

PUBLIC HEALTH INSTITUTE  
INNOVATIONS IN MATERNAL MORTALITY REDUCTION

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>> Dave Clark: Greetings and welcome to today's dialing for health web forum on Innovations in Maternal Mortality Reduction, brought to you by the MacArthur Foundation, the international development research center, the west African health organization, global affairs Canada and Canadian institutes of health research. My name is Dave Clark. I will be the host for today's event.

Before we get started, as usual there are just a couple of things I would like you to know about. First of all, realtime captioning is available for today's web forum provided by Home Team Captions. The captioning panel is located on the right side of your screen. You can toggle it on and off by clicking the Media Viewer icon on the top right of the screen. On the mack it is on the bottom right of your screen. If you would like to use captioning you'll see a link in the captioning panel that says show/hide header. Click that link and you will be able to see the captioning more easily. If the captioning window disappears click the Media Viewer icon I mentioned to bring it back again.

Now, concerning today's audio, the audio is listen only. That means that you can hear us, but we can't hear you. That doesn't mean, though, that today's event won't be interactive. This will be a very interactive event, in fact. We will have a Q&A session at the end of the web forum. You can type your questions at any time into the Q&A panel. The Q&A panel is also located on the right side of your screen. You can toggle it on and off by clicking the Q&A icon that you'll see on the top right of your screen. Again if you are on a Mac, you'll see the icon on the bottom right of your screen.

In the Q&A panel, this is very important. Make sure in the drop down menu it says all panelists. If it doesn't say all panelists, choose that option. That will ensure that your question gets sent to the right place.

You can also use the Q&A panel to communicate with me and my colleague Joanna Hathaway, to let us know about audio issues.

We are interested today in your thoughts, questions, comments, feedback. Utilize the Q&A panel. We will answer as many questions today as we can.

All right. Well, let's get started with today's presentation on Innovations in Maternal Mortality Reduction. Our moderator today is Francine Coeytaux, principal investigator at the Public Health Institute. Francine has over three decades of experience in the development and evaluation of family planning and comprehensive reproductive health programs. Throughout her career she worked to empower women to manage their reproductive health and rights, and has pioneered the use of acceptability research to give voice to women in the shaping of public health agendas. She published, including on abortion, new contraceptive technologies, and access to reproductive health services particularly in Sub-Saharan Africa.

Francine will serve as moderator today and will lead us through the rest of today's event. Francine, over to you.

>> Francine Coeytaux: Thank you, Dave. Bienvenue and welcome to everyone participating in our second webinar on innovations on maternal mortality reduction. It is amazing to be able to communicate to all of you like this, on computer or phone, from all corners of the world.

Where we are coming from, there are 110 people registered for this web forum today. Calling in from all six regions of Africa. In addition, we've got participants from four countries outside of Africa, and we have Francophone colleagues listening in to a simultaneously interpreted session. Thank you very much for your participation.

In our first webinar we shared the lessons learned regarding the use of Misoprostol and we focused on three countries in Africa: Nigeria, Ethiopia and Ghana.

Today you are about to hear several approaches that have been used in Nigeria to scale up the use of magnesium sulfate to treat another very important problem that women encounter in pregnancy. Pre-eclampsia and eclampsia.

Pre-eclampsia or eclampsia is a serious condition and it complicates five to 10 percent of pregnancies globally. It is responsible for approximately 14 percent of maternal deaths every year. There is very little understanding of what causes this, but treatment with magnesium sulfate has been shown to significantly lower the risk of mortality.

Despite its known efficacy this inexpensive drug is often under utilized in part because the diffusion of innovation takes time, but also because it requires a strong and effective referral system.

Thanks to support from the MacArthur Foundation and funding from international development research center, you will hear today from four colleagues from Nigeria who will share their approaches to scale up and introduce the use of magnesium sulfate in Nigeria. Thanks to funding from the West African Health Organization, these are being simultaneously translated into French. To those of you listening from Francophone countries (French phrases.)

We are now going to begin with the presentations. We will allow time at the end for discussion and hope you will pose questions throughout or share successes and challenges you may have faced in your own work. So now, let me turn to our first presenter, Dr. Salisu Ishaku. We are very fortunate to have Dr. Ishaku with us here today. He is the director of the Population Council's reproductive health program in Nigeria. He provides leadership in design, implementation and evaluation of reproductive health programs, and he works with the Nigerian government and Ministry of Health to translate the research into policy decisions. We are very fortunate to have

him here today to give us an overview of the magnitude of the problem and the potential of magnesium sulfate.

Dr. Ishaku?

>> Salisu Mohammed Ishaku: Thank you, Francine. Good morning, afternoon or evening, depending on where you are on the globe. My name is Salisu Ishaku. I work for the Ministry of Health program. Over the next five minutes I will.

(Audio cutting in and out.)

>> Salisu Mohammed Ishaku: I will provide a background to the use of magnesium sulfate for pre-eclampsia and eclampsia. I will highlight some of these approaches to reduce mortality for this disorder in pregnancy.

As we know, globally pre-eclampsia and eclampsia accounts for quite a bit of -- preeclampsia and eclampsia, add to mortality death varies between countries. For example, pre-eclampsia is the leading cause of maternal mortality in Nigeria and second leading cause of mortality in Bangladesh and the third leading cause of maternal mortality in Pakistan. In general, women in low and middle income countries are more likely to die from eclampsia than a woman in high income countries.

The sad story is that these deaths are preventable.

Let me now look at the issue specifically in Nigeria. Pre-eclampsia and eclampsia cause most maternal deaths in Nigeria. This contributes more than 50 percent of maternal mortality. Beginning we are -- we are beginning to have evidence that pre-eclampsia and eclampsia are -- some of the PPH that kills women globally is actually provoked by undiagnosed pre-eclampsia. Actually, the factor is that this has undiagnosed pre-eclampsia or may have disorders in pregnancy that are not diagnosed and this woman is bleeding actively as a result of PPH.

There are a number of pre-eclampsia and eclampsia itself in Nigeria. Recently in 2015 the organization conducted maternal mortality surveillance in Nigeria, across two hospitals. In this story, over the surveys we received, there was a complication.

(Apologies, the audio is cutting out.)

These women arrived at the hospital in critical condition. About 1,000 of them in maternal deaths, about 200 have -- 30 percent of these were due to pre-eclampsia and eclampsia. That shows you how important the pre-eclampsia and eclampsia is to maternal mortality in Nigeria.

It is not only the fact that pre-eclampsia and eclampsia is occurs, but also if the woman has pre-eclampsia and eclampsia complications, she is more likely to die from that complication than if that arises from any other disorder. That shows you the enormity of the problem.

From this story, two main observations were made. One is that most pregnant women with complications arrived at the referral hospitals very late. Why did they arrive late?

That leads to the second observation. Because of their poor knowledge and skills among the providers in the lower cadre. In primary care generals and hospitals, these providers are generally lacking skill or unable to detect pre-eclampsia or detect the complications early. Even if they detect, they are unable to know when complications are setting in or when they should refer to the capital hospital without delay. This is then why women actually arrive at the center and they are already in bad shape.

So in this slide once again, I want to highlight the importance of pre-eclampsia and eclampsia across these countries, because this is a global project not only in Nigeria,

but across many other countries in Africa and Asia. For example, you can see from this slide pre-eclampsia and eclampsia contribute 20 percent of maternal deaths in Bangladesh. It also contributes to 16 percent direct causes of maternal deaths in Pakistan. Out of the 276 women, 100,000 maternal deaths account for 12 percent of maternal deaths in Pakistan. In other low income countries, the situation is basically the same.

How do we end eclampsia with an approach. We approach the issue across the policy line. We look at the facilities and develop the system, develop the providers and their capacity, and look at community health. We also try to work with the community to make sure that the community is better informed and they actually seek care at the appropriate time.

Apart from that we try to conduct implementations to ensure that the know-do gaps are covered. Currently we tend to scale up the models we have been using to detect pre-eclampsia and eclampsia in Kano State. That is in Nigeria. Also we discovered that for the past many years attention has always been on ante-hypertensives for reducing tension. We are experimenting with treating hypertension at a lower level. Finally we define, the women to accept motherhood interventions.

This is the end of my presentation. And at this point I will turn it over to Francine for further instruction. Thank you very much.

>> Francine Coeytaux: Thank you very much, Dr. Salisu. I am now going to introduce my colleague, Dr. Sada Danmusa, who also joins us from northern Nigeria.

Dr. Danmusa is the senior program advisor and project director of The Palladium in Nigeria. He has been implementing and evaluating large scale maternal and reproductive health programs for two decades. His expertise is in strategy management, integrated delivery and health systems strengthening, and has supported public health programs at all three levels of healthcare delivery in Nigeria. He currently strengthens the capacity of public health officials and systems to achieve ambitious national family planning goals.

So we are very pleased to have you here today, Sada.

>> Sada Danmusa: Right, thank you very much, Francine, for that introduction. As Francine said, I work in northern Nigeria. My presentation is going to be on the study that describes the findings of an evaluation we conducted of some grants that we are funded by the MacArthur Foundation, between 2011 and 2014. The basic purpose of the grants was basically to expand the use of magnesium sulfate for the prevention and treatment of pre-eclampsia and eclampsia in Nigeria.

Now, why we did the evaluation, why the evaluation was commissioned is basically again to define an understanding of how the drugs were given to provide lessons going forward. You have what Salisu said, you know what most of the problem is. What he didn't say is comparing the two different, perhaps the two different parts of the world, the developed and the developing, where most of the problems really is in developing countries and most of the issues really relate to the fact that there is poor access to health services.

So that is what is what the evaluation wanted to see, if we can learn something from trying to expand the use in this poor setting in Nigeria.

The grants that we implement, that we evaluated were provided by five organizations. Four of them were from the private sector and one is from the public sector. The private

sector organizations are population, every one of the -- this is one of the organizations that we just had them talk. It is really one of the key organizations working on magnesium sulfate and treatment in this country.

The other organizations are EngenderHealth, which I will talk to you about later. Importantly SOGON, which is the Society of Gynecology and Obstetrics of Nigeria, a very important professional organization in trying to reduce maternal death in the country.

The fifth organization that is the Federal Ministry of Health, we know the effects of the healthcare system of the country. The report I am going to present really discusses the findings in relation to this with a goal of all the grants. We are seeing whether there are success and if there are obstacles to scale up that we can learn how they have been addressed and at the end of the presentation I will discuss how we are going to, we made some recommendations in how we move forward tackling this obstacles.

So as a form of introduction, it is important for us to remember that while pre-eclampsia and its sequel, eclampsia are really very serious and severe illnesses with high fatality relate as Dr. Salisu said, and significant contribution to Nigerians of high mortality ratio, we should also know that magnesium sulfate efficacy in addressing this problem is really not in doubt. The oldest organization has put it on its Essential Medicine List since 1994 and many countries, in fact the developed countries use it very much significantly than developing countries.

Now, this is supposed to be a straightforward treatment. If you have a woman with pre-eclampsia, you administer magnesium sulfate and she is better. But this is really not as straightforward as it sounds. The situation is complicated by very significant health systems, and a lot of human barriers including poor drug availability, poor reporting services and poor capacity and poor skilled attendants, as Dr. Salisu talked about.

That is where the grants came into the picture. Basically MacArthur Foundation funded multiple grants that were made in a straightforward manner to deliver the system. The hope is that it will deliver straightforward action to deliver services to the woman that needs them and therefore reduce maternal mortality from this two key conditions.

So the strategic way the grants were made ensured that the sustained effort is achieved. The slide that is on the screen now really just shows some of the key areas that effort was made so that from different projects, from different organizations efforts there will be a sustained action. Policy advocacy to get the right environment and ensure sustainability, with constituency building to make sure there are critical stakeholders who will support the process and be part of it, and assuring that product supply. Because really availability of magnesium sulfate is one of the key things that ensures that women do not get it when they need it. So these are really the six key areas that we are able to identify that grants were made basically to organizations. I will discuss them later on when I come to discuss the findings.

Let me also give an example. You know, some of the key things. Basically trying to show that the project activities really responded to specific challenges of the health system. I just choose to show how they responded to drug supply issues, how the projects responded to trying to create and generate evidence and how to respond to the issue of capacity. As Dr. Salisu said, throughout the system, capacity to provide the drug is an issue, but especially at the lower level.

So in terms of drug supply, really the major issues have always been poor availability due to lack of portability of the drug. The drug is really inexpensive and is not patent protected. So pharmaceutical companies are not really very motivated to produce it. But in addition to that, in a country there is also poor storage facilities that also effect how you get the drugs to especially the lower level of the healthcare system.

So what the grant did, the grant from the Population Council and Federal Ministry of Health importantly used UNICEF's supply chain to ensure that they address the supply, the storage and the distribution issues.

Now, in terms of evidence generation, one major issue that we see is that health actors have been, there has been a reasonable concern on the efficacy of the drug, coupled with poor capacity. This becomes a very, very key issue that has been almost, if I can use the word, exaggerated. Really, that made both the government and providers not very keen on using magnesium sulfate. Throughout our interviews, throughout our evaluation a lot of people would refer to the toxicity, how can you give that drug to the individual officially before the projects come on board.

What happened is, two research studies were supported by the foundation, which the Population Council conducted. This research is demonstrating the efficacy of the drug. They provided very useful evidence for advocacy on task shifting, which I will discuss later.

Now, in terms of capacity also, the grant made to the Federal Ministry of Health and the Society of Gynecology and Obstetrics of Nigeria and later to Ipas, all trained workers at different levels. EngenderHealth and Population Council also provided an important role by providing evidence and developing national training curricula for all cadres of workers who were used to do the trainings.

Now, in terms of expanding the model, because our healthcare system is kind of three levels, there are almost three autonomous levels. Of course, there is a lot of overlap, but these three levels, the federal, the state, and the local governments all have the specific responsibilities on the health system. Any expansion really needs to take care of, or to take cognizance of that kind of structure so that you don't neglect at any level. At the federal level, that is where policies are set and the third level is the operational level, while the local level is the level that gets to the lower and rural communities where the problem is much.

So this is how the grants addressed these issues, providing grants specifically to different organizations to address this particular levels as shown in the slide.

Now, let me quickly go into the findings. We are convinced by the evaluation, as a result of the evaluations that those grantees, those projects that were funded by MacArthur, by working on the different aspects of the problems, the different aspects of the healthcare system problems, and taking into cognizance specific key steps in sailing up process, where it would successfully made a lot of progress towards full integration of the use of magnesium sulfate into the Nigerian healthcare system.

The quote on the screen now is from one consultant at the am no Kano teaching hospital. It is quite lengthy, but it is important for us to understand how successful these interventions have been. He said in the whole of Kano State -- Kano State is a very big state in northern Nigeria. In the whole of Kano State prior to this project there was only one doctor at Murtala Mohammed specialist hospital who occasionally used magnesium sulfate to treat eclampsia when he was on the shift and the drug was in stock.

Consequently, there was high mortality from eclampsia, with a case fatality rate of around 18.5 percent, and accounting for close to 40 percent of maternal mortality in the hospital in this state. However, this significantly changed with the coming of the project. The case fatality rate from eclampsia dropped to about two to three percent, and mortality from other maternal causes overtook eclampsia. All of this resulted from a simple training of one and a half days.

This is showing how important simple measures were able to address or attempt to address the problem of pre-eclampsia and eclampsia in Nigeria.

So why do we think this project was successful? We feel that, as I said earlier on, really the progress was made by looking and following recognized scale up steps. On the left side, I listed some of those steps, which is legitimizing change, constituency building, modifying organizational structures, realigning and mobilizing resources, coordinating actions and tracking performance. The grants that were made tried to achieve these steps in the kind of sustained and in the kind of coordinated fashion.

For instance, the research and evaluation that was made really gave the drug legitimacy to be integrated throughout the healthcare system. Constituency was also built. Stakeholders were engaged and support was achieved from all organizations. And action was really galvanized right from the beginning of the grants throughout, with meetings being supported nationally to get all actors to be involved.

Why this is important? Because professionals and other important stakeholders, you know engaging them is really important to breakdown resistance that was really key in providers not using this drug. Importantly also, structures, organizational structures were modified. For example, policies were approved to include task shifting to community health extension workers, which was not so at the initial states. Resources were also aligned. Resources from different organizations with different partners and institutions were aligned to move the process forward. And action was coordinated by having national guidelines and curricula that were created, as I mentioned earlier on. The referral system officially when the project was implemented was clearly bolstered. Performance was tracked and momentum was maintained. This was clearly demonstrated through the drug supply that was strengthened as I said earlier through the UNICEF system. Healthcare workers informed us that the system improved also for other drugs that they use in the hospital because of improving the system.

However, there are still remaining challenges. And I listed these. If you look at the report which we will share on the website at the end of this forum, detailed discussion has been provided in the report. But in going through this we saw that more research, more operational research is needed to understand how to overcome obstacles to full scale up. There are key obstacles at the community level that a lot of the projects that were implemented tried to attempt, but of course a pilot project, a project in the very defined community has a lot of limitations in terms of how you scale it up, how you expand it to a bigger region. There are significant challenges that remain that need to be overcome, and we think that operational research will shed more light in doing that. We also think there is a need to continue advocacy and engagement with policymakers and providers so that this momentum that has been created will be maintained. We also think that community-based education on pre-eclampsia and eclampsia and its treatment and institutional delivery is needed, especially in those rural areas where most of the problems lie.

Now, continued monitoring is also needed because when you get to this stage and the lower level, you will see that even though there are guidelines have changed and a lot of them have not reached down to that level. We are still changing, and we feel that all these new guidelines that have been created need to be in the training of all healthcare workers.

We also think that much still needs to be done to strengthen the drug channels. The small improvement that came with the improving the system for magnesium sulfate really did a lot where it is implemented. We feel if that can be translated to all other parts of the country, the system will be significantly improved.

I put most of those recommendations, most of those challenges in the form of recommendations. We also feel that generally there are some key health systems that need to be improved if we are to achieve full scale up.

The continuum of care from home to hospital is really an important thing. And related to that is trying to adopt targeted social and behavior change strategies to increase hospital births throughout the country, especially in north Nigeria. Hospital birth is really very, very low. Because magnesium sulfate and in fact the treatment of eclampsia really requires a hospital. They need to ensure that people, women are encouraged to change their behaviors toward hospital births.

We also think that a very big issue is public sector supply and logistics systems not just for magnesium sulfate but for all, as I said earlier on, for all drugs. You know, if we are to improve the system and make sure that we scale up this interventions. And we also feel it is important to focus on integration of services both at the national level, at the state level, and at the local level.

Thank you very much.

>> Francine Coeytaux: Thank you very much, Sada. Thank you, Dr. Danmusa. Very much appreciated.

Our next presenter is Gloria Adoyi. She is the program coordinator at the Population Council, also from Abuja, Nigeria. Ms. Adoyi coordinates the council ending the eclampsia project in Abuja and she implements partners, regulatory bodies and teaching institutions, including the schools of nursing, midwifery and college of health technologies across the country. As you can see, she is a very busy woman.

Thank you very much, Gloria, for joining us today.

>> Gloria Adoyi: Thank you, Francine. Hello, everyone. I will be speaking on the end eclampsia project, looking beyond the not and imagining challenges to early detection and treatment of pre-eclampsia and eclampsia in Nigeria.

This slide is building on the evidence from the intervention. Ending eclampsia, supported by the U.S. aide continues the work commenced in Kano state on increasing access to under utilized commodities and interventions. These activities commence with the landscape analysis that was conducted to identify and understand gaps and challenges around prevention and treatment of pre-eclampsia and eclampsia, and to plan for improvement.

This analysis was conducted in several states of Nigeria, across the six political zones of the federation, namely cat sin stayed which is supported by the MacArthur foundation and the other states, Bauchi, Sokoto, Kogi, Ebonyi, Cross River, Ondo, and the other funded states.

In the following slides we will look at gaps identified through the landscaping analysis.



This slide shows providers knowledge around prevention and management of pre-eclampsia and eclampsia. It is a total of 379 healthcare providers knowledge was assessed, mostly midwife, committee health officers and a few medical practitioners. Also there are providers interviewed, only 10 percent knew the correct maintenance dose, which is 5 grams every four hours. Moreover, fewer than 11 percent of all providers could list the three ways to monitor magnesium sulfate toxicity, which is stating for the saturation rate, and tensor reflexes.

We also looked at the availability of protocols for the management of pre-eclampsia, the essential treatment to detect pre-eclampsia, and the availability of magnesium sulfate on the day of the landscaping analysis was conducted. It is clear that the guidelines, protocols are missing. Overall, less than -- of the facilities visited had the necessary. Fifty-four had necessary splice and just over some had magnesium sulfate, a very missed feature.

Now, what are the scale up approaches to expand access to the commodities for the prevention and treatment of pre-eclampsia? This commenced with the scale up on early detection of pre-eclampsia and the use of magnesium sulfate with the training of service providers on early detection, which is basically measuring blood pressure and testing for protein in the urine, and ensuring timely management using magnesium sulfate as the standard, the gold standard. Also including referral from the facilities. We also are going to train social workers known as the health educators in each of the facilities we will be working in to provide pregnancy-related health information messages during ANC.

The hypothesis here is to find out if empowering pregnant women with basic information, we help them to demand for such services during ANC training. Information such as why their blood pressure is measured during ANC, or why the urine is tested. The significance of knowing the results from the measurement, and the implications.

Also mentors, we will be mentoring nurses, midwives and community health essential workers on prevention, predetection and management of pre-eclampsia. Over the years the council has been conducting training for health providers for. And all of this, a mentor and trainer will visit a particular facility on the day ANC is being conducted. Both the mentor and the service providers will together measure blood pressure and test the urine for protein. This will reconcile the lack of skill providers in case of service providers retrenchment and retirement. The other approaches we will be looking at is building the capacity of logistics officers to request for essential tools and commodities for detection and management of pre-eclampsia. The facilities are frequently out of stock of essential tools and commodities for prevention and management of pre-eclampsia. In some cases, these tools and equipment are present at the national center of the health ministries. The problem here is that the facilities logistics officers are not skilled enough to take inventory and track consumption for goods and services. So the, we will constantly identify and train officers towards attaining this goal.

In terms of expansion and fund, expanding the effort beyond scaling up intervention the council will also look at, during the conduct of the landscape analysis, we noticed that various facilities have different protocols, guidelines for measuring and management of pre-eclampsia and post-partum hemorrhage. These services rendered by service providers are inconsistent and inadequate. Thus, population council will work with the

Federal Ministry of Health and other partners working on maternal and newborn health to harmonize all existing pre-eclampsia and eclampsia and post-partum hemorrhage protocols, training materials, tools and I don't know aids.

To ensure that we develop guidelines and protocols are further stemmed down to the facility level, the council will continuously advocate to government ministries and other agencies on the adoption of these guidelines and policies at the local level and also to ensure that all the protocols are sent to all levels of healthcare.

Also the council in joint collaboration with the alliance will advocate for maternal health in Nigeria and will advocate to the Ministry of Health for tools and commodities for pre-eclampsia treatment. Further the council will build a global and local network of stakeholders around pre-eclampsia in Nigeria, and also give global evidence through this natural findings in workshops as well as scientific meetings. As pre-eclampsia and eclampsia are getting increased recognition nationally in Nigeria as well as globally, there is a need for a mechanism that connects people working in pre-eclampsia and eclampsia across the country. The ending eclampsia project has already launched a website that is meant to do that, which is already shown on the screen. You can log into this website and find out more details about what the country is doing around issues on prevention, detection, and management of pre-eclampsia at [www.endingeclampsia.org](http://www.endingeclampsia.org).

The council in order to continue to tease out findings from the landscaping analysis to further address some of the issues identified with this analysis that was conducted, the council will conduct some implementation research around some certain key issues that emanate from the analysis. This is one, to determine the feasibility of HHC's workers to detect and treat hypertension in pregnancy with alpha methyldopa.

We will test utility of sensitizing women -- with the doses of magnesium sulfate and refer. But there is no current policy for them to detect and treat hypertension in pregnancy. The council will be conducting this implementation research to show evidence-based community health essential workers can also detect and treat hypertension in pregnancy. This will reduce the high rate of maternal mortality due to pre-eclampsia and eclampsia.

The council will also test the utility of sensitizing women at the community level on their health care seeking behavior. Just before that I address the issue that came up from the landscaping analysis on issues around community misconceptions, myths and mistrust and healthcare providers effecting the behaviors. We will also sensitize young married women to demand and receive quality antenatal care during their visits.

In this following slide, we will be looking at the disconnection between providers certification, knowledge and skills. The argument here is that the quality of healthcare women receive should not depend on only providers education, but rather on how skill of the healthcare providers to be able to render adequate services which is of high quality to treat pregnant women especially with pre-eclampsia and eclampsia.

This slide shows knowledge around aspirin prophylaxis and anti hypertensives. The low dose of aspirin among pregnant women at high risk of developing problems during pregnancy are key opportunities for preventing and managing pre-eclampsia an eclampsia.

Knowledge of the use of anti hypertensives is, although high among the medical practitioners, but low among nurses, midwives, community health workers. Knowledge

of the use of aspirin again is generally low across all the healthcare cadres. This is a huge missed opportunity for preventing pre-eclampsia and eclampsia.

In this slide, we will be looking at the knowledge of health providers on loading and maintaining doses of magnesium sulfate, which is the Pritchard regimen. Across, in all the cadre of providers it shows that low knowledge on the loading dose occurs in all the healthcare providers that we interviewed. The maintenance dose also, which is 5 grams hourly, within four hours of delivery, is also low. The will knowledge is low among healthcare providers.

This slide speaks more on the knowledge of monitoring of toxic effects and antidotes to the use of magnesium sulfate toxicity by providers. 57 percent of the officers knew the correct antidote for magnesium sulfate toxicity. The question is, what happens to the remaining 43 percent of the service providers? Knowledge, low knowledge among healthcare providers on how to monitor magnesium sulfate toxicity is quite a bill challenge in the facilities as shown in this picture here.

In conclusion, there is a need for innovative ways to ensure competence of healthcare providers, availability of working equipment and policies for the detection, management and monitoring of pre-eclampsia, which are key in the efforts to reducing maternal mortality due to pre-eclampsia and eclampsia. Emesis should be on true providers' competence rather than on their certification. Current definition of a skilled provider is not very helpful. It is essential to promote quality ANC services for early detection of pre-eclampsia and eclampsia.

Thank you.

>> Francine Coeytaux: Thank you very, very much, Gloria. That was wonderful. Our final presenter today is Dr. SK Ahmadu, clinical advisor and head of the health systems access unit of Ipas in Nigeria.

Dr. Ahmadu is an obstetrician gynecologist with over 25 years of experience in healthcare service delivery. Her experience includes clinical work, program and team management, as well as training staff of various cadres and backgrounds.

Thank you very much for sharing your experience today with us, Dr. Ahmadu.

SK, are you with us? Yes, thank you.

>> Dave Clark: It looks like we might be having some audio issues with SK.

SK, is your microphone plugged in? You are unmuted.

>> Francine Coeytaux: Dave, I see that she has an icon next to her name. Is that something?

>> Dave Clark: No, that is not an indication of audio. SK, are you able to perhaps reconnect your microphone?

Unfortunately, we are having some audio issues here.

SK, can you try again?

>> SK Ahmadu: Hello!

>> Dave Clark: Hi, we can hear you. Go ahead.

>> SK Ahmadu: Okay. Good evening, everyone. I want to share some of our experiences on strengthening the preservice training in preventing maternal mortality from pre-eclampsia and eclampsia.

In the past, over the past decade, Ipas has been supported on preservice training for house officers and midwives. When we talk about house officers, we are referring to

medical interns who have just completed their medical training and are undergoing supervised training for one year.

During this one year, they spend three months in obstetrics and gynecology where they are trained on how to identify and manage cases under supervision.

Before 2015, Ipas had a grant from MacArthur to develop training guides on select maternal interventions to use in training these house officers. The training guide was developed and disseminated in 2015.

The main conditions that the training guide addressed included post par actual hemorrhage, pre-eclampsia/eclampsia and unsafe abortion. These three conditions have been add judged to be the cause of maternal mortality in about 80 percent of cases in Nigeria.

The intervention I am talking about included the initial advocacy meeting with the Federal Ministry of Health, the regulatory authority, Medical and Dental Council of Nigeria with SOGON qualifying medical doctors and the we also conducted facility baseline assessments in terms of what equipment is available in training these house officers and what curricula and training modules are used during the training sessions. The training guide was developed with stakeholders and having done that, five teaching institutions were selected for pilots in the training guide. And lecturers from these five institutions were selected and given training of trainers on the same training guides, which they in turn now cascaded to the house officers in the institutions.

Stakeholder meetings and review of the training guide was conducted before it was printed and disseminated following this we piloted the mentoring scheme using the training guide on select house officers. This is due to some of the challenges that I will highlight shortly. Located in the training institutions that does not allow the house officers to have hands-on training during the training period. We now selected high volume private facilities within the city where these house officers were taken to and mentored by the lecturers that we have given the training of trainers to.

After this we conducted a tracer study to know if the training has been useful to the house officers and how much of the training they can recall even after their housemanship. We conducted a survey on those that have completed the housemanship and are currently doing their national youth service scheme, which is one year mandatory service to the nation. They are often posted to rural areas where the need is most high.

One of the challenges that the regulatory authority, mental and dental council also had was the tracking and documenting the house officers that have undergone the rotation, and to be able to know how many house officers have actually undergone their rotations and have been certified. With support, we were able to provide support to the council where they can monitor the posting of these house officers.

Why pre-service interns? Some people will ask. The house officers are the front-line practitioners at all service points. They are the ones who first receive the clients or patients, and we all know that the initial management is also very critical in the outcome of morbidity or mortality. Implementing this care is crucial to reducing morbidity and mortality. When posted to rural areas, other healthcare workers benefit from their skills. We will see some of the quotations from some of the house officers toward the end of this presentation.

Preservice training of the house officers is very cost effective. We have done a cost study and we realize that training the health workers as preservice is far, far more cost effective than the in-service training which is very expensive.

It is also sustainable with increased knowledge and skills of the medical workforce. And they have the ability to reach more rural and vulnerable populations during their one-year mandatory youth service scheme.

What were the gaps that we identified in the pre-service training? First, when we conducted the baseline, we realized that even the regulatory authority does not have written accreditation requirements to say that this institution has what it takes to train the house officers. There were no standardized curricula across the teaching institutions that business being used to train these house officers over the three months that they are doing the rotation in obstetrics and gynecology departments.

The clientele in the training institutions, there is limited exposure to hands-on training during the three months of obstetrics and gynecology rotation and there is also absence of formal training during the one-year national service Corps.

We developed a checklist which was to identify availability of supplies, equipment, and infrastructure necessary for service delivery. The checklist also identified knowledge and skills of hospital consultants and midwives who support in the training of these house officers, as well as the availability and willingness to participate in this project. And we assessed if there was adequate space and resources for training the house officers.

As it relates to pre-eclampsia and eclampsia, the training process consisted of the training guide with nine sessions in the module for pre-eclampsia and eclampsia. Five days didactic lectures to take them through the signs, the symptoms, the physiology, the genesis and everything, the management, the prevention and the drug itself. There were group discussions. After 11 weeks remaining for the rotation is done under supervision of the senior doctors and the consultants in the units.

And after this, we piloted a mentoring at selected sites for hands-on by the house officers.

The key outcomes included that all the five teaching hospitals had protocols in place for pre-eclampsia. We were want to also remember that at the beginning only two of the five had protocols at the baseline.

85 percent of house officers interviewed recalled training topics on magnesium sulfate. 51 percent of these house officers trained, and who were posted had magnesium sulfate available at their facilities.

And 33 percent had utilized magnesium sulfate at their places of service since the training was conducted.

The challenges we identified during this project included industrial action in public sector which delayed the implementation of our project. The house officers were not also available to be trained at the time because of the methods used in recruitment in various institutions. And the government policies, notably the single Treasury account system and the difficulties in getting the house officers attached to specific facilities for the one-year posting, hindered the progress of the intervention because there was grants given to the institutions to enable them for these house officers.

Challenges in the supply of magnesium sulfate in the facilities was identified. Only about half that were interviewed had it available at their facility.

Then tracking the house officers who have completed their housemanship by the medical and dental council was a challenge. This is why we had to support the council in developing a website that can make it easier for them and for other organizations who want to track the house officers.

Then we also realized over the past decade that unless there is an organization that is supporting the training of house officers, such trainings are often not done. With support from MacArthur, we got a tie-off grant that has to do with establishing a task force and stakeholders who will ensure that a sustainability plan, comprehensive sustainability plan is put in place by all the regulatory authorities, federal Ministry of Health, medical and dental consultants, the institutions and committee of CMDs, and the medical and dental council of Nigeria to ensure that there is a plan in place that all house officers when they are passing through the obstetrics and gynecology, you need to really process, they have to follow the curricula. There is a module that they must be taking through to ensure that when they pass through the department, they actually know all of these life-saving skills.

We plan to present the lessons learned in the previous project and these tie-off grants to the Society of Gynecology and Obstetrics of Nigeria who we intend to give the responsibility to ensure that this program continues even if there is no sponsor or a grant to ensure that it is done.

I will end by sharing some of the house officer quotes that we met during the tracer study. A house officer from Enugu stated that at the general hospital where I am doing my private practice, a woman presented with pre-eclampsia and was being managed with ante-hypertensives. When I came in I told all involved in the management that the woman could benefit from magnesium sulfate. They were surprised because they thought it was only for eclampsia. Her life was saved when she received magnesium sulfate, from my experience.

The other house officer from Kano said the training was basically a reinforcement to what he has already learned with the details given during one of the lectures on magnesium sulfate, it helped him manage a pre-eclampsia client in his current place of work.

Thank you very much.

>> Francine Coeytaux: Thank you very much, SK. Thank you so much.

So we are now at the end of our presentations and we are open for questions. I hope some of you will send in some questions or comments.

A reminder, this is how you do it. You type in your question in the question and answer box. Make sure that you have all panelists selected. Then send it. And we will do our best to respond.

I am going to now turn this over to Elisa Wells, my colleague and partner in all of this work. Elisa is going to moderate the discussion. So I am going to turn it now over to Elisa. Thank you.

>> Elisa Wells: Thank you, Francine. I am very honored to be a part of this webinar that is clearly addressing such an important issue. Also such a challenging issue. We did have a number of questions that came in from registrants, actually prior to the webinar. We are going to start with those while people formulate questions based on the content of the webinar that you've already heard.

So our first question I would like to address to Dr. Danmusa. The question relates to the scale up, strategies for scaling up within Nigeria. How do you propose to implement the use of this drug throughout Nigeria and make it accessible to all?

A second question related to this which was specifically how can we make magnesium sulfate easily accessible and readily available in Nigeria's rural communities? A particular challenge.

So Dr. Danmusa, would you address some of those challenges in that regard?

>> Sada Danmusa: Thank you, Elisa, for these questions. The way we address them, we mentioned them and part of what we are doing today, trying to disseminate some of the lessons we learned in scaling this drug within the country, is one of them. But I think specifically what was meant to be done really is trying to take these learnings and expand them and implement them in other parts of the country where this has not taken place.

Specifically, national guidelines have already been developed. So what will be important is to make sure that these national guidelines have been extended to the state level, the local government level and the health system benefits from them. Another key issue is what Dr. Ahmadu has talked about, doing a lot of training. Nigeria is a very big country and the capacity in providing this drug is not there. So we feel an important strategy will be to focus on training, training, and training all healthcare professionals from the lowest level of the community health workers to the highest level, the consultants at the teaching hospitals.

This will, in addition to providing them with capacity to provide the drug and manage it, we also feel this will reduce a lot of the resistance to change that we encounter when you discuss with someone who has not used the drug or who has not been trained. Obviously also, there has to be improvement in the logistics supply. There has to be more funding provided from the government. What we have had so far is funding from a private foundation and we have seen this significant achievement. But without the government coming in to fund it at the national level, at the state level, at the local government level, it is more likely that the scale up can be achieved to the highest level expected.

Now, addressing the second question, which you also noted that it is really related: How can we make sure magnesium sulfate is easily accessible and readily available in rural communities? I think one major thing that we need to understand as I said in my presentation, the fact that magnesium sulfate is not expensive compared to other public health issues in the country, pre-eclampsia and eclampsia patients are not many. And because the drug is not patent protected, drug manufacturers, pharmaceutical companies do not have the incentive to produce much of the drug. What has to be done is to make sure that mechanisms are established where incentive is provided for these companies to be producing this drug and subsidized to the hospitals, to the government at a lower level and the drug will be available. But I think related to that also is the improvement in the general procurement, supply, and management system in the country. The poor availability of the drug is not just restricted to magnesium sulfate. It also affects a lot of key drugs that are really very important for improving the wellbeing of women and family in general.

And improvement in the supply chain management is really important to ensure that there has been an improvement.

One thing that has been encountered in other countries is to provide treatment back for specific conditions. Eclampsia treatment pack has been tried in many countries, in India, in Latin America, and several other countries in Sub-Saharan Africa, too, where you have a packet, just like the TV pack that we use to provide TVAs at the community level.

This pack contains the loading dose and the maintenance dose and even calcium gluconate and others needed to provide the drug and manage it. Those packs will be made available to providers and if they are not used for any other thing. Once patients come in with eclampsia, you take one pack and use it for that patient. If that can also be provided with -- if we are able to do that, if we are able to get the government to put in money into this kind of projects, it will definitely improve how this drug gets to the community level.

>> Elisa Wells: Well, thank you very much, Dr. Danmusa.

Another question that has come in I am going to address to Dr. Ishaku. One of the challenges with using magnesium sulfate to treat pre-eclampsia is that it relies on the referral system. And in resource challenged environments the resource system doesn't always work as it should.

But a second part of the question is the initial treatment, because the initial treatment with magnesium sulfate often greatly reduces the symptoms that the woman is having, do you find that many women think they are cured of the disease and then as a result of that don't pursue the recommended follow-up care? What have you found helpful in convincing them to seek this care? And in helping them navigate the logistical challenges of seeking referral care? Dr. Ishaku?

>> Salisu Mohammed Ishaku: Thank you, Elisa, for your question. Actually, Dr. Ahmadu showed in his presentation, an operational study was conducted in 2012 to to give the loading dose of magnesium sulfate. At that time we attempted to find evidence to show to the government that if you have a dose level, they will be able to give loading dose and refer.

In that particular study we discovered that 90 percent of the women that were given magnesium sulfate and were asked to go to the health center did not complete the follow-up process. They absconded and disappeared. We couldn't account for them. That was really a challenge to us at that time. And at that time we didn't expect that kind of response from the women. We did question the facility why the woman did not come back. With this study we have been able to change the policy at their level so that right now they can give the loading dose of magnesium sulfate and refer.

But we have learned from this experience if we are going to scale up and potentially in several states, we are factoring in that possibility into the training. We are training the healthcare providers to inform the client that this loading dose that they are giving them is not the cure. It is just to make sure that they don't convulse, in the case of pre-eclampsia, or to make sure that they stop convulsing in the case of eclampsia. That the final treatment is expected to be received at the higher level where ... (audio cutting out.)

>> Salisu Mohammed Ishaku: We also ...

>> Elisa Wells: Dr. Ishaku? We are losing your audio connection.

And so ...

>> Salisu Mohammed Ishaku: This client also ... (Lost audio.)



>> Elisa Wells: Dr. Ishaku, I think we've lost your audio connection. I'm going to move on to the next question. Thank you very much.

The next question is for Ms. Adoyi. One of the things that you showed in your presentation was the low levels of provider knowledge around magnesium sulfate. And we heard from Dr. Ahmadu about the preservice training that is going on, with I is very important.

But what are the strategies that you are finding that are most helpful for educating your current staff about magnesium sulfate? Can you talk just a little bit more about that?

>> Gloria Adoyi: Thank you very much for this question. Actually, we are looking at how can we bring cadres of providers to be trained on the prevention, management, and detection of pre-eclampsia and eclampsia. We are not just looking at training nurses and midwives or medical officers. We are also trying to see how we can extend this training to reach out to the community health extension workers, the community health officers and most importantly because of the drug and the importance of magnesium sulfate we will also include the pharmacists from each of the various facilities we will be working in, especially the secondary facilities. Also we make sure we train a lab technician that will be involved during the training to know the importance of why you test the urine, test for protein in urine and what is the result after that test has been done.

So we are trying to harmonize all efforts, looking at all the service providers that provide this adequate services to health providers. We feel that if each of them knows what role or the importance of their role in the management of pre-eclampsia, it will go a long way in reducing the maternal mortality due to pre-eclampsia in the country.

>> Elisa Wells: Thank you very much, Gloria. We have time for one more quick question which I will address to Dr. Ahmadu. That is a question about really the reliability of magnesium sulfate and the evidence to support its use. And just the question that came in is: Were there any clinical trials conducted to support the use of this drug?

So if you could talk about, a little bit to reassure our participants that there is lots of evidence. Dr. Ahmadu?

>> SK Ahmadu: Okay. Thank you very much. I think Dr. Salisu mentioned at the beginning of the presentation some of the studies that have been conducted, evidences in support of the reliability of magnesium sulfate in the management of pre-eclampsia and the prevention of eclampsia from pre-eclampsia.

And truly, there are many of these studies that have shown that when healthcare workers are well informed and motivated, and they are able to use magnesium sulfate in the treatment of eclampsia when there is pre-eclampsia, the perinatal mortality for the baby as well as for the mother is much improved than when people use the previous managements with all its attendant complications for the woman and for the baby.

And magnesium sulfate, the advantage in addition is the fact that even in low resource settings with healthcare workers, when they are well trained with written guides and protocols in place, the outcome of the management of pre-eclampsia and eclampsia is much improved.

So there are a lot of studies that have shown the advantages of magnesium sulfate over other methods of management of these conditions. And that is why the World Health

Organization has also come up with protocols and standards in the management of these conditions. Thank you.

>> Elisa Wells: Thank you, Dr. Ahmadu. Thank you to all of our presenters for participating in the question and answer session.

I am going to hand this back to Francine to wrap up. Francine?

>> Francine Coeytaux: Thank you, Elisa. Thank you all very, very much for participating. We hope we have answered some of your questions and we urge you to use the Dialogue4Health website. The recording of the slides with the French and English will be archived and available in about a week. For those of you who participated here today, but also to others. Please, let people know about this available resource, and take advantage of the tools.

Finally, we would like to thank our funders, all of the funders without whom we would not have been able to do this. And I turn it now over to you as this concludes the end of our two webinars on innovations in maternal mortality reduction. Thank you all for participating.

Thanks, Dave.

>> Dave Clark: Thanks so much, Francine. I would also like to thank all of our presenters today for their excellent insights into Innovations in Maternal Mortality Reduction. And as Francine mentioned thanks to all of our partners and sponsors as well.

Now, a recording, as Francine mentioned, of today's session as well as the presentation slides will be available shortly at Dialogue4Health.org. You will also receive an email with a link to the recording and the slides. You can check your inboxes for that. That email will include a link to a brief survey that we hope you will take. We would like to know what topics you would be interested in for future web forums. Please let us know. We do read that feedback. Take a couple of moments and let us know your thoughts. We would appreciate it.

Thanks so much for being with us today. That does conclude today's web forum. Have a great day!

(The web forum concluded at 12:00 o'clock noon.)

(CART provider signing off.)

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