s own accounts of the drivers and barriers.</p> <p>Small number of participants (12-40) are interviewed at one point in time or over time.</p> <p>Yield narrative summaries with key themes and indicative quotes.</p>

The BeSD surveys are formatted for verbal administration. They can be adapted to various interview modes, including online, mailed and in-person.

The in-depth interviews are traditionally carried out in-person with one individual at a time.

The surveys and interview guides can be used independently or together for a thorough assessment of the behavioural and social drivers of vaccination. The interview guides can be used before or after a survey to gather in-depth information about a particular population group or survey finding of interest.

3.4 Integrate the BeSD tools into other data collection processes

The BeSD surveys can be integrated as supplementary modules into other data collection activities, such as an EPI review, coverage survey, MICS or DHS. Integration into these large national surveys requires good coordination, expert input and strong partner engagement. It is also possible to integrate the BeSD tools into local data-gathering activities, regional assessments and academic research studies.

When integrating, include at least the five BeSD priority indicators, in addition to other BeSD survey questions that are relevant to the country or research objective. Ensure the chosen questions align with the target audience of the broader activity (e.g., caregivers, health-care workers), remove duplicate questions (if any) and order questions to create a logical flow.

3.5 Adapt and test the tools to match local needs and context

A global group of experts and partners carried out a rigorous process to develop, test and validate the tools.^a Changing questions or response options removes their validity and comparability. Therefore, to maintain accuracy, standards for tracking trends and comparability across countries, **BeSD questions and response options should not be revised.** Additional questions can be included to accommodate specific contexts. To assist with local translation, all BeSD tools include details on the rationale for each question and related descriptions. Complete the translations and then check the quality of translations through cognitive interviews.

Adapting the BeSD tools requires three steps:

- 1. Translating each survey** into local language(s) with review by stakeholders to ensure the original intended meaning of concepts is retained. If resources allow, parallel translation may offer added rigour, in which two experts independently translate the survey and then meet to discuss and align the translations.
- 2. Conducting cognitive interviews** of each survey to check that each question and its response options convey the intended meaning in the local language and cultural context. See [Annex 3](#) for more details. Also use cognitive interviewing to test the visual representation of the four-point scale ([Annex 1.3](#)).
- 3. Piloting** (or pre-testing) to ensure that the surveys and interview guides work in the field and yield usable data.
 - Test the **qualitative interview guides** with at least 2–3 people from the target population to check that questions are appropriate to the local context and flow well.
 - Test the **surveys** with a sample of 5–10 people to check for flow, skip logic and response options and to ensure that

^a The BeSD tool development process is described in the *Weekly epidemiological record*, 17 December 2021, <https://apps.who.int/iris/handle/10665/350649>.

the survey process yields complete, high-quality data.

- Test the **mode of data collection** (e.g., door-to-door, online surveys) to guide refinements to tools and processes.

In addition, adapt any written materials for persons with disadvantage or disability to enable basic accessibility. This could include, for example, use of plain language, large fonts, clearly readable questions and response options, images and audio for the visually impaired.

Country example: Adapting the BeSD surveys in Guatemala

Spanish and Mayan translations of the BeSD surveys were done through a consensus exercise involving linguists, anthropologists and experienced qualitative interviewers. This process was critical for refining translations and ensuring the interviewers were comfortable with the survey concepts before conducting cognitive interviews.

Cognitive interviews quickly revealed that the translated script had to be flexible enough to accommodate gendered words and inflections in language that mark respect to elders. A different visual representation of the four-point response scale was also needed in Guatemala. Instead, interviewers took with them grains or dried beans and four buckets to represent the response-scale options: one empty, one with a little grain, one with a moderate amount of grain and one very full. Before the interview, some time was spent describing these amounts to ensure participants understood the options on the scale.



Box 1. Recommendations for enhancing data quality

When adapting the BeSD surveys for local needs, remember:

- **Adapt demographic questions to the local setting** (e.g., update response options for ethnicity, education, religion). Ask the minimum necessary demographic questions to support subgroup analyses stated in the analysis plan.
- **Follow this topic order for survey question flow:** 1) infectious disease, 2) vaccination status, 3) motivation, 4) thinking and feeling, 5) social processes, 6) practical issues.
- **Do not add or remove options** from the four-point response scale. If needed, use a visual scale to help improve understanding of the response options ([Annex 1.3](#)).
- **Use consistent response-scale direction**, from negative (lowest) to positive (highest).
- If adding new questions, consider how they fit within the BeSD domains (Fig. 1). Align response options to match the BeSD response options. Box 2 offers more tips on adding new questions.

The BeSD surveys have been validated according to the above principles. Following these will allow data to be comparable across countries.

The BeSD surveys are designed to be read aloud to respondents. The surveys can be easily adapted for self-completion; this is when the respondent reads and answers the questions for themselves on paper or online. When **adapting the BeSD surveys for online data collection:**

- Remove interviewer instructions. See examples in Table 5.
- Include simple instructions to help respondents answer the questions and know what to expect.
- Avoid changing question wording and do not remove or add response options or change scales.
- Where possible, evaluate any changes to the wording of specific questions. Assess understanding of the question and how the changes may affect respondents’ answers.

The qualitative interview guides mirror the four BeSD domains in the survey (Fig. 1). However, if a topic needs deeper exploration, it can be expanded in the interview. For further information on adapting the qualitative interview guides in response to a local context, see [Annex 3](#).

Box 2. Adding new questions for specific contexts

Countries can add questions to BeSD tools to understand context-specific issues. Be sure to:

- Use available evidence about the priority group to determine which questions to add;
- Include demographic questions to facilitate subgroup analysis; and
- Follow quality guidance in Box 1.

Examples of additional questions for gender and religious considerations:

Mother’s decision-making autonomy:

“In your household, who made the decision about vaccinating your child? Would you say... the mother of the child, the father of the child, both parents of the child or someone else?”

Compatibility with religious beliefs:

“Do your religious or spiritual beliefs encourage vaccinating your child, discourage vaccinating you child, or would you say this doesn’t apply to you?”

Table 5. Adapting survey questions for verbal vs self-administration

Construct	Verbal administration (interviewer to read aloud)	Self-administration (read by respondent)
Gender	<p>This may seem obvious, but I have to ask the question. What is your gender? Would you say...</p> <ul style="list-style-type: none"> <input type="checkbox"/> Woman, <input type="checkbox"/> Man, <input type="checkbox"/> Nonbinary, <i>or would you</i> <input type="checkbox"/> Prefer not to say? 	<p>What is your gender?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Woman <input type="checkbox"/> Man <input type="checkbox"/> Nonbinary <input type="checkbox"/> Prefer not to say

Construct	Verbal administration (interviewer to read aloud)	Self-administration (read by respondent)
Service quality	<p>What is not satisfactory about the vaccination services? Would you say...</p> <p>[READ ALOUD ALL RESPONSE OPTIONS, PAUSING TO ALLOW RESPONDENT TO ANSWER “YES” OR “NO” AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]</p> <ul style="list-style-type: none"> <input type="checkbox"/> Nothing, you are satisfied [IF NOTHING, SKIP REST OF RESPONSES] <input type="checkbox"/> Vaccine is not always available <input type="checkbox"/> The clinic does not open on time <input type="checkbox"/> Waiting times are long <input type="checkbox"/> The clinic is not clean <input type="checkbox"/> Staff are poorly trained <input type="checkbox"/> Staff are not respectful <input type="checkbox"/> Staff do not spend enough time with people, <i>or is there</i> <input type="checkbox"/> [Something else? [RECORD ANSWER: _____]] 	<p>What is not satisfactory about the vaccination services? Select all that apply.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Nothing, you are satisfied [IF THIS RESPONSE IS SELECTED, DO NOT ALLOW OTHER RESPONSES] <input type="checkbox"/> Vaccine is not always available <input type="checkbox"/> The clinic does not open on time <input type="checkbox"/> Waiting times are long <input type="checkbox"/> The clinic is not clean <input type="checkbox"/> Staff are poorly trained <input type="checkbox"/> Staff are not respectful <input type="checkbox"/> Staff do not spend enough time with people <input type="checkbox"/> Something else, please specify: _____ _____ _____
Affordability	<p>How easy is it to pay for vaccination?</p> <p>When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say...</p> <ul style="list-style-type: none"> <input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy? 	<p>How easy is it to pay for vaccination?</p> <p>When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Not at all easy <input type="checkbox"/> A little easy <input type="checkbox"/> Moderately easy <input type="checkbox"/> Very easy
Know where to go to get vaccination	<p>Do you know where to go to get your child vaccinated?</p> <ul style="list-style-type: none"> <input type="checkbox"/> NO <input type="checkbox"/> YES 	<p>Do you know where to go to get your child vaccinated?</p> <ul style="list-style-type: none"> <input type="checkbox"/> No <input type="checkbox"/> Yes

Box 3. Assessments for zero-dose children and missed communities

Assessing behavioural and social drivers of vaccination (BeSD) can be useful for understanding why children are unvaccinated. **Zero-dose children** are those who have not received any routine vaccines. **Missed communities** face poor access to primary health-care and social services, limited economic and educational opportunities, and lack of political representation.

The BeSD process (Plan, Investigate, Act) is compatible with the Gavi Alliance IRMMA Framework (Identify, Reach, Measure, Monitor and Advocate) as part of a strategy to reduce zero-dose children. For more information visit:

- [Gavi Zero-Dose Funding Guidelines](#)
- [Gavi Zero-Dose Brief \(slide deck\)](#)
- [Gavi Zero-Dose Analysis Cards](#)

How do I identify zero-dose children?

Identifying who, where and how many zero-dose children exist and why they have been missed requires analysing multiple sources of existing data, including the behavioural and social drivers of under-vaccination. A useful proxy (substitute) measure for the number of zero-dose children is missing DTP1 (first dose of diphtheria toxoid, tetanus toxoid and pertussis vaccine); this can be calculated using data from the immunization programme, other health programmes (e.g., maternal, neonatal and child health) and sectors (e.g., education, social services). Analysing demographic data of zero-dose or missed communities can help characterize the types of inequities they face (e.g., gender, ethnicity/culture, religion, socioeconomic, or disability status).

Which of the BeSD tools should I use?

To gain a deeper understanding of why these children are not vaccinated, use the BeSD qualitative interview guides ([Annex 1.4](#)). As a minimum, aim to interview caregivers and community influencers using the relevant interview guides.

If inadequate data are available to identify zero-dose children, it may be necessary to implement the full BeSD Childhood Vaccination Survey ([Annex 1.2](#)). If the full survey cannot be implemented, a shorter version can be used, including the five priority BeSD childhood vaccination indicator questions ([Annex 1.1](#)), and the following questions from the full survey:

- *Social process questions*: mother's travel autonomy, religious leader support;
- *Practical issue questions*: service satisfaction, service quality, reasons for low ease of access; and
- *Socio-demographic questions*: add questions as needed to understand who zero-dose children are.

How should I adapt the BeSD tools for zero dose?

Adapt the BeSD tools using the principles highlighted in [section 3.5](#). Add probes to the interview guides to address context-specific issues (e.g., natural disasters, conflict). It may also be important to assess whether primary care services or public service platforms exist to reach the target population.

4. Investigate the drivers: data collection, analysis and reporting



This section outlines steps to support collection of quality data using BeSD surveys and qualitative interview guides and offers frameworks to facilitate data analysis. To ensure the best data collection approaches are used for the setting and goals, the study programme should develop a research protocol. The research protocol should clearly describe:

- what the research question is;
- who the target population is;
- how members of the target population will be identified;
- how data will be collected from the target population;
- how the sample size and response rate will be calculated;
- how sampling bias will be minimized to ensure the sample closely reflects the target population;
- how and by whom members of the target population will be invited to participate;
- how informed and voluntary consent will be obtained;
- how data will be stored and the anonymity of participants protected; and
- how data will be analysed and reported.

Safeguard completed questionnaires in locked cabinets/offices (paper based) or on password-protected computers/ encrypted devices (electronic) to protect private and personally identifiable information.

4.1 Choosing a data collection mode

For both tools, data collection can be done using verbal administration, pen and paper or digital tools, for example using the Open Data Kit (ODK) application. Table 6 summarizes the strengths and limitations of a range of data collection modes available for implementing the BeSD tools.

Table 6. Strengths and limitations of different data collection modes

Data collection mode	Strengths	Limitations
Face-to-face	Allows for longer interviews; the presence of an interviewer can increase response rates and motivate respondents to complete the interview. An interviewer can also explain difficult concepts or questions. Involvement of key local stakeholders may facilitate access to specific population groups and contribute as advocates in later activities.	Time and resource intensive due to the logistics involved (e.g., training of interviewers, interviewer time, transport, materials for data collection). The presence of an interviewer or other official may lead to socially desirable responses for sensitive questions.
Telephone	Less costly than face-to-face interviewing; has the advantage of the presence of an interviewer, yet lower levels of socially desirable responses than face-to-face.	Limited to populations with telephones. Can result in biased samples in some settings (e.g., in some countries men, urban younger and better-educated respondents are overrepresented). Interviews need to be shorter than for face-to-face (up to approx. 25 minutes). Relies on trained interviewers to implement.

Data collection mode	Strengths	Limitations
Online (including app-based data collection*)	<p>A cost-effective approach, as it does not require interviewers and thus training.</p> <p>Lessens socially desirable responses due to lack of interviewer presence.</p> <p>Online methods offer greater speed and efficiency.</p> <p>Data are entered automatically, which avoids manual transfer that can be impacted by human error.</p> <p>*Data can be collected offline or when participants are “on the go”.</p>	<p>Limited to populations with online access, which may be less than half the population, depending on the country.</p> <p>Response rates are usually lower than face-to-face or telephone methods.</p> <p>Can result in more biased samples in some settings (e.g., over-representation of men, urban younger and better-educated respondents).</p> <p>Time taken to complete survey needs to be limited to about 15 minutes or less; otherwise the number of non-completions increases substantially.</p> <p>*App-based approaches rely on populations with access to smartphones or computers, further limiting and biasing the sample.</p> <p>Questions need to be very simple to be accurately interpreted on a screen and understood, as no interviewer is present to clarify questions.</p> <p>*On the smaller mobile phone screen, questions and their response options must be short and clear to be well understood.</p>

*Content pertains to app-based data collection methodologies only.

4.2 Develop a sampling plan

Sampling refers to identifying and selecting people who will participate in the study. The sampling approach will depend on the study goals, setting, and human and financial resources. To develop a sampling plan identify a priority population such as caregivers to children under 5 years old or health workers. Then, develop a sampling plan (Table 7).

The sample should be representative of the priority population according to its main socio-demographic characteristics (e.g., age, education, region). Consult with a sampling expert to help develop the sampling plan.

There are two broad approaches to sampling:

1. Probability sampling provides data that can closely represent the characteristics of the target population. This approach is based on the principle of random or chance selection of persons in the target population to participate in the study.

- **Advantages:** Study results can usually be generalized to a wider population.
- **Disadvantages:** It is usually more time-consuming and costly, and data analysis can be more complicated. Consider working with existing population-based surveys using probability sampling in your area to integrate the BeSD survey questions.
- **Types:** Simple^b, Systematic^c, Stratified, Cluster.

b *Simple random sampling* is when people are randomly selected from the target population. For example, if you have a list of all nurses registered in the country, you could select participants at random from the list; each nurse would have an equal chance of being selected.

c *Systematic random sampling* is when people from the target population are selected according to a random starting point, and then at a predetermined interval thereafter.

2. Non-probability sampling provides data that can reflect individual/small group experiences and perspectives but that is not representative of the population. It does not give each person in the target population an equal chance of being selected to participate in the study.

- **Advantages:** It can be used when probability sampling is too expensive or logistically difficult or when information rich cases are needed, for example, in a qualitative study.
- **Disadvantages:** It limits the ability to generalize the study findings to the population. To reduce bias, include varying days, times and targeted locations for recruitment in your sampling plan.
- **Types:** Convenience^d, Purposive^e, Quota, Snowball, Self-selection.

Qualitative interviews mostly involve non-probability sampling of people who can provide the richest insights into the study topic. The term purposeful sampling is used for qualitative methods and there are several types of purposeful sampling. For example, maximum variation sampling aims to include a wide range of perspectives (e.g., parents from different age groups) and criterion sampling aims to include people who meet a specific criterion (e.g., caregivers of children with zero doses).

For **surveys**, you can use either probability or non-probability sampling. The approach and sample size will depend on the resources available and study objectives. Your sample size should also take the expected response rate into consideration (e.g., What percentage of potential participants will agree to participate?). **Cluster sampling is when a population is divided into smaller groups** (known as clusters) for the purposes of sample selection and data collection.

For further guidance see:

- *World Health Organization vaccination coverage cluster surveys: reference manual*. Geneva: World Health Organization; 2018 (<https://apps.who.int/iris/handle/10665/272820>).

^d *Purposive sampling* is when the study team chooses the people to recruit for the study based on preselected experiences or characteristics that are valuable to the objectives of the study.

^e *Convenience sampling* is when people are recruited where they are easy to find (e.g., interviewing people as they exit a health clinic).

Table 7. Target population and sampling examples

Example target population	Example sampling methods
Parents and caregivers of children under age 5	<ul style="list-style-type: none"> • Integrate BeSD questions into an existing population-based survey (e.g., DHS, EPI coverage surveys, MICS household surveys). (probability) • Post flyers in nurseries, at schools and with women's groups. (non-probability) • Recruit people leaving a health clinic. (non-probability)
Adults over age 65	<ul style="list-style-type: none"> • Integrate BeSD questions into an existing population-based representative survey. (probability) • Recruit older adults from a retirement community. (non-probability)
Health workers	<ul style="list-style-type: none"> • Examine archival data from a national registry of all nurses; randomly select a subset. (probability) • Post flyers at health clinics. (non-probability) • Advertise in professional associations or societies. (non-probability) • Recruit health workers who leave a selected health clinic during a pre-determined time frame. (non-probability)
Individuals with underlying health conditions	<ul style="list-style-type: none"> • Use a national chronic disease registry. (probability) • Recruit people attending an outpatient clinic related to the health conditions of interest. (non-probability)
Persons with disadvantage and disabilities	<ul style="list-style-type: none"> • From the national census, randomly select a subset. (probability) • Contact organizations of persons with disabilities to seek recommendations for recruitment. (non-probability) • Plan a referral mechanism to survey persons with disadvantage or disability who may require reasonable accommodation (like local sign language translation). (non-probability)

Resources that may assist in **developing a sampling plan**:

- Ayton D, Pritchard E. Qualitative research methods for public health. Melbourne: Monash University; 2017.
- Lavrakas PJ. Encyclopedia of survey research methods. Thousand Oaks (CA): Sage; 2008. doi:10.4135/9781412963947

4.3 Demographic and immunization coverage measures

Collecting demographic information as part of the survey is vital. Use demographic data to:

- Identify differences in demographic characteristics (e.g., education, gender) between the target population and the sample participants.
 - Understanding these differences will help support data weighting, a method used in data analysis to rebalance the sample data so the information better reflects the target population.
- Identify differences in perceptions (e.g., willingness to be vaccinated), behaviours (e.g., vaccine uptake) and health outcomes (e.g., VPD) among sample participants by demographic characteristics.
 - Understanding these differences will help you design programmes to improve vaccination among specific subpopulations at risk (e.g., low socioeconomic status, location).

Collect Global Positioning System (GPS) data for surveyed clusters or sampling area provided by MICS and other standard surveys such as DHS, if this information is not already available elsewhere. The substantial benefits of GPS data collection include making it possible to link the BeSD tools with other data sets containing similar geographic information, such as MICS or DHS (see [Annex 4](#)).

In addition to the BeSD survey questions, and the minimum socio-demographic questions recommended for each survey, plan to collect immunization status (vaccine uptake) from participants, particularly for childhood immunization. WHO has published guidelines for collecting, processing, analysing and reporting coverage indicators. For practical information on coverage measures and indicators for vaccination delivered through routine immunization services, see [Annex 5](#).

4.4 Survey data analysis and reporting

It is common for data errors to be introduced during data collection and entry. As such, all data sets need to be “cleaned” before data analysis. Data cleaning involves identifying and dealing with responses that are missing or incomplete, out of range of what is expected (e.g., age 125), inconsistent/contradictory as well as responses that don’t follow skip patterns.

For more information on data cleaning, weighting and analysis, use the BeSD [contact form](#) or consult with a statistician.

4.4.1 Analysis of survey data

General descriptions of broad analytical approaches are summarized below, but consider consulting with a statistician or other researcher for help in developing a data analysis plan *before* interviewing participants. This will help to ensure that data are collected and analysed appropriately and can save time and resources in the long term.

Descriptive statistics provide information about characteristics in the population or variables studied. Examples of descriptive statistics include percentages, ranges and means (averages).

Inferential analyses identify associations (relationships) between variables, including examining demographic differences and identifying variables that correlate with key outcomes (e.g., vaccine uptake).

Inferential analyses can include the following:

- **Bivariate analyses** provide information about relationships between two variables. For example, include **chi-square analysis** allow for compare receipt of a health worker recommendation in urban vs rural areas or **correlations** to examine the relationship between age of caregivers and perceptions of vaccine safety.

- **Multivariable analyses** determine the relationship between two or more variables and control for other variables that may confound the relationship. For example, to determine whether gender is associated with vaccination uptake, consider using **logistic regression**, controlling for education.

4.4.2 Reporting survey findings

Report findings concisely, using clearly presented data that answer the research question. Report data as percentages in most instances with raw numbers in brackets (e.g., 58% [$n=203$]). In instances where the sample size is small, it is acceptable to use just the raw numbers (e.g., $n=5$). [Annex 6](#) contains examples of data reporting and presentation.

Report survey data in a manner that can be easily understood and is useful for the target audience.

The following steps serve as a guide for reporting quantitative survey findings:

- **Identify the main audience:**
 - Consider which people have an interest in these data.
 - Decide the best way to present the data based on how the audience will likely use it.
- **Decide on a structure:**
 - Tell the story of the research to the audience. One option is to explain the key findings and how they answer or relate to the research question.
- **Describe the methods, including:**
 - the overall research design and sampling approach, including justification and recruitment methods;
 - the origin of the survey questions and their pilot testing;
 - how survey data were collected (e.g., in person, household surveys);
 - how data were handled, including how missing or incomplete data were dealt with;
 - which statistical analyses were done and why; and
 - any ethical considerations relevant to the investigation and data collection.
- **Describe the results of the study, including:**
 - the response rate of the survey;
 - characteristics of the sample (e.g., age, gender, geographic location);
 - the percentage of respondents who report uptake or intention to accept vaccines;
 - frequencies for the BeSD priority indicators; and
 - association of vaccine uptake with priority indicators (and other BeSD survey indicators, if measured) and demographics.

Further analyses may include assessing variation in the uptake or intention to accept vaccines by BeSD indicators and demographic variables. For example, are women more likely than men to accept all vaccines? Are those who think vaccines are not important less likely to accept vaccines?

Some suggestions for reporting:

- **Report what is most important in answering the research question.** Use the main report to provide the major findings and appendices for detailed tables.
- **Present data visually** when possible to make the results easier to understand (e.g., use tables, graphs, images or icons if possible, such as showing percentages of a sample who know where to get their child vaccinated).
- **Interpret the data** to show or explain why the result is important – do not simply provide the frequencies or percentages.
- When comparing results in multiple figures, make sure the y-axis uses the same range (e.g., from 1 to 100) so that results are easy to compare.

- Results that are not statistically significant may be important because they sometimes challenge assumptions. Report these results, especially if you have analysed the relationships between variables to address a research question.
- Where possible, use qualitative findings to explain or support quantitative survey data and their interpretation.

Resources that may assist in reporting **survey** findings:

- Eysenbach G. Improving the quality of web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *J Med Internet Res*. 2004;6:e34.
- Boynton PM. Administering, analysing and reporting your questionnaire [published correction appears in *BMJ*. 2004 Aug 7;329(7461):323]. *BMJ*. 2004;328(7452):1372–5. doi:10.1136/bmj.328.7452.1372.

4.5 Qualitative analysis and reporting of data from interview guides

4.5.1 Qualitative analysis of BeSD data

There are many approaches to qualitative data collection and analysis. A **framework analysis** is recommended for the qualitative data; templates are **available in Annex 1 (childhood) and Annex 2 (COVID-19)**. The framework analysis approach is a structured method for qualitative analysis well suited to a team with varied levels of qualitative research experience. At least one team member should have strong expertise in qualitative methods.

For more information on the framework methodology, including an illustrative example, refer to:

- Gale NK, Health G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol*. 2013;13:117.
- Furber C. Framework analysis: a method for analysing qualitative data. *Afr J Midwifery Womens Health*. 2013;4(2):97–100.

For a general overview of how qualitative approaches differ from epidemiologic approaches, see:

- Carter SM, Ritchie JE, Sainsbury P. Doing good qualitative research in public health: not as easy as it looks. *N S W Public Health Bull*. 2009;20(7–8):105–11 (<https://pubmed.ncbi.nlm.nih.gov/19735621/>).

Data collection: Carry out interviews as planned, collecting data in the form of detailed interview notes, audio recordings and any materials gathered during the interviews (e.g., self-completed socio-demographic forms).

Data analysis: The main stages in the framework analysis process are as follows:

- **Stage 1: Transcribe and familiarize.** Convert interviews into a format for analysis using verbatim notes from transcribed recordings or detailed interviewer notes taken during interviews, usually by a second person. Immersion in the data will build familiarity. This occurs through reading and rereading, reflection and taking notes about the data.
- **Stage 2: Develop codes.** Use codes to formally organize concepts in the data. Codes are simply a label given to data units. For example, if someone mentions their concern about vaccine reactions, the relevant line of text in the interview transcript could be labelled “safety concerns”, and all lines in the remaining interviews

that describe similar concerns expressed by other participants would also be coded as “safety concerns”. This approach allows systematic comparison of codes across all of the interviews and can be done using comments or annotation functions in an MS Word document, or using specialized software such as Dedoose, QSR NVivo, ATLAS.ti or MAXQDA. After a few interviews, the analyst usually observes patterns where the same codes appear in several interviews. Ideally, for rigour, several members of the team should independently code the first few interviews to enable comparisons and agreement on what codes will be applied to the whole data set.

- **Stage 3: Develop and apply an analytical framework.** After identifying reoccurring codes, group similar or related codes into defined subcodes (or categories). Building on the example above, the “safety concerns” code might include more granular categories, such as “side effects,” “testing”, “newness” and “vaccine components”. Doing so creates a framework you can use for subsequent interviews and revise to cover concepts arising from the interviews. To help with interpretation, develop a summary spreadsheet with an interview per row, and data charted across codes and categories per column (see templates in the Annexes 1.5 and 2.5 for examples).
- **Stage 4: Interpret the data.** Generate themes from the data by viewing the codes in the summary spreadsheet and drawing connections across participants and categories. Themes can be the relationships between codes or patterns that emerge from the coded data. Interpret the data to develop themes, which may offer explanations for what has emerged in the interviews. For example, create typologies (or classifications) and map relationships between themes. Also, interpret data considering intersectionality among different socio-demographic elements, vulnerability factors and conditions. That could mean analysing data according to gender, age, disability, migrant status, etc.

Researchers involved in interviewing and data analysis should keep a **researcher diary**. The diary is a place for each researcher to record their impressions from the interviews and analysis and document their thinking and ideas as they occur. Doing so increases researchers’ awareness of how their own perspectives affect their interpretation of the data – a process known as reflexivity. In performing and writing the qualitative analysis, a reflexive researcher is better able to disentangle the findings from their own unique world view, reducing bias in the interpretation of the data.

4.5.2 Reporting qualitative findings

Reporting qualitative research findings involves constructing a representation of social occurrences and experiences based on accounts of the people who were interviewed. Writing up findings also forms part of the qualitative analytical process, which starts with the researcher diary (see [section 4.5.1](#)). There are a number of ways to report qualitative data, and many good references are available (7, 8). The COREQ checklist is also helpful (https://cdn.elsevier.com/promis_misc/ISSM_COREQ_Checklist.pdf) (9). The following set of general steps will guide reporting of qualitative data.

- **Identify the main audience:**
 - Consider which people have an interest in these data.
 - Decide the best way to present these data to the audience based on how they are likely to use the data.
- **Decide on a structure:**
 - Decide the best way to tell the story of this research to the audience. One option is to explain the key findings and how they answer or relate to the research question.
- **Describe the methods:**
 - It is important to clearly state the methods used in data collection and analysis, including:
 - overall research design, and sampling approach including justification
 - recruitment methods
 - how the interviews were conducted and recorded
 - analytical approach
 - ethical considerations and approval.

- **Describe the results of the study:**

- Start by describing how many interviews were undertaken and over what time period.
- Tell the story of the results, and how they relate to the research questions.
- Focus on the concepts and themes, and how they relate to the research questions.
- Give example quotes to illustrate the concept or theme.
- If links between the themes and concepts were identified, describe these links also, but take care to justify how and why these links were made, using the data as evidence.

Some suggestions for reporting:

- **Avoid using numerical statements.** Avoid sentences that describe how many participants had a certain trait or described a certain attitude. Qualitative data are not about prevalence, but about understanding why or how something is happening. The purposive method of sampling and the smaller sample sizes mean that statements such as “25% said they were worried about vaccine safety” may be misleading. When reporting qualitative results, it is best to focus on the concept rather than how many people said it. For example, the previous statement could be better phrased as “some of the participants were concerned about the safety of the vaccine”.
- **Use quotes to illustrate the concept or theme being reported.** De-identify quotes and keep them short and to the point.
- **Where possible, illustrate the range or diversity in the findings.** When discussing concepts, be sure to discuss any findings that appear to contradict emerging codes and patterns. Include illustrative quotes where appropriate.
- If available, use **qualitative data to help explain unclear or counterintuitive quantitative data** (e.g., why respondents in rural areas were more likely to believe that vaccination services are easy to get to than respondents in urban areas). In addition, qualitative data allow exploring and reporting how minorities and disadvantaged population groups may experience a certain phenomenon (like specific barriers to accessing vaccination and how such groups are treated by a service).

4.6 Sharing plans, data and reports

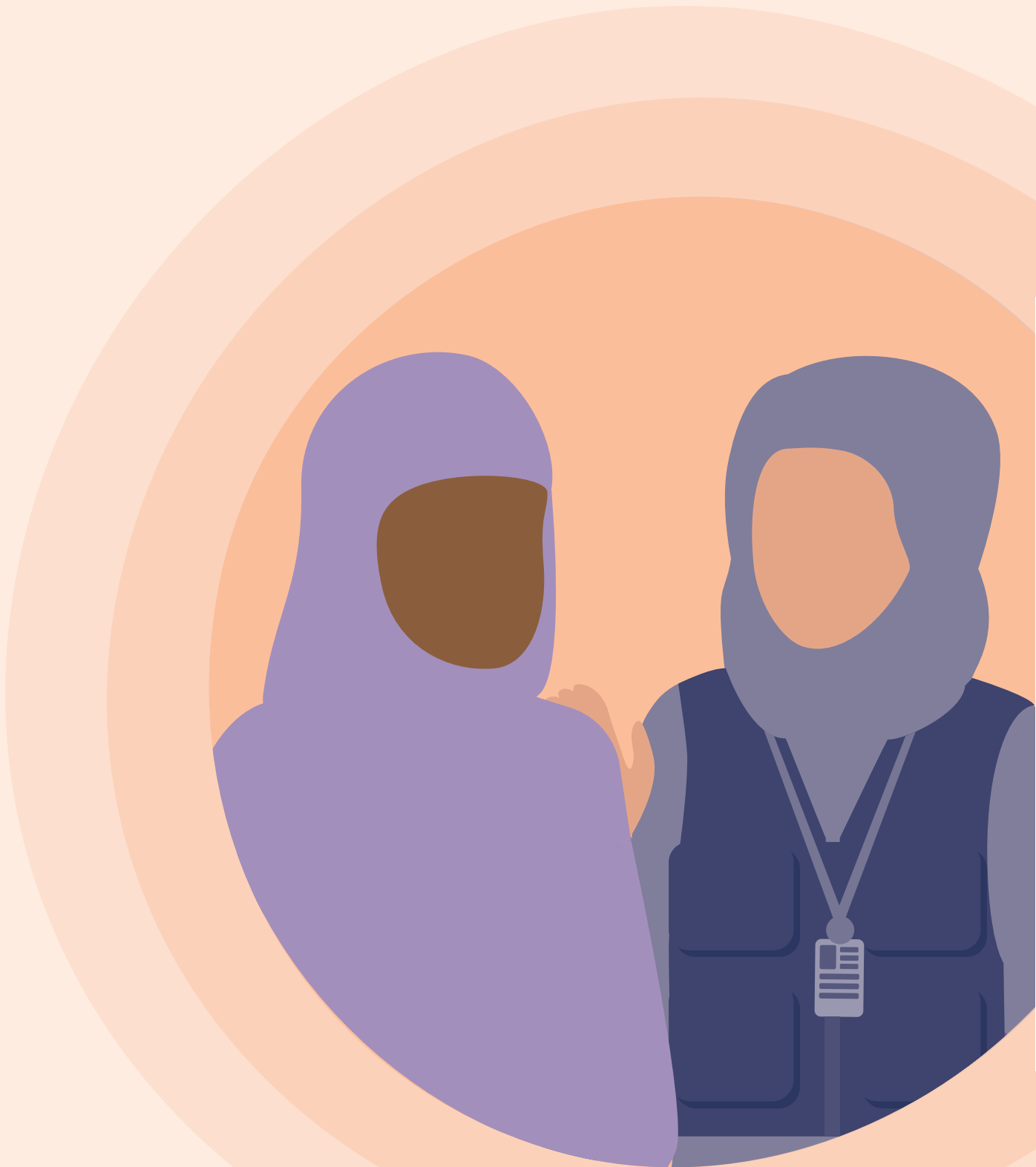
The findings of the report are more likely to have an impact if the research team involve key stakeholders in plans for data collection, hypothesis generation and drafting reports. This approach often elevates the profile of the work and brings to the surface other relevant studies, allowing cross-comparison of findings. Consult with experienced researchers for in-depth or more complex analyses. Where resources for data collection are limited, sharing anonymized data between programmes and researchers can be an efficient way of maximizing the use of limited resources and the impact of data.

Consider sharing plans and materials, and initiating discussion with the following groups:

- **Other stakeholders** can offer broad expertise, contextualization and resource mobilization.
- **Experienced researchers** can support informal peer review of the data and suggest connections with other data sets or established knowledge, often resulting in deeper analysis and new findings.
- **Target population** input can also help improve the quality of analysis and is a well-established method for validating analysis and interpretation of results.

For further reference, [Annex 7](#) provides the WHO policy on data sharing.

5. Act: using BeSD data to drive action



The BeSD tools focus on generating data and using findings to increase uptake of vaccines. Data may be used in a variety of ways at different levels of the programme, for planning, for monitoring and to guide intervention design in specific settings. Data should also be shared with NITAGs (National Immunization Technical Advisory Groups) to support their role in making sound, evidence-based recommendations.

The four BeSD domains (Fig. 1) represent the main factors that influence vaccine uptake in individuals. The survey priority indicators for tracking these factors over time can be found in the tool annexes of this guidebook.

Use the data generated from the tools to:

- inform the design and evaluation of interventions to increase uptake;
- develop targeted interventions to address context-specific drivers and barriers, particularly those experienced by disadvantaged population groups;
- evaluate effectiveness of strategies and track trends over time through routine BeSD assessments;
- advocate and mobilize resources; and
- contribute to triangulated or comparative analysis with other data sources to offer a more complete understanding of issues and guide programme planning.

This section describes how you can use BeSD data for these activities.

5.1 Using BeSD priority indicators

The BeSD survey priority indicators are helpful when planning to monitor changes over time or measure the impact of interventions. The priority indicators represent the domains in the BeSD framework and rely on survey items with strong psychometrics and associations with vaccine uptake. The priority indicators are framed around immunization programme gains, to align with existing immunization indicators such as coverage. **Low values for an indicator show a problem, and an intervention or other action is recommended.** For example, a country may decide to take action when an assessment reveals that only 60% of parents/caregivers know where to get their child vaccinated. Thresholds for action must be determined by each country, taking local context and other data into consideration.

5.2 Planning interventions

Four broad intervention areas are considered foundational to any immunization programme. These are:

1. community engagement
2. communication and education
3. service quality (e.g., provider recommendation, reminder/recall, inclusive services); and
4. supportive policies (e.g., requirements, incentives).

The BeSD priority indicators support tracking how these foundational interventions are working, where and for whom. Where interventions are not working, BeSD assessments can support understanding why that is, particularly through use of the qualitative interview guides. At a subnational level, these assessments can be conducted as part of a human-centred design or tailoring immunization programme process to diagnose the reasons for low uptake, choose tailored interventions and evaluate their effectiveness (10, 11).

Table 8. Promising interventions by BeSD domain to guide planning

Domain where problem is identified	Interventions shown to increase vaccination
Thinking and feeling Motivation	Campaigns to inform or educate the public about vaccination, including approaches based in the health facility or community (1–3, 5) Dialogue-based interventions, including one-to-one counselling to encourage vaccination (12, 13)
Social processes	Community engagement (12, 14) Positive social norm messages (6, 15) Vaccine champions and advocates (16, 17) Recommendations to vaccinate from health workers (18)
Practical issues	Reduced out-of-pocket costs (19) Service-quality improvements (5, 19, 20) Reminder for next dose/recall for missed dose (21–24) On-site vaccination at work, home and school (5, 17, 19, 25–27) Default appointments (6) Incentives (6, 19, 28, 29) School and work requirements (mandates) (19, 30)

In addition to the four broad interventions listed above, other types of interventions that are effective for increasing uptake include those listed in Table 8. Interventions are listed in a domain based on available evidence and expertise. In some settings, an intervention may act on more than one domain. Adequate monitoring and evaluation of interventions, using BeSD indicators, will be critical in establishing the impact of interventions in specific settings and any changes over time. References refer to systematic reviews or meta-analyses that show the intervention led to higher vaccine uptake in low- and middle-income countries, where such data were available.

5.3 Selecting interventions when BeSD data are not available

Collect BeSD data ahead of intervention design, even if using just the BeSD priority indicators. Share findings with local experts, partners and community representatives (including disadvantaged groups and persons with disabilities) to contribute to a broader understanding of the reasons for low uptake and to discussions about intervention selection and design. You may need to prioritize target populations or other elements of implementation. Take care not to ascribe hunches or anecdotal stories as a diagnosis of the problem in place of measurable indicators.

5.4 Monitoring and evaluation of interventions using BeSD indicators

Use at least the BeSD priority indicators to facilitate ongoing monitoring and evaluation of interventions. This is vital to determine whether the intervention is achieving its expected outcomes and to guide continuous improvement to close gaps in coverage and increase equity.

Indicators are numbers or statements that reflect what was measured to help signify performance, change or impact.

When using indicators remember to:

- use BeSD indicators alongside existing relevant immunization indicators;
- use as few indicators as possible;
- collect only the information most needed;
- check that the indicator selected really will measure the desired change; and
- analyse and use the information provided by the indicator to act or make decisions.

Table 9 offers an example framework to help identify inputs, outputs and outcomes that correspond to BeSD indicators and interventions from the COVID-19 surveys.

Finally, accountability is key throughout all assessments. To ensure accountability, consult with the participating communities and other stakeholders regularly, sharing indicator data to show progress and change over time.

Table 9. Example of a monitoring and evaluation framework

Domain and indicators	Intervention	Inputs	Activity/ outputs	Outcomes
<p>Practical Issues</p> <p>% of adults/ HCWs who know where to get vaccines for themselves</p> <p>% of adults/HCWs who believe that accessing vaccination for themselves is "very" or "moderately" easy</p>	<p>Improve access to vaccination</p> <p>Mailed or phone offer of appointment</p> <p>Outreach</p> <p>Reminders, standing orders and walk-in clinics</p>	<p>Messages to invite, remind, follow-up and inform</p> <p>Mechanisms for delivery of personal invitations</p>	<p>Messages are ready on schedule, pilot-tested, revised and ready for roll-out</p> <p>Mechanisms are available and ready to be put into action</p>	<p>↑ Know where to get vaccine</p> <p>↑ Believe that accessing vaccination for themselves is "very" or "moderately" easy</p> <p>↑ Readiness to seek vaccination</p> <p>↓ Perceived barriers to access</p>

HCWs: health-care workers

5.5 Complementing BeSD data with other data sources

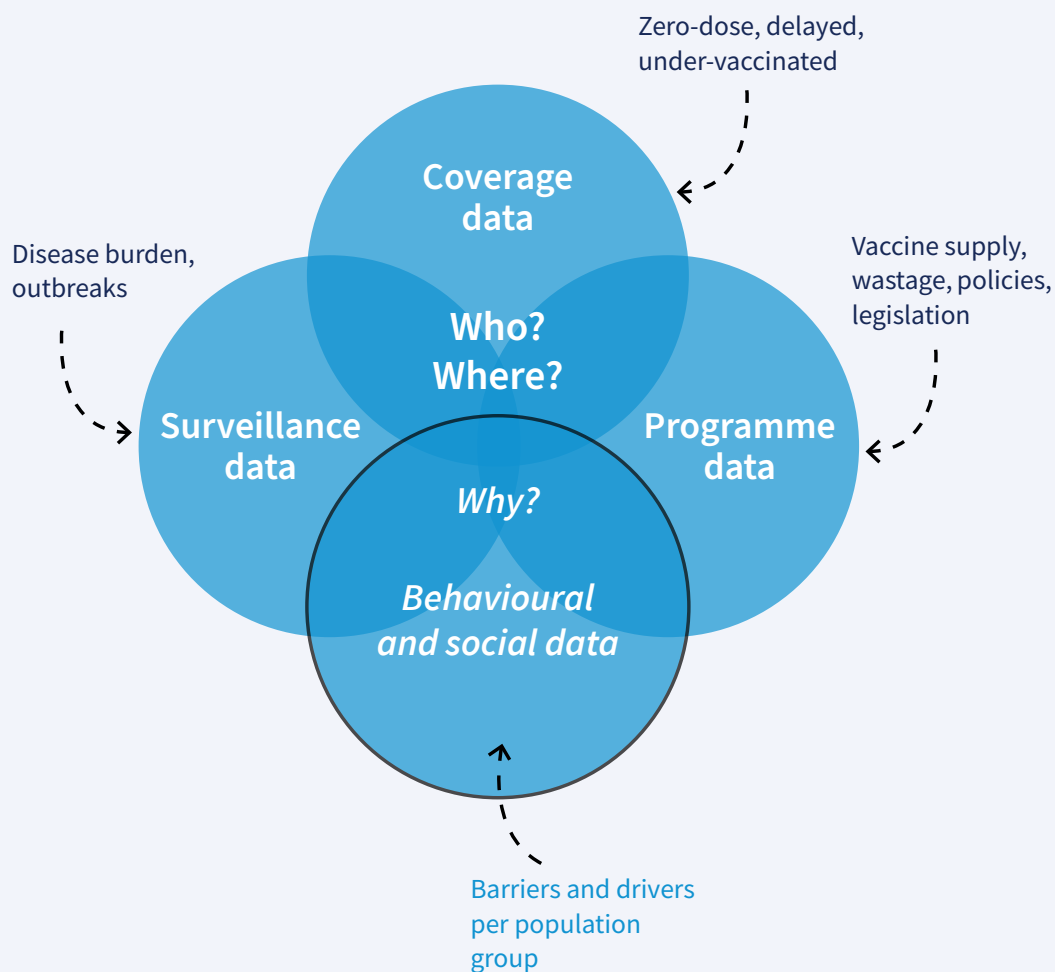
The BeSD tools support understanding *why* gaps in immunization coverage exist. **BeSD data can enable programmes to:**

- identify and address influences on behaviour;
- target and evaluate strategies in specific contexts;
- examine and understand trends over time; and
- better plan for future needs.

Complementing BeSD data with other sources of data serves to:

- Contextualize issues around vaccination confidence, demand and uptake.
- Identify reinforcing factors among different populations and socio-demographic groups. For example, both health workers and caregivers report that vaccine misinformation is an important issue in their community or context. This observation may provide insight into strategies for effectively reaching caregivers and health workers.
- Validate findings based on consistency of data collected using different methods and across different data sources

Fig. 2 Integrated analysis of data on BeSD with other programme data



(Fig. 2). Such triangulation can help to address the limitations of findings and biases associated with any one method.

Use BeSD data along with other data sources to understand key areas of focus and unique interventions that may be required:

- **Surveillance data:** Use vaccine-preventable disease (VPD) surveillance data to understand prevalence, incidence and related changes in VPDs in specific areas over time. Surveillance data showing a high disease burden may indicate populations for prioritization of BeSD data collection. The combination of different kinds of data can also help inform adaptation of vaccination campaigns following VPD outbreaks, for a more tailored and targeted approach that addresses the specific drivers or barriers uncovered.
- **Coverage data:** Use coverage data to narrow down population subgroups that merit further assessment using the BeSD tools (i.e., where coverage is low and a population is more susceptible to outbreaks, it will be important to conduct a BeSD assessment to understand the specific drivers and barriers to vaccination). Where coverage is particularly low, for example among zero-dose communities, qualitative assessments using the BeSD interview guides enable a richly detailed understanding of the contributors. Additionally, assess BeSD data from specific regions alongside vaccine coverage data from the same regions to identify trends and patterns in the relationship between determinants of uptake and vaccine coverage. If coverage data are available from different subpopulations, the resulting analyses will help to understand key differences in the pattern of these associations as well.
- **Census data:** Analyse BeSD data alongside census data in the specific country context on how uptake relates to major socio-demographic characteristics. This information in turn may help to inform policy-level decisions by health authorities. For example, poor social norms around vaccination are specific to areas belonging to particular ethnic groups. This observation may indicate that more targeted interventions might improve vaccine uptake in these areas. Note that census data may not be up to date in resource-poor settings.
- **Other health system data:** Analyse BeSD data with other health data on maternal and child health services to highlight similar trends over time or geographic patterns across subpopulations of interest in uptake of other child health services compared with immunization services. This information may provide insight into whether low vaccine uptake is related to health system issues or behavioural and social issues, or a combination of both. Triangulation may offer useful insights when health system data are disaggregated by gender, age and disability status.
- **Social listening data:** Examine findings from BeSD data alongside data and trends from social listening data. Social listening means tracking content and exposure to conversations about vaccination in the public space or on social media and monitoring what themes emerge. These data can indicate the specific messages and information (including misinformation) people are exposed to across a range of sources. BeSD data look at the potential impact of such data on uptake, vaccine intentions and other contextually relevant variables.

References

1. Lukusa LA, Ndze VN, Mbeye NM, Wiysonge CS. A systematic review and meta-analysis of the effects of educating parents on the benefits and schedules of childhood vaccinations in low and middle-income countries. *Hum Vaccin Immunother.* 2018;14:2058–68. doi: 10.1080/21645515.2018.1457931.
2. Kaufman J, Ryan R, Walsh L, Horey D, Leask J, Robinson P et al. Face-to-face interventions for informing or educating parents about early childhood vaccination. *Cochrane Database Syst Rev.* 2018;5:CD010038. doi: 10.1002/14651858.CD010038.pub3.
3. Saeterdal I, Lewin S, Austvoll-Dahlgren A, Glenton C, Munabi-Babigumira S. Interventions aimed at communities to inform and/or educate about early childhood vaccination. *Cochrane Database Syst Rev.* 2014;11:CD010232. doi: 10.1002/14651858.CD010232.pub2.
4. Johri M, Pérez MC, Arsenault C, Sharma JK, Pai NP, Pahwa S et al. Strategies to increase the demand for childhood vaccination in low- and middle-income countries: a systematic review and meta-analysis. *Bull World Health Organ.* 2015;93:339–46c. doi: 10.2471/blt.14.146951.
5. Oyo-Ita A, Wiysonge CS, Oringanje C, Nwachukwu CE, Oduwale O, Meremikwu MM. Interventions for improving coverage of childhood immunisation in low- and middle-income countries. *Cochrane Database Syst Rev.* 2016;7:CD008145. doi: 10.1002/14651858.CD008145.pub3.
6. Brewer NT, Chapman GB, Rothman AJ, Leask J, Kempe A. Increasing vaccination: putting psychological science into action. *Psych Sci Public Interest.* 2017;18:149–207. doi: 10.1177/1529100618760521.
7. Charmaz K. *Constructing grounded theory.* 2nd ed. London: SAGE; 2014.
8. White C, Woodfield K, Ritchie J, Ormston R. Writing up qualitative research. In: Ritchie J, Lewis J, McNaughton Nicholls C, Ormston R, editors. *Qualitative research practice: a guide for social science students and researchers.* London: SAGE; 2014:367–400 https://books.google.com.au/books/about/Qualitative_Research_Practice.html?id=EQSIAwAAQBAJ&redir_esc=y, accessed 1 October 2021).
9. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care.* 2007;19:349–57. doi: 10.1093/intqhc/mzm042.
10. Human Centered Design 4 Health [website]. New York: UNICEF; 2021 (<https://www.hcd4health.org>, accessed 1 October).
11. Tailoring Immunization Programmes (TIP). Copenhagen: WHO Regional Office for Europe; 2019 (<https://apps.who.int/iris/bitstream/handle/10665/329448/9789289054492-eng.pdf>, accessed 1 October 2021).
12. Jarrett C, Wilson R, O’Leary M, Eckersberger E, Larson HJ. Strategies for addressing vaccine hesitancy – a systematic review. *Vaccine.* 2015;33:4180–90. doi: 10.1016/j.vaccine.2015.04.040.
13. Sanftenberg L, Kuehne F, Anraad C, Jung-Sievers C, Dreischulte T, Gensichen J. Assessing the impact of shared decision making processes on influenza vaccination rates in adult patients in outpatient care: a systematic review and meta-analysis. *Vaccine.* 2021;39:185–96. doi: 10.1016/j.vaccine.2020.12.014.
14. Deardorff KV, Rubin Means A, Ásbjörnsdóttir KH, Walson J. Strategies to improve treatment coverage in community-based public health programs: a systematic review of the literature. *PLoS Negl Trop Dis.* 2018;12:e0006211. doi: 10.1371/journal.pntd.0006211.
15. Cooper S, Schmidt BM, Sambala EZ, Swartz A, Colvin CJ, Leon N et al. Factors that influence parents’ and informal caregivers’ views and practices regarding routine childhood vaccination: a qualitative evidence synthesis. *Cochrane Database Syst Rev.* 2021;10:CD013265. doi: 10.1002/14651858.CD013265.pub2.
16. Glenton C, Scheel IB, Lewin S, Swingler GH. Can lay health workers increase the uptake of childhood immunisation? Systematic review and typology. *Trop Med Int Health.* 2011;16:1044–53. doi: 10.1111/j.1365-3156.2011.02813.x.
17. Rashid H, Yin JK, Ward K, King C, Seale H, Booy R. Assessing interventions to improve influenza vaccine uptake among health care workers. *Health Aff (Millwood).* 2016;35:284–92. doi: 10.1377/hlthaff.2015.1087.
18. Oh NL, Biddell CB, Rhodes BE, Brewer NT. Provider communication and HPV vaccine uptake: A meta-analysis and systematic review. *Prev Med.* 2021;148:106554. doi: 10.1016/j.yjpm.2021.106554.
19. Community Preventive Services Task Force. *The community guide: increasing appropriate vaccination* [website]. Atlanta (GA): Centers for Disease Control and Prevention; 2021 (<https://www.thecommunityguide.org/sites/>

[default/files/assets/What-Works-Factsheet-Vaccination.pdf](#), accessed 30 September).

20. Norman DA, Barnes R, Pavlos R, Bhuiyan M, Alene KA, Danchin M et al. Improving influenza vaccination in children with comorbidities: a systematic review. *Pediatrics*. 2021;147:e20201433. doi: 10.1542/peds.2020-1433.
21. Eze P, Lawani LO, Acharya Y. Short message service (SMS) reminders for childhood immunisation in low-income and middle-income countries: a systematic review and meta-analysis. *BMJ Glob Health*. 2021;6. doi: 10.1136/bmjgh-2021-005035.
22. Yunusa U, Garba SN, Umar AB, Idris SH, Bello UL, Abdulrashid I et al. Mobile phone reminders for enhancing uptake, completeness and timeliness of routine childhood immunization in low and middle income countries: a systematic review and meta-analysis. *Vaccine*. 2021;39:209–21. doi: 10.1016/j.vaccine.2020.11.043.
23. Linde DS, Korsholm M, Katanga J, Rasch V, Lundh A, Andersen MS. One-way SMS and healthcare outcomes in Africa: systematic review of randomised trials with meta-analysis. *PLoS One*. 2019;14:e0217485. doi: 10.1371/journal.pone.0217485.
24. Sondaal SF, Browne JL, Amoakoh-Coleman M, Borgstein A, Miltenburg AS, Verwijs M et al. Assessing the effect of mHealth interventions in improving maternal and neonatal care in low- and middle-income countries: a systematic review. *PLoS One*. 2016;11:e0154664. doi: 10.1371/journal.pone.0154664.
25. Bright T, Felix L, Kuper H, Polack S. A systematic review of strategies to increase access to health services among children in low and middle income countries. *BMC Health Serv Res*. 2017;17:252. doi: 10.1186/s12913-017-2180-9.
26. Cawley J, Hull HF, Rousculp MD. Strategies for implementing school-located influenza vaccination of children: a systematic literature review. *J Sch Health*. 2010;80:167–75. doi: 10.1111/j.1746-1561.2009.00482.x.
27. Nelson KN, Wallace AS, Sodha SV, Daniels D, Dietz V. Assessing strategies for increasing urban routine immunization coverage of childhood vaccines in low and middle-income countries: a systematic review of peer-reviewed literature. *Vaccine*. 2016;34:5495–503. doi: 10.1016/j.vaccine.2016.09.038.
28. Owusu-Addo E, Cross R. The impact of conditional cash transfers on child health in low- and middle-income countries: a systematic review. *Int J Public Health*. 2014;59:609–18. doi: 10.1007/s00038-014-0570-x.
29. Giles EL, Robalino S, McColl E, Sniehotta FF, Adams J. The effectiveness of financial incentives for health behaviour change: systematic review and meta-analysis. *PLoS One*. 2014;9:e90347. doi: 10.1371/journal.pone.0090347.
30. Lytras T, Kopsachilis F, Mouratidou E, Papamichail D, Bonovas S. Interventions to increase seasonal influenza vaccine coverage in healthcare workers: a systematic review and meta-regression analysis. *Hum Vaccin Immunother*. 2016;12:671–81. doi: 10.1080/21645515.2015.1106656.

Annexes

Annex 1: BeSD tools for childhood vaccination

1.1 Childhood vaccination priority indicators (version 1.0)

The five priority indicators for vaccination of children (younger than age 5) are presented in the table below. When it is not possible to use the full childhood vaccination survey, at least measure these priority indicators.

Domain	Construct	Priority question	Priority indicator
Thinking and feeling	Confidence in vaccine benefits	How important do you think vaccines are for your child's health? Would you say... <input type="checkbox"/> Not at all important, <input type="checkbox"/> A little important, <input type="checkbox"/> Moderately important, <i>or</i> <input type="checkbox"/> Very important	% of parents/caregivers who say that vaccines are "moderately" or "very" important for their child's health
Social processes	Family norms	Do you think most of your close family and friends want you to get your child vaccinated? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of parents/caregivers who say most of their close family and friends want their child to be vaccinated
Motivation	Intention to get child vaccinated	[COUNTRY NAME] has a schedule of recommended vaccines for children. Do you want your child to get none of these vaccines, some of these vaccines or all of these vaccines? <input type="checkbox"/> NONE <input type="checkbox"/> SOME <input type="checkbox"/> ALL	% of parents/caregivers who say they want their child to get all of the recommended vaccines
Practical issues	Know where to get child vaccinated	Do you know where to go to get your child vaccinated? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of parents/caregivers who say they know where to get their child vaccinated

Domain	Construct	Priority question	Priority indicator
Practical issues	Affordability	<p>How easy is it to pay for vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say...</p> <p><input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy</p>	% of parents/caregivers who say vaccination is “moderately” or “very” easy to pay for vaccination for their child

1.2 Childhood vaccination survey for caregivers (version 1.0)

The BeSD Childhood Vaccination Survey is a globally standardized tool for assessing the drivers of vaccination for children. The survey is to be completed by parents and caregivers to children under age 5 (0–47 months).

The survey has 19 questions. When it is not possible to use the full childhood vaccination survey, at least measure the priority indicators. To support use of the survey and analyses, also included are a recommended consent script and socio-demographic questions; programmes should adapt the consent and demographic questions as needed but should not change the rest of the survey.

The “Indicator” column shows **priority** indicators; optional indicators are shown with a * (based on weaker performance in validation). The “Rationale” column contains important information for translating and locally adapting questions. Table cell colours indicate the BeSD domain (**demographics**, **thinking and feeling**, **motivation**, **social processes** and **practical issues**).

Trained interviewers should read the survey questions and response options aloud to respondents. Interviewers should not read aloud instructions in [square brackets] and ALL CAPITALS. Interviewers should emphasize underlined words. Instructions on how to adapt the survey for self-administration, such as an online survey, are in the BeSD data for action guidebook, [section 3.5](#).

Construct	Question	Indicator	Rationale
Date	DAY /MONTH /YEAR OF INTERVIEW: ____/_____/____	None	This is an administrative question for the interviewer to complete at the time of interview. To ensure comparability and tracking, this question must not be adapted.
Participant	PARTICIPANT ID: _____	None	This is an administrative question for the interviewer to record a unique identity for individual participants at the time of interview. To ensure comparability and tracking, this question must not be adapted.
Location	GPS COORDINATES: _____ CLUSTER NUMBER: _____ DISTRICT NAME: _____	None	This is an administrative question for the interviewer to complete at the time of interview. This question can be adapted to suit the survey methodology.
Consent	<p>Hello, I am [INTERVIEWER NAME] with [INSTITUTION OR ORGANIZATION NAME]. We are interviewing people to help improve children's vaccination services in [COUNTRY NAME].</p> <p>I know you are busy, so this will take only a few minutes. Your participation is completely voluntary and anonymous. If you do not want to answer a question or wish to stop the interview, just let me know.</p> <p>Would you be willing to take the survey?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>IF "YES": Thank you very much. Do you have any questions for me before we begin?</p> <p>ADDRESS ANY QUESTIONS AND PROCEED.</p> <p>IF "NO": Thank you very much. END INTERVIEW.</p>	None	This question serves as an example of text to be included to capture respondents' informed consent to their participation in the study.

Construct	Question	Indicator	Rationale
Age	How old are you? _____YEARS	Mean age % of parents/ caregivers who are 18–34 years old % of parents/ caregivers who are 35–54 years old	This question collects age in number of completed years; this will allow for stratified analysis by age of respondents.
Gender	This may seem obvious, but I have to ask the question. What is your gender? Would you say... <input type="checkbox"/> Woman, <input type="checkbox"/> Man, <input type="checkbox"/> Nonbinary, <i>or would you</i> <input type="checkbox"/> Prefer not to say?	% of parents/ caregivers who are women % of parents/ caregivers who are men	This question collects gender identity of respondents to allow stratified analysis. The third response option can be included in contexts where specific third-gender categories are culturally recognized; this response option can be adapted as appropriate based on in-country considerations or consultation.
Parent/caregiver	Are you the parent or primary caregiver of any children who are younger than 5 years old? <input type="checkbox"/> YES <input type="checkbox"/> NO IF “NO”: Unfortunately, you are not eligible to participate in the survey. Thank you very much for taking the time to answer my questions. END INTERVIEW.	None	This question determines whether the respondent is responsible for any children under 5 years old. It should be used to screen out respondents who do not have children younger than age 5.
Number of children under 5	How many children do you have who are <u>younger</u> than 5 years old? _____CHILDREN IF MORE THAN ONE CHILD: The next questions are about your <u>youngest</u> child.	% of parents/ caregivers with two or more children	This question collects the number of children younger than 5 years old. If the respondent has more than one child under 5, they should be informed that the rest of the survey is about their youngest child.

Construct	Question	Indicator	Rationale
Relationship to child	<p>What is your relationship to your child? Would you say...</p> <p><input type="checkbox"/> Mother, <input type="checkbox"/> Father, <input type="checkbox"/> Grandparent, <input type="checkbox"/> Uncle or aunt, <input type="checkbox"/> Brother or sister, <i>or</i> <input type="checkbox"/> Other? [IF "OTHER": Please specify _____]</p>	<p>% of parents/ caregivers who are the mother</p> <p>% of parents/ caregivers who are the father</p>	This question assesses the caregiver's relationship to the child.
Age of child	<p>How old is your youngest child?</p> <p><input type="checkbox"/> Less than 1 year old, <input type="checkbox"/> 1 year old, <input type="checkbox"/> 2 years old, <input type="checkbox"/> 3 years old, <i>or</i> <input type="checkbox"/> 4 years old?</p>	% of parents/ caregivers reporting about a child younger than age 2	This question collects the age of the youngest child in number of completed years.
Gender of child	<p>Is your youngest child...?</p> <p><input type="checkbox"/> Female, <input type="checkbox"/> Male, <input type="checkbox"/> Non-binary, <i>or would you</i> <input type="checkbox"/> Prefer not to say?</p>	<p>% of children who are female</p> <p>% of children who are male</p>	This question collects gender identity of respondents' youngest child to allow stratified analysis. The third response option can be included in contexts where specific third-gender categories are culturally recognized; this response option can be adapted as appropriate based on in-country considerations or consultation.
Vaccination status	<p>[COUNTRY NAME] has a schedule of vaccines for children. As far as you know, has your child had none of these vaccines, some of these vaccines or all of these vaccines?</p> <p><input type="checkbox"/> NONE <input type="checkbox"/> SOME <input type="checkbox"/> ALL</p>	% of parents/ caregivers whose child had all recommended vaccines	This question collects reported vaccination status. In addition to this question, full vaccination status should be recorded as recommended in the <i>World Health Organization vaccination coverage cluster surveys: reference manual</i> , https://apps.who.int/iris/handle/10665/272820 .

Construct	Question	Indicator	Rationale
Intention to get child vaccinated	<p>[COUNTRY NAME] has a schedule of vaccines for children. Do you <u>want</u> your child to get none of these vaccines, some of these vaccines or <u>all</u> of these vaccines?</p> <p><input type="checkbox"/> NONE <input type="checkbox"/> SOME <input type="checkbox"/> ALL</p>	<p>Priority % of parents/ caregivers who say they want their child to get all of the recommended vaccines</p>	<p>This question assesses intention to get the child vaccinated. “Want” is similar to desire, prefer, like, plan and intend. It might identify a plan for future action but can also be about willingness.</p> <p>“Recommended” is similar to advised, suggested, standard or nationally recommended; it refers to the national vaccination schedule of recommended vaccines for children.</p> <p>The text in square brackets is to be locally adapted to include the country name.</p>
Confidence in vaccine benefits	<p>How important do you think vaccines are for your child’s health? Would you say...</p> <p><input type="checkbox"/> Not at all important, <input type="checkbox"/> A little important, <input type="checkbox"/> Moderately important, <i>or</i> <input type="checkbox"/> Very important?</p>	<p>Priority % of parents/ caregivers who say vaccines are moderately or very important for their child’s health</p>	<p>This question assesses positive attitude towards vaccination of the child. The main idea is that vaccination is good, important and valuable. A related idea is that vaccination is effective, prevents disease, saves lives and protects children who are vaccinated.</p>
Confidence in vaccine safety	<p>How safe do you think vaccines are for your child? Would you say...</p> <p><input type="checkbox"/> Not at all safe, <input type="checkbox"/> A little safe, <input type="checkbox"/> Moderately safe, <i>or</i> <input type="checkbox"/> Very safe?</p>	<p>% of parents/ caregivers who say vaccines are moderately or very safe for their child</p>	<p>This question assesses negative attitude towards vaccination of the child. The main idea is the belief that vaccination is safe and is not dangerous or harmful.</p> <p>“Do you think” is included so that respondents do not see the survey as a test or as demeaning them for what they may not know.</p>

Construct	Question	Indicator	Rationale
Confidence in health workers	<p>How much do you trust the health workers who give children vaccines? Would you say you trust them...</p> <p><input type="checkbox"/> Not at all, <input type="checkbox"/> A little, <input type="checkbox"/> Moderately, <i>or</i> <input type="checkbox"/> Very much?</p>	<p>% of parents/ caregivers who say they trust the health workers who give children vaccines “moderately” or “very” much*</p>	<p>This question assesses confidence in people who provide vaccines.</p> <p>“Trust” refers to belief that the health worker will be competent, reliable and give good health care.</p> <p>“Health worker” will need local adaptation to indicate the medical professionals responsible for recommending and administering childhood vaccination (i.e. health provider, general practitioner or paediatrician and assisting nurses or vaccinators).</p>
Peer norms	<p>Do you think most parents you know get their children vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	<p>% of parents/ caregivers who say most parents they know will get their children vaccinated</p>	<p>This question assesses social norms – beliefs about what other parents are doing.</p> <p>“Most parents you know” includes friends, people at work and people in the neighbourhood who the respondent may not have close social ties to. It does not include people the respondent has never met.</p>
Family norms	<p>Do you think most of your close family and friends want you to get your child vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	<p>Priority % of parents/ caregivers who say most of their close family and friends want their child to be vaccinated</p>	<p>This question assesses social norms – beliefs about what close social contacts want the respondent to do.</p> <p>“Close family and friends” include people with opinions the respondent would listen to or feel some degree of pressure to heed.</p>
Religious leader norms	<p>Do you think your religious leaders want you to get your child vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	<p>% of parents/ caregivers who say their religious leaders want their child to be vaccinated*</p>	<p>This question assesses social norms – beliefs about what opinion leaders want the respondent to do.</p> <p>“Religious leader” includes priests, clerics, imams, rabbis and others in similar roles.</p>

Construct	Question	Indicator	Rationale
Community leader norms	<p>Do you think your community leaders want you to get your child vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of parents/ caregivers who say their community leaders want their child to be vaccinated	<p>This question assesses social norms – beliefs about what opinion leaders want the respondent to do.</p> <p>“Community” may refer to a neighbourhood or region or social group defined by a characteristic such as race or national origin.</p> <p>“Community leader” includes people who represent a neighbourhood, region or subgroup of people.</p>
Health worker recommendation	<p>Has a health worker recommended your child be vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of parents/ caregivers who say a health worker has recommended vaccination for their child	<p>This question assesses whether the respondent recalls a health worker or health-care provider recommending vaccination.</p> <p>“Recommended” includes raising the topic during a clinic visit, saying the child is due and offering advice to get the child vaccinated.</p> <p>The term “health worker” must be locally adapted to indicate the medical professional most likely to/responsible for recommending childhood vaccination (i.e., health provider, general practitioner or paediatrician).</p>
Received recall	<p>Have you ever been contacted about your child being due for vaccination?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of parents/ caregivers who have been contacted about child being due for vaccination	This question assesses the mechanisms in place to call in children who are due for vaccines.

Construct	Question	Indicator	Rationale
Mother's travel autonomy	<p>If it was time for your child to get vaccinated, would the mother need permission to take your child to the clinic?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of mothers who say they do not need permission to take child for vaccination*	<p>This question assesses freedom of women to leave the home to get the child vaccinated.</p> <p>“Time to get vaccinated” is similar to the child being due for vaccines.</p> <p>“Clinic” refers to the clinic, doctor’s office, primary care practice, vaccination clinic, health centre or mobile service that delivers the vaccines for the child.</p>
Know where to go to get vaccination	<p>Do you know where to go to get your child vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	<p>Priority</p> <p>% of parents/ caregivers who say they know where to get their child vaccinated</p>	<p>This question assesses whether the respondent knows where to take the child for vaccination. The question is about knowing that the facility or vaccination site exists and where it is located. The question is not about ability to access or use the services.</p>
Took child for vaccination	<p>Have you personally ever taken your youngest child to get vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of parents/ caregivers who say they have taken youngest child for vaccination*	<p>This question assesses whether the respondent, personally, has been with the child when the child went to a vaccination clinic. This question allows us to disaggregate analysis by those who have a personal experience with the vaccination clinic and staff.</p>
Vaccination availability	<p>Have you ever been turned away when you tried to get your child vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of parents/ caregivers who say they have never been turned away for child vaccination	<p>This question assesses the experience of going to the vaccination clinic and not receiving vaccination for the child that day.</p> <p>“Turned away” refers to staff at the clinic saying the vaccine was not available, a sign saying the clinic was out of stock or being unable to see a vaccine provider because of other problems at the clinic.</p>

Construct	Question	Indicator	Rationale
Ease of access	<p>How easy is it to get vaccination services for your child? Would you say...</p> <p><input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy?</p>	<p>% of parents/ caregivers who say it is “moderately” or “very” easy to get child vaccination services</p>	<p>This question assesses the degree to which vaccination is easy to get for the child. The question looks at ease of access in general and leads into the next question.</p> <p>“Easy” refers to achievable, possible without great effort, not hard and not difficult.</p> <p>“Vaccination services” refers to access to vaccination.</p>
Affordability	<p>How easy is it to pay for vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say...</p> <p><input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy?</p>	<p>Priority % of parents/ caregivers who say vaccination is “moderately” or “very” easy to pay for</p>	<p>This question assesses the perceived cost of vaccination. Cost is the monetary value associated with vaccination.</p> <p>“Easy to pay” refers to the total costs associated with vaccinating being something the respondent can afford to pay.</p>

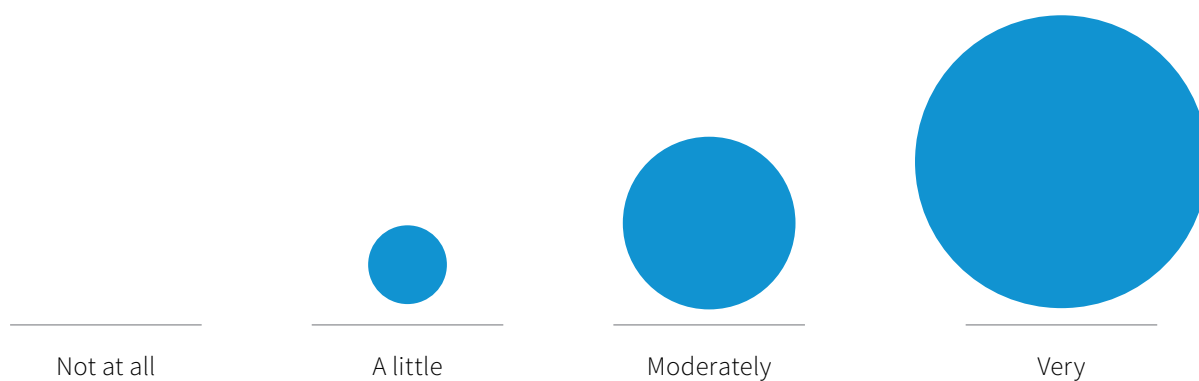
Construct	Question	Indicator	Rationale
Reasons for low ease of access	What makes it hard to get vaccination services for your child? Would you say... [READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER "YES" OR "NO" AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]	% of parents/ caregivers who say nothing makes it hard to access children's vaccination	This question assesses the reasons why vaccination is difficult to get for the child. Respondents can choose multiple response options here. There is no skip logic for this question; it must be asked of all respondents.
	<input type="checkbox"/> Nothing, it's not hard, [IF NOTHING, SKIP REST OF RESPONSES]	% of parents/ caregivers who say getting to the clinic is hard	"Nothing, it's not hard" is an exclusive response option (it cannot be selected alongside other response options) available for those who do not think it is difficult to get vaccination services for their child.
	<input type="checkbox"/> Getting to the clinic is hard,	% of parents/ caregivers who say clinic opening times are inconvenient	"Hard to get to" refers to geographical distance and barriers related to transportation.
	<input type="checkbox"/> The clinic opening times are inconvenient,	% of parents/ caregivers who say the clinic sometimes turns people away	"Inconvenient" refers to opening hours that do not suit the respondent.
	<input type="checkbox"/> The clinic sometimes turns people away without vaccinating,	% of parents/ caregivers who say the clinic sometimes turns people away	"Turns people away" refers to the clinic sending people home without vaccination despite their having come to be vaccinated.
	<input type="checkbox"/> The waiting time in the clinic takes too long, or	% of parents/ caregivers who say the waiting time takes too long	"Takes too long" refers to the waiting times at the clinic.
<input type="checkbox"/> Is there something else? [RECORD ANSWER: _____]			

Construct	Question	Indicator	Rationale
Service satisfaction	How satisfied are you with the vaccination services? Would you say...	% of parents/ caregivers who say they are “moderately” or “very” satisfied with the vaccination services for their child	This question assesses satisfaction with vaccination services received during the last visit. “Satisfied” refers to how good the services and experience were for the respondent, and how pleased or happy the respondent felt about the visit and the interactions that took place. “Vaccination services” refers to work done by vaccination clinic staff who greet the patient, handle paperwork and payment, and administer the vaccine. “Not at all” is bad and not acceptable. “Not very” is okay, adequate and not bad. “Somewhat” is positive but not the best possible. “Very” is great, fantastic and outstanding.
	<input type="checkbox"/> Not at all satisfied, <input type="checkbox"/> A little satisfied, <input type="checkbox"/> Moderately satisfied, <i>or</i> <input type="checkbox"/> Very satisfied?		
Service quality	What is not satisfactory about the vaccination services? Would you say...	% of parents/ caregivers who say vaccine is not available	This question assesses reasons why the respondent is not satisfied with the vaccination services. Respondents can choose multiple response options here. There is no skip logic for this question; it must be asked of all respondents.
	[READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER “YES” OR “NO” AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]	% of parents/ caregivers who say the clinic does not open on time	“Nothing, you are satisfied” is an exclusive response option (it cannot be selected alongside other response options) available for respondents who are satisfied with the vaccination services.
	<input type="checkbox"/> Nothing, you are satisfied, [IF NOTHING, SKIP REST OF RESPONSES] <input type="checkbox"/> Vaccine is not always available, <input type="checkbox"/> The clinic does not open on time, <input type="checkbox"/> Waiting times are long,	% of parents/ caregivers who say waiting times are long % of parents/ caregivers who say the clinic is not clean	“Vaccine is not always available” refers to people being turned away due to lack of vaccine (stock-outs). “The clinic does not open on time” refers to the clinic not operating according to the hours advertised.

Construct	Question	Indicator	Rationale
Service quality	What is not satisfactory about the vaccination services? Would you say...	% of parents/ caregivers who say staff are poorly trained	“Waiting times are long” is the perception that the service was poorly organized for time, and that staff were unable to provide efficient, quick service.
	<p>[READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER “YES” OR “NO” AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]</p> <p><input type="checkbox"/> Nothing, you are satisfied, [IF NOTHING, SKIP REST OF RESPONSES]</p> <p><input type="checkbox"/> Vaccine is not always available,</p> <p><input type="checkbox"/> The clinic does not open on time,</p> <p><input type="checkbox"/> Waiting times are long,</p> <p><input type="checkbox"/> The clinic is not clean,</p> <p><input type="checkbox"/> Staff are poorly trained,</p> <p><input type="checkbox"/> Staff are not respectful,</p> <p><input type="checkbox"/> Staff do not spend enough time with people, or</p> <p><input type="checkbox"/> Is there something else? [RECORD ANSWER: _____]</p>	<p>% of parents/ caregivers who say staff are not respectful</p> <p>% of parents/ caregivers who say staff do not spend enough time with people</p>	<p>“The clinic is not clean” refers to any complaint about the place where vaccines are given, including location and building structure. This includes lack of cleanliness and poor maintenance. This includes vaccine vials, needles, fridges for storing vaccines as well as furniture in the clinic, reception and waiting rooms, or even appearance of personnel, such as appropriate attire, clean appearance and uniforms.</p> <p>“Staff are poorly trained” is the perception that the service received was not as promised or that the quality of service was not reliable or consistent. The respondent may perceive that staff did not fulfil their role very well, that the staff were not well trained or prepared for their responsibilities, or that the staff lacked the confidence or skill to deliver the service expected.</p> <p>“Staff are not respectful” refers to inability to inspire confidence, put parents at ease and communicate competence. It includes staff being discourteous, impolite and unable to reassure parents. Staff can show respect in verbal and non-verbal ways.</p> <p>“Staff do not spend enough time with people” is the perceived lack of empathy a respondent may experience from vaccination clinic staff, and perception of a rushed service or lack of time dedicated to reassuring parents and answering their questions.</p>

1.3 Visual survey response scale

For survey respondents with lower-literacy, consider using a visual response scale. It is designed for questions with four response options (such as “not at all”, “a little”, “moderately”, “very”). Interviewers should read the question aloud and point to the visual scale as they read the response options.



1.4 Childhood vaccination in-depth interview guides (version 1.0)

The BeSD tools for childhood vaccination provide a set of four adaptable qualitative interview guides intended for use with different audiences. These guides can be used for in-depth interviews with individuals. Questions should be adapted to suit the cultural context of the people being interviewed and the research question being investigated.

Interview guide for caregivers of children under 5

BeSD model construct	Question/[Instruction]	Rationale
General	<p>Introduction: Hello, I am [INTERVIEWER'S NAME] with [INSTITUTION OR ORGANIZATION NAME]. We are interviewing people to help improve vaccination services in [NAME OF COUNTRY].</p> <p>The interview is expected to take ___ minutes. Your participation is completely voluntary and anonymous. The answers you give will be completely confidential. If you do not want to answer a question or wish to stop the interview, just let me know. Would you be willing to take part in an interview with me? [If audio recording the interview] Would you be happy for me to record our conversation?</p>	<ul style="list-style-type: none"> • Clear introduction to ensure true informed consent for participation is obtained before proceeding.
	<p>Tell me a little about yourself and your family. <i>Probe:</i></p> <ul style="list-style-type: none"> • Who lives in your household with you? • How old is your child/are your children? • Are your children up to date with their vaccines? 	<ul style="list-style-type: none"> • Warm-up question. • Enables understanding of the participant's family situation and personal context.
Motivation Social processes	<p>Thinking back to the first time you had your child vaccinated, tell me why you decided that you would go ahead with it. [If first vaccine was administered at birth, ask about the first time they took their child back for their next set of scheduled vaccines.] <i>Probe:</i></p> <ul style="list-style-type: none"> • Did anyone suggest it? • Who decided that you should take your child to be vaccinated? • Who usually takes your child(ren) to have their vaccines? 	<ul style="list-style-type: none"> • Aim to understand how the caregiver came to the decision about whether or not to vaccinate their child. • Aim to understand who else was involved in the decision.

BeSD model construct	Question/[Instruction]	Rationale
Social processes	<p>Do you talk about vaccination with anyone else? <i>Probe:</i></p> <ul style="list-style-type: none"> Who do you talk to? What do they say? Do other parents you know vaccinate their children? 	<ul style="list-style-type: none"> Aim to understand what the social norms are for this caregiver (i.e., what the usual vaccination behaviour of other caregivers is in their community).
Practical issues	<p>Thinking back to the first time you took your child to be vaccinated, tell me how you knew it was time to do so? <i>Probe:</i></p> <ul style="list-style-type: none"> What kind of reminders do you use? 	<ul style="list-style-type: none"> Aim to understand what prompts the caregiver to seek vaccination for their child.
Practical issues	<p>Thinking about vaccination day for your child, tell me about what happens before you arrive at the place where your child gets the vaccine. Start with before you leave home. <i>Probe:</i></p> <ul style="list-style-type: none"> What do you need to do to prepare before you leave home? How do you travel to the vaccination place? <p>Once you arrive at the vaccination place, tell me what happens next. <i>Probe:</i></p> <ul style="list-style-type: none"> Who do you talk to when you get there? What happens in the waiting room or queue? Do you need to pay a fee? Are other health checks done while you're there? <p>What happens when it's your child's turn to get the vaccine? <i>Probe:</i> What happens first? [Probe for each step until the vaccination is completed.] What do the health workers talk to you about while you're there? How do you feel when you talk with them?</p> <p>After your child has had the vaccine, tell me what happens next. <i>Probe:</i> What happens when you leave the vaccination place? How do you travel home? What happens after you arrive home?</p>	<ul style="list-style-type: none"> Aim to understand the practical and logistical considerations the caregiver must address or overcome to get their child vaccinated. Describe the process they follow on vaccination day. [Note: "Vaccination place" should be substituted with the correct word for the particular vaccination service the caregiver uses, for example "hospital" or "clinic".]

BeSD model construct	Question/[Instruction]	Rationale
Practical issues	<p>What do you like about what happens on vaccination day?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Ask about each step described by the caregiver in the question above. • [If there is something identified that they like] Why do you like it? 	<ul style="list-style-type: none"> • Aim to understand positive aspects of the vaccination process described.
Practical issues	<p>What don't you like about what happens on vaccination day?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • [If the response is “nothing”, list the steps in the process they describe and ask whether there is anything they don't like about them individually.] • Is there anything you find difficult? Why do you find it difficult? 	<ul style="list-style-type: none"> • Aim to understand in detail any barriers to getting their child vaccinated.
Thinking and feeling	<p>Tell me how you feel about childhood vaccination?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Why do you feel this way? • Do you think it's a good thing? Why? • Do you think it's important? Why? • Is there anything you feel isn't good about vaccination? Can you tell me more about it? 	<ul style="list-style-type: none"> • Aim to understand underlying feelings about childhood vaccination in general.
Thinking and feeling	<p>How do you feel when your child is vaccinated?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Do you think it's good for your child? Why? • Is there anything that worries you? Why does it worry you? 	<ul style="list-style-type: none"> • Aim to understand their feelings when it comes to vaccinating their child specifically (different from the previous question, which aims to understand how they feel about vaccination in general).
General	<p>Is there anything else you'd like to say?</p>	<ul style="list-style-type: none"> • Aim to capture any other issues or thoughts that haven't been captured in previous questions.

Interview guide for health workers

Question/[Instruction]	Rationale
<p>Introduction: Hello, I am [INTERVIEWER'S NAME] with [INSTITUTION OR ORGANIZATION NAME]. We are interviewing people to help improve vaccination services in [NAME OF COUNTRY].</p> <p>The interview is expected to take ___ minutes. Your participation is completely voluntary and anonymous. The answers you give will be completely confidential. If you do not want to answer a question or wish to stop the interview, just let me know. Would you be willing to take part in an interview with me? [If audio recording the interview] Would you be happy for me to record our conversation?</p>	<ul style="list-style-type: none"> • Clear introduction to ensure true informed consent for participation is obtained before proceeding.
<p>Tell me a little about yourself and what you do.</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • What are you responsible for? • How many days do you work in this role? • Where do you perform your duties? 	<ul style="list-style-type: none"> • Warm-up question. • Enables understanding of the participant's professional role. • Understanding the breadth of the participant's responsibilities. • Understanding how many days per week the participant works and where they are situated physically (e.g., does the participant work at multiple sites?).
<p>To what extent does your role involve immunization?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • What parts of your job involve immunization? • Can you tell me more about that? 	<ul style="list-style-type: none"> • To understand how much of the participant's role is immunization related. • To understand in some detail what those immunization-related responsibilities are.
<p>I'd like to understand the process you follow to immunize a child, starting from the very beginning.</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Does it involve work for you even before the family arrives at the centre for vaccination? • Can you summarize the procedure of immunization in around five steps, starting once a family arrives at the centre for vaccination? [Note: Adjust this question for non-clinic settings if required.] • Are there follow-ups or steps involved once they leave the centre? [Note: Other probes, such as ongoing door to door, systems of recording vaccinations, making vaccination cards and so on, could be added as required.] 	<ul style="list-style-type: none"> • This question is for workers who administer immunizations to children. • The aim is to understand the work processes followed by the participant: <ul style="list-style-type: none"> • May shed light on logistical or practical barriers they may encounter when delivering immunization services. • May shed light on facilitators that could be applied elsewhere. • [Note: The wording of this question is currently framed for a health worker in a clinic-type setting. The wording will have to be adjusted for the approach used in the setting being researched, for example outreach or mobile vaccination services.]

Question/[Instruction]	Rationale
<p>What do you find works in helping families stay up to date with immunization?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • What helps them not miss doses or appointments? [Note: This is to probe for practical issues.] • What helps those who are hesitant about getting their children vaccinated? 	<ul style="list-style-type: none"> • This question is designed to find out what, in the participant's experience, helps keep families up to date with immunizations for their children. • [Note: The question is intentionally broad and open-ended so that all possible answers are gathered.]
<p>What do you find difficult when it comes to helping families stay up to date with immunization?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Which part of the process you described before do you find the hardest to complete? Why is that? • Can you give some examples of reasons people give when their child has fallen behind the vaccination schedule? • Can you give some examples of reasons that people give for refusing vaccines for their children? 	<ul style="list-style-type: none"> • This question is designed to help identify and understand difficulties the participant faces in helping families to keep up to date with vaccinations. • [Note: The suggested probes are to help separate differences between difficulties in the process they describe above, and difficulties they think families experience.]
<p>If you had the chance, what would you do to improve immunization services in your area?</p>	<ul style="list-style-type: none"> • The aim is to identify any other issues or suggestions not identified in the previous line of questioning. • Closing question.

Interview guide for community influencers

Question/[Instruction]	Rationale
<p>Introduction: Hello, I am [INTERVIEWER'S NAME] with [INSTITUTION OR ORGANIZATION NAME]. We are interviewing people to help improve vaccination services in [NAME OF COUNTRY].</p> <p>The interview is expected to take ___ minutes. Your participation is completely voluntary and anonymous. The answers you give will be completely confidential. If you do not want to answer a question or wish to stop the interview, just let me know. Would you be willing to take part in an interview with me? [If audio recording the interview] Would you be happy for me to record our conversation?</p>	<ul style="list-style-type: none"> • Clear introduction to ensure true informed consent for participation is obtained before proceeding.
<p>Tell me a little about yourself and your role here in the community.</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • To what extent does your work involve immunization? • Can you tell me more about that? • Who do you work with to do that work? 	<ul style="list-style-type: none"> • Warm-up question. • Enables understanding of the participant's role in the community. • Understanding the breadth of the participant's responsibilities.

Question/[Instruction]	Rationale
<p>Can you take me through the process you follow when you work in a community?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • [Note: This probe is for participants who work with families.] When you visit a family: <ul style="list-style-type: none"> • What do you talk about? • What information can you not leave without saying? • Do you follow up with the families afterwards? How do you do that? • [Note: This question is for participants who work with other people and organizations; use as appropriate for the participant.] <ul style="list-style-type: none"> • How do you help the front-line health workers in working with families? • How do you help with routine immunization? 	<ul style="list-style-type: none"> • To understand the details of the participant's immunization-related activities. • [Note: Some participants may work directly with families; others work with NGOs (nongovernmental organizations) and other agencies. The suggested probe questions should be adjusted to suit the participant's setting and role.]
<p>What do you find works in helping families stay up to date with their children's immunizations?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • What helps them not miss doses or appointments? [Note: This is to probe for practical issues.] • What helps those who are hesitant about getting their children vaccinated? 	<ul style="list-style-type: none"> • This question is designed to find out what, in the participant's experience, helps families keep up to date with immunizations for their children. • [Note: The question is intentionally broad and open-ended so that all possible answers are gathered].
<p>What makes it difficult for families stay up to date with immunization?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Can you give some examples of reasons people give when their child has fallen behind the vaccination schedule? • Can you give some examples of reasons that people give for refusing vaccines for their children? • Are you able to overcome these challenges? How? 	<ul style="list-style-type: none"> • This question is designed to help identify and understand difficulties the participant sees for families in keeping up to date with vaccinations in their community.
<p>If you had the chance, what would you do to improve immunization services in your area?</p>	<ul style="list-style-type: none"> • Aim to identify any other issues or suggestions not identified in the previous line of questioning. • Closing question.

Interview guide for programme managers

Question/[Instruction]	Rationale
<p>Introduction: Hello, I am [INTERVIEWER'S NAME] with [INSTITUTION OR ORGANIZATION NAME]. We are interviewing people to help improve vaccination services in [NAME OF COUNTRY]. We're seeking input from people like you who know the processes and the work well. Your views are crucial and very valuable.</p> <p>The interview is expected to take __ minutes. Your participation is completely voluntary and anonymous. The answers you give will be completely confidential. If you do not want to answer a question or wish to stop the interview, just let me know. Would you be willing to take part in an interview with me? [If audio recording the interview] Would you be happy for me to record our conversation?</p>	<ul style="list-style-type: none"> • Clear introduction to ensure true informed consent for participation is obtained before proceeding.
<p>Tell me a little about yourself and your current role.</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • To what extent does your work involve childhood immunization? • What kinds of immunization-related activities are you responsible for (e.g., surveillance, campaigns, communications)? • Can you tell me more about those? 	<ul style="list-style-type: none"> • Warm-up question. • Enables understanding of the participant's overall current role. • Understanding the breadth of the participant's responsibilities. • Understanding the extent of their immunization-related activities and what those entail.
<p>What makes the provision of childhood immunization a success in your area?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Are there specific examples you can describe? 	<ul style="list-style-type: none"> • This question is designed to find out what, in the participant's experience, helps keep families up to date with immunizations for their children. • [Note: The question is intentionally broad and open-ended so that all possible answers are gathered.]
<p>What do you think are the difficulties when it comes to providing childhood immunization in your area?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Do you face difficulties with children falling behind the vaccination schedule in your area? Can you describe those difficulties? • Do you face difficulties with parents refusing vaccines for their children? • Are you able to overcome these challenges? How? 	<ul style="list-style-type: none"> • This question is designed to help identify and understand difficulties the participant sees for families in keeping up to date with vaccinations in their jurisdiction.
<p>If you had the chance, what would you do to improve the childhood immunization situation in your area?</p>	<ul style="list-style-type: none"> • Aim to identify any other issues or suggestions not identified in the previous line of questioning. • Closing question.

1.5 Qualitative framework analysis template for caregivers, health workers, community influencers and programme managers

The qualitative framework is provided in an Excel template to support interpretation of qualitative results. The Excel template can be accessed [here](#).

Note that the analysis approach recommended is not a linear process. It will be necessary to move between coding the interviews and the framework summaries and adjusting the categories slightly as new data from subsequent interviews emerge.

Annex 2: BeSD tools for COVID-19 vaccination

2.1 COVID-19 vaccination priority indicators (version 1.0)

The five priority indicators for vaccination of COVID-19 among adults are provided in the table below. When it is not possible to use the full COVID-19 vaccination survey, at least measure these priority indicators.

Domain	Construct	Priority question	Priority indicator
Thinking and feeling	Confidence in COVID-19 vaccine benefits	How important do you think getting a COVID-19 vaccine is for your health? Would you say... <input type="checkbox"/> Not at all important, <input type="checkbox"/> A little important, <input type="checkbox"/> Moderately important, <i>or</i> <input type="checkbox"/> Very important?	% of adults/health workers who say a COVID-19 vaccine is moderately or very important for their health
Social processes	Family norms	Do you think most of your close family and friends want you to get a COVID-19 vaccine? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say most of their close family and friends want them to get a COVID-19 vaccine
Motivation	Intention to get vaccinated	Do you want to get a COVID-19 vaccine? Would you say... <input type="checkbox"/> You do not want to,, <input type="checkbox"/> You are not sure, <input type="checkbox"/> You want to <i>or</i> <input type="checkbox"/> You are already vaccinated?	% of adults/health workers who say they want to get a COVID-19 vaccine
Practical issues	Know where to get vaccination	Do you know where to go to get a COVID-19 vaccine for yourself? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say they know where to get a COVID-19 vaccine for themselves
Practical issues	Affordability	How easy is it to pay for COVID-19 vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there, plus the cost of taking time away from work. Would you say... <input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy?	% of adults/health workers who say COVID-19 vaccination is “moderately” or “very” easy to pay

2.2 COVID-19 vaccination survey for adults and health workers (version 1.0)

The BeSD COVID-19 Vaccination Survey is a globally standardized tool for assessing the drivers of COVID-19 vaccination. The survey is to be completed by adults and health workers.

The survey has 22 questions. When it is not possible to use the full COVID-19 vaccination survey, at least measure the priority indicators. To support use of the survey and analyses, also included are a recommended consent script and socio-demographic questions; programmes should adapt the consent and demographic questions as needed but should not change the rest of the survey.

The “Indicator” column shows **priority** indicators; optional indicators are shown with a * (based on weaker performance in validation). The “Rationale” column contains important information for translating and locally adapting questions. Countries may also adapt the term “COVID-19” throughout the survey where a colloquial term is better understood, such as “coronavirus”. Table cell colours indicate the domain (**demographics**, **thinking and feeling**, **motivation**, **social processes** and **practical issues**).

Trained interviewers should read the survey questions and response options aloud to respondents. Interviewers should not read aloud instructions in [square brackets] and ALL CAPITALS. Interviewers should emphasize underlined words. Instructions on how to adapt the survey for self-administration, such as an online survey, are in the BeSD data for action guidebook, [section 3.5](#).

Construct	Question and response options	Indicator	Rationale
Date	DAY /MONTH /YEAR OF INTERVIEW: ____/_____/____	None	This is an administrative question for the interviewer to complete at the time of interview. To ensure comparability and tracking, this question must not be adapted.
Participant	PARTICIPANT ID: _____	None	This is an administrative question for the interviewer to record a unique identity for individual participants at the time of interview. To ensure comparability and tracking, this question must not be adapted.
Location	GPS COORDINATES: _____ CLUSTER NUMBER: _____ DISTRICT NAME: _____	None	This is an administrative question for the interviewer to complete at the time of interview. This question can be adapted to suit the survey methodology.
Area	IS THE AREA: <input type="checkbox"/> RURAL <input type="checkbox"/> URBAN	None	This is an administrative question for the interviewer to complete at the time of interview.

Construct	Question and response options	Indicator	Rationale
Consent	<p>Hello, I am [INTERVIEWER NAME] with [INSTITUTION OR ORGANIZATION NAME]. We are interviewing people to help improve vaccination services in [COUNTRY NAME].</p> <p>I will be asking you questions about COVID-19.</p> <p>I know you are busy, so this will take only a few minutes. Your participation is completely voluntary and anonymous. If you do not want to answer a question or wish to stop the interview, just let me know.</p> <p>Would you be willing to take the survey?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>IF “YES” : Thank you very much. Do you have any questions for me before we begin?</p> <p>ADDRESS ANY QUESTIONS AND PROCEED.</p> <p>IF “NO” : Thank you very much. END INTERVIEW.</p>	None	This question serves as an example of text to be included to capture respondents’ informed consent to their participation in the study.
Age	<p>How old are you? _____ YEARS</p>	<p>% of adults/health workers who are 18–34 years old</p> <p>% of adults/health workers who are above 55 or more years old</p>	This question collects age in number of completed years: this will allow stratified analysis by age of respondents. This question can also serve to screen in or screen out participants for inclusion based on the study sampling methodology.

Construct	Question and response options	Indicator	Rationale
Gender	<p>This may seem obvious, but I have to ask the question. What is your gender? Would you say...</p> <p><input type="checkbox"/> Woman, <input type="checkbox"/> Man, <input type="checkbox"/> Non-binary, <i>or would you</i> <input type="checkbox"/> Prefer not to say?</p>	<p>% of adults/health workers who are women</p> <p>% of adults/health workers who are men</p>	<p>This question collects gender identity of respondents to allow stratified analysis. The third response option can be included in contexts where specific third-gender categories are culturally recognized; this response option can be adapted as appropriate based on in-country considerations or consultation.</p>
Occupation	<p>Which of the following best describes your work during the COVID-19 pandemic? Would you say...</p> <p><input type="checkbox"/> Health worker, <input type="checkbox"/> Essential services worker, <input type="checkbox"/> Educator, <input type="checkbox"/> Other worker, <i>or</i> <input type="checkbox"/> None of the above?</p>	<p>% of adults who are health workers</p> <p>% of adults who are essential service workers</p>	<p>This question enables sorting of respondents for the right survey as needed. Inclusion of this question will allow analysis of intentions to be stratified by whether someone is in a priority occupational group or not.</p> <p>This question can also serve to screen in or screen out participants for inclusion based on the study sampling methodology.</p> <p>“Essential services worker” refers to other non-health front-line workers (e.g., police, transport service workers, grocery store staff).</p> <p>The categories may be locally adapted to ensure they are appropriate to the specific context and allow disaggregated data as needed. Some countries may choose to delineate between front-line and non-front-line health workers.</p>
Health worker	<p>[FOR HEALTH WORKERS ONLY] What is your current role? Would you say...</p> <p><input type="checkbox"/> Doctor, <input type="checkbox"/> Nurse, <input type="checkbox"/> Paramedic/first responder, <input type="checkbox"/> Community health worker, <input type="checkbox"/> Traditional healer, <i>or</i> <input type="checkbox"/> Other health worker?</p>	Varies by country	<p>This question enables categorization of health workers into common roles or functions within the health system. If included, this question enables more detailed analysis of health worker roles and stratification of results.</p> <p>The response options offered should be adapted in-country at national or even subnational level to reflect the most appropriate role categorizations based on the types of health workers most likely to be at risk of COVID-19 infection/most exposed to COVID-19.</p>

Construct	Question and response options	Indicator	Rationale
COVID-19 risk	<p>Do you have a chronic condition? This could include, for example, obesity, diabetes, lung disease or another long-term condition.</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES <input type="checkbox"/> NOT SURE</p>	% of adults/health workers who have a chronic condition (answered “yes”)	<p>This question assesses whether the respondent has any underlying condition, comorbidities or health conditions that make the respondent a higher priority for vaccination. Inclusion of this question allows stratification of results by comorbidities.</p> <p>This question can also serve to screen in or screen out participants for inclusion based on the study sampling methodology.</p>
COVID-19 diagnosis	<p>To your knowledge, have you ever had COVID-19?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p> <p>IF “YES”: Was it...</p> <p><input type="checkbox"/> Mild, <i>or</i> <input type="checkbox"/> Severe?</p> <p>Was it...</p> <p><input type="checkbox"/> Confirmed by a test, <i>or</i> <input type="checkbox"/> Not confirmed by a test?</p>	<p>% of adults/health workers who have had COVID-19 (answered “yes”)</p> <p>% of adults/health workers who have had COVID-19 confirmed by test</p>	<p>Previously having COVID-19 can be perceived as a reason to not vaccinate, and countries may want to stratify data on intentions to be vaccinated according to this. This question can also serve to screen in or screen out participants for inclusion based on the study sampling methodology.</p> <p>When a COVID-19 vaccine becomes available in-country, researchers may choose to include a question to assess whether the respondent has received a COVID-19 vaccine. If several are available in the country, a question that asks which vaccine the respondent received may also be added.</p>
Perceived risk – self	<p>How concerned are you about getting COVID-19? Would you say...</p> <p><input type="checkbox"/> Not at all concerned, <input type="checkbox"/> A little concerned, <input type="checkbox"/> Moderately concerned, <i>or</i> <input type="checkbox"/> Very concerned?</p>	% of adults/health workers who say they are “moderately” or “very” concerned about getting COVID-19*	This question assesses the degree to which the respondent perceives a risk of getting COVID-19 themselves. “Concern” is similar to worry or thinking about a problem; it is not directly about fear or anxiety or emotion.
COVID-19 vaccine uptake	<p>Have you received a COVID-19 vaccine? Would you say...</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes, you received one dose, <input type="checkbox"/> Yes, you received two doses, <i>or</i> <input type="checkbox"/> Yes, you received three or more doses? <input type="checkbox"/> NOT SURE</p>	% of adults/health workers who received a COVID-19 vaccine (answered “yes”)	This question assesses whether the respondent has ever received any dose of a COVID-19 vaccine. A “not sure” response option is included here as it is likely some adults may not easily be able to recall such information.

Construct	Question and response options	Indicator	Rationale
Intention to get vaccinated	<p>Do you want to get a COVID-19 vaccine? Would you say...</p> <p><input type="checkbox"/> No, you do not want to, <input type="checkbox"/> Yes, you do want to, <input type="checkbox"/> You are not sure, <i>or</i> <input type="checkbox"/> You are already vaccinated?</p>	<p>Priority % of adults/health workers who say they want to get a COVID-19 vaccine</p>	<p>This question assesses intention to receive a COVID-19 vaccine if advised to do so by a medical professional.</p> <p>Countries can choose to add an open-text follow-up question for those who answer “no”:</p> <p>What is the main reason you would not get a COVID-19 vaccine if it were available to you?</p> <p>[OPEN-TEXT RESPONSE]</p>
Confidence in COVID-19 vaccine benefits	<p>How important do you think getting a COVID-19 vaccine is for your health? Would you say...</p> <p><input type="checkbox"/> Not at all important, <input type="checkbox"/> A little important, <input type="checkbox"/> Moderately important, <i>or</i> <input type="checkbox"/> Very important?</p>	<p>Priority % of adults/health workers who say a COVID-19 vaccine is “moderately” or “very” important for their health</p>	<p>This question assesses positive attitude towards COVID-19 vaccination. The main idea is that vaccination is good, important and valuable. A related idea is that vaccination is effective, prevents disease, saves lives and protects those vaccinated.</p>
Confidence in COVID-19 vaccine safety	<p>How safe do you think a COVID-19 vaccine is for you?</p> <p><input type="checkbox"/> Not at all safe, <input type="checkbox"/> A little safe, <input type="checkbox"/> Moderately safe, <i>or</i> <input type="checkbox"/> Very safe?</p>	<p>% of adults/health workers who say a COVID-19 vaccine is “moderately” or “very” safe</p>	<p>This question assesses negative attitude towards COVID-19 vaccination for themselves. The main idea is the belief that the vaccine is safe and is not dangerous or harmful.</p>
COVID-19 vaccine – see friends and family	<p>Do you think that getting a COVID-19 vaccine will allow you to see your family and friends again?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	<p>% of adults/health workers who say that getting a COVID-19 vaccine will allow them to safely see their family and friends again*</p>	<p>This question assesses whether freedom to see family and friends could be a motivator to get a COVID-19 vaccine.</p>

Construct	Question and response options	Indicator	Rationale
Confidence in health workers	<p>How much do you trust the health workers who would give you a COVID-19 vaccine? Would you say...</p> <p><input type="checkbox"/> Not at all, <input type="checkbox"/> A little, <input type="checkbox"/> Moderately, <i>or</i> <input type="checkbox"/> Very much?</p>	% of adults/health workers who say they trust the health workers who give COVID-19 vaccines “moderately” or “very much”*	<p>This question assesses confidence in the people responsible for recommending and administering vaccines.</p> <p>“Trust” refers to belief that the health worker who gives vaccines will be competent, reliable and provide good health care.</p> <p>“Health worker” will need local adaptation to indicate the medical professionals responsible for recommending and administering adult vaccination (i.e., general practitioner, health provider or primary health-care physician and assisting nurses or vaccinators).</p>
Peer norms	<p>Do you think most adults you know will get a COVID-19 vaccine if it is recommended to them?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of adults/health workers who say that most adults they know will get a COVID-19 vaccine (answered “yes”)	<p>This question assesses social norms – beliefs about what other people are doing.</p> <p>“Most adults you know” includes friends, people at work and people in the neighbourhood who respondents may have social ties to. It does not include people they have never met.</p>
Workplace norms	<p>Do you think most of the people you work with will get a COVID-19 vaccine?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES <input type="checkbox"/> NOT CURRENTLY WORKING</p>	% of adults/health workers who say that most of the people they work with will get a COVID-19 vaccine*	<p>This question assesses social norms – beliefs about what other people are doing.</p> <p>“Most people you work with” includes all colleagues and people at their place of work who could be eligible for a COVID-19 vaccine.</p> <p>This question has been shown to be highly correlated with COVID-19 vaccine uptake. If you use this question, note that it does not collect data on the workplace norms of those who are unemployed at the time of data collection (those who select “I am not currently working”).</p>

Construct	Question and response options	Indicator	Rationale
Family norms	Do you think most of your close family and friends want you to get a COVID-19 vaccine? <input type="checkbox"/> NO <input type="checkbox"/> YES	Priority % of adults/health workers who say most of their close family and friends want them to get a COVID-19 vaccine	This question assesses social norms – beliefs about what close social contacts want the respondent to do. “Close family and friends” include people with opinions the respondent would listen to or feel some degree of pressure to heed.
Religious leader norms	Do you think your religious leaders want you to get a COVID-19 vaccine? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say their religious leaders want them to get a COVID-19 vaccine (answered “yes” or “not sure”)*	This question assesses social norms – beliefs about what opinion leaders want the respondent to do. “Religious leader” includes priests, clerics, imams, rabbis and others in similar roles.
Community leader norms	Do you think other community leaders want you to get a COVID-19 vaccine? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say their community leaders want them to get a COVID-19 vaccine (answered “yes” or “not sure”)	This question assesses injunctive social norms – beliefs about what opinion leaders want the respondent to do. “Community” may refer to a neighbourhood or region or a social group defined by a characteristic such as race or national origin. “Community leader” includes people who represent a neighbourhood, region or subgroup of people.
Health worker recommendation	Has a health worker recommended you get a COVID-19 vaccine? <input type="checkbox"/> NO <input type="checkbox"/> YES	% of adults/health workers who say a health worker has recommended they get a COVID-19 vaccine	This question assesses whether a health worker or health-care provider has advised the respondent to get a COVID-19 vaccine. “Recommended” includes raising the topic during a clinic visit, saying the person is due and offering advice to get vaccinated. The term “health worker” must be adapted to reflect local language (e.g., health-care provider, general practitioner, vaccinator).

Construct	Question and response options	Indicator	Rationale
Received recall	<p>Have you ever been contacted about being due for a COVID-19 vaccine?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of adults/health workers who say they have been contacted about being due for a COVID-19 vaccine (answered “yes”)	This question assesses mechanisms in place to reach and remind adults due for vaccination. If these systems/mechanisms are not in place in-country, we recommend that this question not be included.
Gender equity – travel autonomy	<p>If it was time for you to get a COVID-19 vaccine, would you need permission to go and get it?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	% of adults/health workers who say they do not need permission to go and get a COVID-19 vaccine*	<p>This question assesses freedom of the respondent to leave the home to get a COVID-19 vaccine.</p> <p>Data can be stratified by gender to assess women’s travel autonomy.</p>
Know where to get vaccination	<p>Do you know where to go to get a COVID-19 vaccine for yourself?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>	<p>Priority</p> <p>% of adults/health workers who know where to get a COVID-19 vaccine for themselves</p>	<p>This question assesses whether the respondent knows where to go for vaccination. The question is about knowing that the facility or vaccine provider exists and where it is located. The question is not about ability to access or use the services.</p> <p>If COVID-19 vaccines are not yet available in your country, adapt the question to:</p> <p>Do you know where to go to get yourself vaccinated?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>

Construct	Question and response options	Indicator	Rationale
On-site vaccination	<p>Is a COVID-19 vaccine available for you to get at your place of work? Would you say...</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES <input type="checkbox"/> NOT CURRENTLY WORKING</p>	<p>% of adults/health workers who have access to a COVID-19 vaccine at their place of work (answered “yes”)*</p>	<p>This question assesses availability or existence of vaccination services at work (on-site) for health workers only. This question can also be applied to adults in countries where it is not uncommon to offer adult vaccines in workplaces. A “not sure” response option is included here as some may not be aware of the presence of any on-site vaccination in their place of work.</p> <p>If COVID-19 vaccines are not yet available in your country, adapt the question to:</p> <p>Have any vaccines ever been available for you to get at your place of work?</p> <p><input type="checkbox"/> NO <input type="checkbox"/> YES</p>
Ease of access	<p>How easy is it to get a COVID-19 vaccine for yourself? Would you say...</p> <p><input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy?</p>	<p>% of adults/health workers who say getting COVID-19 vaccination is “moderately” or “very” easy</p>	<p>This question assesses the degree to which vaccination is easy for respondents to get for themselves. The question looks at ease of access in general and leads into the next question.</p> <p>“Easy” refers to achievable, possible without great effort, not hard and not difficult.</p> <p>“Vaccination services” refers to access to vaccination.</p> <p>If COVID-19 vaccines are not yet available in your country, adapt the question to:</p> <p>How easy is it to get vaccination services for yourself?</p> <p><input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy?</p>

Construct	Question and response options	Indicator	Rationale
Affordability	<p>How easy is it to pay for COVID-19 vaccination? When you think about the cost, please consider any payments to the clinic, the cost of getting there and the cost of taking time away from work. Would you say...</p> <p><input type="checkbox"/> Not at all easy, <input type="checkbox"/> A little easy, <input type="checkbox"/> Moderately easy, <i>or</i> <input type="checkbox"/> Very easy?</p>	<p>Priority % of adults/ health workers who say COVID-19 vaccination is “moderately” or “very” easy to pay for.</p>	<p>This question assesses the perceived cost of vaccination. Cost is the monetary value associated with vaccination.</p> <p>“Easy to pay” refers to the total costs associated with vaccination being something the respondent can afford to pay for.</p>

Construct	Question and response options	Indicator	Rationale
Reasons for low ease of access	What makes it hard for you to get a COVID-19 vaccine? Would you say... [READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER "YES" OR "NO" AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]	% of adults/health workers who say COVID-19 vaccination is not yet available for them	This question assesses the reasons why vaccination is difficult to get. Respondents can choose multiple response options here. There is no skip logic for this question; it must be asked of all respondents.
	<input type="checkbox"/> Nothing, it's not hard, [IF NOTHING, SKIP REST OF RESPONSES]	% of adults/health workers who say making an appointment is hard	Response options explained: "Nothing, it's not hard" is an exclusive response option (it cannot be selected alongside other response options) available for those who do not think it is difficult to get COVID-19 vaccines.
	<input type="checkbox"/> COVID-19 vaccination is not yet available for me,	% of adults who say they can't go on their own	"COVID-19 vaccination is not yet available for me" is to capture people who are not yet eligible for a COVID-19 vaccine according to their country guidelines.
	<input type="checkbox"/> Making an appointment is hard,	% of adults/health workers who say the vaccination site is hard to get to	"Hard to get to" refers to geographical distance and difficult or inconvenient logistics of getting to the place where COVID-19 vaccines are offered.
	<input type="checkbox"/> The vaccination site is hard to get to,	% of adults/health workers who say vaccination opening times are inconvenient	"Inconvenient" refers to opening hours that do not suit the respondent.
	<input type="checkbox"/> The opening times are inconvenient,	% of adults/health workers who say the waiting time takes too long	"Takes too long" refers to the waiting times at the place of vaccination.
	<input type="checkbox"/> The waiting time takes too long,	% of adults/health workers who say the waiting time takes too long	"Unable to leave work duties" refers to health workers being unable to make time for vaccination alongside their work responsibilities.
	<input type="checkbox"/> I am unable to leave work duties,	% of health workers who say they are unable to leave work duties	"Turns people away" refers to the clinic sending people home without vaccination when they specifically had come for vaccination.
<input type="checkbox"/> Sometimes people are turned away without vaccination, <i>or</i>	% of adults/health workers who say sometimes people are turned away without vaccination	If COVID-19 vaccines are not yet available in your country, adapt the question to: What makes it hard for you to get vaccines?	
<input type="checkbox"/> Is there something else? [RECORD ANSWER: _____]		REMOVE THE RESPONSE OPTION: COVID-19 vaccination	

Construct	Question and response options	Indicator	Rationale
<p>Service satisfaction</p>	<p>How satisfied are you with COVID-19 vaccination services? Would you say...</p> <p><input type="checkbox"/> Not at all satisfied, <input type="checkbox"/> A little satisfied, <input type="checkbox"/> Moderately satisfied, <i>or</i> <input type="checkbox"/> Very satisfied?</p>	<p>% of adults/ health workers who say they are “moderately” or “very” satisfied with COVID-19 vaccination services (answered “yes”)</p>	<p>This question assesses satisfaction with vaccination services received during the last visit.</p> <p>“Satisfied” refers to how good the services and experience were for respondents, and how pleased or happy they felt about the visit and the interactions that took place.</p> <p>“Vaccination services” refers to work done by vaccination clinic staff who greet patients, handle paperwork and payment, and administer the vaccine.</p> <p>“Not at all” is bad and not acceptable.</p> <p>“Not very” is okay, adequate and not bad.</p> <p>“Somewhat” is positive but not the best possible.</p> <p>“Very” is great, fantastic and outstanding.</p>

Construct	Question and response options	Indicator	Rationale
Service quality	What is not satisfactory about the COVID-19 vaccination services? Would you say...	% of adults/health workers who say vaccine is not available	This question assesses reasons why the respondent is not satisfied with the vaccination services. Respondents can choose multiple response options here. There is no skip logic for this question; it must be asked of all respondents.
	[READ ALOUD ALL RESPONSE OPTIONS, PAUSING AFTER EACH TO ALLOW RESPONDENT TO ANSWER "YES" OR "NO" AFTER EACH RESPONSE OPTION. RESPONDENTS MAY SELECT MULTIPLE RESPONSE OPTIONS.]	% of adults/health workers who say the vaccination site does not open on time	"Nothing, I am satisfied" is an exclusive response option (it cannot be selected alongside other response options) available for respondents who are satisfied with the vaccination services.
	<input type="checkbox"/> Nothing, you are satisfied [IF NOTHING, SKIP REST OF RESPONSES]	% of adults/health workers who say waiting times are long	"Vaccine is not available" refers to the lack of COVID-19 vaccine stock at the vaccination site/clinic.
	<input type="checkbox"/> Vaccine is not available,	% of adults/health workers who say the vaccination site is not clean	"The vaccination site does not open on time" means that the service operating hours were not functioning as scheduled or advertised.
	<input type="checkbox"/> The vaccination site does not open on time,		
	<input type="checkbox"/> Waiting times are long,	% of adults/health workers who say staff are poorly trained	"Waiting times are long" is the perception that the service was poorly organized for time, or that staff were unable to prioritize efficient, quick service.
	<input type="checkbox"/> The vaccination site is not clean,		
	<input type="checkbox"/> Staff are poorly trained,		
<input type="checkbox"/> Staff are not respectful,	% of adults/health workers who say staff are poorly trained	"The vaccination site is not clean" refers to any complaint about the place where vaccines are given, including location and building structure. This also includes lack of cleanliness and poor maintenance. This could include vaccine vials, needles, fridges for storing vaccines as well as furniture in the clinic, reception and waiting rooms, or even appearance of personnel, such as appropriate attire, clean appearance and uniform.	
<input type="checkbox"/> Staff do not spend enough time with people, <i>or</i>			
<input type="checkbox"/> Is there something else? [RECORD ANSWER: _____]	% of adults/health workers who say staff are not respectful		
	% of adults/health workers who say staff do not spend enough time with people		

Construct	Question and response options	Indicator	Rationale
			<p>“Staff are poorly trained” is the perception that the service received is not as promised or that the quality of service is not reliable or consistent. The respondent may perceive that staff did not fulfil their role very well, that staff were not well trained or prepared for their responsibilities, or that staff lacked the confidence or skill to deliver the service expected.</p> <p>“Staff are not respectful” refers to inability to inspire confidence, put respondents at ease and communicate competence. It includes staff being discourteous, impolite and unable to reassure respondents. Staff can show respect in verbal and non-verbal ways.</p> <p>“Staff do not spend enough time with people” is the perceived lack of empathy a respondent may experience from vaccination clinic staff, and perception of a rushed service or lack of time dedicated to reassuring respondents and answering their questions.</p>

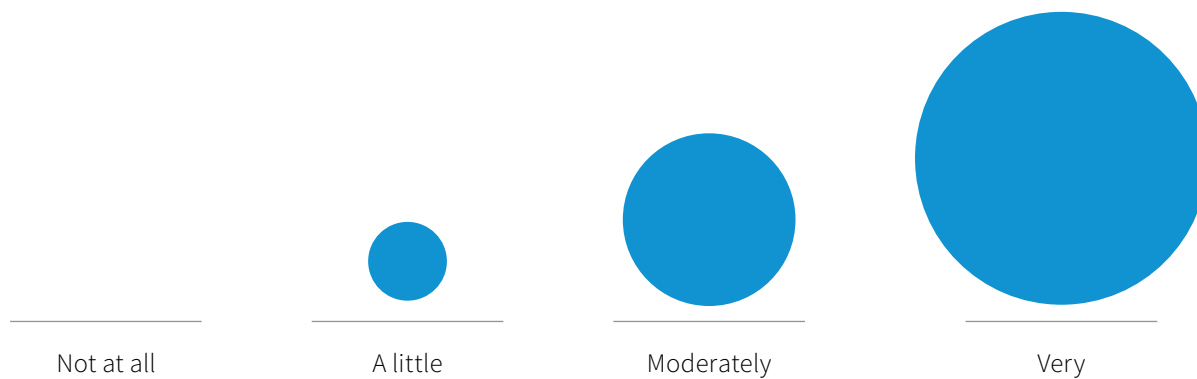
In addition to the BeSD survey questions in the table above, countries may choose to add questions about provision of COVID-19 vaccines, including the two below. These questions are just for health workers and should only be included in data collection if they will provide valuable descriptive data for the immunization programme.

Construct	Question and response options	Indicator	Rationale
Willingness to recommend vaccine to others	<p>Would you recommend a COVID-19 vaccine to eligible individuals? Would you say...</p> <p><input type="checkbox"/> No, you do not want to, <input type="checkbox"/> Yes, you do want to, <i>or are you</i> <input type="checkbox"/> Not sure?</p>	% of health workers who say they would recommend a COVID-19 vaccine to eligible individuals (answered “yes”)	<p>This question assesses health workers’ willingness to recommend or promote a COVID-19 vaccine to persons who are eligible candidates for COVID-19 vaccines.</p> <p>If COVID-19 vaccines are not yet available in your country, adapt the question to: Would you recommend a COVID-19 vaccine to eligible individuals when it becomes available? Would you say...</p> <p><input type="checkbox"/> No, you do not want to, <input type="checkbox"/> Yes, you do want to, <i>or are you</i> <input type="checkbox"/> Not sure?</p>

Construct	Question and response options	Indicator	Rationale
Ability to answer patient questions	<p>How confident are you that you could answer patient questions about getting a COVID-19 vaccine? Would you say...</p> <p><input type="checkbox"/> Not at all confident, <input type="checkbox"/> A little confident, <input type="checkbox"/> Moderately confident, <i>or</i> <input type="checkbox"/> Very confident?</p>	<p>% of health workers who say they are “moderately” or “very” confident they could answer patient questions about getting a COVID-19 vaccine</p>	<p>This question measures health workers’ confidence in their ability to support the information needs of patients about a COVID-19 vaccine once it becomes available.</p> <p>If COVID-19 vaccines are not yet available in your country, adapt the question to:</p> <p>How confident are you that you could answer patient questions about getting a COVID-19 vaccine, once it is available? Would you say...</p> <p><input type="checkbox"/> Not at all confident, <input type="checkbox"/> A little confident, <input type="checkbox"/> Moderately confident, <i>or</i> <input type="checkbox"/> Very confident?</p>

2.3 Visual survey response scale

For survey respondents with lower-literacy, consider using a visual response scale. It is designed for questions with four response options (such as “not at all”, “a little”, “moderately”, “very”). Interviewers should read the question aloud and point to the visual scale as they read the response options.



2.4 COVID-19 vaccination in-depth interview guide for adults and health workers (version 1.0)

The questions below are designed to be asked in a context where a COVID-19 vaccine is available. In contexts where multiple vaccines are available for use, questions should be modified and refer to “the COVID-19 vaccines”. In this instance it may be useful to understand whether perceptions, norms and willingness to accept a COVID-19 vaccine depend on which vaccine is being offered; interviewers should use probes for all vaccines available in the local context.

If these questions are to be used in a context where a COVID-19 vaccine is not yet available, the questions will need to be modified accordingly. For example, the COVID-19 vaccine confidence question “How do you feel about the COVID-19 vaccine?” would be modified for a pre-vaccine roll-out context by adjusting the wording to “How do you think you’ll feel about the COVID-19 vaccine when it becomes available?”

Some questions will be worded differently, depending on whether the interviewee has had the vaccine or not. In these questions wording for both scenarios is included. Choose the wording that is appropriate for the interviewee.

Table cell colours indicate the domain (**thinking and feeling**, **motivation**, **social processes** and **practical issues**).

Construct	Adult	Health worker	Rationale
General	Tell me a little about yourself.	Tell me a little about yourself. Tell me a little about your role.	<ul style="list-style-type: none"> • Warm-up question. • Orients interviewer to participant's situation.
Thinking and feeling			
Perceived COVID-19 risk – to self	<p>Tell me, how concerned are you about getting COVID-19?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Why do you feel that way? • How likely do you think it is? • How severe do you think it would be? 	<p>Tell me, how concerned are you about getting COVID-19?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Why do you feel that way? • How likely do you think it is? • How severe do you think it would be? 	<ul style="list-style-type: none"> • Understand the participant's perceived risk due to COVID-19 (disease, not vaccine). • Will tie in with later question about getting COVID-19 vaccine when available.
Perceived risk – to patients	N/A	Tell me what you think about the risk that you could give COVID-19 to your patients	<ul style="list-style-type: none"> • Understand participant's perceived risk of infecting others.
COVID-19 stigma (social processes)	N/A	<p>Being a health-care worker, how are you usually treated by others in the community?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Have you noticed anything different in how you're treated since the pandemic? 	<ul style="list-style-type: none"> • Enables probing for the presence of/ experience of stigma.
COVID-19 vaccine information	<p>What have you heard about the COVID-19 vaccine(s)?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Have you heard anything that worries you? • Who did you hear this from? • Do you think it's true? Why? • Have you heard anything that makes you feel positive about the vaccines that are being developed? 	<p>What have you heard about the COVID-19 vaccine(s)?</p> <p><i>Probe:</i></p> <ul style="list-style-type: none"> • Have you heard anything that worries you? • Who did you hear this from? • Have you heard anything that makes you feel positive about the vaccines that are being developed? 	<ul style="list-style-type: none"> • Ask what they know about the vaccine – enables probing for positive or negative information.

Construct	Adult	Health worker	Rationale
COVID-19 vaccine confidence	<p>How do you feel about the COVID-19 vaccine(s)?</p> <p>Probes:</p> <ul style="list-style-type: none"> • <i>If multiple vaccines are available</i>, what are the perceptions of each? • Relate back to perceived COVID-19 risk and how important it is. • Importance in protecting others. • Alignment with spiritual or religious beliefs. <i>Ask for all COVID-19 vaccines available.</i> • What are your thoughts about the safety of the vaccine? <i>Ask for all COVID-19 vaccines available.</i> • Thoughts or concerns about how “new” the vaccines are (try to understand if this links to safety, efficacy or anything else). • Thoughts on whether it works. <i>Ask for all COVID-19 vaccines available.</i> 	<p>How do you feel about the COVID-19 vaccine(s)?</p> <p>Probes:</p> <ul style="list-style-type: none"> • <i>If multiple vaccines are available</i>, what are the perceptions of each? • Relate back to perceived COVID-19 risk and how important it is. • Importance in protecting others. • Alignment with spiritual or religious beliefs. <i>Ask for all COVID-19 vaccines available.</i> • What are your thoughts about the safety of the vaccine? <i>Ask for all COVID-19 vaccines available.</i> • Thoughts or concerns about how “new” the vaccines are (try to understand if this links to safety, efficacy or anything else). • Thoughts on whether it works. <i>Ask for all COVID-19 vaccines available.</i> 	<ul style="list-style-type: none"> • Elicits the participant’s confidence in the vaccine; probe questions will cover the different aspects, such as safety and importance.
COVID-19 vaccine confidence in providers	N/A	N/A	<ul style="list-style-type: none"> • Trust in health providers will be covered under service satisfaction below.

Construct	Adult	Health worker	Rationale
Motivation			
COVID-19 vaccine intention	Have you thought about getting a COVID-19 vaccine? What did you decide? (Why?) <i>Follow on to next question (combine).</i>	Have you thought about getting a COVID-19 vaccine? What did you decide? (Why?) <i>Follow on to next question (combine).</i>	<ul style="list-style-type: none"> Elicits what their intentions and decisions are towards the vaccine. On probing “Why?” responses may be repetitive of questions answered above; this can serve as a good cross check to previous answers given and allow for deeper understanding of motivation.
Social processes			
COVID-19 vaccine – decision process	Take me through how you will or have decided whether to get a COVID-19 vaccine. <i>Probe:</i> <ul style="list-style-type: none"> Was anyone else involved in the decision? Who else did you discuss it with? 	Take me through how you will or have decided whether to get a COVID-19 vaccine. <i>Probe:</i> <ul style="list-style-type: none"> Was anyone else involved in the decision? Who did you discuss it with? Is it a requirement from your employer? 	<ul style="list-style-type: none"> Covers decision autonomy, but also the decision-making process more broadly, with a view to understanding what kinds of social processes might be involved.
COVID-19 vaccine – safe to see family and friends	(If already had the vaccine) Has getting a COVID-19 vaccine changed things for you? (If hasn't had the vaccine) How do you think getting a COVID-19 vaccine might change things for you? <i>Probe:</i> <ul style="list-style-type: none"> See family and friends Going out in public Going back to work. 	(If already had the vaccine) Has getting a COVID-19 vaccine changed things for you? (If hasn't had the vaccine) How do you think getting a COVID-19 vaccine might change things for you? <i>Probe:</i> <ul style="list-style-type: none"> See family and friends Going out in public. 	<ul style="list-style-type: none"> This question explores ways a COVID-19 vaccine might impact people.

Construct	Adult	Health worker	Rationale
COVID-19 vaccine stigma	N/A	<i>If they answered in the affirmative to the stigma question above, ask:</i> Do you think having the COVID-19 vaccine will help/has helped with the stigma we spoke about earlier? Why?	<ul style="list-style-type: none"> This question is only relevant if the participant describes any kind of stigma in the question above. Suggest not asking if they don't report having experienced or heard of it happening.
COVID-19 vaccine – travel autonomy	N/A	N/A	<ul style="list-style-type: none"> Travel autonomy covered in practical issues below.
COVID vaccine <ul style="list-style-type: none"> Descriptive social norms Family norms Religious leader norms Workplace norms 	<p>If a COVID-19 vaccine is recommended by health-care workers, what do you think other people will do?</p> <p>Probe:</p> <ul style="list-style-type: none"> Family and friends Religious or community leaders recommend? If more than one vaccine available: Is this true for all COVID-19 vaccines or does it depend on which vaccine is recommended? 	<p>If a COVID-19 vaccine is recommended by health-care workers, what do you think other people will do?</p> <p>Probe:</p> <ul style="list-style-type: none"> Family and friends Religious or community leaders recommend? What do you think your work colleagues will do? If more than one vaccine available: Is this true for all COVID-19 vaccines or does it depend on which vaccine is recommended? 	<ul style="list-style-type: none"> Elicits what they anticipate will be the social norms regarding uptake of COVID-19 vaccination.
Provider recommendation	What do you think your health-care provider's recommendation will be to you about the COVID-19 vaccine(s)?	What do you think your health-care provider's recommendation will be to you about the COVID-19 vaccine(s)?	<ul style="list-style-type: none"> Anticipated recommendations.
General provider recommendation (any adult vaccine)	N/A	N/A	<ul style="list-style-type: none"> General provider recommendation covered in practical issues below.

Construct	Adult	Health worker	Rationale
Practical issues			
Ever gone to get vaccines	<p>Did you have any vaccines as a child? What do you remember about it?</p> <p>Probe:</p> <ul style="list-style-type: none"> Experiences, good and bad. <p>Have you ever had a vaccine as an adult? Have you ever had one recommended to you by a health-care worker?</p> <p>If previously vaccinated as an adult, ask: Thinking about when you got that vaccine, what did you think was good about what happened in the clinic? Was there anything that wasn't good?</p>	<p>Have you ever had a vaccine as an adult? Have you ever had one recommended to you by a health-care worker? What about your employer?</p> <p>If previously vaccinated as an adult, ask: When you got that vaccine, what did you think was good about what happened in the clinic? Was there anything that wasn't good? What do you think might work better for you next time?</p>	<ul style="list-style-type: none"> Start with past general vaccination experiences, including, if applicable, service satisfaction in past experiences.

Construct	Adult	Health worker	Rationale
COVID-19 vaccine <ul style="list-style-type: none"> On-site vaccine availability Access General vaccination – know where to get vaccines Vaccination availability General vaccine – affordability General vaccine – service satisfaction General vaccine – service quality 	<p>Can you take me through how you would get/how you got a COVID-19 vaccine? Start at the beginning.</p> <p>Probe:</p> <ul style="list-style-type: none"> Would/did you need to ask permission? Where would/did you go to get it? How would/did you get there? What other things would/did you need to do (e.g., find care for young children, find someone to take care of livelihood/get up earlier to take care of household duties)? Would there be/was there any cost involved for you (not just for vaccine, but things like transport)? How much do you trust the health-care worker who will give you the vaccine? <p>What would make it easy for you to get a COVID-19 vaccine if it was recommended and available? / What would make it easier for you to get a COVID-19 vaccine?</p>	<p>Can you take me through how you would get/how you got a COVID-19 vaccine? Start at the beginning.</p> <p>Probe:</p> <ul style="list-style-type: none"> Would/did you need to ask permission? Where would/did you go to get it? Is the vaccine available at your workplace? How would/did you get there? Would/did you have to do it in your own time (not while you're on duty)? Would there be/was there any cost involved for you (not just for vaccine, but things like transport)? How much do you trust the health-care worker who will give you the vaccine? <p>What would make it easy for you to get a COVID-19 vaccine if it was recommended and available? / What would make it easier for you to get a COVID-19 vaccine?</p>	<ul style="list-style-type: none"> Ask for a narrative of how they might access the vaccine, covering things like cost, missed workdays, transport, any permissions needed, etc. Also cover what they feel might make accessing the vaccine easier for them.
Close	Is there anything else you'd like to say?	Is there anything else you'd like to say?	<ul style="list-style-type: none"> Leave option for unexpected findings or elaboration of things expressed previously.

2.5 Qualitative framework analysis template for BeSD COVID-19 in-depth interview

The qualitative framework is provided in an Excel template to support interpretation of qualitative results. The Excel template can be accessed [here](#).

Note that the analysis approach recommended is not a linear process. It will be necessary to move between coding the interviews and the framework summaries, adjusting the categories slightly as new data from subsequent interviews emerge.

Annex 3: Guidance for adapting the BeSD tools

3.1 Adapting the BeSD surveys

For the BeSD surveys, a process of cognitive interviewing is recommended to improve the quality of translations and support careful adaptation of survey questions and corresponding response options.

How to carry out cognitive interviewing to test and locally adapt the surveys

This is a brief guide to using cognitive interviewing to improve BeSD surveys. **Cognitive interviewing is a process for improving the quality of a survey**, to ensure questions and response options are understood as intended, are well adapted to a local context and measure what they are designed to measure. **Recruit participants for cognitive interviewing from the target population.** In this case, parents or caregivers to one or more children under the age of 5.

Schedule separate interviews with participants and follow the steps below for each survey question and its response options, one question at a time. Assume 2–3 minutes' interview length per question. Where possible, aim to conduct two rounds of interviews with four to eight respondents per round. However, conducting even one round of interviews with as few as four people can offer meaningful insights to improve the survey significantly.

1. Ask the respondent the question (including response options) and allow them to answer.
2. Ask the respondent about the question they just answered, using probes to understand whether:
 - **The question is easy to understand and makes sense:**
“In your own words, what is this question asking?” or “What does this question mean to you?” to check the survey question was well understood.
 - **The ideas or words in the question and response options are easy to understand:**
 Ask generally, *“Did this question make sense to you? Why/why not?”* or probe around specific words or concepts that may be difficult to understand. *“What do you think of when you hear the phrase ‘getting vaccines?’”*
 - **The response options make sense and allow for meaningful answers:**
“Do the response options fit in with the sort of answer you want to give?”
 - **There are any response options that are missing:**
“Was there anything missing from the list of response options?” to check the options are adequate.
 - **The question and response options are relevant in the country or region:**
 Ask generally, *“Did the response options offered make sense to you? Why/why not?”* or probe around specific words or concepts that could be interpreted differently: *“What do you think of when you hear the phrase ‘vaccination clinic?’”*

If using **the visual response scale**, if questions are being asked in person (not self-administered), the interviewer should point to the corresponding part of the visual analogue scale when that response option is being verbalized. This helps respondents understand the meaning and the connection with the circles.

After conducting the first round of cognitive interviews, review the feedback from participants. Were the questions understood as intended? Did the response options allow them to answer meaningfully? Are the questions appropriate in the local setting? If needed, adapt questions and response options using the insights. Table A3.1 offers an example for organizing survey questions and cognitive interview insights when considering revisions. Document the findings and recommendations or adaptations made.

Table A3.1. Example cognitive interview probes, findings and recommendations

Survey question	Probes	Example of findings	Recommendations
<p>How safe do you think vaccines are for your child? Would you say...</p> <p><input type="checkbox"/> Not at all safe <input type="checkbox"/> A little safe <input type="checkbox"/> Moderately safe, <i>or</i> <input type="checkbox"/> Very safe</p>	<ul style="list-style-type: none"> • What does the word “safe” mean to you? • Did the response options offered make sense to you? Why/why not? 	<ul style="list-style-type: none"> • Respondents not sure of the degree of difference on the response scale. • Visual scale helpful. 	<ul style="list-style-type: none"> • Be sure interviewers have a printed visual scale to use at <i>every</i> interview. • Wording to clarify that “vaccines” is general, and question is not about any one specific vaccine.
<p>How much do you trust the [health-care providers] who would give your child vaccines? Would you say you trust them...</p> <p><input type="checkbox"/> Not at all <input type="checkbox"/> A little <input type="checkbox"/> Moderately, <i>or</i> <input type="checkbox"/> Very much</p>	<ul style="list-style-type: none"> • What does the term “health-care provider” mean to you? • Who would normally give you your vaccines? 	<ul style="list-style-type: none"> • “Health-care provider” associated with clinic management; not those responsible for administering vaccine. • “Vaccinator” suggested by respondents as more appropriate term. 	<ul style="list-style-type: none"> • Rephrase question: How much do you trust the vaccinators who would give your child vaccines? Would you say you trust them... <p><input type="checkbox"/> Not at all <input type="checkbox"/> A little <input type="checkbox"/> Moderately, <i>or</i> <input type="checkbox"/> Very much</p>

It is very important to maintain the intended meanings of each question in the process of translation and potential question adaptation. The rationale provides a description of the question so as to clarify its intended meaning along with question-specific recommendations for local adaptations. Refer to the question rationale provided with the BeSD

It is also essential to test the modified questions and responses by conducting another round of cognitive interviews with a new group of participants, repeating the process until the questions and response options are understood as intended.

3.2 Adapting the BeSD interview guides

The series of questions offered in the BeSD in-depth interview guides are designed as a menu for researchers to choose from, depending on what topics require in-depth understanding. Using all of the questions listed in the guide will result in an interview that may be almost 2 hours in length, and thus a significant time commitment from participants with large amounts of data to analyse. Choose questions that will best answer the specific research question for the project.

Questions should be ordered in such a way that the interview flows more like a conversation than a survey. The order of questions in the suggested interview guide results in a fairly conversational interview in English and follows a general order of starting with a “warm-up” question, followed by thoughts and feelings, what respondents think they will do, the social processes involved and practical issues. This will change, depending on the language and cultural setting.

Once a draft qualitative interview guide is developed, pilot test it with two or three people who are fluent in the language that the interview will be conducted in. During these pilot interviews, be mindful of whether the interview flows well (like a conversation) and adjust the order of questions if needed.

More information on interview guide development can be found in:

- Roberts RE. Qualitative interview questions: guidance for novice researchers. *Qualitat Rep.* 2020;25(9):3185–203.
- Kvale S, Brinkmann S. *Interviews: learning the craft of qualitative research interviewing*. 3rd ed. Thousand Oaks (CA): SAGE; 2015.

Annex 4: Guidance for GPS data collection

What are GPS data?

The Global Positioning System (GPS) data include a set of coordinates that identify a point in physical space, in this case, to identify the location of a surveyed site using longitude, latitude, altitude and the time surveyed. The benefits of GPS data collection are substantial because it makes it possible after the survey to link the BeSD data with other data sets containing similar geographic information, such as MICS and DHS. Typical examples are to use databases that include geographic location information on health facilities, schools, road networks and many other geographically located attributes.

Benefits of collecting GPS data

With the use of GPS, it becomes possible to carry out further analyses of BeSD data sets by expanding and triangulating them with information available from other databases. The collection of GPS data is part of the general approach to develop geographical information systems (GIS) which can help with microplanning, mapping services and populations, and even target population estimates. GPS data are usually collected with the cluster or area geographic location data, such as the administrative units of the sampled area and its urban vs rural characteristics.

In *DHS practice*, for instance, the GPS location of the centre of each cluster is recorded during either the fieldwork or listing stage of the survey. To protect the confidentiality of our respondents, the locations are displaced, sometimes termed “geo-masked” or “geo-scrambled”. UNICEF recommends that GPS data not be shared in publicly available data sets, but rather that interested parties submit a formal request for access and use to the national statistical office.

Operational considerations

- GPS data collection can almost always be done without hiring additional **personnel**. The allocation of roles and responsibilities may vary according to the survey and what data are already available. However, each field team should have a person who is responsible for collecting the GPS points (**the GPS operator**) and an overall **GPS coordinator** at the implementing agency headquarters.
- The responsibilities of the **GPS operators** are as follows: capture and record the GPS waypoint at the centre of the survey site; complete the GPS data collection form, including the GPS waypoint name/number, latitude, longitude, altitude and GPS unit number; communicate with the GPS coordinator; and ensure that unit and accessories are handled properly during fieldwork.
- The responsibilities of the **GPS coordinator** are as follows: obtaining materials (hardware, software, data, training/ other field materials); preparing the GPS units (GPS units are relatively inexpensive and generally available in countries); training GPS operators; and data collection/processing.

More detailed description and guidance on GPS data collection is available at <https://mics.unicef.org/tools> including tools for [MICS GPS Data Collection](#), and [MICS GPS Data Collection Questionnaire](#).

Annex 5: Guidance for collecting vaccination status

To capture routine immunization coverage, and in order to standardize procedures across surveys, WHO recommends the following hierarchy of evidence of vaccination as outlined in the *World Health Organization vaccination cluster surveys reference manual*:

- 1. Home-based records** (vaccination cards). The best evidence is a legible date of vaccination on the home-based record (vaccination card) with a day, a month and a year.
- 2. Health centre records.** It will be necessary to search for evidence of vaccination status in health facility records for children in the cluster whose caretaker says that they received some routine vaccinations locally, and if:
 - the caretaker does not show interviewers the vaccination card;
 - the card indicates some doses with a tick mark, but no date; or
 - the caretaker says that the child received some routine doses that are not recorded on the card.
- 3. Recall, or verbal history of vaccination.** If there is no home-based record of vaccination, or if it is incomplete, the next level of evidence is a verbal *history* of vaccination by the caretaker (vaccination recall). Start by asking the caretaker the place of the injection (on the body) for injectable vaccines or act out putting drops in the mouth to ask about oral polio vaccine or rotavirus vaccines. Ask when the vaccine was received in relation to other documented vaccinations. Plan to use helpful visual aids matching the national vaccination practices when asking this question. Also ask the caretaker where the person went to receive the vaccination (e.g., clinic, outreach site, hospital, school, home). A child might have been vaccinated in a health centre different from the nearest one. In such a case it will not be possible to look for the record at the closest health centre.

For the complete *World Health Organization vaccination cluster surveys reference manual*, see:

- <https://apps.who.int/iris/handle/10665/272820>.

For further recommendations on harmonization vaccination coverage measures in household surveys, see:

- https://cdn.who.int/media/docs/default-source/immunization/immunization-coverage/surveys_white_paper_immunization_2019.pdf.

Annex 6: Example report templates and charts

This annex contains templates and examples for reporting on and visualizing BeSD data. These resources are non-prescriptive and aim to offer a helpful starting point for users of the BeSD tools.

Example table. Intention to accept vaccine across socio-demographic characteristics

	Total n (%)	Intention to get the recommended vaccine n (%)	P value
Gender Woman Man Non-binary Declined to respond			
Age (years) of caregiver 18–29 30–49 50–69 70+			
District D 1 D 2			
Employment Health worker Essential services worker Other			
Completed years of education 0 1–5 6–12 12+			

Example table. Univariate analysis and multivariate logistic regression model of vaccine intentions and demographic variables

	Vaccine intentions <i>n</i> (%)	Unadjusted ORs(95% CI)	<i>P</i> value	Adjusted ORs (95% CI)	<i>P</i> value
Gender of caregiver Woman Man Non-binary Declined to respond					
Age (years) 18–29 30–49 50–69 70+					
District D 1 D 2					
Completed years of education 0 1–5 6–12 12+					

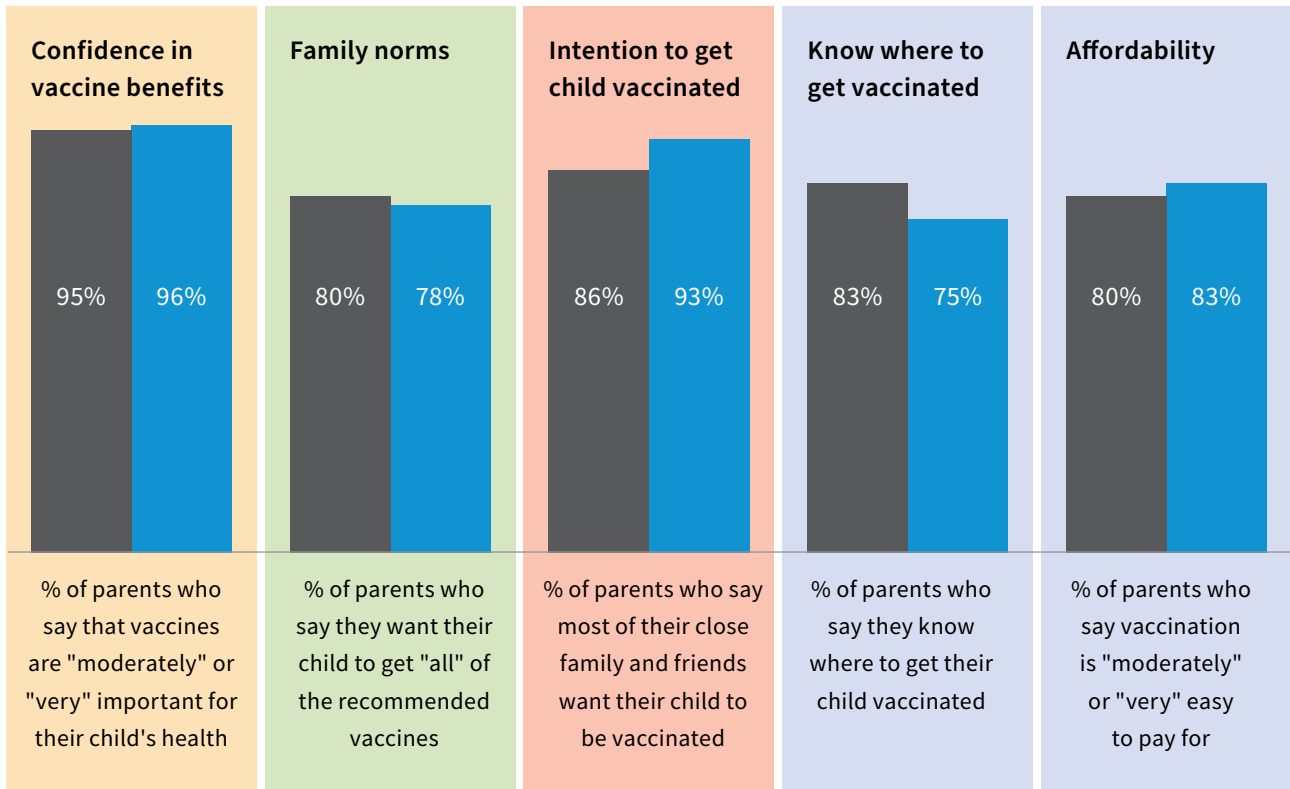
CI: confidence interval; OR: odds ratio.

6.1 BeSD data visualizations

The charts below offer initial examples of ways in which data may be represented visually. (Each visualization would also have a sample size indicated.)

BeSD priority indicators for childhood vaccination

■ Rural ■ Urban



Total sample (n=304); male (n=239), female (n=165).

Social processes



BeSD childhood vaccination survey. All respondents (n=304).

■ Yes ■ No

6.2 BeSD reporting template

The adaptable template presented in this section offers an initial example of how to report BeSD findings.

Instructions for use:

- Please fill in the following fields based on the guidance provided for each section. Either enter text directly or copy and paste from another document.
- Please provide full source citation and URLs; where relevant, include data visualizations and good-quality photographs.

Country	
Date of investigation (months and year)	
Focus area: e.g., childhood vaccination among migrant communities in	
Title	
Principal investigator full name and contact information	
Abstract	Please provide a 1–2 short paragraph abstract/summary of the data-gathering activities, adding contextual relevance. Describe what the study was about and, briefly, how it was carried out. Describe in a few sentences the main findings and recommendations or next steps.
Introduction	<p>a. Problem and situation analysis.</p> <p>What was the research question? Briefly describe the initial situation or challenge that was the basis for this work. Cite any comparative statistics or other sources to support this contextualization.</p>

<p>Plan</p>	<p>b. Research methods.</p> <p>How did you plan to assess and address the problem? Briefly describe the methods used and research protocol developed, including any rationale for decisions made on tools use, sampling, mode of implementation, etc. If the group had a working hypothesis, state this up front and clarify how the hypothesis would be tested.</p> <p>Be sure to include:</p> <ul style="list-style-type: none"> • overall research design, and sampling approach with justification • recruitment methods • how the data were handled, including how missing or incomplete data were dealt with • what analysis was done and why • how the interviews were conducted and recorded • ethical considerations and approval.
<p>Investigate</p>	<p>c. Evidence and analysis.</p> <p>What did the research reveal, and was this different from what you had expected to find? Describe the findings resulting from the BeSD surveys or interviews.</p> <p>For BeSD survey reports:</p> <ul style="list-style-type: none"> • the response rate of the survey • characteristics of the sample (e.g., age, gender, geographic location) • the percentage of respondents who report willingness or intention to get vaccinated • report on the BeSD priority indicators (descriptive statistics) • association of vaccine uptake with priority indicators (and other BeSD survey constructs if measured) and demographics. <p>For BeSD in-depth interviews study reports:</p> <ul style="list-style-type: none"> • Describe how many interviews were undertaken and over what time period. • Tell the story of the results, and how they relate to the research questions. • Focus on the concepts and themes, and how they relate to the research questions. • Give example quotes to illustrate the concept or theme. • Describe any links between themes and concepts identified but take care to justify how and why these links were made, using the data as evidence.

<p>Act</p>	<p>What did you do with the findings? Describe the intervention or strategy, how it was selected and developed and who was involved in the process. Describe how the intervention contributes to the overall outcomes. How were planning and preparation undertaken collaboratively with communities?</p> <p>This section could include the following topics as relevant:</p> <p>a. Intervention What is the intervention? What or who does it involve? How was it decided on? Include any visuals to support a description of the intervention.</p> <p>b. Partnerships, local structures, services and resources Describe the partnerships and collaboration mechanisms, the local structures, services, initiatives and resources that are available/unavailable to support implementation of the intervention. To what extent have stakeholders been involved?</p> <p>c. Monitoring and evaluation What is the plan for tracking the progress and impact of the intervention selected? What measures, tools and procedures are being considered to gather feedback, monitor progress and evaluate results based on baselines?</p> <p>d. Describe key successes and challenges during implementation. What is the potential for replication and scaling up? (Optional)</p> <p>e. Progress and results APPLICABLE ONLY WHERE AN INTERVENTION HAS ALREADY BEEN IMPLEMENTED. In summary (3–4 paragraphs) describe the current situation in terms of progress so far. Provide (quantitative and qualitative) evidence from monitoring and evaluations used to validate results and conclusions. What were the outcomes? What were the lessons learned in seeking to achieve the outcomes, and how can we factor these into the next programming cycle to ensure sustainability and scale-up?</p> <ul style="list-style-type: none"> • Behaviour and social change • Policy change • Institutional/structural change • Improved (access and quality) service delivery.
<p>Next steps</p>	<p>Describe any planned next steps in implementation or any challenges in strategy as a result of this good practice to date (2–3 paragraphs).</p>
<p>Attachments</p>	<ul style="list-style-type: none"> • Provide related data tables, charts and visualizations as available. • Provide a list of available related literature about the situation/issue (with links, if possible). • Provide any relevant high-quality photos. • You are welcome to include quotes from staff, partners or members of the community. • You are welcome to suggest additional persons to contact for more information.

Annex 7: WHO policy on data collected in Member States

Policy on use and sharing of data collected in Member States by WHO outside the context of public health emergencies

Data are the basis for all sound public health actions and the benefits of data sharing are widely recognized, including scientific and public health benefits. Whenever possible, WHO wishes to promote the sharing of health data, including but not restricted to surveillance and epidemiological data.

In this connection, and without prejudice to information sharing and publication pursuant to legally binding instruments, by providing data to WHO, the Ministry of Health of your Country:

- confirms that all data to be supplied to WHO have been collected in accordance with applicable national laws, including data protection laws aimed at protecting the confidentiality of identifiable persons;
- agrees that WHO shall be entitled, subject always to measures to ensure the ethical and secure use of the data, and subject always to an appropriate acknowledgement of your Country:
 - I. to publish the data, stripped of any personal identifiers (such data without personal identifiers being hereinafter referred to as “the Data”) and make the Data available to any interested party on request (to the extent they have not, or not yet, been published by WHO) on terms that allow non-commercial, not-for-profit use of the Data for public health purposes (provided always that publication of the Data shall remain under the control of WHO);
 - II. to use, compile, aggregate, evaluate and analyse the Data and publish and disseminate the results thereof in conjunction with WHO’s work and in accordance with the Organization’s policies and practices.

Except where data sharing and publication are required under legally binding instruments (IHR [International Health Regulations], WHO Nomenclature Regulations 1967, etc.), the Ministry of Health of your Country may in respect of certain data opt out of (any part of) the above, by notifying WHO thereof, provided that any such notification shall clearly identify the data in question and clearly indicate the scope of the opt-out (in reference to the above), and provided that specific reasons shall be given for the opt-out.

