EPISODE 8: DISCOVERIES FROM VACCINE IMPLEMENTATION

Garry Aslanyan [00:00:09] Hello and welcome to the Global Health Matters podcast. I'm your host Garry Aslanyan. Just recently, the World Health Organization made their official recommendation to widely use the long anticipated malaria vaccine. This recommendation was based on research evidence from a pilot programme in Ghana, Kenya and Malawi that reached more than 800 000 children since 2019. This is an excellent example of how evidence, based on implementation research, tells us whether the health interventions, such as vaccines, will be effective in real life beyond the laboratory. In this episode, Margaret Gyapong of the University of Health and Allied Sciences in Ghana, will be sharing her first-hand experiences and learnings from the malaria vaccine pilot. Margaret will also share with us how Ghana has been successful in building a learning health system. You will also hear from Lee Hampton of Gavi, the Vaccine Alliance in Geneva. Lee will tell us about his work on yellow fever diagnostics and how implementation research is informing the global decision-making process. We hope you enjoy today's show.

Garry Aslanyan [00:01:27] Professor Margaret Gyapong is the Director of the Institute of Health Research and Coordinator of the Centre for Health Policy and Implementation Research at the University of Health and Allied Sciences in Ghana. She has been a member of the WHO Task Force on Malaria Research Capacity Strengthening in Africa, and she was recently given the EDCTP Award for Outstanding Female Scientist.

Garry Aslanyan [00:02:00] Margaret, a big congratulations to you. It's great to have you on the show with me today, all the way from Accra.

Margaret Gyapong [00:02:10] Hi Garry, how are you?

Garry Aslanyan [00:02:12] Good. How are you?

Margaret Gyapong [00:02:12] I'm OK. Thank you.

Garry Aslanyan [00:02:14] So we're going to talk a little bit about implementation research. Was there a moment when you realized the importance of doing that kind of research and how that really is going to make a difference?

Margaret Gyapong [00:02:25] When I went to Dodowa, and in doing my research, one of the things that Irene Agyapong, the District Director at the time told me, was that whether researchers do their research or not, the health system would run. And it shocked me a bit because I thought that research was very important, and the health providers and the programme managers and the policy-makers, needed research to be able to do their work. So when she said that, I was like, What do you mean? And she said, sometimes we researchers think that without our research, the health system would not function. It functions anyway. Whether the data is correct or not, they have to deliver the health services. So she told me to make sure that whatever research I do is relevant to the health system so that they would see us as important partners rather than we trying to make them think that we are important. So those words that Irene spoke to me really hit me hard and made me look at the health system and research within the health system and for the health system in a different way.

Garry Aslanyan [00:03:43] I really was looking forward to talking to you and the last, I don't know, 10, 15 years, I've really been amazed how Ghana has got together a system that one could describe as a learning health system. And there are certain parts in it, the way it's organized, that allows for that term to be used. Maybe you could share more, you already started, but share more with us how that has been achieved in Ghana.

Margaret Gyapong [00:04:14] These learning health systems have actually emerged in response to a very urgent health challenge that there's a large lag in time between the publication of biomedical knowledge and then the application of this knowledge to improve care at the clinical practice level. Now this term is quite recent, but in Ghana, as you were saying, prior to the late 1980s, this issue about the disconnect between research and practice and the lack of vision on how to improve the connection, was a big problem. And so we had a few people in the system who were medical doctors who had done public health and had some exposure to operations research and health systems, who decided to start a research division in the Ghana Health Service, so that you had the research within the service to try and understand what is going on in the service and identify and do research on problems that affect the health system. And so what happened was that the Ministry of Health had a medium-term health strategy, and the Research Division developed a research agenda to support this strategy. And then we started doing a lot of this systems thinking and evidence-based decision-making, training district directors and regional directors of health on simple operations research, and that's how it started. Then there was this cascading process and, like people say, the rest is history and research has been ingrained in the health sector.

Garry Aslanyan [00:06:01] So the actual knowledge started to be produced by researchers and managers and service providers and with the inclusion of the system. Is that still happening in the Ghanaian health system?

Margaret Gyapong [00:06:17] Yes it's still happening. So now then you have the establishment of the research centres in the Ghana Health Service in the three geographical regions of the country. So you have the Navrongo Health Research Centre, which was set up in the northern part, and then you have the Kintampo Health Research Centre in the middle part of the country, and then you have the Dodowa Health Research Centre at the southern part of the country. So anything that was happening in the northern belt in terms of health systems and stuff like that, when it came to research, Navrongo was contracted and they worked with the health system as a team. And the same with the middle belt and the southern sector. And it's still happening. The Research Division started as a small research unit under the Policy Planning, Monitoring and Evaluation Division, but then it became its own division shortly after that. So they are an independent division in the Ministry of Health.

Garry Aslanyan [00:07:21] I know, Margaret, that you've been working in the rollout of some of the vaccine programmes in Ghana and you've studied implementation of their introduction in various ways. Do you have any experience about that process that you could share with us?

Margaret Gyapong [00:07:40] Yes, that process of the malaria vaccine has really been an eye opener for me. Yes, I've done a bit of malaria work, but this one was completely different. A new vaccine that hasn't been tried anywhere. Well the studies had been conducted, but its rollout in Ghana was the first. And in Ghana we worked in three regions of the country where this was being deployed. In the Volta Region where we were, we actually selected three communities or three districts, and in each district we selected one community that was far away from the health system, one that was in-between and another that was very close to the health system. Now, one of the things that struck me was, one of our communities is called Abrewangko and Abrewangko means "an old lady does not go". It tells you how far it is from any place. But we were curious about that place because even though it was so far away from any place, their immunization coverages were one of the highest and we wondered why. I mean, this is a community where if I have to leave my home and go there, I have to wake up at 3 a.m. to be able to do a five hour drive to catch a ferry, and then after crossing the ferry for half an hour, I have to drive another two hours to get to the main city before you drive another half an hour to get to this village. And this village is on the banks of the Volta River. So we tried to find out how come their immunization coverages are so high. And we realized that the health system actually used the community leaders and the community agents when it came to health care delivery. So thanks to mobile phones, so they would call the community leader who had a register of everybody and knew any woman who had delivered and anybody who had died. It was such a fantastic system, they had registered over the years of everybody who came into the community. So when it was time for immunizations, you go around house to house, telling people to stay at home because the health workers were coming to immunize their children. And that is how come they got their coverages. And he kept everything in an old notebook. He's the one who keeps the records. And it was just fascinating to me to watch this guy. But then another interesting thing that I found from this work that we are doing, and we are not done yet, is some of the approaches that are used as an anthropologist are very fascinating. We use what we call the photo voice where we are hearing, giving the communities a voice to be able to speak and tell us the way they feel. And one of the pictures that the woman, the primary caregivers of these children who were being given their vaccinations showed us was very striking. She showed us a picture of a scorpion and we asked, why a scorpion and how does it relate to immunization? And then she says, she was bitten by a scorpion some time ago and it was really painful. So when she took, and I'm reading what she has read, I'm reading verbatim, she said, "When my child took the vaccine, I was scared that something will happen to him. I felt like I was going to die when the scorpion bit me, and that's how I feel about the vaccine given to my child. I hope the vaccine is not killing him slowly." Which was very striking to us, especially with all this vaccine hesitancy and all the rumours about the new malaria vaccine and stuff like that. So we were curious. So why is it that you still took your child for the vaccination if you think it is killing the child slowly. And she said, "But the health system has always given our children vaccinations and our children haven't died. So I trust the health system. But because this is a new vaccination, I'm not sure. But I still took my child anyway, and I hope the vaccine will not kill the child." I mean this you will never get from any approach other than this Photo Voice. And so we are beginning to use this approach a lot more to get at the innermost feelings of women in the communities that we work with.

Garry Aslanyan [00:12:49] So you learned a lot from that experience, or it still continues in a way, of introducing the new vaccine for malaria and I'm sure there have been some transferable lessons that you think would support the current challenge that we have globally, actually, in terms of rolling out the COVID vaccines. What would be your suggestion, or what would be your lessons learned you'd like to share?

Margaret Gyapong [00:13:19] We've really learnt a lot of lessons, I must say. You know, many times when we are delivering a new intervention, we think that we should focus all our attention on community members because they have low levels of literacy, they are not health care providers and they don't know anything, and so we need to engage them and design health education materials for them and everything. But then one of the things I have realized from the introduction of the new malaria vaccine is that we need to have a better understanding of our health care providers and the way they think. We shouldn't take it for granted that because they are healthcare providers, they understand everything and will do what is expected of them. We found out that the health workers at the lower level who were going to be the frontline workers to deliver the vaccinations had a shorter period of training than those at the higher level, and the health workers complained bitterly. So those at the regional and the district level had a full week of training, then the ones who are actually supposed to give the vaccinations had two or three days of training. So it's not surprising that some of these misunderstandings about eligibility and stuff came up. So it's something that could come up even with this COVID-19 vaccination that if it's going to be a cascaded kind of training, then the people who are actually going to give it should be properly trained.

Garry Aslanyan [00:14:58] So clearly, Margaret, in all of your work, you try to make sure that questions that you're asking are actually relevant to the system. I mean, this is coming through very clearly from our discussion here. So for those listeners to this episode that are up and coming researchers or they are working in a similar area globally in different settings, what would be your advice to them? How can they make their work relevant to the system or to the communities that they work in?

Margaret Gyapong [00:15:33] I've spent quite a number of years working on implementation research, of course, and one of the things that I've learnt over the years, that really offers a way to understand and address implementation challenges and also to make a real positive impact on people's health through contributing to building stronger and more responsive health systems within the realities of specific contexts. Truly it's not everybody who would be interested in doing implementation research, but I think that whatever kind of research you are doing, understanding the system within which you work is critical. We shouldn't just sit in our offices and craft research questions and think that they are important for the health system. It may not be something they are interested in at all. So my first advice would be understand the situation on the ground. Understand the needs of your stakeholders. Understand the needs of the health system if you are working in health, before you design any interventions or do any research with them. IR (implementation research) really can lead to positive outcomes and it can lead to helping policy-makers design and implement new approaches, if we really engage them properly. It will also help them own whatever process it is that they are going through. It will help us to build trust. So let us put our own prejudices

aside, let us put our own ideas aside and learn to listen to the people on the ground. And I found out that it makes a lot of difference.

Garry Aslanyan [00:17:20] Margaret, one last question. What has been the most satisfying, one or more, moments in your career? I'm sure there were many.

Margaret Gyapong [00:17:28] When I see the results of my research being used in policy. And many times I quote the malaria control programme. You know when you are doing some research and you are struggling to get the programme managers and policy-makers on board, it's not an easy journey. But when you see their strategic plan and they say that we want to ... Let me use the malaria programme as an example. They talk about home management of malaria and then the justification for implementing home management of malaria is because of this study by this group. And it's such a joy to see it in there. It's really heartwarming for me. It makes me feel that the work I'm doing is not just in vain, it's not just sitting on the shelf, but it's making a difference at country level and internationally just makes me happy.

Garry Aslanyan [00:18:25] These were great examples, Margaret, and clearly seeing the impact of your work and seeing the use of your work, it must be very satisfying. This was really a great conversation. I hope we will continue discussions around implementation research in the future. Thanks for sharing this with our listeners.

Margaret Gyapong [00:18:47] Thank you very much, Garry. I think it has been an exciting moment sharing these experiences with you. And thanks for the opportunity to be able to share some of these experiences with the wider audience out there. Thank you.

Garry Aslanyan [00:19:08] Dr Lee Hampton is the focal point for vaccine preventable disease surveillance and vaccine safety at Gavi, the Vaccine Alliance. As a paediatrician and medical epidemiologist, Lee leads Gavi's Yellow Fever Diagnostics initiative. He has received four Honor Awards for Excellence and the Kaafee Billah Memorial Award in Economics from the US Centers for Disease Control and Prevention. Lee, welcome to the show and thank you for joining me today from Geneva.

Garry Aslanyan [00:19:41] Today, we're going to talk about implementation research and use of the knowledge and evidence that comes out of it to help in public health. Maybe we can start by you sharing with us an experience that has really highlighted the value of implementation research.

Lee Hampton [00:19:58] So a recent experience involved my work at the Gavi Secretariat, where I'm responsible for a lot of the work on disease surveillance, and one of the challenges that we face is with one of our newer vaccines, which is typhoid conjugate vaccine, which we would expect can be used to prevent tens of thousands of cases and potential deaths each year. It's very useful, it's a great vaccine, but there's a lot of variation about where you find typhoid disease, and there's a lot of variation over time in addition to place. And we're very interested, given the finite amount of typhoid vaccine that we have, of making sure it's used as usefully as possible. So we've been working a lot with colleagues at the World Health Organization and CDC and in national institutes, for example in Ghana, to try to identify,

where are the places that have typhoid and develop methods so that even countries that maybe have more limited surveillance capacity can make decisions about when and where they should use typhoid vaccine or if they should use it at all. But at the beginning, when we were starting off and we didn't have this information, it really highlighted how difficult it is to make good decisions about using limited resources when the implementation research has not been done yet, and how critical that research can be to make sure that we really are preventing as much death and disease as possible.

Garry Aslanyan [00:21:30] So really, with the introduction of this vaccine, clearly there is a need for better understanding of how best and where and in which way to introduce it. That is exactly what implementation research should do or help with public health. If we look at the current issue at hand, basically COVID and vaccines for COVID, we've seen some significant inequality in terms of its delivery in the world. Building on your previous example, how would that work for COVID vaccines, especially in low- and middle-income countries.

Lee Hampton [00:22:04] I think actually the typhoid vaccine example I just made is informative here because one of the challenges we faced was that it wasn't that there was no information on where there was typhoid anywhere in the world. The problem was, there's a lot of information for a few countries, but we didn't have it for all of them. And so trying to fill those gaps about where you would have typhoid sickness and where you use the vaccine, that's been the real challenge. I think we see something very similar with COVID in a lot of ways. There are a lot of resources available for research on COVID and its distribution, its spread, its control, and that information has been vital for the progress that has been made. But it's not evenly distributed. And so what often happens is you have new methods that are developed, for example trying to control COVID, like vaccine control programmes, that may be, the most resources for developing those and evaluating them tend to be in high income countries. And so we have a strong tendency to try to apply the game plans and the experience that worked in those countries that had the resources to first do the development everywhere. But then we run into trouble when there are major differences between the game plan we have that works in one place and trying to apply it in another place that's very different. And so I think in part it's partially a resourcing issue, it's partially a capacity issue, but this comes up a lot. With global health programmes it's really vital to have a good model that you can scale up. You have a good, basically a good pilot project, that can provide the evidence and kind of guide everybody on how to proceed. But when you try to take a pilot project that works in one place, and you generalize it to another place that's very different, it makes things challenging. So you have to first convince people that you're going to need another pilot project, that you can't just generalize from that first experience. And sometimes it can take, especially if people really like that first version, it can sometimes take a long time to convince them that you're going to need another model for other places. So I think there's a lot of factors.

Garry Aslanyan [00:24:16] What kind of partnerships and groups you work with, and obviously you mentioned WHO already, Gavi, and I'm assuming UNICEF is heavily involved in immunization, so what kind of processes are there to help build on that knowledge and identify global level priorities or gaps in knowledge?

Lee Hampton [00:24:39] I think a really key element at the global level in terms of identifying gaps in data needs is the work of the World Health Organization, particularly the SAGE, the Strategic Advisory Group of Experts on Immunization. So SAGE periodically will review different vaccines or potentially with a new vaccine and identify recommendations on how to use it and also evidence gaps. Now it can be challenging for SAGE for a couple of reasons, one is that they are dependent on other people generating evidence. So they can't start those pilot projects. They need somebody else to run the relevant pilot project that they can then judge and see how it applies globally. And it's also challenging because they're trying to provide guidance for the entire world, so they can't necessarily cover the same level of detail that would be needed to account for all that variation. But it's a really key factor in terms of doing those types of evidence reviews and identifying evidence gaps and areas that implementation research is needed. And the great thing about how SAGE is organized is that you do have experts from different organizations in parts of the world who are interacting and so even just the discussions around putting these proposals together can lead to a lot of improved understanding across community public health workers and researchers as to what needs to be done until then.

Garry Aslanyan [00:26:06] I understand that Gavi's Board has agreed that once the malaria vaccine is licensed and recommended by SAGE, it could play a role in supporting widespread implementation of it, is that right?

Lee Hampton [00:26:18] Yes, so Gavi very much takes into account SAGE recommendations. For example, Gavi won't actually provide funding to support the use of a new vaccine until SAGE has recommended that vaccine and laid out recommendations on how it should be used by national ministries of health is absolutely critical because that's where the best ideas come out of. And there's many examples of this and in other contexts, for example, with the use of a very old example, the smallpox eradication programme. One of their big breakthroughs was realizing that they could identify how much smallpox there was in an area by asking schoolchildren if they've seen anybody who looked like they had smallpox. And the schoolchildren were fantastic informers. They were great at identifying the relevant people. So that observation, that method, was identified by a guy working in Indonesia who was just trying to figure out what's a better way for me to identify smallpox cases so I can get my job done faster. And so he did it, it worked, and then that got scaled up globally once the people at WHO realized what he was doing and how well it worked. So that kind of bottom up approach is honestly what works best when it happens. So all of my examples are from immunization. Are there similar examples from other diseases that you've encountered?

Garry Aslanyan [00:27:46] Oh, yes, of course. Here at TDR, we've been supporting implementation research, looking at how the COVID-19 pandemic has been affecting care for tuberculosis patients in West and central Africa. For example, in Burkina Faso the average time between onset of tuberculosis symptoms and the first health consultation increased by 72 percent during the pandemic, which is pretty dramatic. So the research is looking at why that's happening and how that access time can be reduced. Those solutions are being shared with other countries in the region, and this knowledge will be applicable to public health efforts that have been affected by the COVID-19 pandemic. So that's one way that evidence from implementation research helps us adapt to a new situation.

Lee Hampton [00:28:41] Another recent example of implementation research very much affecting a range of countries with some Gavi involvement is that one of the challenges that we've noticed with yellow fever control is the amount of time that it can take to identify and confirm that there is a yellow fever outbreak. And that's really important because on the one hand, it's important to detect and respond to yellow fever outbreaks as quickly as possible, because if you can deal with them when they're small, obviously there are fewer people who have been sickened or died as a result. It's also a lot easier and cheaper to try to quash the outbreak early than to wait until it has become quite large. On the other hand, yellow fever resembles a lot of other diseases. For example, it can resemble Ebola. And so it's really important to know that you're really dealing with yellow fever so that you're watching an outbreak response campaign that will be helpful. So one of the problems that became clear from talking with people in different ministries of health and with WHO, was just the amount of time it was taking to confirm whether or not somebody had yellow fever because of the tests that were available and involved. And through implementation research, we found out that the main reason for that really long three-and-a-half months' time for confirmation, was because of the time required to ship samples from the national laboratories to the regional reference laboratories. And that was particularly causing two issues. One was, many of the laboratories didn't have the funding to pay for the international sample transportation or, alternatively, because of disruptions in air transits, it was often difficult to find shippers that would take the samples under any circumstances, either because they didn't want to deal with samples from haemorrhagic fever or because of disruptions like with the COVID-19 pandemic. So what Gavi, in collaboration with partners like WHO has been doing, is we've been providing funding to national laboratories with help from WHO, to actually pay for the international shipment of the supplies. And we're also moving with WHO and UNICEF and CDC and partners like Institut Pasteur Dakar, Institut Pasteur Cameroon and Uganda Virus Research Institute, to work with the national laboratories to improve their own testing capacities so they can confirm samples on their own. And as a result of that, in just a couple of years, we've cut down the time needed to confirm these samples by 70 percent. So it's been it's been very gratifying to see this multinational, multi-agency really implementation research project lead to real improvements in an area that will let us detect and respond to these disease outbreaks faster. So given that and given that TDR is working on capacity building, and this example from Nigeria CDC is one where they really have built up their capacity, are the things that other countries that similarly want to build their capacity can do to access tools or support along those lines.

Garry Aslanyan [00:31:57] And that's a great question, because doing implementation research requires a particular kind of training and also tools to be used by multidisciplinary teams, we have to be innovative. By developing a massive open course on implementation research, in fact it's in English, Spanish, French and Russian, several thousand people have completed the course already. We also support postgraduate training in several universities in Africa, Asia, Latin America and in the Middle East, where people are getting master's degrees in implementation research, on public health challenges in their own countries and regions. And we have established six regional training centres for those in the health system who would like to gain knowledge about implementation research. So these are some of TDR's approaches to addressing capacity in countries.

Lee Hampton [00:32:54] If you don't mind a follow-up question. Given all the work that you guys are doing with that capacity building, where would you see that kind of global support for implementation research going in the next couple of years? What would be your expectations, what researchers in this area could expect?

Garry Aslanyan [00:33:11] So clearly, COVID and the pandemic have made that clear in most of the countries where decision-makers turned to science and tried to use the evidence to make their decisions. So I would say it will increase. We have seen, interestingly, people who have been either trained or have done a project in implementation research in the past and in another area not related to pandemics. And we have surveyed them, and we have seen that a number of them have quickly switched to pandemic and their knowledge of using evidence and using research in making decisions and the need for them to be involved has increased. So I would think that there will be more interest. Public health schools or training in public health and particularly in public health research. This kind of applied, more operational and implementation research should hopefully increase.

Lee Hampton [00:34:18] One of the real privileges to be able to work at Gavi is having colleagues who have come from a very wide range of backgrounds, including finance and business. And my colleagues in Gavi, I think, always understood why the issues around implementation research and public health delivery were important. But I think it's much easier for their colleagues in finance and business who are not working in this area to understand it now, given the very obvious impact that COVID has had on everybody, no matter what they do. It should be really easy in the next few years to explain why this is important to people.

Garry Aslanyan [00:34:58] Do you have any advice for our listeners from your experience in terms of how to work with decision-makers, funders, as someone who works in a funding agency that works with countries, how best to present the need for this kind of research and this kind of evidence in countries? Do you have any advice for them?

Lee Hampton [00:35:23] So when it comes to gaining support for implementation research, I think it's very important to keep in mind a quote from US epidemiologist and former CDC Director Bill Foege, which is quote, "If you want to do something important, then work on something important" end quote. And that applies not just for the implementation researcher deciding how to use their time, but it also means if they're doing something important or want to do something important, it's easier to convince decision-makers and funders to support that work. So when looking at what work needs to be done, the more important the decision that it informs, the more money that's involved, the more lives that could be saved with that decision, the more important the implementation research and the more likely it is to move forward, that's the angle that researchers should take.

Garry Aslanyan [00:36:10] So we always need to make the case to link it to bigger impact in case it's not done or it's not done correctly is really important. This is great input. Thanks for this Lee. I really enjoyed our conversation. Thank you for being part of the show today. Best of luck with all of your projects you're working on.

Lee Hampton [00:36:32] Thank you. I appreciate the time and the opportunity to discuss it with you and also very much appreciate your work on trying to make sure that implementation research support and resources are there. So I hope your team's work goes well.

Garry Aslanyan [00:36:44] On behalf of the Global Health Matters podcast, I'd like to thank you for listening to this episode. We hope this episode peaked your interest in some questions that can be answered through implementation research. Understanding different contexts and communities remains ever so important in ensuring that well-intended health programmes achieve their impact for all people in all places. If you have insights to share with us from your implementation research experiences, we would like to hear from you. Engage with us either on social media or send us an email. To remind you, more information on our guests, their work and today's show notes are available on the podcast website. If you liked today's episode, please give us a five star rating on your podcast platform of choice.

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