

The Sole Provider

Preparation for Deployment to a Medically Austere Theater

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ABSTRACT

The combat focus of the US Military over the past 15 years has primarily centered on the Iraq and Afghanistan areas of operation (AOs). Thus, much human and financial capital has been dedicated to the creation of a robust medical infrastructure to support those operations. However, Special Operation Forces (SOF) are often called upon to deploy in much more medically austere AOs. SOF medical providers operating in such environments face significant challenges due to the diversity of medical threats, extremely limited access to medical resupply, a material shortage of casualty evacuation platforms, lack of medical facilities, and limited access to higher-level care providers. This article highlights the challenges faced during a recent Special Forces deployment to such an austere environment. Many of these challenges can be mitigated with a specific approach to premission training and preparation.

KEYWORDS: *prolonged field care; austere environment, deployment preparation*

Introduction

A significant amount of the US Military's resources over the past 15 years have been dedicated to operations in Iraq and Afghanistan. The result was that the medical infrastructure in those AOs was built up to a level never seen in a foreign combat theater.¹ This robust medical infrastructure, which includes state-of-the-art medical care facilities, deployed providers, and a mature medical evacuation system (MEDEVAC), created an operational environment where a casualty typically moved from the point of injury (POI) to definitive level care in less than an hour. By the end of 2009, average evacuation times dropped to 42 minutes in Afghanistan and 55 minutes in Iraq.²

Our experience as SOF medical providers has drifted toward the spectrum of knowledge most relevant to those AOs. Many of the Special Forces Medics (18Ds) who have been in the Regiment for less than 10 years were trained by senior noncommissioned officers whose

professional experience centers on excellence in acute trauma care with the support of a first-world medical infrastructure. In a May 2016 presentation, Dr Frank Butler said, "Coalition forces at the end of the Afghanistan conflict had the best definitive care and evacuation system in history."³ This infrastructure has resulted in a reduction of fatalities from war wounds from 24% in the Persian Gulf War to 10% in the Global War on Terror.^{4,5}

In contrast, our recent deployment to Central Africa presented an entirely different threat profile. It required preparing for a wide array of health concerns combined with significant environmental and logistical challenges that did not exist in Iraq or Afghanistan. Due to the vastness of the continent, the long distances involved, lack of adequate indigenous medical facilities, the unpredictability of the weather, and the shortage of air assets (and suitable airfields), we would need to be prepared to provide care for multiple patients suffering a complex range of clinical and traumatic pathologies for an extended period, without the benefit of the mature medical infrastructure previously found in Afghanistan or Iraq.⁶

Our mission took us to areas accessible only by extended foot patrols, which meant the medical supplies the 18Ds had to work with were limited to what we could carry. On any given day, we had several split teams conducting missions as far as 500 miles apart. We could not afford to use our only MEDEVAC platform system unless it was absolutely necessary. Once launched, operations throughout our AO essentially ceased until the MEDEVAC was completed. This limitation required very timely and accurate clinical assessments to ensure that each MEDEVAC was appropriate and actually needed.

Preparing for these realities required a substantive change in the way we approached our premission training (PMT.) This article highlights some of our experiences operating in this environment and how we modified our PMT to ensure we were ready to meet those challenges.

Trauma

PMT has long featured extensive training for the entire Special Forces Operational Detachment-Alpha (SFOD-A) on stabilization of traumatic injuries.⁷ When compared with PMT for a typical mature AO, preparing for a deployment to a medically austere environment requires a more in-depth approach to trauma training, with significant emphasis on prolonged field care (PFC), particularly for the nonmedics on the team. Although we were not expecting the regular combat engagements that were typical in Afghanistan and Iraq, if an injury did occur, the 18Ds would be required to stabilize and maintain the patient for a significantly longer period while using an aid bag limited to what could be carried on a dismounted patrol. We thought it was essential that every Operator be prepared to serve as a vital member of the trauma management team. To this end, additional time and effort were spent during our PMT to develop the nonmedic Operator's medical capabilities. Additionally, if the casualty was the 18D, the other teammates' competency in providing advanced and prolonged trauma care would be the only medical care available to the 18D at the POI.⁸



Photograph courtesy of Paul Corso

SSG Corso examining a member of the partner force who contracted Stevens-Johnson syndrome after eating a wild mushroom.

The standard level of care we generally cross-train the nonmedics on our teams to perform (Combat Life Saving and Tactical Combat Casualty Care) is simply not adequate for operations in this type of austere deployment environment. Extra time during PMT (and downtime during deployment) was devoted to preparing the team to provide more advanced care than would be typical for most deployments in more mature theaters. Examples of topics we covered that are normally beyond the scope of nonmedics on an SFOD-A include whole-blood transfusions, infectious disease recognition and treatment, prolonged fluid management, antibiotic therapy, and burn management.

While on deployment, as time would allow, we would gather the team together, open our aid bags, review the contents, and discuss different treatment scenarios. We



Photograph courtesy of Paul Corso

SSG Corso examining a villager in Central African Republic during a key leader's engagement. Providing medical care to the indigenous population was an essential component of the mission.

identified team members who had some experience or interest in medicine and worked with them individually to further their medical skill level. We configured the team's battle roster such that, whenever possible, those individuals who had received more advanced training were distributed throughout our split elements. We created and distributed a wide-spectrum treatment-algorithm flow chart to serve as a "cheat sheet" by our nonmedical Operators. We thought this would be very useful if the 18D was the casualty and unable to assist in his own care. The chart covered topics ranging from management of snake bites to the stabilization of multi-system trauma in a PFC scenario.

Environmental Threats

The wilderness in Africa is a hostile high-threat environment. Equatorial Africa is home to the most diverse range of environmental threats on the planet—from dangerous animals to microscopic pathogens and the swarms of vectors that carry them.⁶ An article published by Doctors Without Borders states that venomous snake bites resulted in 30,000 fatalities and an additional 8,000 amputations reported each year in sub-Saharan Africa alone and likely much more that go underreported.⁹ Our premission research made it clear that substantial preparation for environmental threats would be key to maintaining the health and combat readiness of our force.

During this deployment, we collectively encountered swarms of bees, hippopotamus herds, large cats, crocodiles, elephants, snakes, large primates, and a host of other threats ranging in severity from irritating to life threatening. Although these hazards were new to us and significant, all were mitigated through research and preparation during PMT.

Photograph courtesy of Cristobal Mandy



Medical Civic Assistance Programs were a critical component in the mission. It required being prepared to treat a far more diverse spectrum of patients and pathological conditions than what would normally be required of a SOF care provider.

Nontrauma Module

Appropriate clinical assessment and preventive health measures are concepts we all understand. In a limited-resource and medically austere environment, their importance is dramatically increased.¹⁰⁻¹² If a misdiagnosis resulted in a delayed call for higher-level care, or if the patient was transported to the wrong or inappropriate facility, it would make an already long evacuation time even longer, potentially adding days to the evacuation. Statistics suggest that 87% of the fatalities from survivable combat wounds occur in the prehospital setting.¹³ In austere environments where evacuation times are substantially longer, an error in a clinical assessment could be catastrophic.

To enhance our clinical assessment and preventive medicine skills before deployment, the medics on our teams



Photograph courtesy of Paul Corso

SSG Corso treating a refugee who had sustained an ocular impalement from a tree branch while fleeing an LRA attack.

attended our biennial, required nontrauma training module (NTM). Medical, preventive medicine, dental, and veterinary topics were covered. Our 20th Group-sponsored NTM included significant exposure to infectious disease, physical therapy, dental assessment, ultrasound sonography, water procurement, and vector control.

Tropical Medicine Course

A vital component of any SOF mission is to build trust among the partner forces and the indigenous population. 18Ds have a unique opportunity to advance that objective by often being the only care provider in an area where there are few, if any, options for medical care.¹⁴ In Africa, this meant diagnosing and treating a multitude of infectious diseases that continually ravage the population. Additionally, for US personnel operating in this type of environment, the threat from infectious disease far outweighs the combined threat from the enemy, accidental injuries, and dangerous animals.

In preparation for this deployment, our Medical Command augmented the medical portion of our PMT by setting up a tropical medicine/infectious disease course presented by a mobile training team (MTT) of medical and academic doctors from the Walter Reed Army Institute of Research. This 3-day course covered a wide variety of pathogens and prepared us for rapid identification and treatment of the various diseases prevalent in central Africa (Appendix).

Despite up-to-date vaccinations, chemoprophylaxis, and extensive vector control protocols, we still had members of our Company and partner force become ill with yellow fever, dengue, chikungunya, giardiasis, and several cyclic febrile illnesses that were never definitively

Photograph courtesy of Paul Corso



SSG Corso providing wound care to a Sudanese refugee who had been shot by members of the Lord's Resistance Army terrorist group

Photograph courtesy of Paul Corso



SSG Corso treating a patient with malaria. The child's father was a tribal leader who provided key intelligence for our mission.

Photograph courtesy of Paul Corso



SSG Corso treating a refugee who was critically ill from multisystem organ damage due to a severe parasitic infection.

diagnosed despite antivirus antibody serologic assay (i.e., immunoglobulin M antibody capture enzyme-linked immunosorbent assay), viral nucleic assay (i.e., polymerase chain reaction) and plaque reduction neutralization testing. Several American contractors became sick with malaria, which, in one instance, resulted in the death of the patient. In another case, a team leader in our Company became unstable with complications from what was ultimately diagnosed as dengue fever. The infectious disease training was invaluable in preparing the 18D who initially evaluated the patient to quickly recognize the symptoms and severity of the infection, and immediately initiate antibiotics and sepsis resuscitation protocols. Despite the immediate availability of our MEDEVAC, due to the distances involved and refueling, it took over 24 hours to get the patient to the nearest American Role II facility, which was located several countries away. Twenty-four hours became our

"best case" baseline for movement of patients from POI/illness to definitive Role II level care.

Blood Products

One of our concerns was the limited access to US quality blood products in our AO. Outside of a US military Role II facility located more than 1,000 miles away, there were no blood products available in our AO that met US Food and Drug Administration (FDA) standards or accreditation by the American Association of Blood Banks.¹⁵ We knew that if an immediate transfusion was indicated, our only recourse would be to provide it directly from one teammate to another (colloquially known as "walking blood bank").¹⁶

To improve the efficiency of and mitigate the risks associated with the walking blood bank, we continually retyped our teammates during PMT so that all team members were familiar with the process. We created and distributed to each team member laminated index cards that listed the blood type of each Operator. In the event an injury was sustained that required a transfusion, anyone on the team could easily identify suitable donors. The relevant individuals could accompany the casualty or be moved to a link-up location to expedite the process. Upon deployment at our various forward operating stations, all co-located US military personnel were blood typed, which expanded the numbers of potential donors.

In addition, we had access to freeze-dried plasma (FDP), which has been proven effective in stabilizing life-threatening hemorrhage.¹⁷ FDP has been successfully used for years in Europe but is only currently approved in the US through an FDA Expanded Access Investigational New Drug Protocol Program. Although the product is available for SOF care providers, there are strict restrictions for its use by and in US personnel. Before a deployment, especially to a medically austere AO, the time spent becoming authorized to carry and use FDP as part of your trauma management plan is extremely worthwhile. The training and the actual FDP issue require a single day of your PMT training; ours was arranged through the Clinical Coordinator of the US Army Special Operations Command. They will come to your PMT location as an MTT (Appendix).¹⁸

Laboratory Training

To refresh our laboratory skills before deployment, we reached out to the Joint Special Operations Medical Training Center (JSOMTC) at Fort Bragg, North Carolina. The Command and Laboratory Skills Cadre at the JSOMTC were gracious enough to allow our 18Ds to spend 2 days in their laboratory receiving instruction

and practicing skills such as blood typing, microscope use, Gram staining, pathogen identification, fecal analysis for parasites, urinalysis dipstick testing, and rapid tests for human immunodeficiency virus and malaria. These skills proved invaluable during the deployment, because we were continually evaluating and treating our partner forces who did not have the benefit of our required vaccinations, malaria prophylaxis, and vector protective or personal protection measures.

When laboratory work in medically mature AOs is indicated, patients are referred to clinics equipped with state-of-the-art equipment and dedicated laboratory technicians. In a medically austere AO, laboratory resources are not readily available. Any laboratory diagnostics we could do at the 18D level went a long way in improving patient outcome and had the additional benefit of allowing us to accurately diagnose and treat patients who may have otherwise required a MEDEVAC to a higher-level facility. For most 18Ds, proficiency in laboratory skills requires some refresher training before deployment and is well worth the time and effort (Appendix).

Prolonged Field Care

PFC is arguably the most challenging area in the 18D's scope of practice. In Iraq or Afghanistan, where a robust medical infrastructure exists, trauma skills are the most important area of competency for improving patient outcome. In medically austere AOs, PFC becomes paramount. As with most aspects of medicine, PFC protocols are constantly evolving and continued training is necessary. Historically, the tendency is for 18Ds to prioritize acute trauma stabilization over PFC in



SFC Reynolds treating a trauma patient in the makeshift clinic at our Forward Operating Station. The clinic served as a stabilizing waypoint when patients were being transferred from rotary to fixed-wing aircraft during the multiday evacuation to higher-level care.



Photograph courtesy of Paul Corso

SSG Corso treating a gunshot victim. The patient suffered a traumatic abdominal hernia when he was shot fleeing LRA captivity.



Photograph courtesy of Cristobal Mandry

US Servicemember inexplicably and voluntarily increases his risk of becoming a casualty to one of the common environmental hazards we faced during deployment.

their annual training. In the medically austere AOs, PFC should share equal emphasis with initial trauma care.

In the dengue fever case, the logistics surrounding the evacuation were ideal. The patient first presented to the 18D at one of our Forward Operating Stations, the severity of his illness was immediately recognized, and antibiotics and sepsis resuscitation protocols were initiated. The fixed-wing aircraft needed to evacuate the patient was positioned that day on a dirt strip a few miles from our compound. The weather was clear and the decision to transport was immediately approved. Despite these ideal conditions, it still took more than 24 hours for the patient to arrive at a US military Role II facility. Our PFC training proved invaluable in maintaining this patient during the long evacuation.

In a medically austere AO, there is no simple or immediate option to refer a patient to a facility with a specialist

Photograph courtesy of Paul Corso



SFC Reynolds examining a gangrenous gunshot wound. The patient was unstable with septic shock when he arrived. Aggressive wound debridement and antibiotic therapy saved his life and the majority of his arm.

Photograph courtesy of Paul Corso



Maneuvering during our deployment normally required multiple stops at makeshift fuel depots such as this one. The vastness of the operational area presented a significant challenge when a medical evacuation or resupply was required.

or higher resources. In our case, the nearest US Role II facility was several countries away. Mitigating the risks of this reality began in PMT and influenced how we trained, packed, and prepared for deployment.

Shortcomings in Our Preparation

After the deployment, we realized that although the modifications and additions to the medical portion of our PMT were mostly invaluable in preparing us for the unique challenges we had faced, there were areas of preparation that had been overlooked. Most notably, the largest shortcomings in our preparation were in the diagnosis and treatment of pediatric and geriatric patients, as well as our ability to provide veterinary services.

Even though our primary patient population is our own military personnel, every 18D is aware the Special Forces mission may require treating partner force personnel as well as the indigenous population. Our own personnel are younger healthy individuals who do not suffer from significant chronic medical issues. In our African deployment, we treated great numbers of children and elders throughout our AO. We were also called on to provide care to our supporting contractors, who tended to be older and have more chronic health problems than we commonly see in our own military population. Our mission required us to build rapport with nomadic tribes whose economy revolved around their herds of cattle and goats. The treatment we provided for the indigenous population and their herds was a critical component in the development of trust among the local population and directly contributed to the success of our mission. For medical providers who do not see veterinary, pediatric, or elderly patients on a regular basis, the time and effort spent preparing for these patient populations during PMT is well spent.

Conclusion

The purpose of this article is not to codify how PMT should be organized but to suggest that deploying to a medically austere AO requires a unique and specific approach.

Although SOF units have been deployed to more than 135 countries in recent years, the US missions in Iraq and Afghanistan have received the emphasis in both funding and training.¹⁹ As modern conflict persists, we will undoubtedly deploy to theaters with substantially less, and in some cases nonexistent, medical infrastructure. We will find ourselves in medically austere AOs and tasked with providing a broader spectrum of care and for a longer time than in the past. In many cases, we will be required to fill the role of the sole provider without the level of support we are accustomed to in more mature theaters. To accomplish these goals, we need to rely on continuing education and a modified mission-specific approach to the medical portion of our PMT.

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APPENDIX

Tropical Medicine Class

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Freeze-Dried Plasma

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