Report from the FIELD

A Personal Journal Account of the Monrovia Medical Unit in Liberia

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ABSTRACT

On September 16, 2014, President Obama, speaking from the Centers for Disease Control and Prevention in Atlanta, Georgia, declared the Ebola epidemic in West Africa a national security priority and laid out the US government's plan for contributing to and helping to lead the international response. There were, and remain, several facets to the US government's efforts to help control the epidemic, including the commitment to provide a facility and staffing in Liberia that would ensure access to a high level of quality care for any Liberian or international health care workers who may, themselves, become infected and ill with Ebola. That facility came to be known as the Monrovia Medical Unit and is staffed by officers of the US Public Health Service. The following pages are excerpts from the journal I kept during my time at the Monrovia Medical Unit, which I hope will relate some elements of the concerted effort that took place that led to this arm of the US government response being established. (*Disaster Med Public Health Preparedness*. 2015;9:581-585)

On September 16, 2014, President Obama, speaking from the Centers for Disease Control and Prevention in Atlanta, Georgia, declared the Ebola epidemic in West Africa a national security priority and laid out the US government's plan for contributing to and helping to lead the international response. There were, and remain, several facets to the US government's efforts to help control the epidemic, including the commitment to provide a facility and staffing in Liberia that would ensure access to a high level of quality care for any Liberian or international health care workers who may, themselves, become infected and ill with Ebola. That facility came to be known as the Monrovia Medical Unit (MMU) and is staffed by officers of the US Public Health Service (Figure 1).

This particular mission was as much intended to instill hope and confidence in the international community as it was to deliver direct medical care. The collective effort on the part of numerous US government departments, agencies, uniformed services, and non-governmental partnering organizations led to the timely execution of the mission and continues to play a prominent part in its ongoing success, helping to save lives, bring a broader international aid capacity to the region, and slow the Ebola epidemic's progress.

The following pages are excerpts from the journal I kept during my time at the MMU, which I hope will relate some elements of the concerted effort that took place that led to this one arm of the US government response being established. My role, as senior medical planner and chief medical officer for the US Public Health Service and the MMU in Liberia, may be reflected in any bias in these notes.

DAY 3, OCTOBER 19 – MMU SITE PLANNING

Today, after my likely last decent meal for a while (breakfast at the Cape Hotel in downtown Monrovia), we headed to the Monrovia Medical Unit, or MMU as the facility is now being referred to, out on the far side of the airport. En route, we swung by the compound where we will be billeting, possibly for the duration of this mission. G2, my two advance team partners who I have come to refer to this way out of friendship and simplicity, and I dropped our gear off in our "bungalow" and then moved on to the MMU. That car ride is going to be a logistics nightmare for the movement of our people. Accountability of personnel and the logistics burden of moving the team will be a tiresome effort for several of our folks, undoubtedly, to ensure people are safe, moved efficiently, and fed well—not to mention happy and able to regularly get some rest. The transit between the billeting and MMU alone takes 45 minutes at best and that with a frighteningly sporty driver on a dangerous road! This issue of ground movement of personnel always seems to be one of the toughest logistics hurdles to face, particularly in the developing world. Though, honestly, it's tough even in the US during similar disaster-related deployments.

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FIGURE 1

The Monrovia Medical Unit in Liberia.

I can remember a few concerning times in NYC, following Hurricane Sandy, when we were lost driving around Brooklyn late at night.

Our first look at the MMU site was incredibly reassuring. The Air Force's 633rd Medical Group, responsible for deploying the Expeditionary Medical Support (EMEDS) system, which we will be modifying into a highly functioning Ebola treatment unit (ETU), and the construction folks from the Army Corps of Engineers and the US Navy's Construction Battalion (CB) are doing an outstanding job. Though, as anticipated, not all of the requirements we had put forward were known to the setup crews and planners on the ground ahead of our arrival. But, truly, they are attentive to what our design needs are and more than willing to make this facility exactly what it needs to be to ensure mission success. I'm not sure what they may have been saying behind my back in response to some of the requests and demands I laid out today...but, for sure, everyone was listening and appeared sensitive to what needs to be done. I fully expect to see all of the needed changes to the site when we get back there tomorrow afternoon. It feels good to recognize everyone's attention to the needs of the mission.

In addition to the medical planners, engineers, and support personnel from the DOD [Department of Defense] working to build out the site, numerous other interested partners were on hand today to get a tour and mostly to offer their assistance, including two World Health Organization (WHO) physicians, the US Army Medical Research Institute of Infectious Disease (USAMRIID) laboratory folks, US Agency for International Development-Office of Foreign Disaster Assistance-Disaster Assistance Response Team (USAID-OFDA-DART) logisticians, and a planner from the International Committee of the Red Cross (ICRC). I am confident, now that we are finally "boots on the ground," that we will have what we need to make this happen. It would have been nice to have been so certain earlier in the planning stages for this mission, before heading over here. Though, isn't it always that way…that advance planning ultimately contributes only the scant framework for what actually is achieved on the ground. Mission execution always demands operational planning in-country to be successful. Planning from a distance only guarantees so much.

I will have to cut short my time at the Médecins Sans Frontières (MSF) ETU (ELWA-3) tomorrow, where I am due to be training with their staff, to be sure I can get back to the MMU and have eyes on all the changes. Nonetheless, I don't see it being a problem. All of our partners are doing what needs to be done. They are equally motivated by the gravity of the mission and not by what they think will make good political sense. I like working away from that political pressure, a focus that often distracts from mission success. Not that it is really gone, just more easily ignored...for now.

The living quarters?! Well, for being deployed to Liberia, we are in pretty good shape. A completely walled-in compound with 15 bungalows, each with a small kitchenette, 2 bedrooms, 2 bathrooms, and a living area. Our US Public Health Service 70-officer team will eventually occupy 6 of these bungalows, given the Marine contingent (Osprey flyers and their ground crew) have 9 of them. For now, it is just the 3 of us as part of the advance echelon (ADVON) team that is sleeping here among our Marine fellow servicemen. We had the chance this afternoon to chat it up with the guys, including their flight surgeon (a young Navy Lieutenant, fresh to the Marines for the past 8 months). We had earlier caught wind that some in their ranks are a little apprehensive about sharing the compound with us, not having much understanding of the risk of Ebola transmission. Hopefully, we can help remedy that misunderstanding, despite all the hysteria. Perhaps another small contribution to the big picture?

DAY 5, OCTOBER 21 – EBOLA TREATMENT UNIT (MSF) AND MMU SITE PLANNING

It rained like I have never seen or heard before overnight, and it continued to lightly rain on and off all morning. A testament to living in tropical West Africa. The thick, humid air and cloudy skies added to the surreal nature of today's experience. We woke early after having had poor sleep through the heavy rain and thunder only to find that our driver never showed. I had actually slept for a good 5 and a

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half hours before the first clap of thunder at 0315. We had gone to bed pretty early after a long day yesterday. After that storm...any further sleep was futile. In the morning, we ended up being delayed over an hour while we waited for another driver to make his way to pick us up. That led us to be over an hour late to the ELWA-3 site.

ELWA-3, the largest ETU ever constructed, sits on the side of the main road about halfway between downtown Monrovia and Roberts International Airport. The ETU's name comes from missionary work dating to the early 1950's: *Eternal Love Winning Africa*, a name befitting the role the ETU plays and the altruism that fills its spaces. ELWA-3 is massive. Despite its size though, in 2 days we (G2 and I) have made a name for ourselves there and have made close contacts with a number of their staff, including Lucas. We are instantly recognized by most of the staff, the Liberians always smiling and calling us out by our last names. I suppose they memorized our last names from our uniforms, though we have only worn them into the site and immediately changed into scrubs. These people are seemingly genuinely happy all the time and yet have every reason to be disillusioned and bitter. They show none of that. In just a few short days, they have come to understand our role in the big picture and they repeatedly extend their gratitude for what we are doing. It is remarkable and humbling.

Gregg D. joined Lucas, a young civilian German physician, and me today. Lucas had told me when we first met how he had come to be supporting MSF in Liberia. He is an infectious disease doctor in his home country and his government had promised to share its expertise with the West Africans during this crisis. Lucas stood first in line to answer that promise. The 3 of us spent some time reviewing MSF protocols before going into medical rounds behind the line. I can't decide how else to refer to entering the high-risk zone of the ETU, so I've come to call it being "behind the line." There is, in fact, a very real line of demarcation...one that makes you feel like you are being reborn when you return across it and doff your personal protective equipment (PPE). Behind the line it is surreal, as if you are transported to some unheard of place where being intensely present-moment aware is genetically programmed. I have never been so aware of my surroundings, the pace of my breathing, the movement of myself and those around me, the feeling of my muscles, or the sensation of my skin.

Lucas moved through the ward, calling on every patient and nearly fully informed about each patient's name, length of stay, array of symptoms, the date of next viral PCR "re-check," or any other pertinent piece of information. It was all in his head. He shows the skills of an old-school clinician, belying his age. Lucas is caring—caring in a way that can't be taught or learned. Caring in a way that bears open his true nature. And, he is tired.

Edward was there, behind the line, to greet us. He beamed with that beautiful white smile. And, he said my name! Edward was the first patient I had met with Ebola, a 7-year-old boy who had been sitting quietly in the hot sun the day before. I had met him only once before today. He's sick with Ebola in an open-air ward where 61% of the people around him, including other children, die. And, he remembered my name. Even in full PPE, where everyone looks the same and only my eyes are visible through foggy, sweaty goggles, he noticed me. Today, I told him about my son, Alex, who is his age and Edward smiled even bigger. Then he repeated Alex's name, too, and smiled again.

We were behind the line for 2 hours today; 2 hours afforded us by the cooler temperatures after the rain and by the clouds that held back the oppressive sun. Yesterday, after only an hour in PPE, I was ready to leave. Today, I didn't feel the urgency. At least not an urgency dictated by my own physical limitations. I was, however, always mindful of my responsibility to ensure that preparations of the MMU were moving forward and I couldn't shake the sense of urgency to be there and help facilitate things. Still, my limited time at ELWA-3 will undoubtedly always be the most valuable and memorable experience of this deployment.

The performance art with repercussions that is…doffing your PPE. I stood with my arms outstretched under the white tent. My face was uplifted, though I didn't dare open my eyes. The thick mist of the chlorine spray struck my PPE as I stood there, as if basking in the sun. I turned and faced the other way, as instructed by my sprayer, the "watsan" (water and sanitation worker) responsible for ensuring I was properly cleansed of any contagion. The spray hit my back again as I stood with outstretched arms. Then it was my responsibility. Methodically, like I have never been so focused before, I slowly and with exacting precision removed my PPE. There are steps, each interrupted from the other with handwashing in bleach solution and each in its own sequence. I carefully applied them all, with the steady calming instructions of the watsan, a voice and a reminder that was there whether I needed it or not. That's how it's done. That's how one reappears to the world outside of the high-risk zone where Ebola is certain. Whether Ebola is near you in this "normal" world you are reborn to—that demands another level of attention.

Flooding! Much of the MMU is flooded. All of the floors—synthetic tarps lying on crushed rock—are being removed and new elevated flooring is being installed. It will take days. It will push back the date we are able to accept our first patient. That, however, is likely a good thing. We need the time to adequately prepare and to acquire all of our necessary supplies, so I am not at all upset by the delay. I can now catch up on my preparations and that of my team. I can catch up on e-mails and RFIs that plague me, since I haven't had Internet access for days. Hopefully, with the limited cellular data capacity that G2 and I purchased on our own, we can function connected to the rest of the world, if only while we are at the MMU close to the

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airport and its cell towers. Communication, like the movement of personnel, is always a hugely limiting logistics factor. Like so many other requirements that we had put forward so early in our planning, this one is yet to be met and will likely take some time to be fully realized.

DAY 13, OCTOBER 29 – GOOD WORK

We managed a whole day today at the MMU and we got quite a bit of work done among visits from different partnering organizations, including WHO with representation from Sweden, Cuba, and Switzerland; MSF; ICRC; as well as the new Army Deputy commanding officer for the 101st. We were able to take advantage of the best Internet connectivity we have had at the MMU. That may not seem like such a big deal, but when I've been required to edit and respond to various documents and e-mails and yet have had no Internet connectivity to pull things off of my e-mail, that work is left undone. Today, we were all productive. Our full team has now been on the ground for 2 days and those of us on the ADVON are glad for it.

The team has seemed content so far, being able to take ownership of the MMU and make it work for their purposes. I have tried to relate to them how *they* need to make it work, that it is in fact their facility in which to ensure good, effective, and safe Ebola care. I think they took that to heart today. I hope they took that to heart today.

DAY 19, NOVEMBER 4 – RELATIONSHIP BUILDING

To get anything done, you have to make relationships. This is true in any circumstance, but could not be more imperative under circumstances such as this, where everyone is under stress, fatigued, and out of their element. You have to meet face-to-face and you have to let people know that you are working for a cause that isn't about yourself. When you share your common mission focus and you share a sincere motivation to serve something bigger, people respond. Don't blow smoke. If you aren't genuine, you don't deserve the service of others towards your cause. And, you won't get it. I say these things because often the concepts are not understood, or even contemplated, by some. Or, others are distracted by not knowing what the mission is really all about, with increasing levels of complexity all the way up to the "big" picture and therefore are unable to share in that mission.

On the other hand, the responsiveness of most actors (and there are many truly selfless participants in this game) to genuine need and concern for action has been outstanding, through relationships being built and valued. I have been blessed with many wonderful working relationships of late, with similar-minded people who want to get this done and get it done right, despite the politics or media hysteria. They understand how their roles fit into the big picture, even if the entire big picture isn't all that clear.

There is very practically, however, a lack of experience in the joint, interagency environment across civilian and military ranks. This inexperience makes the use of a common operating language as well as a common understanding of "the" mission very challenging. The idea of military and nonmilitary governmental agents working in synchrony is unknown to most. The idea of governmental and nongovernmental agents working in synchrony is almost unfathomable to many. We have to continue to improve in this regard.

DAY 22, NOVEMBER 7 – OPEN FOR BUSINESS

It is 1024 Liberia time and the MMU is prepared and ready to receive our first patient. If, however, there never is a first patient admitted to our ETU, the international community will have succeeded in the greatest way imaginable. That, alas, is not likely to be the case and we will be taking care of some.

The fact that we have opened legitimately 1 day before promised given the overwhelming logistical, training, and operational requirements is staggering. It is also well received by everyone, from the Liberian government to ours. Not the least of the interested stakeholders are the nongovernmental organizations. We have heard so many thanks and praises for what we are doing. It really has "changed the game!" just as President Obama said to us over the phone the other day.

After months of stress, long hours of planning, intense dialogue and thought, mental strain, and physical exertion, we are there. I hope all of our partners in supporting this mission understand their successes.

DAY 23, NOVEMBER 8 – FLOORS AND FATIGUE

The floors are again a problem. This time we are dealing with wood rot. I am not sure what the right answer is at this point, because we need to be viable (in some way) to receive a patient. The infection control requirements in an ETU are limiting our options for ensuring the floor is sound while maintaining our ability to take care of patients. Ultimately, we will have an answer. With the Army Corps of Engineers, the Navy CBs, and our own engineers (facilities, environmental, etc), we will find the right solution set. In the end, we must balance the safety concerns as well as the long-term structural concerns against the very real political and clinical concerns in maintaining some bed capacity. Not an easy balance to strike while preserving standards of infection control for an ETU.

More than the problem of the floor reengineering, I am beginning to worry about how engaged we can keep our team because of fatigue due to downtime, not overexertion. Up until yesterday, we were moving up on our tempo, every day having added work-ups of our standard operating procedures (SOPs) and added logistics concerns for managing last-minute supplies. Now, we have minimum residual supply

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needs and our SOPs are solid, as is the team's preparedness to act when we get our first patient. The question, from a leadership standpoint, now becomes what happens with a very slow or no patient demand on our officers. We need to get our collective leadership around that potentiality. On a long sea cruise, Navy folks would drill and drill again on any and all contingencies. That we can do, but there are a finite number of things to drill on.

Today marked a day of transition, at least in my mind and in my feel for the place, the pace, and the mood. We seem to have turned from the mode of preparation, planning, and training to one of operations. Although we don't have a patient in the ETU, we are conceptually a functioning ETU. At any time, I could get the call that there is a health care worker who is to be referred to us for monitoring or care, a health care worker with either a significant exposure risk or symptoms consistent with Ebola. The entire team knows this and is prepared, and even in an anxious way hoping, for our first patient. The irony here is obvious: either we don't receive a patient and realize the best possible scenario—one in which health care workers are no longer at risk or infected—while the team is bored and struggling to find something to fill their time away from their families, or we have work to do in the MMU and health care workers are continuing to suffer.

DAY 25, NOVEMBER 10 – A PATIENT

It came last evening, the call that I have been very conflicted about for months now. It is at the heart of our mission: to care for those who get sick with Ebola while providing care themselves. We all want to have the responsibility for this mission; we want to ensure the best possible outcomes for these noble individuals. But we would rather not have a patient to begin with, knowing that would be the best possible outcome.

I focused on trying to offer a calm and organized approach to preparing for the receipt of the first patient. Though, I don't think it was entirely necessary given the professionalism, expertise, training, and preparedness of our staff. They are primed to manage this patient, and any others that are yet to seek our care, very well with skill and empathy.

AFTERTHOUGHTS

Since November 10, 2014, the US Public Health Service has continued to man the MMU 24 hours a day, 7 days a week. Over 36 health care workers from 9 nations have been cared for with suspected or confirmed Ebola viral disease. Although not all of the patients have survived, many health care workers have and most have committed to return to their work, caring for those suffering similarly from Ebola. That is true for Alvin, our first patient admitted, who on the day of my departure from the MMU was 1 of 2 Liberian gentlemen in our care to be the first to place their handprints on a wall for survivors outside the facility. Above his handprint, and that of many others today, are the words, "Today I am Healed, Tomorrow I Return to Heal Another."

If the mission of the MMU was to both instill hope and confidence in the community of health care workers on the front lines of the Ebola response and to ensure a high level of clinical care to those who fell ill with the disease while providing care themselves, then all who were responsible for the MMU's establishment can feel confident that their efforts were meaningful and led to success. There will be many further evaluations of the impact of the work done at the MMU, including a rigorous discussion of standards of clinical care for Ebola viral disease and similar infectious diseases with a high risk to caregivers. The MMU has provided a unique context within which to consider what appropriate care can and should be rendered in such environments. Considerations of medical logistics, the degree of subject matter expertise brought to bear, the application of more sophisticated diagnostic and therapeutic interventions, and the like will be discussed among many stakeholders in the follow-on dialogue regarding the MMU. While a number of assessments of the impact of the MMU on the Ebola epidemic will be considered in the months ahead, it is an easy lesson to learn at this early stage of reflection that a concerted effort by multiple partners, across the US government and among international and nongovernmental organizations, with a steeled focus on mission, can have a great effect on the morale of a community. In this regard, the community served was no less than the international community of health and medical responders.

Along with rotating teams of US Public Health Service Commissioned Corps officers attending to the direct clinical work of the MMU, delivering medical care to those health care workers suspected of having Ebola viral disease, there are also numerous other US governmental agents in West Africa aggressively working to bring the largest Ebola epidemic in the world's history to an end. Many facets, to not only the US government response efforts but those of the entire international community of governmental and nongovernmental organizations, have been woven together and formed a fabric of altruism, caring, and expertise that has blanketed the region. Hopefully, with this fabric of individual and organizational determination, laid down for the people of West Africa, health, peace, and prosperity will return and be sustained.

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