

COMMENTARY

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Medical Support of the Sinai Multinational Force and Observers: An Update, 2020

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ABSTRACT The Multinational Force and Observers in Sinai is a 13-nation international peacekeeping organization with the mission to implement the security provisions of the 1979 Egyptian–Israeli Treaty of Peace and continues today after approximately four decades. Despite not having significant changes to its core mission of force health protection, the medical team has recently evolved to face several challenges, with a coronavirus pandemic and a fatal helicopter crash. This article describes the medical challenges and experiences of the medical team from August 2019 to December 2020, highlighting changes from previous years. This article also updates three previous articles on the subject published in *Military Medicine* in 1983, 1991, and 2003.

INTRODUCTION

The Multinational Force and Observers (MFO) in Sinai carries out its mission to supervise the implementation of the security provisions of the Egyptian–Israeli Treaty of Peace and employ best efforts to prevent any violation of its terms with approximately 1,200 military personnel from 13 nations, approximately 125 international civilians, and 655 local Egyptian support personnel. Detailed and current information on the organization and its mission is available on the MFO website (www.mfo.org).¹ The challenges of providing medical care to this multinational group stationed in geographically separated camps (Fig. 1) and remote sites with varying security conditions were increased greatly this year by the coronavirus disease (COVID-19) and a fatal helicopter crash.

Three previous articles describing the medical operations of the MFO were published in the October 1983, October 1991, and February 2003 issues of *Military Medicine*.^{2–4} This

article describes the medical challenges and experiences of the medical team from August 2019 to December 2020, including the recent COVID-19 pandemic, highlighting changes from previous experiences.

MEDICAL ORGANIZATION

Health care in the MFO is provided out of two dispensaries on the Sinai Peninsula, one each at the North Camp and South Camp. The dispensaries are staffed through two different mechanisms. The primary support is the Medical Company (MEDCO) component of the U.S. Task Force Sinai (TFS). The USA provides two physicians (currently one 61H and one 62A) to serve as officers in charge of the respective clinics, as well as serving primary patient care role. Task Force Sinai also supports one nurse practitioner at the North Camp. The South Camp is the base of operations for one each of a TFS-provided dentist, veterinarian, preventative medicine officer, physical therapist, and psychologist. The accompanying medical support personnel—medics, X-ray technicians, laboratory technicians, pharmacy technicians, and a medical company command team—are also provided by TFS.

In addition to the organic medical company personnel, U.S. rotational units and a few Troop-Contributing States supply additional providers that round out staffing. At the North Camp, a Colombian physician, psychologist, and dentist support the dispensary operations. The South Camp is supported by the addition of a U.S. rotational unit physician assistant, a U.S. flight surgeon from the aviation company, an Italian physician, and a Fijian physician and dentist. Lastly, the TFS Force Surgeon (currently a 61F) oversees the medical

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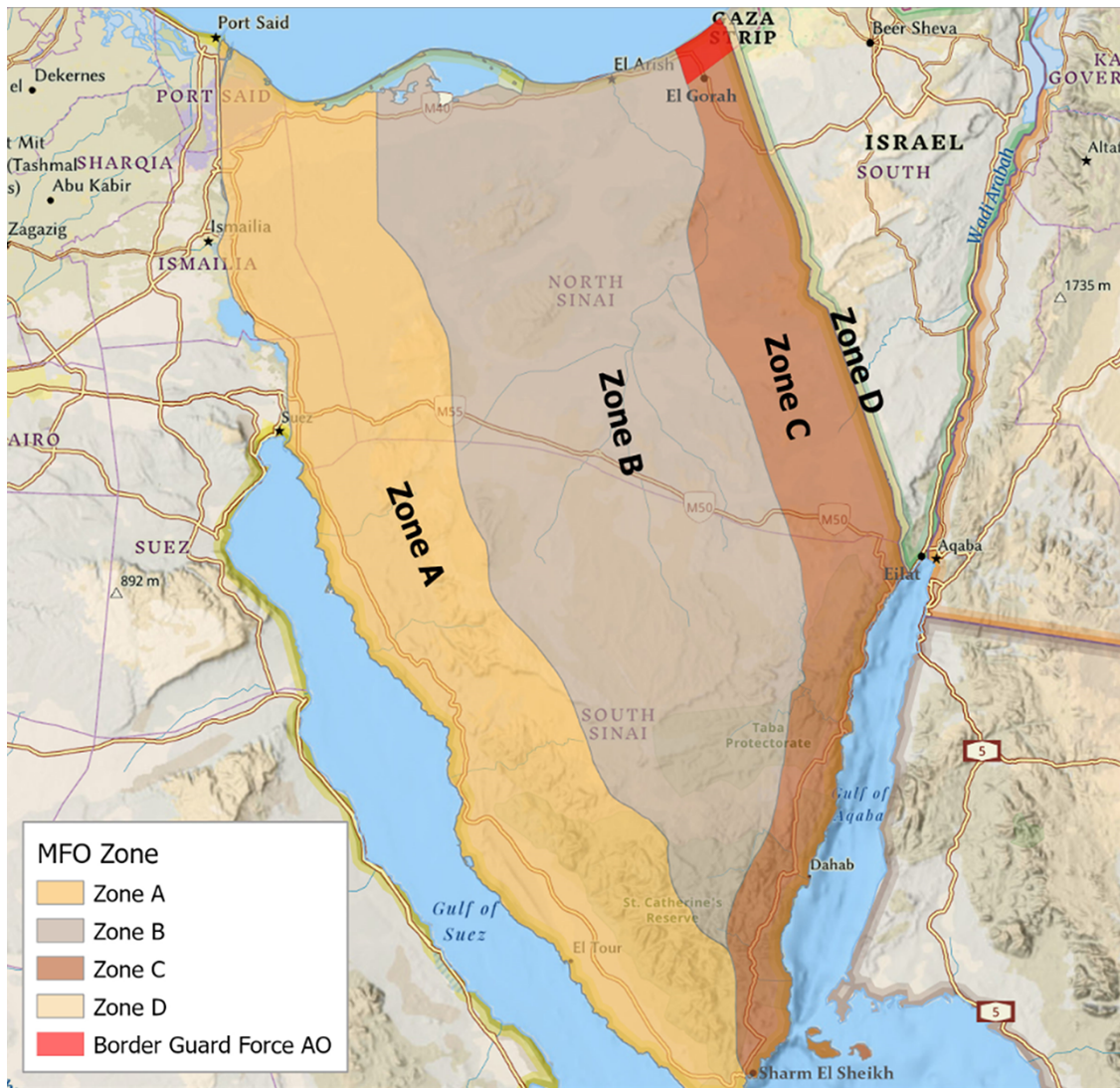


FIGURE 1. Map of treaty of peace security zones. Zone A, western zone of the Sinai; Zone B, middle zone of the Sinai; Zone C, eastern zone of the Sinai; Zone D, western zone of Israel; Border Guard Force AO, northeastern portion of the Sinai boarding Gaza. Map kindly provided courtesy of the Multinational Force and Observers.

operations in a force-level position. In total, there are nine medical providers from four different countries.

One of the major organizational changes since the last MFO healthcare update centers around the Damage Control Surgical Team (DCST). In 2015, the Force Surgeon at the time requested co-location of the DCST at the North Camp Dispensary. The DCST consisted of one orthopedic surgeon (61M), one general surgeon (61J), one emergency medicine physician (62A), and one certified registered nurse anesthetist (66F), as well as two critical care nurses (66S), one perioperative nurse (66E), one health services administrator (70A), and four enlisted support personnel. This DCST deployed in September of 2015 with plans for a continued presence at the North Camp. However, from September 2015 to May 2019, the DCST sat idle much of the time and began to fulfill more of a sick-call function in support of the dispensary. Lack of

procedural volumes necessary to maintain proficiency, lack of demonstrated need, and the high cost of maintaining an austere surgical team, all supported the proposal to eliminate the DCST from the North Camp. These factors, combined with the stabilization of security in the Sinai, led to the withdrawal of the DCST from the North Camp in 2019.

MEDICAL PLANNING AND OPERATIONS

Both dispensaries operate as Role II facilities, with X-ray, laboratory, and pharmacy capabilities. Also, both have units of packed red blood cells and fresh frozen plasma available—fortunately, transfusion has not been required in recent years. In addition, walking blood bank screening efforts take place every 3 months to ensure a robust walking blood bank should the need arise. Basic laboratory functions are available at both locations, including most recently, PCR testing for

severe acute respiratory syndrome coronavirus 2. Plain film radiography is also available, although without formal radiologist interpretation. Patients requiring advanced laboratory or imaging studies, or specialty consultation, are referred to Egyptian hospitals in Sharm El-Sheikh, near the MFO South Camp.

With the loss of the DCST, medical evacuation has again become a primary area of focus and preparation for dispensary operations. Host Nation Hospitals in both Egypt and Israel graciously serve as the nearest Role III and Role IV treatment facilities. From the North Camp, UH-60 casualty evacuation (CASEVAC) flight time to an Israeli Role IV facility can be as quick as 20 minutes. At other times (e.g., due to poor weather), it is necessary to be able to provide prolonged care at the dispensary while awaiting flight clearance. From the South Camp, there are multiple options for evacuation, including ground transport to a local Role III Egyptian facility or air transport to an Israeli Role III facility, depending on patient needs. If a CASEVAC flight to Israel should not be possible, the nearest Role IV facility is in Cairo, roughly 70 minutes via UH-60 from the North Camp and reachable by fixed wing asset from the South Camp.

Given the potential for injuries to MFO personnel from collateral activity, mass casualty exercises are conducted at a minimum of once per quarter. These events allow for full-scale exercise, identifying gaps in training or operational knowledge. They have proven to be especially educational, given the relatively constant flux of personnel into and out of the MFO, as well as the language barriers encountered within such a multinational force.

Given the split operations nature of the MFO, the bulk of certain medical services are provided at the South Camp, where roughly two-thirds of the Force resides. Physical therapy services have been in high demand, given the expected injuries from training and recreation. However, as the Force is limited to one Force Physical Therapist and one physical therapy specialist, they attempt to split time between the camps, rotating to the North Camp for 1 week every month. Behavioral health services similarly rotate to the North Camp once per month. Capitalizing on the use of video telehealth capabilities, behavioral health services have been effectively delivered to North Camp soldiers via virtual visits between rotations. In addition, complicating matters was the restriction of inter-camp travel during the peak of, and resurgences of the COVID-19 pandemic, March 2020 through July 2020 and October 2020 until December 2020, respectively.

These inter-camp restrictions required cross-training of most of the personnel assigned to MEDCO. Quite noteworthy is the effect on the veterinary mission. Again, due to limited personnel and restricted travel, the Force Veterinarian remained mostly at the South Camp, co-stationed with the food inspection specialist. The North Camp hosted a single animal care specialist, who received specific cross-training on the food-inspection mission and maintained quality assurance of the North Camp food supply. The MFO hosts six military

working dogs and nine sentry dogs between the camps and remote sites, which requires significant coordination for veterinary exams and sick calls. Lastly, to help control pests, the North Camp hosts a feral cat colony. These cats are regularly screened and vaccinated by the veterinary personnel.

The Preventative Medicine team has experienced a slightly different mission this past year due to the COVID-19 pandemic. The MFO has one Environmental Science Officer and three preventative medicine specialists. As a group, their mission includes water-safety inspections, environmental condition reports, and vector-borne disease surveillance of all MFO staffed facilities. Enteric disease surveillance is conducted with the support of Navy Medical Research Unit-No. 3 (NAMRU-3), located in Sigonella, Italy. Further preventative measures include organizing influenza vaccine administration throughout the Force and public health contract tracing—especially important this past year.

Local Egyptian nationals are employed by the MFO to perform many support roles on both camps, especially contributing to the food service workforce, janitorial staff, firefighters, barbers, etc. These personnel are required to have annual health screening examinations performed by the dispensary staff, which includes stool assessment for intestinal parasites and screening for hepatitis and tuberculosis. Previously, the purified protein derivative test was used for tuberculosis (TB) screening. However, the widespread use of Bacillus Calmette–Guerin vaccine complicated this screening process, which has been replaced by chest radiograph and symptom-based screening.

The total MFO operating budget for the fiscal year (FY) 2019 was just over \$75 million, of which the USA contributed \$25 million (<https://mfo.org/financial-information>). The medical logistics (MEDLOG) FY19 expenditures made up \$1,066,589 of that budget, which has increased substantially since the last MFO medical update. The 2001 FY budget allotted only \$355,000 for MEDLOG in 2001.⁴ The fiscal year 20 MEDLOG budget was slightly less than FY19 at \$902,638, with the majority of the difference coming from a near \$150,000 cut in DoD supplies. This is likely attributable to the loss of the DCST during FY20 and the resultant supply savings. Projecting next year, the FY21 MEDLOG budget is relatively stable at \$912,808.

MEDICAL EXPERIENCES 2019–2020

Overall, with the exception of COVID-19, sports-related/overuse injuries and medical/surgical issues predominated new visits to both dispensaries from November 2019 to November 2020 (Table I). This trend is consistent with experience of previous MFO medical team in the Sinai in 2001. No battle-related injuries were seen during this time period. Due to the absence of off-post recreational activities due to COVID-19, there has been increased use of recreational exercise on camp, leading to an increase in injuries in this category. Preparation for the new Army Combat Fitness test could also be considered as a contributing factor to the increase in

TABLE I. Medical Conditions Identified in the MFO, 2019–2020

	Injury (fall, MVA)	Dermatological	Infectious diarrhea	Injury, sports/recreational	Other medical/surgical	Ear/Nose/throat	Genitourinary	Respiratory	Other (administrative)	Total
November 2019	8	17	3	41	15	22	9	7	33	155
December 2019	6	7	7	10	2	9	4	6	84	135
January 2020	10	12	0	12	6	20	8	3	89	160
February 2020	30	12	0	38	9	17	6	1	121	234
March 2020	23	7	0	17	7	26	4	2	137	223
April 2020	22	7	0	37	6	28	2	0	115	217
May 2020	69	7	4	23	4	8	5	1	106	227
June 2020	13	10	4	10	2	9	1	2	153	204
July 2020	12	10	1	36	10	13	2	2	132	218
August 2020	44	25	14	40	2	15	5	2	93	240
September 2020	44	17	6	41	13	13	10	0	69	213
October 2020	24	17	16	19	40	4	5	4	24	153
November 2020	2	13	6	42	27	2	8	3	19	122

Abbreviation: MFO, Multinational Force and Observers; MVA, Motor Vehicle Accident.

injuries. Furthermore, increase in the number of civilian workers has also increased utilization of medical services for the management of chronic diseases, which is typically not done in an austere environment.

In previous studies, diarrheal disease has been highlighted as an enduring problem with assignments in Sinai. A 2011 NAMRU-3 study noted identification of enterotoxigenic *Escherichia coli* and *Campylobacter jejuni* in diarrheal specimens,⁵ with the study at the time limited to culture methods. However, with the availability of the Biofire FilmArray system (Biomerieux), pathogens such as *Entamoeba histolytica* and *Giardia lamblia* that are not easily detected using conventional methods have been identified and have led to changes in management. With enhanced molecular capability, NAMRU-3 has re-engaged the MFO in conducting diarrheal disease surveillance, providing equipment and supplies to facilitate the process.

With regard to air evacuations of urgent conditions, Soroka Medical Center in Be'er Sheva, Israel, and Yoseftal Medical Center in Eilat, Israel, have been used as Role IV centers by North and South Camps, respectively. Soroka Medical Center is a level 1 trauma center, while Yoseftal is considered a community hospital. In Egypt, medical evacuations are sent primarily to Saudi German Hospital in Cairo and South Sinai Hospital in Sharm El-Sheikh, which are Role IV and III centers, respectively. The Egyptian Role IV facility has been underutilized during the past 2 years due to distance as mentioned previously. With regard to conditions evacuated, acute abdominal pain was the most common reason for evacuation from November 2019 to November 2020. Others such as eye and chest pain have also been seen (Table II). Depending on the severity of the condition, medical evacuees typically spend a week at the medical facility and then their return is

TABLE II. Medical Evacuations in the MFO, 2019–2020

Diagnosis	SC/NC	Location evacuated
Periorbital cellulitis	NC	Soroka
R eye vision loss	SC	Yoseftal
Testicular pain	SC	Yoseftal
Seizure	NC	Soroka
Pulmonary embolism	SC	Yoseftal
Chest pain	SC	Sharm international
Eye pain	NC	Soroka
Eye pain	SC	Sharm international
Abdominal pain/appendicitis	NC	Soroka
Chest pain	SC	Soroka
Cholecystitis	NC	Soroka
Abdominal pain	SC	Soroka
Testicular pain	SC	Yoseftal
Abdominal pain	NC	Soroka
Vaginal bleeding	SC	Yoseftal
Appendicitis	SC	Yoseftal
Nephrolithiasis	SC	Yoseftal

Abbreviations: MFO, Multinational Force and Observers; NC, North Camp; SC, South Camp.

coordinated through the MFO Israeli liaison and Force personnel, with follow-up care performed at the South Camp dispensary. A few conditions required repatriation based on non-compatibility with service in the Sinai. There were no medical fatalities resulting from CASEVACs in the years 2019 and 2020.

EXPERIENCE WITH COVID-19 PANDEMIC

When the pandemic began in 2020, the Force adopted a restricted movement posture to prevent the spread of COVID-19. Travel to Sharm El-Sheikh was restricted in February, and only travel essential to the MFO's mission was authorized. The Force also instituted a mandatory 14-day quarantine on all incoming personnel including host nationals who work in support functions at both camps. Neither camp initially had PCR testing capability but was augmented with a Biofire FilmArray system and COVID-19 testing kits mid-2020. This capability proved useful in identifying an outbreak found among 24 Egyptian workers mid-year, resulting in immediate transfer of personnel out of the South Camp to prevent spread. During this outbreak, no MFO members were diagnosed with COVID-19. Later during the year, the MFO was supplied with a Biofire Torch system by the Australian Defense Force, allowing for both syndromic and asymptomatic testing. These capabilities came into play during the multiple reliefs-in-place and quickly ruled out the presence of COVID-19 in symptomatic individuals. Furthermore, the benefit of this capability was highlighted during a recent COVID-19 localized outbreak in late 2020, when four personnel were diagnosed with mild disease with no medical evacuations needed. Although in both instances the sources of the contagion were unknown, deliberate testing along with close contact tracing was instrumental in minimizing COVID-19's impact on MFO operations. Although both camps still initiated a lockdown with enhanced mitigation procedures in place, they were able to return to normal operations within 6 weeks after a phased reopening approach.

Due to the severe impact of a COVID-19 lockdown, the Force is currently investing in medium throughput testing based on Applied Biosystem (ABI) 7500 technology, with the capability to test the entire Force in a short time frame if needed. The choice of the ABI system was deliberate due to its flexibility and potential use in surveillance activities such as other respiratory and diarrheal diseases.

HELICOPTER INCIDENT

On November 12, 2020, an MFO UH-60 was conducting routine resupply of Remote Site 6 on Tiran Island when it crashed. Seven members of the MFO including five U.S., one French, and one Czech Republic military personnel perished in the incident. One U.S. casualty was identified with multiple traumatic injuries and was evacuated to Israel. Due to potential neurological involvement, the decision was made to transport the casualty to Soroka Medical Center, which

has neurosurgical capabilities. However, flight time from the South Camp would have taken approximately 3 h with refueling for MFO air asset, resulting in delays in delivering care to a surgical patient. Thus, the decision was made to request Israel Defense Force and Egyptian Armed Forces assistance in organizing a patient transfer using rehearsed CASEVAC procedures. The patient underwent surgical intervention at Soroka and was then evacuated back to the U.S. via usual U.S. military medical evacuation processes. The events, processes, and outcomes underscore the strong relationship and coordination between the MFO, the Egyptian Armed Forces, and the Israel Defense Force, which has been fostered in the last 40 years. Having this capability has definitively given confidence in the CASEVAC processes in the Sinai to Troop-Contributing States.

SUMMARY

The year 2020 was eventful for the MFO medical personnel. Improvements in medical processes and technology have both extended capabilities and provided confidence to Troop-Contributing States that their members will be medically ministered to while in the service of peace. As long as the MFO still has a mission in the Sinai Peninsula, medical personnel will be unwavering in their commitment to provide world-class health care to all members of the organization, regardless of military affiliation or national origin.

IN MEMORIAM

This publication is dedicated to the memory of CPT Seth Vernon Vande Kamp D.O., who was a great clinician, soldier, and dear friend to the MFO.

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CONFLICT OF INTEREST STATEMENT

None declared.

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