HOW DATA SYSTEMS CAN HELP IDENTIFY ZERO-DOSE AND UNDER-IMMUNIZED CHILDREN

Webinar Transcript

00:00:44.73 >> Hi, everyone. Welcome. We will get started in about one minute, just giving people a little bit of time to log on and get situated. Thank you for joining.

00:02:10.03 Okay, so I think we'll go ahead and get started. Good morning, good afternoon, and good evening. If you have not done so already, please introduce yourself by typing your name and organization into the Chat. We would love to know where you are from, and which organization you are with. My name is Natasha Kanagat, and I am a senior monitoring evaluation and learning advisor for the MOMENTUM Routine Immunization Transformation and Equity Project. I am pleased to introduce today's webinar on how data systems can help reach zero-dose and under-immunized children. I'll now cover some housekeeping, and review the Zoom environment for this webinar. Next slide, please.

00:03:08.31 So today's webinar is available in English and French, and we are offering a simultaneous translation service in French. You can access the French speaking channel by clicking on the Interpretation icon at the bottom of your Zoom screen to choose your language. Next slide, please.

00:03:30.87 You may use the Chat feature to introduce yourself, as I see many of you are doing right now, and you can also use the Chat feature to share your thoughts during the presentation. However, please use the Q and A button, which is located on the bottom bar of your Zoom window, to ask questions, or request technical help. Please do not use the Chat to ask question, because we have specific people who are monitoring the Q and A, and you will get quicker responses if you will use the Q and A button. So the questions you ask using the Q and A button are only visible to you, our presenters, and technical support. If you are experiencing difficulties, our technical support will respond to your question privately. And we will collect your questions for our speakers and save them for the discussion period following the presentations.

00:04:31.99 The webinar is being recorded, and following today's event, you will receive an email with a link to the recording. If there are questions that don't get answered during the Q and A session, we will forward them to the presenters and share responses by email to all participants. Next slide, please.

00:04:52.97 We have three excellent speakers today. I am pleased to introduce our guest presenter, Allison Osterman, who will present findings from a landscape analysis of health information systems and data tools for identifying, reaching and monitoring zero-dose and under-immunized children. Allison is a Senior Program Officer on the MOMENTUM Routine Immunization Transformation and Equity Team, and works for PATH. In addition, we have two guest speakers, Dr. Landry Kaucley and Dr. Subhash Chandir, who will share their experience from Benin and Pakistan, but they are working to improve immunization equity. Dr. Kaucley works for the National Agency for Primary Healthcare and the Ministry of Health in Benin. He is Director of Vaccination and Logistics and EPI Manager. He is also a public health physician and immunization supply chain expert.

00:05:56.98 Dr. Chandir is a Senior epidemiologist and Director of Maternal and Child Health at IRD Global. He earned his medical degree from Pakistan, and has a master's in Public Health, and doctorate in Global Disease Epidemiology and Control from Johns Hopkins University. Dr. Chandir serves on the faculty at Johns Hopkins Bloomberg School of Public Health, and is a member of the WHO Digital Health Technical Advisory Group. Next slide, please.

00:06:30.25 To kick us off, I will introduce the MOMENTUM Routine Immunization Transformation and Equity Project, the zero-dose children draft toolkit, and the learning exchange series. Then I will turn it over to Allison and our guest speakers to present the findings of the Landscape Analysis and share country experiences. We will have about 15 minutes at the end of the webinar to answer your questions. Our speakers will be available during the Q and A, so be sure to share your questions in the Q and A box. Next slide, please.

00:07:09.33 The zero-dose draft toolkit and the learning exchange series, as well as the presentations you are going to hear today, are initiatives under the MOMENTUM Routine Immunization Transformation and Equity Project. We are a US-AID-funded project that works toward a world in which all people eligible for immunization, particularly underserved, marginalized and vulnerable populations are regularly reached with high-quality vaccination services to protect their children and themselves against vaccine- preventable diseases. Next slide, please.

00:07:51.58 As we know, current administrative data systems are limited in their ability to accurately quantify and localize communities with zero-dose children, especially in low-income countries and low-middle-income countries. In response, WHO has drafted a toolkit that provides an integrated approach to identifying non or unvaccinated communities, as well as zero-dose and under-immunized children, by using decision-making criteria and combining tools to decide when and where and how to conduct rapid convenience assessments, or targeted probabilistic surveys, and take actions to reach, vaccinate and follow up on non and under-immunized communities. The toolkit is complementary to existing manuals and guides. The audience for this toolkit include immunization program managers at the national and sub-national levels, those working to support the delivery of vaccination services to identify, reach, measure and monitor non and under-immunized communities, where zero-dose children appear to live, and immunization MNE personnel. Next slide, please.

00:09:09.56 So we are using a multi-method approach to refining this draft toolkit, which includes learning exchanges, a design collaborative, and a field test in Nigeria. The learning exchanges, of which today is the first one, will focus on sharing tools and methods related to ZDC, to zero-dose children, as well as seeking input in to the toolkit in future webinars. We are also convening a design collaborative comprising experts from about 10 countries, mainly in Africa. The design collaborative will critically review toolkit content for suitability and ease of use. Finally, we are planning to do a field test in Nigeria, where we will interview EPI stakeholders on their current approach to reaching zero-dose children, and we will also use the toolkit and test its utility and offer real-time feedback on the toolkit itself.

00:10:11.10 With that, I will turn it over to Allison for today's presentation.

00:10:20.95 >> Thank you so much, Natasha, for setting the stage. And thanks for everyone joining today's webinar. It's such a pleasure to be invited, to present the results from the landscape analysis of health information system and data tools, for identifying, reaching and monitoring zero-dose and under-immunized children.

00:10:43.01 So before getting started, I have a few warm-up questions for everyone who joined the webinar today. These should be popping up on your screen very shortly. The purpose of these questions is to get to know who joined today's webinar, and understand what kind of role you play related to identifying zero-dose children. We're going to keep the poll up for about 30 seconds, and then share the results. So please go ahead and just take a moment to respond to this poll.

00:12:08.99 Okay, great. Thanks, everyone, for participating in the poll. The results should be showing up on your screen now. So it looks like a majority of our participants today do play a role in identifying zero-dose children -- that's great. And then in terms of the role related to identifying zero-dose, it looks like we have a pretty good spread. So I'm seeing quite a few participants that are involved in planning and implementation. It looks like the most participants today are involved in monitoring and evaluation. And then about 22 percent involved in providing technical assistance, 19 percent involved in research -- okay, that's great. We really have a diverse group of participants. And then our third question here, what is your greatest data-related challenge to identifying zero-dose? It looks like the majority is related to data collection -- okay, great. That's not a big surprise. Second is related to data use, then also some that say the greatest challenge is data management, data analysis. Okay, wonderful, well, thanks so much for participating in the poll. It's great to see all the responses. Also, I think this information is really great for setting the stage of today's presentation. I think you're going to see that the findings from the landscape analysis that we conducted are really intended to help you consider some of the types of information systems and tools that you could be using if you're not already, to help address some of these challenges, and better-identify zero-dose in under-immunized children.

00:14:05.30 So I'd like to start by first going over a few key concepts that will be coming up frequently during this presentation. First, as I think many of you already know, zero-dose children are children who are defined as not having received any routine vaccines, and under-immunized children are children who have not received their full course of routine vaccines. And then also, missed communities are defined as geographies that have clusters of zero-dose and under-immunized children. They are also more likely to have populations that face constraints and barriers to accessing health services. Then on the right hand side of this slide is a graphical representation of GAVI's IRMMA framework -- I-R-M-M-A. The framework describes the intervention areas or steps that are needed to vaccinate zero-dose children and missed communities, and as you can probably tell by the title of the landscape analysis, we were specifically focused on the identify, reach and monitor intervention areas. I also included a definition for health information systems, which the WHO defines as systems that are used to generate information to enable decision makers at all levels of the health system to identify problems and needs and make evidence-based decisions, and optimally allocate resources. We conducted the landscape analysis because we were interested in learning more about what health information systems and data tools are currently being used by healthcare workers, specifically to identify reach and monitor zero-dose and under-immunized children, and we also wanted to gain insights on how countries can invest in better systems and tools to capture, analyze, and use data to improve vaccine equity. Next slide, please.

00:16:21.97 The key questions that guided the literature search and analysis are listed here. Specifically, we were looking at what kind of information and data healthcare workers need to identify, reach, and monitor zero-dose and under-immunized children, what kinds of tools and systems exist to capture the information, and then what are the functional requirements or components of those systems and tools? And so by functional requirements, we're really talking about, what can the information system or tool do, and how do end users interact with it? Finally, we were also curious if there were lessons learned from the tools and systems that were introduced to manage COVID-19 vaccination data. Next slide.

00:17:14.32 Working backwards, we thought about the questions that immunization decision makers and healthcare workers might ask, and the kind of information that they need. From there, we listed the kinds of functionalities or components that an information system or data tool would require to support those information needs. So for example, if you're looking at this matrix, you can see to identify zero-dose children, health workers need to know things like, how many children are eligible for vaccination, where they live, why they're unvaccinated. And the information system functionalities that this requires are things like, the ability to collect population data and have accurate denominators, things like enrollment at birth, meaning that the system has the ability to register a child for vaccinations soon after they're born. Also, unique identifiers -- this means that there's a way of assigning a unique ID

number to each child that is registered for vaccination, and that enables tracking individual children and their vaccination status. I'm not going to go through all of these functionalities right now, because we'll be talking about them more when we talk about the specific information systems and tools that were identified in the landscape, later in the presentation. One other thing I want to note is that, as I'm presenting, I'm going to focus more on the findings of the landscape that related to identifying zero-dose and under-immunized children, and I'm going to spend less time on their reach and monitor steps, because I know that this learning exchange series is really focused on exploring approaches and strategies for identifying unvaccinated communities, zero-dose and under-immunized children. Next slide.

00:19:20.51 So now I'd like to pause and get a little bit of feedback from our participants through a quick poll. In this poll, we have two questions we would like to find out. First, what data are you currently collecting and using to identify under-immunized children? And second, what information do you need that you don't already have that would help you identify zero-dose children? So these are both open-ended questions. Please type your response into the poll. We're going to give everyone about 60 seconds, and then we'll come back and share the results.

00:21:05.32 I'm just going to give everyone a 10-second warning to finish typing your response into the poll, and then we will show the responses. Thank you.

00:21:54.32 Okay, the poll is now closed, and just waiting to see the results. I think Katie is working on getting those results for us, so we can see the answers. Here we go. Great, so for the first question, some of the data that our participants, that you all are collecting, I see things such as SMS reports from health facilities following sessions conducted on selected antigens, administrative data coming from DHIS2, survey data, routine EPI data -- great. It looks like there are more answers. Yeah, lots of different kinds of data that's being collected. LQAS data, other secondary data sources, coverage data, survey, household survey data -- great. Qualitative data, communities with under-immunized children -- okay, wonderful.

00:23:18.07 And then for our second question, what information do you need that you don't already have that would help you identify zero-dose children? It looks like some of the information needs relate to reasons for not getting vaccinations. Zero-dose children who don't have any interaction with formal health systems and aren't captured in sampling frames for household surveys -- that's great. Birth data -- mm-hmm. Denominator data, actually household data -- great. I see routine surveillance data, schoolchildren in primary and nurseries -- okay. More guidance and attention to implementation and process outcome data -- great. Well, thank you, everyone, for participating in this poll and sharing with us some of the challenges that you're having, the information that you need, and what you're collecting already.

00:24:24.29 So with that, while we're still on the topic of reflecting on the kind of information needed to identify zero-dose children, I'm going to turn it over to our first guest speaker, Dr. Kaucley, who is going to tell us a little bit about the experiences that the EPI program in Benin has had, related to their data-related challenges with identifying zero-dose children. And just a reminder for everyone, Dr. Kaucley will be presenting in French, and so if you would like to continue listening in English, you can switch your channel in the Interpretation box. You can switch to English and have the translation in real-time. Thank you. Over to you, Dr. Kaucley.

00:25:13.25 >> *[French Translation to English]*
Many thanks, Alisson, for the introduction. Good evening, everyone.

In relation to Benin's experience regarding the use of data for the identification of zero doses.

What I can say is that first of all, the type of data we are using is administrative data.

This data is collected from Excel files. We have an Excel file which we call C8.

And also from the DHIS2. And the big difficulties or the big challenges we have regarding this data, is that we do not have a reliable denominator, I think it has been said previously. The denominator is based on a census that is over ten years old, that doesn't really give any precision on the number of targeted children. So we don't have that mastery.

The numerator too.

We also have some problems with the accuracy of the data that is collected in the field.

Because the colleagues in the field still use manual collection methods to get information about vaccination. Other challenges are disaggregation of data. Our data is disaggregated often just at the district level. We can't seem to get the zero doses children's data situation at the level of villages, neighborhoods. And it is practically impossible with the system we are currently using

to have an accurate geolocation of zero doses and undervaccinated children. We don't have a collection routine tool which allows us to monitor and to follow zero doses children.

So, to be able to mitigate this, we are trying to make an adjustment of the denominator.

So we took the data from the demographic survey realized by EDS health in 2017.

And this investigation had given vaccination coverage. Survey vaccination coverage.

We have used these vaccination coverages to adjust the denominator for each municipality.

As you can see on the table here in the first column, We have departments, so regions.

In the second column we have districts. And in the third column, we have an estimate

of vaccination targeted children from 0 to 11 months from administrative data.

If we use this column, we will not find any zero dose children. So we won't have any

zero dose children in the country or any district. Because it's really an underestimation relative to- On the contrary, we will have a surplus of children. Because as you see here, if I point to the first district 8500. And the number of children vaccinated with Pentat, we have 12,000, so that shows that we vaccinated more than the target. So we made an adjustment exercise

from the survey's data to have an estimate to adjust the denominators and we go

from 8500 to 14,000, which shows us children with zero doses, around 1500 children with zero doses. So it is this exercise that we do to be able to estimate roughly zero doses children at the level of each district. So in terms of lessons learned, is that it is important to integrate the identification of zero doses children in our information systems of data collection.

So it's a practice that we need to develop in our vaccination programs. And also in the indicators that we monitor for vaccination. We should really be able to have in our dashboards

an indicator about zero doses and undervaccinated children. We also need to have a system information that facilitates identification of zero children doses, as I said.

Here it is ourselves who had to do fit gymnastics to have an estimate, which is not very precise,

but that still allows us to prioritize the districts and to have a visualization if you want of zero doses. These are really the challenges that we face and that is the need that we will have to correct if we want to work on the zero doses children problem.

Thanks.

00:30:26.80 >> We apologize for the challenges with the English translation. Allison Osterman is posting the summaries in the webinar Chat, please take a look at them there. And I'll hand it back to Allison for the next set.

00:30:55.20 >> Thanks, Natasha, and thank you so much, Dr. Kaucley, for sharing those observations. Apologies about the technical difficulties that we were having with the translation. I hope that you can see in the Chat a very brief summary of the points that Dr. Kaucley shared, in English. But just to summarize -- a lot of challenges with having accurate denominator data, and that that has made it challenging to create accurate targets. He shared a system that was put in place to try to address the challenge, and it was using DHS survey data to triangulate and adjust the number of children targeted for vaccination. But in terms of lessons learned, very much they're needing to integrate identification of zero-dose and under-vaccinated children in their information systems, having appropriate data collection tools, having the data in the EPI dashboards. So just to summarize some of Dr. Kaucley's points, I think that this is really helpful for setting the stage for some of the results that I am now going to present from the landscape analysis. Next slide, please.

00:32:32.19 We reviewed over 160 documents for the landscape analysis, and based on the review, we identified 11 primary information systems and tools. And we found that some of these are already being used to strengthen immunization equities, while others that are listed here either have strong potential, or they would require slight adaptations. And so in this slide, we grouped the systems and tools according to who was the primary user. There are three main user types; clients, healthcare providers, and health system or resource managers. And within these groupings, we were thinking about who is using the system or tool to collect and use data, and at what level is the data being collected? So for example, whether the data is being collected at the community or the facility level, or if it's aggregate data. And then we had a fourth category for data services, which includes tools such as data quality assessments that are used at multiple levels of the health system, and have various different purposes. Next slide.

00:33:51.09 So we also mapped the 11 systems and tools to the specific functionalities that I discussed earlier, so that for each system or tool, you can see what components it has, and how those components or functionalities relates to identifying, reaching and monitoring zero-dose and under-immunized children. Another way to think about using this matrix is to think about the kinds of information or analytic needs that you have, and then find the information system or tool that's most aligned with your needs. So just to give an example, if your main challenge is determining how many children in a given community or geographic area are eligible for vaccination, so similar to the challenge that Dr. Kaucley was sharing with us about having accurate denominator data, then you would look for a system or tool with the ability to capture population data. You can look at this matrix, and looking at the top row, you can see that five of the systems and tools that we identified have this functionality. And just to highlight, there's a lot of complexity; it wasn't as though we identified specific tools that were uniquely for identifying, or uniquely for monitoring zero-dose and under-immunized children; rather, most of the systems and tools are multi-functional. They have components that support multiple uses related to identifying, reaching and monitoring zero-dose children. And some of the functionalities, they also depend on how the system is configured. So, for example, if we're talking about an EIR, really, the functionality is based on its configuration. There are many different functionalities and modalities that can be added on, also thinking about to what extent it's interoperable with other health information systems.

00:36:05.36 So in the next slides, I'm going to talk about a few of these systems and tools in greater detail. And before doing that, we're going to have just one more quick poll to get feedback from you. So in this next poll, the question is, which of these tools or systems are you currently using in your country to collect and analyze immunization data? So these are 10 of the 11 systems and tools that we identified. It's a multiple choice question, so you should have the ability to select the various systems. If you're using multiple ones, you should be able to select multiple. We'll give everyone about 30 seconds to answer, and then we'll share the results.

00:36:55.71 And also, if there are tools or information systems that you're using that you don't see here, please feel free to type them in the Chat and share with us what you're using.

00:37:47.58 Okay, thanks, everyone, for participating in the poll. And just before I read the results, I'm also seeing in the Chat some of that, for example, School Children Immunization Cards, that's one tool that's being used that's not listed here -- thank you for sharing. So it looks like the most common tool that's being used, or information system, are health management information systems. So, for example, DHIS2, 63 percent of the participants said that this is a system that's being used. Also, it looks like immunization coverage surveys at 54 percent, and then next in line in terms of frequency, monitoring charts and data dashboards, okay, 46 percent are using EIRs, electronic immunization registries -- 42 percent of you said that you're using this kind of system. And 42 percent using home-based records. Great. Okay. And then the others look like they're not as commonly used, things like community-based information system, -- that's great, I'm going to talk more about CBIS, and geospatial not as frequently used. Great. Okay, well, thank you so much, everyone, for participating in the poll.

00:39:23.64 In the next few slides, I'll review the findings on these three systems and tools; community-based information systems, home-based records, and then also our next guest speaker is going to talk about how EIRs have been used in Pakistan to identify zero-dose children. I won't be going into detail on some of the other systems and tools identified in the landscape; so some of those were things like immunization coverage surveys and denominator estimation strategies. And that's because these are tools and methods that you'll be learning about during the webinar series, and will have the opportunity to practice. Next slide, please. Great.

00:40:13.03 So first, I'll talk about community-based information systems. As I'm talking, for I think it was around 17 percent that said that they're using this type of system -- if you can type in the Chat, if you're using it, has it helped you to identify zero-dose or under-immunized children? And tell us about any challenges that you're having using the system or tool -- that would be great to have that information. So CBIS are systems that are used to collect, manage and analyze data on health services provided to individual children at the community level. This is data that's primarily collected by CHWs. And some of the software platforms that CBIS use and that you might be familiar with are, platforms like CommCare, Community Health Toolkit, ODK -- so those are all platforms that host community-based information systems. These systems have many functionalities, but in the slide I'm specifically highlighting some of the ways that they can be used to identify zero-dose and under-immunized children. So the first one here, for example, they can be used to register births in the community. Or, as mentioned in the Kenya example at the bottom of the slide, they can be used to register pregnant women and their children for vaccination services. And this is a functionality that can be really helpful. It allows CHWs to know how many children in the community will be eligible for vaccination before those children are even born. And since CBIS are used to collect data at the community level, they're also very useful for identifying children who were never brought to a health facility, and often these are the children who are missed for vaccination, because they've never been registered. Healthcare workers have no way of knowing who these missed children are. And then the final point here, we found an example of CBIS being used in combination with geospatial technology to find entire communities that have been missed. And so this is just an example of another functionality that can be really helpful for things like immunization micro-planning. Next slide.

00:42:51.79 So moving on to home-based records, HBRs are used to record vaccinations and history of health services. They're kept by caregivers, and usually in a paper format, but they can also be electronic. They help

caregivers and healthcare workers know what vaccines or health services a child has received. And HBR use has been associated in the literature with improvements in vaccination coverage. We also found that countries that have focused on improving health worker training and caregiver understanding of the cards, that those kinds of investments have helped to also increase vaccination coverage. One limitation, however, is that children who are born at home are less likely to have an HBR, compared to children born in a facility. And so in our review of the literature, we found some countries, particularly in Asia, have overcome this challenge by using integrated maternal and child health books. And this could be a promising strategy for identifying zero-dose children, because the children of mothers who have received antenatal care, they can be identified early and more easily tracked to ensure they receive vaccination. And just one other strategy to note is, linking the HBR with an EIR. So in the example here, this is something that has been done in Mexico and Argentina as a way to help health workers follow up on children who have missed vaccines. Next slide, please.

00:44:43.67 So now I'm going to turn it over to our next guest speaker, Dr. Subhash, who is going to talk about Pakistan's experience leveraging their EIR to identify zero-dose children. Over to you, Dr. Subhash.

00:45:00.50 >> Thank you, Allison. I'll be presenting Leveraging Electronic Immunization Registries to Identify, Reach and Monitor Zero-Dose Children, brief insights from the Zindagi Mehfooz, Safe Life Electronic Immunization Registry, in short known as ZM-EIR in Pakistan. Next slide, please.

00:45:22.25 This slide gives you a list of brief feature in the ZM-EIR. It's a very comprehensive EIR that has all the [INAUDIBLE] features as for the [INAUDIBLE] recommendations, and more than that as well. The highlighted features here, that includes unique identification, child registry, GIS tracking of children and vaccinators, micro-planning activities, defaulter lists and reports. These are the primary features that are leveraged to track and immunize zero-dose children. Next slide, please.

00:45:58.31 This gives you an overview of the pre-collected information in the ZM-EIR as part of the PI program that includes identifiers like child name, gender, date of birth, place of birth, address, contact number, parental national ID, and so on. And each with it, even there's actually geo-enabled as well. So the geo-coordinates for each vaccination. And all of this is collected in routine by the EPI. Next slide, please.

00:46:28.45 To give you the overview of the status of the ZM-EIR in Pakistan, there was a phase wise scale-up in October, 2017 across Sindh province, that has 30 districts. And then it was later scaled to Islamabad and Gilgit districts. Currently it is being scaled as national EIR across the country, with support from GAVI and WHO. Currently, the system has more than nine million children, or 3.3 million women, and has recorded more than 107 million immunization events. It is currently used by 4500 vaccinators across more than 2200 facilities. Next slide, please.

00:47:10.96 Looking at the key pathways that are leveraged to track and immunize zero-dose children, the EIR enables vaccinators to download the zero-dose children into the registry. These are the children who were directed with the health system at some point, and were registered, but were lost to follow-up. For example, they received immunization at birth, but then were lost essentially there in the list. There was a non-vaccination encounter, and they get enrolled into the EIR. So the system can actually look at the data by district level, Union Council [INAUDIBLE] who frequently download their lists, and then monthly, district offices and program offices use that for the resource of location and implementation as well. In terms of GIS, it is leveraged to look at the location of the child. It also highlights the missed communities and populations. Then it also kind of is leveraged to look at the hotspots to identify clusters of zero-dose children. In addition to these features, the other features are, for example, the [INAUDIBLE] by the frontline health workers, which are not necessarily the vaccinators, but community health workers and midwives who can register the children. At the non-vaccination encounters, for example, at the facilities, as well as at the household level. And then once they register, vaccinators can follow up with them. The other integration is with the pregnant women and birth registry; I'll talk more about it in a bit, and this kind of prevents the

zero-dose from happening. Then thirdly, also deployment of targeted interventions for zero-dose coverage, for example, mobile immunization vans and other inventions that are utilized by the government partners to tackle the zero-dose. Next slide, please.

00:48:57.10 This is an example of how GIS is used to identify the areas which have a larger number of zero-dose children. Here you can see basically the way administrative division in Pakistan is, their provinces, divisions, districts, town and Union Council at the UC, that's a [INAUDIBLE] unit. Then you could see on the map basically the areas which are red, essentially, show the high number of the zero-dose children. Next slide, please.

00:49:22.02 This is an example of what we have seen of the zero-dose children essentially, in every country is different. Some countries have clusters, others do not, and in Sindh and Pakistan, we have seen there's a clustering of zero-dose children in the rural areas, while in the urban settings, it's generally less clustering in overall distribution. Next slide, please.

00:49:43.65 Now the key limitation of EIRs in reaching zero-dose children is that it only covers a proportion of ZD children which get enrolled into the EIR through one way or the other. There's a proportion which is not part of the EIR which does not interact with the health systems, and for those, essentially other interventions are required. Next slide, please.

00:50:05.34 For example, the other interventions could include birth registry. We consider the fastest step towards limiting zero-doses, and getting the children right at birth, enrolling them into the system, as well as giving them the birth doses, and then it can be followed up. There is that was founded in Pakistan, and now it's being scaled-up in parts of the country. Next slide, please.

00:50:25.48 Another intervention is mobile immunization vans, which actually go to the high-risk areas and low-covered areas in the communities that enroll them. What we have seen with this initiative in Pakistan is, they have enrolled and vaccinated more than 108,000 kids, out of a 16.5 were zero-dose. Next slide.

00:50:46.22 Thank you.

00:50:53.68 >> Thank you so much, Dr. Subhash, for that presentation. It's really interesting to hear how you've overcome some of the EIR limitations so that you can be using the EIR to identify zero-dose children. Next slide, please.

00:51:10.14 So we're now approaching the end of the presentation, and we're actually quickly running out of time. So I'm going to keep things moving, so we still have a little bit of time left for Q and A. Next slide, please.

00:51:25.25 I'll just say here, without going into a lot of detail, that based on the analysis we identified for high-level actions as recommendations, and we tagged them according to the different actors who are best-positioned to take action. Next slide.

00:51:46.64 And then this slide is highlighting some of the sub-actions that government decision makers, such as yourself, can take. I don't have time to go through all these, but really encourage you to take a look at our report, if you're interested in learning more. Next slide.

00:52:09.86 And so with that, this concludes my presentation. We've included the QR codes that you can scan here to access our reports. We have a shorter five-page brief, and also the full report.

00:52:26.51 So now I'm going to turn it over to Natasha, to help us moderate the Q and A. Thanks.

00:52:33.87 >> Thank you, Allison, Dr. Kaucley, Dr. Chandir for all of the excellent presentations. I think we'll just kick this off with questions from [INAUDIBLE], who is following up to the presentation by Dr. Chandir. And [INAUDIBLE] says, "I see the surveys which use GIS data that kind of identify the GIS coordinates from exact value so that no one can reach the interviewed household for ethical purposes, do you have such measures, or is it not an ethical issue as we are trying to vaccinate children? So I think Dr. Chandir, if you feel like taking this question.

00:53:17.82 >> Sure. Thank you, Natasha. I'm actually going to try to answer. So whatever we did with the data [INAUDIBLE] team, ethical concerns will always need to be addressed and dealt with systematically with the highest in importance and methods. Yes, when it comes to GIS, that is always kind of protected by the government, and this use is kind of in line with the government instructions. So far this is data used by the government programs to target the locations and reach out to the children, and it is not used by anybody else for any other purposes. But it all comes down to the government, and in my personal opinion, I don't think it is [INAUDIBLE] government is actually tracking the GIS -- or leveraging the GIS data to reach these children. Yes, but safeguarding the data, protecting it, and following the standards is what is critical here, and that's what the government in Pakistan is following those to make it happen.

00:54:19.16 >> Thank you. There was another comment by [INAUDIBLE] earlier, and I'll read that out as well, because you raised a really good point about the validity of using [Penta-1?] as the definition for zero-dose children. So I'll read out your comment, where you say, "I think vaccination coverage does decrease with the increasing age of child. There is no drawback to Penta-1, but I think Penta is a better indicator than any vaccine in Bangladesh, considering MR coverage of full vaccination coverage will be better than Penta," according to [INAUDIBLE]. So this was a comment. Would anyone like to respond to that, if you are familiar with the Bangladesh context? Any of our panelists?

00:55:11.90 >> I can take the first try. So yes, Bangladesh, I think, sets an example for the country in terms of its coverage [INAUDIBLE]. But as pointed out by [INAUDIBLE], I think there are other places where there is a challenge. Now in terms of the zero-dose definition, the whole idea is that we want to capture the kids who are inevitably [INAUDIBLE]. That's the true definition. But then it's really hard when you need something operational. If you look at the measles, the challenge is essentially they may already have dropped out from all these other vaccines. And I think the idea is to capture them early on. That's why birth does is not used, because that's the first one, and we lose a lot of people after that in many countries, globally. But if you wait for measles to arrive in Penta, that will be too late kind of, to catch them on. That's kind of, like, special definition that is early on, but not too late, kind of finding the optimal level to identify and reach these children who are left out of the system.

00:56:11.65 >> Thank you. And our Q and A is now blowing up with a lot more comments. So I'll quickly pull out Nancy Fullman's question, which is actually in the webinar Chat. Are there efforts to expand the Sindh registry elsewhere in Pakistan, and then adapt elsewhere? It seems like it would, like so many places, would benefit from a similar registry.

00:56:37.74 >> Yes. Again, in Sindh has been running since 2017, it was [INAUDIBLE] to Islamabad, which is capital of Pakistan, as well as the Gilgit district. But currently, as I said, it is being scaled as a national EIR, and all the other provinces in Pakistan as well.

00:56:56.18 >> Thank you. Okay, and then I think we have another question from anonymous attendee, which is, any experience among participants on using data from outbreaks and campaign micro-planning to use for routine immunization?

00:57:14.48 >> [INAUDIBLE], I can try it?

00:57:19.73 >> Yes, please.

00:57:23.53 >> Maybe I can [INAUDIBLE]. We are not using campaign for routine, in terms of estimating zero-dose children, from my experience. We use however campaign post-op and surgery data, mostly LPAs that try to triangulate with zero-dose localities; for example, when we conduct the polio campaign, and we do LPA surgery, [INAUDIBLE] are rejected from this surgery. We suppose and we assume that this area most probably have not a lot of zero-dose children. We can also use outbreaks data to try to locate zero-dose children. We suppose that outbreak occurs in localities where we have a lot of children with zero-dose, so when we make our adjustment and we try to estimate the zero-dose children, we compare with outbreak data to try to really -- I can say to try to triangulate and to have a best location of zero-dose children. That's our experience in using outbreaks and counting data in term of estimating or locating zero-dose children.

00:58:53.98 >> Thank you, Dr. Kaucley. I think I will have to, unfortunately, cap the questions here. As we said at the start of the webinar, we are going to share all of the slides and the recording, and unanswered questions will be answered and emailed out as well. So with that, can we go to the final evaluation slide? Thank you.

00:59:18.35 So I would like to thank our presenter and guest speakers again for giving their time and expertise today, and the participants for your engagement. We would really appreciate two minutes of your time now to provide feedback on our webinar. You can click on the link in the Chat, or use the QR code on the screen; that will direct you to a shot of it, which only takes two minutes, and it's very valuable for us, because it helps us know what we should be focusing on in the future.

00:59:45.81 In the next few days, you'll receive an email with a link to today's recording. Thank you all, once again, and we look forward to seeing you in the future set of webinars.