Barbara Marston

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MH: *So Barbara, good morning. If you could just begin by telling listeners who you are, what your job title is and a bit of biographical background.*

BM: I sort of pre-thought that, I don't know what my title is, but I'll make one up! So I'm Barbara Marston, I'm an MD, I've been a clinician for some period of time and then at CDC for the past dozen years or something like that – it's a little bit complex. For the Ebola response my title is the Lead of the International Task Force; it's difficult to understand, but it's the interface between the headquarters' support and the field teams in West Africa.

MH: *Okay. So I want to talk obviously a little bit about Ebola, but also the parallels that maybe you see between the Ebola epidemic and other outbreaks of infectious disease that you've dealt with. To start with Ebola, what was your perception of Ebola before 2014? If somebody had mentioned it, what would you have thought, what did you know about it?*

BM: Well my speciality is infectious disease so I have some understanding [interruption 01:14]

MH: *Okay so just one more time, introduce yourself and give me a little bit of biographical background please.*

BM: I'm Barbara Marston, I'm an infectious diseases physician and I've had a career that's a mix of clinical and then public health. So working at CDC most recently on global HIV, on the response to Haiti after the earthquake and for the past little bit over a year on the Ebola response.

MH: *Okay, so before we get to the Ebola response, prior to 2014 where would you have ranked Ebola on the list of top ten infectious disease threats globally?*

BM: So I don't know if it's fair to come back with questions, but I think it depends if you're talking about things we just need to work on steadily or things we're worried that could flair or cause outbreaks and epidemics …

MH: *I'm asking you if somebody came to you at a dinner party and said "How worried should I be about Ebola?" …*

BM: Then I would dismiss their concerns. For themselves I would think the concern would be very very low.

MH: *Do you remember when you first heard about the outbreak in West Africa?*

BM: No not exactly. Over the course of the initial response to the outbreak in early 2014, so sometime around April, something like that. I was aware that we were sending response teams but I wasn't paying close attention at that time.

MH: *Because you were working … your responsibility was something else?*

BM: Yes.

MH: *Which was …?*

BM: That was the re-establishment of public health systems following the earthquake in Haiti.

MH: *Okay, I'd like to come back to that, but I'd just like to really understand at what point then were you asked to join the International Ebola Taskforce?*

BM: So that was in mid-August of 2014. We'd struggled actually to get a country director in Haiti and finally had somebody in place, I was in Haiti turning over some of the things I'd been working on to him, and was called asked if I would go to the response at that point.

MH: *So what did that involve? What was it that you were asked to do?*

BM: That's a very good question! So it was completely unclear; it was clearly a need to help coordinate the teams that were going to West Africa, but it wasn't entirely clear what the job would entail at that time, and I think it's evolved over time. But I've become the interface between the field teams and headquarters and that means finding the people to deploy … that's basically how it went at first, they said "You coordinate the teams" and I said, "Who are the teams?", and they said, "We don't know". They had some people out there at the time but the first challenge was to find people to take for the next rotation and then to help them get ready to go, support them while they're there and then take the information that they have from the field and feed it up the chain and respond to it here.

MH: *Right, so I imagine that a lot of that is about managing the health risks … because a lot of it … so I think that would be interesting so talk me through that because it seems to me that because Ebola is such a deadly pathogen that that kind of brings up issues much more sharply than would be the case with other diseases where you might have treatment drugs or have a better understanding of how to insulate your personnel from the risk. So was it difficult to recruit and build those teams as the demands for man power increased?*

BM: It was extraordinarily difficult, although to be honest I don't think much of that difficulty was driven by the risk. So I think the difficulty is driven by completing priorities and responsibilities that people had, and the need for specific skills. I think CDC responders as a whole were looking forward to participating; everybody recognised this as an enormously important public health event.

So that's not to say there weren't concerns, there definitely were and I think there were people that didn't sign up because they were concerned. I think we had to take it on in two main ways: one, how do you prepare the individual to minimise the risk? And the other, how do you do systemic things to help deal with the risk or to respond in case there were a case; to make sure you had procedures in place for medical evacuation and treatment?

MH: *Well let me ask you about that because this was a very big issue in the UK, Public Heath England. Of course they were doing the same thing; recruiting infectious disease specialists, epidemiologists, but there was a lot of uncertainty around what sort of PP equipment they might have, and what the procedure would be if they fell ill in those countries, and I think at first there was no guarantee that those people would be medevaced out. Could you just talk me through the policy that the CDC had vis-à-vis those sort of issues?*

BM: It would take a long time to go through the details and to explain that; there's different groups of employees and it really varies by employees. For a straightforward American employee of CDC, there are procedures already in place for managing evacuation. Not that they didn't have to be explored and solidified. I think the most important part of that was to make sure that there was the best treatment available on the evacuation plane, and then where would somebody be evacuated to, and who would provide those services?

MH: *So it's always been the policy that someone, if they were diagnosed or suspected of having Ebola, would be evacuated out of West Africa?*

BM: We always had that option, you wouldn't necessarily make that decision in every case because there's risks associated with a long trip by air, but for Americans yes, that was always in place.

MH: *Actually, out of interest, how many CDC employees contracted Ebola?*

BM: No CDC employees have contracted Ebola.

MH: *None?*

BM: None, but we …

MH: *That's remarkable isn't it?*

BM: It's good – we did have to evacuate some people because of concerns about exposure, but remember we're doing fieldwork, not clinical work, so the risks that we took, although real, paled in comparison to the risks taken by the people actually providing care to the patients with known Ebola, or to the healthcare workers in the care facilities in West Africa who were providing care more generally and didn't know if somebody came in with Ebola. So we haven't had any Ebola among our CDC employees.

MH: *It just sounds remarkable because of the scale of the mobilisation, even if they weren't working in ETUs, I mean you had contact tracers in the community so …*

BM: Definitely and during the peak of the epidemic there was potential for exposure just within the community, so people staying in the hotel, if somebody from the hotel were ill. We did have situations where some of the CDC staff were exposed to other responders who did have Ebola in meetings for example, and so there were serious concerns, but no serious consequences.

MH: *Was it qualitatively different, more difficult to actually manage the work of personnel in the field because of all the risk restrictions around Ebola?*

BM: Oh absolutely yes. There were a lot of reasons – CDC staff were not actually doing the contact tracing for most circumstances, they were primarily supervising teams that were locally hired staff that were doing the contact tracing. That's important for two reasons: one, if you bring foreigners into a village setting that may not be well received from a cultural or language standpoint, but that also did offer a measure of protection to our staff and at some points where you'd say, "Wow it would really be better to go and speak directly with the family, or directly with the patient that was infected" and we were sometimes limited in that.

We were also somewhat limited in entering healthcare facilities, so trying to make recommendations about what protective equipment people would wear, or how they would manage patients that might or might not have Ebola – it was obviously challenging if you can't go into the areas where these activities are being done. We were careful to ensure that unless there were very special circumstances, CDC staff didn't enter the treatment units themselves, or the healthcare facilities where … the areas where there might be Ebola patients.

MH: *I understand that there were moments when some of the local staff who were taking on a greater risk were exposed to Ebola; I just wondered if you've got any anecdotes or any moments where this was upsetting or emotionally difficult for CDC staff who are interfacing with them? Were there moments like that?*

BM: I think countless moments. I'm not sure I could go back to one in particular but I think for our staff there were numerous episodes where we lost colleagues. From the Ministry of Health working on the response, people go to know the clinicians that were working in the treatments units and people got to know the patients as well and

I think that was an extraordinarily challenging part of the response; it remains an extraordinarily challenging part.

Even now, with cases dwindling, in a way it's just as hard or harder because people are familiar with each individual case to this extent so we're tracking this child in this Ebola treatment unit and everybody knows what the outcome is and people become much more people, even for everybody like me, than numbers. I think it was a tremendously important aspect of the response.

MH: *In addition to managing the teams, or having oversight of the teams in the field, were you involved with managing people's perceptions here in the United States when health workers were repatriated for treatment at Emory and other places?*

BM: Sure I think there were others that maybe managed more of that than I did at several levels; so personally, my children going to school, my daughter had developed a fever one time, the nurse tried to call and say she needs to be picked up, she explained that her father was in West Africa for the Ebola response and that made the nurse really get nervous and put a mask on her and didn't let her go back to get her books. And that's absurd, that implies that somehow my daughter could get ill from my husband being overseas, he hadn't returned yet so …

MH: *Forgive me, your husband also works for the CDC?*

BM: He does.

MH: *So what was he doing?*

BM: Like I said, I had to recruit the teams and one person I could recruit was my husband so he served in the response in Liberia and worked on vaccine evaluation in Sierra Leone.

MH: *It's interesting what you say about the school's reaction; can I ask you whether people in your wider social group were also asking questions at certain points about the risks?*

BM: Sure, of course. I think primarily around the time that Craig Spencer had been ill in New York; people had a lot of questions about his illness and the exposures. It's a common topic of dinner conversation at my house even if it's not work related colleagues so …

MH: *I remember that very clearly – this is the doctor who volunteered for MSF in Guinea, and then returned and within hours of arriving in New York, he went jogging, he went to the High Line, he went bowling in Brooklyn – I remember that very clearly because the comments I heard, even from liberal Americans, if I can put it that way,*

was that he somehow was behaving irresponsibly, this seemed to be the perception. Are those typical comments that you would have heard at that time or …?

BM: So again I would say my friend group is relatively … is pretty well educated about that kind of thing, but did express concerns so that was precisely a topic of conversation. Honestly I think the biggest concern that my group of friends brought up was about the shoes in the bowling alley.

MH: *The shoes?*

BM: The shoes, yes. They go "Okay, maybe he was in these places but I don't want to share clothing with him".

MH: *That's very interesting because I suppose now might be a good time to talk about parallels with other epidemic diseases, so we were talking about this a little bit before we started taping but you've obviously worked in HIV, what similarities or differences do you see between Ebola and HIV?*

BM: I think it's remarkable how many similarities there are. I've described it several times to people as HIV on fast forward. So I think from the beginning, HIV had its biggest impact in Africa, it was an unknown phenomenon; not that Ebola is unknown, but I think we've learned so much about it from this outbreak that that aspect is there as well. The stigma and the fear … so HIV has shifted from where we go "We don't know quite what it is, and we're very afraid of it" to "We know what it is but we can't do much about it." Over time we've been able to develop treatments, I hope the same is true for Ebola, but I think the idea that maybe you don't have to worry about it too much because it's over there and not affecting populations that we care about as much, meaning Americans didn't worry about it too much because they didn't feel like it was going to be affecting America; once it did I think the tension rose very dramatically.

I remember explaining I was working on Ebola to somebody, not a close friend, and they said "Oh you mean those two people that came to be treated at Emory?" And I said "Well no, the outbreak in West Africa" and I think that was classic for people to be much more aware of what was going on in their own vicinity than necessarily what was going on globally. And I think the same is true about HIV; I think people were unaware of the impact it was having before it started affecting populations close to home.

MH: *Well HIV was different though wasn't it because …*

BM: They learned about it here.

MH: *I'm saying there are lots of similarities, I take all the points you're making. but the major difference of course is the first population group who became visibly victims of AIDS were gay homosexual white men largely, and then it moved to the Haitian population, so there are lots of parallels but it seems to me what you're*

describing is that Ebola is kind of an invisible disease of Africa until some white people, health workers, get infected.

BM: Of course that's not true for everybody, but I think it's a fair … it's one way of viewing how it was perceived. But I think that for any medical situation, the care providers are supposed to put the patient ahead of themselves, but that's understandably difficult to do. I think …

MH: *With Ebola you're saying?*

BM: With anything that's contagious – that's the oath that we as clinicians take that we'll provide care even if it's a risk to ourselves, but if it's a risk to yourself, a risk to your family, a risk to bring back, it gets complicated and you want to do what you can to minimise it. Certainly that concern or fear impacts what kind of care could be provided and the things we were just talking about; the stigma, the undue fears when people don't know very much about it and I think we saw that with HIV as well that the people could have inappropriate fears. With HIV maybe it was a fear of sharing a bathroom or something; we know now that that's not a reason to be concerned at all, but until you know more about it, you tend to be overprotective. So I think we saw that with some of the people that returned to this country with Ebola or Ebola exposures, that there was a more conservative approach to avoiding contact than was necessary. But people, if they don't know, behave in that way.

MH: *Often the media gets blamed for exaggerating the risks and propagating the fear and the hysteria at the height of these epidemics, but I wonder whether you think that's the only reason why we get these, not kneejerk, but almost exaggerated fear responses? Do you think the medical community participates, or has a degree of responsibility to the way that these social reactions manifest themselves?*

BM: Of course we have a responsibility. I think we have a major responsibility to share what we know in ways that people can understand. We also have to be clear when we don't know; that's been a humbling experience in this whole outbreak. There was a lot known about Ebola before this outbreak but this is so much bigger than everything that had happened previously. I don't think it's surprising that there are new issues that are coming up and new truth about Ebola that we were unaware of before. We have to stay humble and stay imaginative about those things. It's not enough for us to know; just because we know we can't expect people to behave based on that knowledge, so we have to share that knowledge and recommendations in ways that are understandable.

I think honestly the media has a big part on the positive side in sharing the information as well as the part on the negative side on blowing some things out of proportion or making hysterical … one example of that is when the models predicted how many cases there would be. The models were measured, they said, "Well, if this happens, if there is no additional intervention, there could be as many as 1.4 million cases, and if these interventions are put in place, the epidemic might be controlled by the end of January." I didn't hear very much in the media about that the epidemic might be controlled by the end of January, it was only the 1.4. So what I would wish for from the media is a more complete, or a measured approach to sharing the information. We do that in West Africa, we depend on journalists to help

us share information and we work with them to try and help frame the messages, make sure the journalists themselves understand and then share the information. But we know that's not their only … they're there to share information for sure, but they're also there to sell papers, or to sell advertising so you get a mix …

MH: *I think you put it very well when you say there are some things we know and some things we don't' know. Of course this uncertainty is very difficult to communicate because that's a very nuanced message, but often it's driven by the epidemiology, the messages that the press pick up. Those models … I think it was in September that the CDC modellers said "This is the worst case scenario", and of course that's a headline; the more nuanced message that comes after it that might not be so bad, doesn't get the same ranking in the news media.*

So that was the situation … the possible world that we were looking at in September last year, but we're now at the tail end of the epidemic …

BM: I hope so.

MH: *Well it seems we're at the tail end, but still learning new things about Ebola, particularly that it might persist in semen; it could possibly be transmitted that way for longer than six months. Again, there seem to be parallels with HIV/AIDS there.*

BM: Absolutely, we're now tapping into some of our experience with HIV with respect to providing counselling messages, particularly for male survivors because that's where we have the greatest amount of information. So helping people to understand for example, how to use condoms – that's not necessarily widespread knowledge in West Africa; to help develop a plan to protect their family members; to give messaging that helps explain where maybe if you have this sort of contact with a person there's no risk at all but with this sort of contact there is some risk. Hopefully that can spill over into other risk protection; so there is HIV in West Africa, there are other sexually transmitted diseases, so ideally this counselling about protection against sexual transmission of Ebola would have a broader impact, but the parallels now are extremely similar and the stigma that's applied to the survivors at this point that's also incredibly similar to what's still going on with HIV; maybe it's been attended to to some extent but it's still going on.

And then we have hope for some new therapies. Even now there is some pretty intriguing information about treatments that may become available; you can imagine that changing the response to Ebola as well.

MH: *It would also change the perception of, or the fear and stigma attached to the disease right?*

BM: I think so, sure.

MH: *Which is something else we saw change with HIV/AIDS once antiretroviral therapies became available.*

BM: Absolutely.

MH: *Okay, I just want to change tack a little bit because you were describing before how you had worked on the Haiti response, the disaster in Haiti, which of course was a natural disaster, a humanitarian mission although obviously it had a medical aspect. One thing that's said about this Ebola epidemic is that unlike other infectious disease outbreaks, it very quickly took on the same scale as we'd seen with the typhoon in the Pacific, but also it was an epidemic outbreak but it was a natural disaster on such a scale that it demanded this huge humanitarian, as well as the medical response. So I just wondered if you can reflect a little bit on the parallels that you see between Haiti and now Ebola in West Africa in that respect?*

BM: So in Haiti, our main focus was trying to build public health systems after the earthquake. There are a lot of different things that happened, but some of the things that happened are for example is ongoing treatment programmes for HIV or for tuberculosis were interrupted in the wake of the earthquake, and then trying to track down the patients that had been cared for and ensure that they were back in care. One of the things we worked on the most was establishing surveillance for infectious diseases and other health threats after the earthquake in that context with people moving around and treatment programmes being disrupted, you'd worry about the additional spread of disease.

And then I guess in some ways the work in Haiti was really a big opportunity because it brought resources to a situation where there were very weak public health systems to begin with and it was an opportunity to build some of it back; not just back, but hopefully better and more resilient than were there previously. I think that the fact that the Ebola epidemic could go on for as long as it did before it was really well recognised, helped the world understand the message we were trying to put forward, even prior to the Ebola epidemic, which is how important it is to have systems for detecting disease and responding to disease and I think for at least a while, we're going to have the attention of the world to this very critical work of preparedness. Whereas ordinarily it's quite difficult to make the case because if you do it well, nobody knows that you need it, if that makes sense? So if everything's working smoothly and things are detected quickly and responded to, then over time people don't recognise the need for the surveillance systems and the financial support and the other support that's needed to maintain them may not be there. So I think what we have to do is capitalise on this very awful epidemic to help hammer home the point about how important those systems are.

I think I've strayed from the question a little, but it goes to the response as well so following the earthquake, we had a long series of people deploying to Haiti to help set up the surveillance system and then when cholera did appear in Haiti to help respond to the cholera epidemic. But we didn't have a big group of people whose primary job it was to respond to things like that that could go for long periods of time. And so in Haiti we ran into situations where we had one person doing something and somebody else came and did the same thing, and the turnover in the staff and I think that was an issue for CDC responders, it's an issue for responders across the globe. What you really need is a group of people who have as their first job, response to situations like this and we made the point after Haiti; but I think it's difficult to get traction. We're saying we need some things that require additional funding, but I think the Ebola situation was so severe that the world is going to come to the conclusion that we need a big force of responders for public health and emergencies

just like we need a big force of responders for military emergencies and I think that's something that may come out of the combination of Haiti and then the Ebola response; just to say we need to shore up our systems for that sort of response.

MH: *I'm just reminded when you were talking about Haiti and cholera that at a certain point in that outbreak there were a lot of conspiracy theories weren't there about how cholera had got to Haiti and I believe that some of the WHO contingent … I think … I forget from which country, but they were blamed for importing it.*

BM: The concern was whether UN soldiers had brought it and I think that sort of concern hammers home the point that this world is small now and what happens in one place could happen in another place and I think we faced the same thing again with Haiti for example; there are a lot of well trained public health staff in Haiti that could assist with the response in West Africa. A very big need to find French speaking epidemiologists or clinicians, but there was understandable reluctance to send people from Haiti to the response based on concern that Ebola could then be brought into Haiti, and much as there's been progress there, there's still not a situation that would be well equipped to handle an introduction of Ebola.

And luckily that's been resolved to a substantial extent and there are quite a few staff for example from our CDC office in Haiti that are responding to this outbreak. But the bottom line point being that no matter where something happens in the world, with the way our world is with transport and movement, things can show up very quickly in a different place, and so that something happening in any part of the world could be a concern to any other part of the world.

MH: *Just to stick for a moment on the parallels between cholera and Ebola, although Ebola has this image of this highly pathonagenic virus which of course it is, in terms of the clinical symptoms, there are a lot of similarities actually with Cholera; I mean Pierre Rollin was talking about this yesterday – quite often patients didn't visibly bleed out, but there was a lot of diarrhoea, okay? Very similar to cholera in that respect. When you were talking about health systems I wanted to ask you, there's quite often a lot of focus on these high tech Ebola treatment units and people have this image of people in PPE suits, but some of the most basic health measures can greatly reduce transmission such as being able to wash your hands frequently and basic proper hygiene, running water. All the sort of things that were not in Haiti after the earthquake.*

BM: I don't know if there's a question in there but I can reflect on it. It's certainly true I think that there are remarkable similarities in how we as a world respond. So we'd send a group of specialists basically to set up treatment units; they're called CTUs for cholera, cholera treatment units, and ETUs for Ebola, and they're remarkably similar. And it's mostly supportive care that's provided although that could be changing for both diseases. Ordinarily, you like a health facility to be able to handle whatever comes at it, but I don't think that we really ask that of health facilities especially in countries with limited resources to say, "We need you to handle the everyday things; pregnancy and malaria and tuberculosis, and oh, by the way can you get ready to handle a full scale response to something like a cholera epidemic or an outbreak of Ebola?" But they do have to be ready to handle it at the first glance because they're going to be the ones on the frontline and it's another thing we hope to get out of this epidemic is progress in infection control; I think the

situation prior to this epidemic was frankly horrifying with respect to knowledge and availability of gloves and supplies and you're absolutely right, there are things that can be done even with limited resources, and people were creative using plastic bags for gloves, that kind of thing.

I hope that we as a world can support enough improvements that reduce the risks meaningfully and that this whole outbreak will have the impact of improving infection control across West Africa, but across the world and that that in turn will reduce risks related to other diseases. It's something that's very heavily on the minds of people now but it goes away quickly. We find the healthcare workers most attentive right in the throes of things and so that actually feeds one of our strategies is if there are cases of Ebola we do what's called ring infection prevention and control meaning wherever that case occurred, go to the facilities immediately in the area and instead of saying, "In general we think it's a good idea for you to use gloves", we say "There have been cases around here just recently. You yourself might be at the health facility when a contact shows up ill. We want you to be prepared, and your health facility to be prepared." And I think the healthcare workers are in a better position to receive the messages under those circumstances when they can really make it very real for themselves and for their facility.

MH: *Well thank you. Is there anything else you would like to say that I haven't asked you or you think would be worth …?*

BM: I could talk for hours!

MH: *Yes it's a fascinating subject. Well thank you very much.*

BM: Thank you.