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Spring 2021
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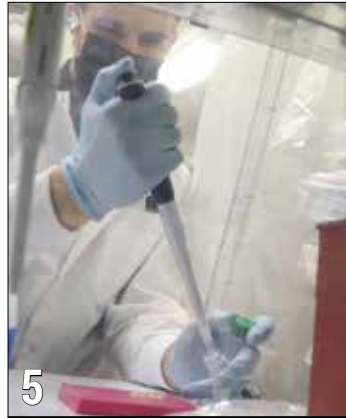


UNDERSTANDING VIRAL MUTATION THROUGH NEXT-GEN GENE SEQUENCING

Led by director MAJ Jeffrey Kugelman, the Center for Genome Sciences, U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID), is advancing next-generation gene sequencing to better understand changes in viral strains.

By Caree Vander Linden

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PROJECTING LOGISTICS IN PANDEMIC MITIGATION

DLA Distribution continues to provide COVID-19 support to federal and military entities.

By Dawn Bonsell



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COMBATTING PANDEMIC PSYCHOLOGY

Brooke Army Medical Center is advancing positivity in mental health.

By Anthony Gray

Interview with MAJ Raymond Beckman,
Dir. Training and Research Programs,
Dept. of Behavioral Health, BAMC

Cover: U.S. Army National Guard medical personnel with the South Carolina National Guard provide medical pre-screening to U.S. Army National Guard Soldiers starting duty April 15, 2020 in Eastover, South Carolina. The medical pre-screening is part of measures put in place to limit the exposure of COVID-19 for the service members and protect the health of the force. The South Carolina National Guard remains ready to support the counties, local and state agencies, and first responders with requested resources for as long as needed in support of COVID-19 response efforts in the state. (U.S. Army National Guard photo by Sgt. Tim Andrews, South Carolina National Guard)



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INSIGHTS

With the seasonal transition of Winter to Spring, the nation continues its fight to protect Americans against an ongoing pandemic. Those serving in our Armed Forces know all too well the dangers posed by unseen foes, with hidden enemies often more deadly than visible ones. This, the Spring 2021 issue of Combat & Casualty Care, sheds light on the superhuman efforts that these guardians of ours are putting forth with the weight of a country's hopes upon them. From genome sequencing to animal virus modeling, the health of U.S. Servicemembers reflects a strong cross-section of U.S. health as a whole.

The Spring issue offers readers some highlighted interviews with key leaders at the forefront of DoD's fight against COVID-19. At the top echelon of the Army's health-minded leadership, The Army Surgeon General (TSG) and Commander, Army Medical Command, LTG R. Scott Dingle, is focused on the Army Health System as a component of globally integrated health services in support of the Joint Force conducting multi-domain operations with expeditionary, agile, adaptable, and interoperable medical capabilities. Without a healthy Joint Force, very little in the way of multi-domain operations can hope to be successful. Part of LTG Dingle's current health focus is in the ongoing fight against COVID-19, ensuring the availability of vaccine and critical equipment across the DoD's Military Treatment Facility (MTF) landscape.

Much of what TSG's team brings to bear on an active Joint DoD force, Program Executive Office for Defense Healthcare Management Systems (PEO DHMS) brings to bear across an active, reserve, and military veteran population. With a priority to continue rolling out DoD's electronic health record MHS GENESIS capability to MTFs across the nation, PEO Holly Joers and DHMS have viewed the ongoing pandemic fight as added motivation to continue making health information technology (IT) delivery even more efficient. Improving effectiveness of the Joint Trauma System (JTS) by way of a Medical Common Operating Picture (MedCOP) is today as critical to combat field casualties as to COVID-19 patients, both equally in need of fluid transitions to the next level of care.

From field to laboratory, C&CC drills down into the world of microscopic genome mapping and work the U.S. Army Research Institute of Infectious Diseases (USAMRIID) is doing in proactive vaccine discovery. As the COVID-19 virus continues to mutate, current vaccines may no longer effectively neutralize the disease. USAMRIID scientists are trying to get out in front of these mutations and discover new vaccines to address new COVID and other viral threats. From body to mind, we also get insight into ways MTFs such as Brooke Army Medical Center (BAMC) is pioneering an Observe; Pinpoint; Exercise and Eliminate; Navigate and Negotiate or O.P.E.N. philosophy toward negative feedback in the workplace, a much-needed new mindset for dealing with today's COVID-dictated reality. Oh, and be sure not to miss this issue's Industry Partner which explores the multiple uses of digital radiography.

As always, your comments are welcome. Thanks for the readership and stay safe!

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NEXT-GEN GENE SEQUENCING FIGHTS COVID-19

The U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) has successfully used genetic sequencing tools to track outbreaks of diseases like Ebola. Now it's pioneering a method for COVID-19 surveillance that could be used to detect a broad array of disease threats.

By Caree Vander Linden, USAMRIID



SPC Brandon Tapia, a medical laboratory specialist, processes COVID-19 surveillance samples for Next Generation Sequencing analysis at the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Md. (Photo by John W. Braun, Jr., USAMRIID Visual Information Office)

Perhaps the biggest lesson learned from the COVID-19 pandemic is that the world needs to be better prepared for the next one. MAJ Jeffrey Kugelman, director of the Center for Genome Sciences at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), is leading a team of scientists focused on that very mission. "To deal with disease outbreaks like COVID-19, we need better diagnostic and surveillance tools," Kugelman explained. "When your entire clinical diagnostics apparatus is fighting to keep up with symptomatic cases, how do we test for asymptomatic cases? What tools are available to address clinical diagnostic shortfalls? And how can we provide continual, cost-effective sampling of higher-risk populations?"



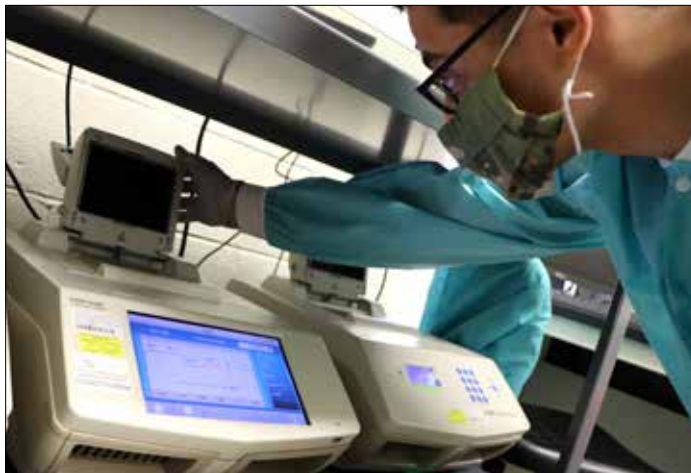
MAJ Jeffrey Kugelman

Some of these questions could be answered, he believes, by combining standard diagnostic assays with a method known as Next Generation Sequencing (NGS). To validate the approach, his team is working to provide individual results from a pool of 5,000 samples in a 24-hour period using a single instrument. However, the eventual capacity will allow testing of tens of thousands of samples at a time, while screening for several different disease threats. "We still have a long road to travel to completely control the pandemic," Kugelman said, "but we think this assay will contribute to the arsenal of tools the Department of Defense can field in support of Force Protection and public health."

INCREASING TESTING CAPACITY

One approach to COVID-19 testing shortages is sample pooling. A common method is to combine several patient samples in one tube for testing. If the results are negative, pooling saves on materials; if the results are positive, the samples can still be tested one by one. This conserves testing supplies when there is a relatively low positivity rate. However, as case numbers climb, there are more positives, making it increasingly likely that all samples will need to be individually tested. The gold standard diagnostic assay for COVID-19 is quantitative Polymerase Chain Reaction (qPCR). It can detect genetic material that is specific to the virus within days of infection—even in people who are not yet showing symptoms. The usual testing process involves taking a nasal swab, extracting material from that sample, and putting it into a tube for processing.

According to Kugelman, technology developed over the past decade has made it possible to combine PCR with an NGS "reporter" system. His team uses a small amount of patient saliva or swabbed material, and then uses heat for the extraction step, which saves time and conserves critical extraction kits for clinical testing. The NGS process incorporates a genetic barcode on each sample before it's analyzed. "The idea is



Medical laboratory technician PFC Jackie Payne operates a PCR instrument before running the gene sequencer to determine sample positivity at the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Md. (Photo by John W. Braun, Jr., USAMRIID Visual Information Office)

to incorporate unique barcodes into a sample and run it directly on a sequencer," he explained. "With a mid-range sequencing instrument like the Illumina MiSeq, potentially thousands of samples can be rapidly processed and pooled, and we can still see the result for each individual sample." Pooling samples in the thousands means the per-sample cost of testing is significantly lower. In addition, the new process circumvents the need for PCR extraction kits—which have been in short supply since the start of the pandemic.

SCREENING FOR MULTIPLE DISEASES

Another key advantage of the NGS approach is that it is "multivalent," meaning that it can test for multiple pathogens at the same time—making it potentially useful well beyond COVID-19. A single "run" can look for several different pathogens, or can detect different strains of the same pathogen.

"We have developed a method to perform a large number of tests at once, but they don't all have to be the same test," Kugelman explained. "Imagine a stack of green single Lego blocks. You could stack 1,000 green Legos end to end, all looking for the same target—let's say influenza—in 1,000 patients. Alternatively, you could use 10 different colors of Legos—each representing a different disease target—and stack them 100 'patients' high. As long as the number of tests does not exceed the limits of the assay, you could look at multiple different pathogen targets. An assay that concurrently tests each sample for influenza viruses, coronaviruses, rhinoviruses, and Respiratory Syncytial Virus, to name a few, could potentially be very useful."

The new assay, due to this multivalent approach, is tolerant of mutation, according to Kugelman. "Viruses are constantly changing, which can be a challenge," he said. "With this system, a single mutation won't derail the assay—we can still get the answer we need."

ASSESSING FEASIBILITY

In July 2020, USAMRIID performed a small feasibility study, funded by DOD's Global Emerging Infections Surveillance program, to explore the possibilities of combining PCR and NGS. Initially, they found stability issues that would not allow for the massive pooling required.

"NGS systems are laborious and time-consuming as compared to qPCR diagnostics," explained Kugelman, "unless you can significantly

increase the throughput above 1,000 samples in a 24-hour period." So his group applied to the Military Infectious Diseases Research Program for additional funding and executed an accelerated research program. In three months, they identified the source of the stability issues and were able to detect SARS-CoV-2, the virus that causes COVID-19, accurately and consistently in over 1,000 samples pooled in a single sequencing run. The U.S. Army Public Health Center provided those samples, taken from Service Members.

Microbiologist CPT Timothy Egbo, who works on Kugelman's team, said the initial sample set provided a "soft start" that allowed USAMRIID to identify problems, work out solutions, and refine techniques before increasing capacity. They believe their method could eventually be useful for testing Army recruits during basic training, Navy personnel on aircraft carriers, and other large formation military populations. To complement the assay, the team also developed software that can process over 40 million "reads" and analyze the test results in less than 15 minutes. USAMRIID's provisional patent on the new method was submitted in December 2020.

"The most satisfying part for us is to observe so many parts of the medical countermeasure development process on an accelerated timeline," Kugelman commented. "The feasibility study generated the requirement in a month. The initial research and development activity achieved the breakthrough needed to address the issues in three months, and we believe the assay will be fully developed and fielded within 12 months. There are higher risks with countermeasure development performed in this manner—but while it's been a heavy lift, it is amazing to see what's achievable with the resources and support being focused on controlling this pandemic."

OPERATIONALIZING CAPABILITY

Having established the proof of concept, Kugelman, Egbo, and the rest of the team are focused on the task of "operationalizing" the process—translating results from their lab into techniques that can be used at military laboratories around the country. In January 2021, USAMRIID received additional funding to perform advanced development (expanding the assay to process over 5000 concurrent samples in a 24-hour period) and to conduct 200,000 actual screening evaluations on patient samples to operationalize the capability. This includes SOP development, training, equipment and supply validation, and training activities to expand to other sites within the DOD.

"This has never been done before, so there was no prototype," said Egbo. "We are continuing to modify things as we go, and we'll incorporate lessons learned over a six-month period. Our goal is to get to the point where we can process 10,000 samples weekly at USAMRIID."

"Once we have a tried-and-true process, we'll hand it off for implementation," added Kugelman. "Our concept is to have three regional sites set up this summer. Each will send a team of personnel for a two-week training here at USAMRIID. Next, our personnel will travel to their facility and provide hands-on training to the rest of the team." With this approach, the process can be tailored to meet the unique capabilities and facilities at each regional site. The final step will be to have the newly trained team complete a successful run before the USAMRIID personnel depart.

"NGS is a brand-new skill for our Soldiers, so these 68K Medical Laboratory Specialists are learning a great deal," said Egbo. And while doing so, they are contributing to a project that's likely to make a lasting positive impact on the health of their fellow Service Members.

DRIVING VACCINE DEPLOYMENT THROUGH ANIMAL MODEL DEVELOPMENT

The U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) is studying multiple primate-based airborne infection models to support current COVID-19 vaccine efforts.

By Caree Vander Linden, USAMRIID



Aerobiology technicians Chris Jensen and Talearia Young prepare the Class III Biological Safety Cabinet for an aerosol study at USAMRIID. (Photo by David Dyer, USAMRIID)

U.S. Army scientists evaluated three nonhuman primate species as potential models of SARS-CoV-2 airborne infection, according to results published online Feb. 2, 2021 in PLOS ONE. Their work demonstrates that any of these species may be useful for testing vaccines and therapies in response to the COVID-19 pandemic, which has resulted in over 114 million cases and more than 2.5 million deaths worldwide in the past year.

Given the global impact of COVID-19, experts are working rapidly to develop medical countermeasures, and testing in animal models is critically important to evaluate the efficacy of these products. Recent studies suggest that aerosol transmission may be the most prevalent route of human exposure to SARS-CoV-2, the virus that causes COVID-19. Until now, however, the African green monkey was the only nonhuman primate model studied in efforts to replicate airborne transmission of the virus.

The team exposed cynomolgus macaques, rhesus macaques, and African green monkeys to SARS-CoV-2 using a model system invented at USAMRIID that generates a controlled dosage of highly respirable airborne particles within a sealed chamber. Scientists then monitored the animals for up to 18 days, documenting clinical disease findings and comparing them to human cases. All three species developed disease that resembled mild acute respiratory disease in human patients, and all had corresponding viral loads in nasal and throat swabs. Respiratory abnormalities and viral shedding also were observed for all animals.

"In general, the clinical disease characteristics we noted are similar to those described by others in the field," Johnston commented. "One exception is the presence of fever in all cynomolgus macaques on this study. This finding was exclusive to cynomolgus macaques and was detected only by using implanted body temperature-monitoring devices. Since fever is a hallmark of COVID-19 for human patients, this represents an important clinical finding."

ANIMAL MODELS FOR VACCINE TESTING

Developing animal models is a complex process, according to Johnston. Variables include the species selected, the dose of virus used, and the route of exposure, with the goal being to combine these elements to create a model that replicates human disease as closely as possible. Overall, the USAMRIID data indicate that macaques, in addition to African green monkeys, can be infected by airborne SARS-CoV-2, providing natural transmission models for evaluation of vaccines and treatments.

"In addition to determining critical disease parameters associated with disease progression, and establishing correlations between primate and human COVID-19, this work directly contributes to the advancement of medical countermeasures against the virus," said USAMRIID senior author Aysegül Nalca, M.D., Ph.D. She said the team's next step is to demonstrate the utility of these primate models for the continuing evaluation of vaccine and therapeutic candidates. Having more than one viable model in place, she added, will help to facilitate a more rapid deployment of new medical products to mitigate the COVID-19 pandemic.

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PROJECTING LOGISTICS IN PANDEMIC MITIGATION

In support of the military services and other federal agencies during the COVID-19 pandemic, Defense Logistics Agency (DLA) Distribution has been providing support as part of DLA's long-standing agreements with the Federal Emergency Management Agency and Department of Health and Human Services.

By Dawn Bonsell, DLA Distribution



Defense Logistics Agency Distribution Susquehanna, Pennsylvania, employees receive 20 million donated cloth masks from the Department of Health and Human Services for distribution to warfighters and federal, state and authorized local governmental agencies April 17, 2020. (DLA Distribution Susquehanna)

The agency responded early and often to requests from military services and federal agencies focused on winning the COVID-19 battle and continues distributing critical supplies. From the onset of the pandemic through the end of 2020, DLA Distribution centers received and/or shipped 39,500 Moderna COVID-19 vaccines, over 400 vaccine ancillary kits, 1.5 million N95 respirator masks, 20 million other masks, 1.2 million face shields, more than 517,000 bottles of hand sanitizer, more than 66,000 thermometers, 39,000 testing swabs, 1.5 million rapid COVID-19 test cards, 157,000 COVID-19 rapid test kits, an additional 100,000 COVID-19 test kits, 500 ventilators, 7.3 million medical gloves, 110,000 exam gloves and 350 oxygen tanks.

In March, DLA Distribution Europe worked with the 21st Theater

Sustainment Command to distribute 42 pallets of American Red Cross comfort packs to nine locations throughout the U.S. European Command as part of the regional response. Personal protective equipment was also distributed to military field hospitals deployed to the hardest hit areas throughout the U.S.

DLA Distribution Susquehanna, Pennsylvania, the Defense Department's largest distribution processing facility, began processing COVID-19 test kits, ventilators, hand sanitizers, masks, cots, hand-washing stations, industrial goggles, industrial face shields and breathing sets in April. The DDSP Transportation Services Team also shipped more than 72,000 Meals-Ready-to-Eat and nearly 1.1 million shelf-stable meals to support FEMA, U.S. Northern Command and U.S. Indo-Pacific Command.

IMMEDIATE RESPONSE TO EQUIPMENT NEED

When the Centers for Disease Control and Prevention recommended the wearing of cloth face coverings April 3, DLA responded quickly. Working in conjunction with DLA Troop Support Medical, DDSP received 20 million manufacturer-donated cloth face masks from HHS. The company retrofitted factories in March to make the masks, which military services and federal, state and authorized local governmental agencies ordered by cases of 500 from FedMall, a government e-commerce platform.

DLA Distribution Tobyhanna, Pennsylvania, and Tobyhanna Army Depot worked together in early April to support an urgent Army Medical Materiel Development Activity request for more than 300 oxygen tanks. DDTP and TYAD expedited the tank shipment to hospitals to aid in the treatment of the rapidly spreading virus.

The USS Nimitz contacted DLA Distribution Puget Sound, Washington, April 17, requesting distribution assistance for over 3,000 COVID-19 test kits. DDPW received the test kits April 20, immediately packaged the kits and established priority overnight delivery to key Navy test sites in California.

As Navy hospital ships prepared to deploy to support the pandemic, DLA Distribution Norfolk, Virginia, and federal agencies turned the USNS Comfort, a 250-bed operation, into a 1,000-bed operation in five days. Personal protective equipment, food and consumables were loaded before the hospital ship set sail to New York City in April.

Meanwhile, DLA Distribution San Diego loaded 100 pallets of 6,000 medical items including test kits and dressings for USNS Mercy at the Port of Los Angeles. After the initial supply push, DDDC made three deliveries each week to the USNS Mercy until it left Los Angeles May 15 for its home port in San Diego.

“With the constant change in support levels due to COVID-19, the one constant was our logistics community. DDDC assured continuous, on-time deliveries, and neither 3rd Fleet nor the ship had to double back to rework distribution issues with leadership. We could not have asked for better service from DLA,” said Navy Rear Adm. Kenneth R. Blackmon, deputy commander, U.S. 3rd Fleet.

The San Diego distribution center also sent about 380 shipments of personal protective equipment, cleaning supplies, medical equipment and repair parts to the USS Theodore Roosevelt in Guam, over 3,000 types of material to the USS Nimitz Carrier Strike Group and more than 5,000 items to the USS Makin Island’s Expeditionary Strike Group.

PARTNERING INTERNATIONALLY TO SUPPORT THE FIGHT

To support the U.S. European Command, DLA Distribution Europe and DLA Troop Support arranged for the shipment of 14 pallets of personal protective suits to DLA Distribution Europe’s Theater Consolidation and Shipping Point in Germersheim, Germany. The suits were delivered by commercial trucks to troops in Italy, Germany, Belgium, Romania and Poland May 8-29.

In June, DLA Distribution Yokosuka, Japan, collaborated with 7th Fleet officials to distribute more than 16,000 face masks, 186,000 gloves, 1,500 protective suits and over 600 goggles to ships from Naval Force Yokosuka, Japan; Fleet Activities Sasebo, Japan; the USS Nimitz and the USS Theodore Roosevelt to help control the virus’ spread.

CONTINUOUS ASSISTANCE TO INTERAGENCY PARTNERS

In an ongoing mission throughout July, DDSP’s Mechanicsburg location received over 95 trucks of protective equipment including 4 million isolation gowns and face shields to support FEMA’s assistance to hospitals dealing with rising COVID-19 infections across the country.

“Our logistics professionals at DDSP are committed to assisting FEMA and our other interagency partners to meet the needs of the nation during this critical time,” said DDSP Commander Army Col. Trenton Conner.

As the nation braced for an anticipated second wave of COVID-19 in the fall, DLA and Veterans Health Administration officials partnered to ensure over 1,200 Department of Veterans Affairs’ health care facilities nationwide had 120 days of personal protective equipment. In addition, DDSP received, stored and distributed equipment to free VHA’s limited storage, saving millions of dollars in storage costs. More than 1,400 pallets of personal protective equipment were delivered on 62 trucks to DDSP’s Mechanicsburg and New Cumberland, Pennsylvania, locations mid-July through mid-August. Employees stored most of the equipment and shipped the first 2,400 masks to veterans’ medical facilities Aug. 21.

DDSP also received, processed and shipped 1.5 million N95 masks for HHS to assist nationwide nursing homes facing mask shortages for healthcare staff. Employees received the masks Aug. 25 from the Strategic National Stockpile in Atlanta and worked non-stop nearly round-the-clock to ship the masks to over 3,000 nursing homes.

In an ongoing mission, DLA Distribution San Joaquin, California, and DDSP are distributing 6 million COVID-19 rapid test kits for HHS for distribution to medical facilities and DOD customers worldwide. The first rapid test kits began arriving in October and the shipments will continue through April. Although 90% of the components are arriving at DDJC’s refrigerated warehouse for assembly and shipment to medical facilities, 10% are shipping to DDSP for assembly and shipment to DOD customers worldwide.

FACILITATING CRITICAL VACCINE DISTRIBUTION

When the U.S. Food and Drug Administration approved the Moderna COVID-19 vaccine in December 2020, DLA Distribution began supporting the federal response by receiving and shipping the vaccine to DOD vaccination locations outside the continental U.S., the Navy fleet and a limited number of locations within the continental U.S. Ancillary kits containing gloves, needles, syringes, alcohol wipes, sharps containers, band aids, gauze and tape are shipping as well.

As 2020 ended, DLA Distribution had successfully delivered Moderna COVID-19 vaccine kits to three U.S. Forces Korea locations; Naval Hospital Yokosuka, Japan; Naval Base Health Clinic Bahrain; three DOD locations in Germany, two in Belgium and several continental U.S. locations. Vaccine deliveries allowed medical staff and other key workers to be inoculated before the end of the year. Vaccine kit shipments continue to other DOD locations.

“These mission sets demonstrate DLA Distribution’s ability to serve as a key enabler to the armed services and whole of government throughout this global crisis,” said Army Col. Robb Meert, DLA Distribution operations director.

The amount of items DLA Distribution processes with priority shipping, especially COVID-19 medical supplies, continues increasing daily as new requirements emerge.

AUGMENTING HEALTH THROUGH VIGILANCE AND READINESS

LTG R. Scott Dingle is The 45th Surgeon General of the United States Army and Commanding General, United States Army Medical Command. Prior to his appointment as The Surgeon General and Commanding General, he served as the Deputy Surgeon General and Deputy Commanding General (Support), U.S. Army Medical Command.

Previous military assignments include: Commanding General, Regional Health Command – Atlantic; Deputy Chief of Staff, G-3/5/7, Office of The Surgeon General (OTSG), Falls Church, VA; Commander, 30th Medical Brigade, Germany; Director, Health Care Operations/G-3, OTSG, Falls Church, VA; Commander, U.S. Army Medical Recruiting Brigade, Fort Knox, KY; Commander, 261st Multifunctional Medical Battalion, Fort Bragg, NC; Chief, Current Operations, Special Plans Officer, Healthcare Operations Executive Officer, OTSG, Falls Church, VA; Chief, Medical Plans and Operations Multinational Corps-Iraq Surgeon's Office, OPERATION IRAQI FREEDOM, Baghdad, Iraq; Chief, Medical Plans and Operations, 18th Airborne Corps Surgeon's Office, Fort Bragg, NC; Executive Officer, 261st Area Support Medical Battalion (44th MEDCOM), Fort Bragg, NC; Ground Combat Planner for CJTF -180, OPERATION IRAQI FREEDOM, Baghdad, Iraq; Assistant Chief of Staff, Plans and Exercises, 44th Medical Command and 18th Airborne Corps Plans Officer, Fort Bragg, NC; Chief, Division Medical Operations Center, 1st Armored Division, Germany; Instructor, Officer Basic and Advanced Courses, Army Medical Department Center and School, Fort Sam Houston, TX; Plans Officer, 3rd Infantry Division Medical Operations Center, Germany; Commander, Charlie Company, 3rd Forward Support Battalion, Germany; Commander, Medical Company and Medical Hold Detachment, Fort Eustis, VA; Chief of Plans, Operations, Training, and Security, Fort Eustis, VA; Adjutant, Fort Eustis, VA; Ambulance Platoon Leader and Motor Officer, 75th Forward Support Battalion, 194th Separate Armored Brigade; Fort Knox, KY.

LTG Dingle is a Distinguished Military Graduate of Morgan State University. His degrees include Master of Science in Administration from Central Michigan University, Master of Military Arts and Science from the School of Advanced Military Studies and a Master of Science in National Security Strategy from the National War College.

Awards and decorations include the Distinguished Service Medal (Oak Leaf Cluster), Legion of Merit (two Oak Leaf Clusters), Bronze Star Medal, Meritorious Service Medal (seven Oak Leaf Clusters), Joint Service Commendation Medal, Joint Meritorious Unit Award, Army Commendation Medal (two Bronze Oak Leaf Clusters), Army Achievement Medal (one Bronze Oak Leaf Cluster), Humanitarian Service Medal, the Order of Military Medical Merit, Recruiters Medallion, the Order of Kentucky Colonels, the Army Surgeon General's prestigious 9A Proficiency Designator, Expert Field Medical Badge, Parachutist Badge, and the Air Assault Badge.



LTG R. Scott Dingle

Army Surgeon General
Commander
U.S. Army Medical Command

C&CC: As Army Surgeon General priorities remain focused on force-wide health, how has your office addressed ongoing challenges relating to the COVID-19 pandemic and the current vaccination roll-out?

LTG Dingle: The fight against COVID-19 is far from over. We need everyone's help to continue this battle. Army Medicine and the Army are committed to the whole-of-government response to COVID-19. The U.S. Army has doctors, nurses, scientists, Soldiers and our Department of the Army (DA) Civilians working on the frontlines to help mitigate the impacts of the COVID-19 pandemic across our nation. We are working to inform and educate all Army beneficiaries of the measures they can take to protect themselves, their Families, and our communities. Army Medicine continues to monitor trends in the pandemic and how it is impacting the Force. We adjust guidance accordingly, and in line with the latest CDC recommendations.

DoD expects to eventually receive enough vaccine for all Active Duty and Reserve Component Service Members, dependents, retirees, DoD Civilian employees and contractors, as well as for U.S. Public Health Service personnel. Vaccine is being distributed as it is received and recipients are prioritized based upon the published CDC prioritization

framework. The specific timing will be location dependent. As of February 18, 2021, the Army has been administering the COVID-19 vaccine across military treatment facilities (MTFs). The Army is prioritizing distribution of the COVID-19 vaccine to healthcare workers, emergency and essential personnel, deploying forces, and others most at risk. Distribution will expand to all DoD beneficiaries as soon as larger quantities become available and in accordance with the published DoD COVID-19 Vaccination Plan Population Schema. The bulk of Army personnel will most likely be vaccinated during Phase 1c and Phase 2 of the vaccine rollout, as defined by the DoD. Phase 1c is defined as authorized persons aged ≥ 65-74 years; authorized persons aged ≥ 16-64 with increased risk for severe illness; personnel designated as Key, Essential or mission-essential. Phase 2 is defined as healthy uniformed personnel, and those not otherwise mentioned in prior Phases that are authorized to receive vaccines from the DoD.



LTC Juli Fung-Hayes (left), a U.S. Army Reserve emergency medicine physician with the 2nd Medical Brigade, leads a medic team from the 396th Combat Support Hospital, headquartered at Fairchild Air Force Base, WA, through a "point of injury" care scenario in a field environment. (U.S. Army Reserve photo by Master Sgt. Michel Sauret)

C&CC: From readiness and modernization perspectives, what are your priorities in ensuring force adaptation to a multi-domain battlespace combat posture?

LTG Dingle: The Army Health System, as a component of Globally Integrated Health Services, will support the Army and the Joint Force conducting multi-domain operations with expeditionary, agile, adaptable, and interoperable medical capabilities during competition; when necessary, armed conflict, and a return to competition on favorable terms.

Army medical operations must employ layered, agile, mobile, and responsive command and control, expeditionary treatment and multimodal evacuation capabilities designed to rapidly stabilize and clear casualties from the battlefield, while maximizing returned to duty as far forward as possible to enable maneuver. Force Health Protection are measures that promote, improve, or conserve the behavioral and physical well-being of the Joint force. Enabling a healthy and fit force, prevent injury and illness, and protect the force from health hazards in both competition and conflict. The Army Health System force posture must support multi-domain formations operating semi-independently from multiple locations, globally and at home. My priorities are to improve medical organization, structure systems and develop processes that align with the Army's vision and objectives. We will lead change from the top to establish irreversible, positive momentum.

My top priorities are people and readiness. Units will conduct high-intensity, mission-focused training, maintain capable and reliable equipment and develop competent leaders of character. As we focus on modernization, Army Medicine will become more tailored and expeditionary through reorganization, able to support multi-domain operations with Army Health Systems synchronized across the battlefield. Army Medicine is "all in" on the Army's modernization initiatives through Army Futures Command's Cross Functional Teams (CFT) and the capabilities they deliver. As an example, I'm really excited about the Future Vertical Lift CFT that is working on the Future Long Range Assault Aircraft which will have an Aeromedical Evacuation variant; this will expedite the evacuation of wounded Soldiers off the battlefield that will be almost twice as far, and twice as fast as our current capabilities.

C&CC: With the MHS Electronic Health Record roll-out on schedule, what are some tweaks you see necessary for fully-intended implementation?

LTG Dingle: Army Medicine has maintained its support to the Defense Health Agency (DHA) and its sister Services to deploy and implement the DoD's Electronic Health Record (EHR), MHS GENESIS, in the face of this COVID-19 normalized environment. Travel restrictions forced the DHA and the Leidos Partnership for Defense Health (LPDH) to rethink some of the on-site implementation plans using a virtual environment whenever possible to meet necessary milestones to bring a health facility online with the EHR. However, one area that could not be conducted virtually was the on-site Subject Matter Expertise (SME) support provided to the staff during Go-Live. Lessons learned from the initial deployment to Madigan Army Medical Center (MAMC) and the other MTFs validated the absolute need to have SMEs on-site providing "elbow-to-elbow" support to the healthcare team as they transition to MHS GENESIS. This "pay-it-forward" concept brings experienced MHS GENESIS users from various MTFs to serve as adoption coaches for their peers across the enterprise. This valuable effort has made all the difference in the success of deploying the EHR.

The COVID-19 pandemic has fast-tracked the development of two essential readiness capabilities for the military. The Mass Vaccination and Mass Readiness capabilities support high-volume events such as pre-deployment/mobilization activities at Military Readiness Platforms or during initial Military Processing Platforms. The development of the Mass Readiness capability was led by one of our Informatics Army Nurse Corps SMEs that allowed this Mass Readiness functionality to be leveraged for COVID-19 vaccination administration. This innovated initiative and has been so impactful that the DoD's EHR vendor, Cerner, has touted its success to their civilian clientele. (<https://www.cerner.com/perspectives/managing-the-biggest-covid-19-vaccine-challenges>). These enhancements are slated to be utilized later this year by our brethren at the Marine Corps Recruit Depot in Southern California and Soldier Initial Entry Training-intensive sites like Ft. Leonard Wood.

Lastly, Brooke Army Medical Center (BAMC) is projected to Go-Live on MHS GENESIS in January 2022, its unique capabilities in being home to the Institute of Surgical Research/Burn Center, the Virtual Medical Center and the DoD's sole Level I Trauma Center are driving further development in the EHR. The joint efforts at BAMC between the DHA Health Informatics team and our sister Services continue to work through some modifications to workflow and clinical/business processes in order to meet BAMC's needs in this once in a generational modernization milestone.

C&CC: In terms of training acumen, how is your office helping to facilitate the needed tools to meet mission demand?

LTG Dingle: The Army is developing a new framework to help integrate and synchronize the force to meet regional requirements, all while providing predictability during training and modernization efforts. The AMEDD is constantly conducting the five types of training analyses: needs, mission, collective task, job, and individual task analysis. Cyclical updates of programs of instruction to ensure the latest tactics, techniques and procedures are integrated into institutional courses and classes, as well as unit training plans and training support packages.

In October 2019, we created the Army Ready Surgical Task Force to address skill sustainment concerns for our Critical Wartime Specialties. History has consistently shown that after periods of relative peace, military medicine's ability to adequately respond in the early months of war lags in quality. Individual and collective trauma skills not required in a peacetime practice degrade, and the time taken in battle to mature the Knowledge Skills and Abilities (KSA) risks the lives of the Soldiers we are committed to support. To ensure critical wartime skillsets do not degrade, the Task Force set forth several initiatives to specifically address the high-risk area of trauma surgery. The initiatives focused on; developing a program to centrally manage trauma trained surgeons, defining and assessing required Individual Critical Tasks (ICTs) for the Critical Wartime Specialties, increasing the scope and scale of trauma training platforms and improved recruiting and retention of surgical trauma specialties. The Centralized Management Program assigns the majority of Army surgeons under MEDCOM to optimize skill sustainment/readiness and availability for deployment. The effort involves a partnership between MEDCOM, FORSCOM and USAEUR to proactively manage readiness and align trauma trained and experienced surgeons against known and unanticipated requirements. The development of ICTs enable a realistic assessment of an individual's current level of readiness as well as an assessment of a program or platform to provide the experience necessary to support readiness training. Partnerships with civilian Level I trauma centers greatly increases the ability to sustain trauma skillsets through real-world, hands-on experience in some of the busiest trauma institutions in the United States. Partnerships currently exist with seven civilian centers with additional centers to be added over the next year. To improve recruiting and retention, special pay increases were proposed to Congress and approved as part of NDAA 2021 allowing compensation for Critical Wartime Specialties to more closely approximate the civilian community. The Task Force continues to meet regularly, identifying and advancing new and existing initiatives to ensure the surgical trauma remains prepared for the current and future fight.

We accomplish these efforts by leveraging science and evidence-based data that helps to inform ready and responsive medical capabilities. Further developing the appropriate platforms like that of simulation training through Medical Simulations Training Centers (MSTCs) and collaborating with civilian trauma centers are critical to the

enhancement of skill sustainment and our readiness. We've expanded training opportunities with now seven partnerships for AMEDD Military/Civilian Trauma Team Training (AMCT3) to build individual and collective skills for Forward Resuscitative Surgical Team members; and have eight partnerships with twelve partner hospitals for Strategic Medical Asset Readiness and Training (SMART) available to active Army, Army Reserve, and Army National Guard that includes enlisted medical workforce individual skills.

C&CC: Any message the Army SG has on the state of pandemic/vaccine distribution?

LTG Dingle: First, it is extremely important to state that before and after vaccination, keep practicing the "three W's" that help to keep us safe – Wear a mask, Wash your hands, and Watch your distance. At this point, it cannot be accurately predicted when, or how quickly, specific sites will move through the DoD Vaccination Tiers. The DoD, as a jurisdiction like each U.S. state, is provided a pro-rata allowance of supplied vaccine. At present, forecasts are provided one week in advance. The Army distributes allocated vaccines based on HQDA prioritization in conjunction with Senior Mission Command requirements. There is not a cost for personnel to receive the COVID-19 vaccine, regardless if it is received through a DoD or other source (e.g., a pharmacy or healthcare provider). DoD civilian employees, who are not otherwise eligible DoD beneficiaries, are eligible to receive the COVID-19 vaccine, and select contractor personnel who usually receive influenza vaccines as part of a DoD occupational safety and health program (e.g., healthcare workers, maintenance depot workers), and who are not otherwise eligible DoD beneficiaries, may be offered COVID-19 vaccines at DoD vaccination sites. Look for additional information about local vaccine availability from your Installation and Medical Treatment Facility (MTF) commanders.

To the greatest extent possible, beneficiaries in priority groups who are enrolled at MTFs should come to the MTF to be vaccinated. This will ensure the maximum number of vaccines sent to non-DoD jurisdictions will be available for the general public. TRICARE beneficiaries who receive care at DoD MTFs on a space-available basis can alternatively receive vaccine through the local civilian jurisdiction.

C&CC: From a combat field perspective, what do you see as most critical to sustaining trends in lower casualty mortality rates?

LTG Dingle: Well-trained medical personnel, from the combat medic to the trauma teams in theater to the subspecialists at our major medical centers, are the most critical to sustaining trends in lower casualty mortality rates. Of course, medics are not the only things that have led lower casualty rates. Body armor, increased use of tourniquets, increased use of blood transfusion, and rapid pre-hospital transport times have all helped. In the future battlefield, though, we may not have the air superiority or safe ground transport to move casualties over long distances.

Survival may well rely on the combat medic and the closest surgical team. Therefore, it is essential that these medical personnel are well trained, and their skills sustained, so they are ready to provide top-notch care from the first day on the battlefield.

C&CC: With the continuing challenges related to an ongoing COVID-19 pandemic, how is MEDCOM maneuvering to ensure mission success?

LTG Dingle: The Army Strategy provides clear direction for the Army

of 2028 to be ready to deploy, fight and win decisively against any adversary, anytime and anywhere, in a joint, multi-domain, high-intensity conflict, while simultaneously deterring others and maintain its ability to conduct irregular warfare. Army Medicine will be Ready, Reformed, Reorganized, Responsive and Relevant to support the Army's lethality and continue to conserve the fighting strength. We will sustain Ready forces, Reform according to law, Reorganize according to Army directives, be Responsive to the needs of the warfighter in large scale operations and change at the speed of Relevance through agile leaders of character.

We have successfully maneuvered the pandemic ensuring safe conditions are met by incorporating the appropriate screening and testing protocols, while enabling an environment conducive to the protection of our personnel and those we serve. As an example, Army Medicine was proud to host the 2021 CSM Jack L. Clark, Jr. U.S. Army Best Medic Competition at Fort Gordon, GA in January 2021. Not only was I inspired by the pure excellence of the twenty-two teams of Army Medicine Soldiers competing, but the incredible effort to incorporate the safeguards required in the pandemic. The detailed planning, preparation and execution by operations and clinical personnel instilled confidence in leaders, cadre and competitors alike that we were executing to standard and within CDC guidelines.

Army Medicine's first priority, Ready, speaks to both a medically ready force and ready medical force. Enabling readiness requires a holistic approach for the total Soldier and total force, ranging from simple prevention to that of small unit or team training across Active Duty, National Guard and Reserve personnel. As mentioned earlier in this interview, we leverage various platforms to ensure skills sustainment. The creation of our Individual Critical Task List (ICTL) in April 2019 was in direct response to NDAA 2017 Section 725 legislation to improve the readiness of our medical force through core competencies. We implemented and tracked progress performed in and outside of standard training platforms including Military Treatment Facilities (MTFs), military/civilian partnered trauma centers, medical simulation training centers (MSTCs) and more. These ICTLs are nested with the Army's system of record for training and will soon feed into unit status reporting to truly represent current training

status. NDAA 2017, Section 708(c), granted the authorization and establishment of skills sustainment partnerships with civilian Level I trauma centers creating the Army Medical Skills Sustainment Program (AMSSP), comprised of the aforementioned AMEDD Military-Civilian Trauma Training Team (AMCT3) and Strategic Medical Asset Readiness Training (SMART) programs. Today, we are proud to have 15 such partnerships across the nation that provide a menu of training options for the tactical and operational commanders.

C&CC: From a treatment facility perspective, how is MEDCOM ensuring equipment availability in maximizing positive outcomes?

LTG Dingle: Ensuring prompt and effective hemorrhage control through early point of injury interventions is likely the most important contributor towards increasing survival on the battlefield. This is achieved through ongoing efforts to improve existing hemostatic agents, bandages, and control techniques as well as technology advances such as upgraded armor for both personnel and vehicular protection.

Recently, MEDCOM has emphasized the training and equipping of all deployed Soldiers with tools including the personal tourniquet to control hemorrhage while at the same time refining resuscitation protocols to incorporate newer practices such as Tranexamic Acid (TXA) administration and junctional tourniquets. The development of more advanced strategies including battlefield Whole Blood transfusions and "walking blood banks" has reduced battlefield mortality even lower. The concept of Prolonged Field Care (PFC), which envisions enabling extended care for wounded Soldiers in anticipation of potentially limited evacuation capabilities, likely also has relevance in medical planning for the future conflicts.

Currently, PFC remains an unproven concept with significant limitations in personnel, equipment, and logistical support but if successful, may further reduce mortality rates on the battlefield. PFC will require doctrine, technology, and clinical practice modifications in order to fully mature, but the Army MEDCOM is well positioned for this task and has a long history of successfully developing and deploying similarly ambitious battlefield care efforts.

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THROWING BIG WEIGHT AT A TINY FOE



USAMRDC scientists demonstrate a "sham" aerosol experiment with SARS-CoV-2 in a Biosafety Level 3 laboratory at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). The effort allows investigators to model the course of respiratory infections. (Photo by Ondraya Frick, USAMRIID/Aerobiology)

As the U.S. Department of Defense continues its effort to combat the novel coronavirus pandemic, the U.S. Army Medical Research and Development Command (USAMRDC), Ft. Detrick, MD, similarly advances its work in aiding both DoD and the nation to prevent, detect and treat COVID-19. Given the substantial and well-documented amount of pandemic-related research and medical materiel developed and funded by USAMRDC during the past year, it seems only logical to dive into more detail regarding the Command's current and future efforts.



COL Stuart D. Tyner

C&CC: As we enter the first quarter of 2021, in what specific ways is USAMRDC continuing to help combat the novel coronavirus pandemic?

COL Tyner: The U.S. Army Medical Research and Development Command is leveraging its expertise in infectious disease research through its global research network and established partnerships with industry and academia to lead efforts to prevent, detect and treat COVID-19.

Combat & Casualty Care had the opportunity to speak with several key members of USAMRDC, including COL Stuart D. Tyner, Director, USAMRDC Medical Infectious Diseases Research Program; Dr. Mark T. Dertzbaugh, USAMRDC Acting Principal Assistant for Research and Technology; and Leigh Anne Alexander, Deputy Project Manager of the Warfighter Expeditionary Medicine and Treatment Project Management Office at USAMRDC's U.S. Army Medical Materiel Development Activity, regarding both current research efforts and forward-looking pandemic-related medical research prioritization.

In terms of prevention, USAMRDC scientists have developed a vaccine prototype and are preparing to initiate a Phase 1 (first-in-human) Clinical Trial this spring. Additionally, USAMRDC scientists produced a highly-detailed, atomic-level view of the SARS-CoV-2 (the virus that causes COVID-19) spike protein receptor binding domain. This breakthrough has been critical to vaccine discovery and development efforts by providing a resource map for the field for vaccine design. Other key efforts include the development of animal models for the testing of vaccine and therapeutic candidates, as well as monoclonal antibody development through government and

industry partnerships. USAMRDC is also heavily involved in protective equipment efforts, to include the testing of portable isolation units, masks and other equipment to determine air worthiness for MEDEVAC and other flight operations. Finally, USAMRDC's Additive Manufacturing Working Group is assisting with the development, manufacturing, testing and distribution of critical diagnostic supplies and personal protective equipment in compliance with U.S. Food and Drug Administration policies during the Public Health Emergency.

With regard to the detection of COVID-19, USAMRDC scientists are working with industry partners to develop and evaluate immunoassays to determine immunity status and identify candidates for convalescent plasma donation. Additionally, those same teams are developing diagnostics to identify early infections in austere environments, and are further developing tests to determine virus clearance to inform return-to-duty decisions. On a final note, USAMRDC scientists are leading diagnostic development efforts to develop protocols to enable pooled-sample testing via next generation sequencing; thereby helping to maximize testing throughput while conserving resources.

With regards to treatment, USAMRDC is leading an Expanded Access Investigational New Drug protocol using convalescent plasma to treat U.S. Department of Defense personnel, beneficiaries and eligible civilians diagnosed with severe COVID-19. Additionally, USAMRDC is working with industry partners to screen and mature new antivirals as well as drugs to combat the severe respiratory consequences associated with COVID-19. Other efforts include partnering with multiple federal agencies to develop and refine the cutting-edge National Emergency Tele-Critical Care Network (developed by USAMRDC's Telemedicine and Advanced Technology Research Center) in order to digitally extend specialized critical care resources into communities and areas that do not have critical care medical providers.

C&CC: What are some of the key challenges the Command has faced during the pandemic and how have you tackled those obstacles?

COL Tyner: While this pandemic posed significant challenges at the outset, it has also provided opportunities to strengthen interagency and DOD partnerships and improve coordination efforts. Additionally, while the DOD has strong ties with industry partners, the ability to rapidly fund performers to provide solutions takes time. During a pandemic, this is exacerbated by the need to move very quickly. Finally, as this was a new pathogen amidst a rapidly evolving pandemic, significant coordination was required between leadership and the laboratory performers in order to establish priority research areas that aligned with DOD priorities, and minimized duplication of effort across other U.S. federal government efforts.

C&CC: USAMRDC has played a key role over the past year in helping combat COVID-19 both internally (within the Army and the larger DOD), and nationally. How has that role evolved over time – how has it changed over the past year?

COL Tyner: While the initial response was coordinated very closely to augment the “whole of government” approach to the pandemic, the



Leigh Anne Alexander



Dr. Mark T. Dertzbaugh

DOD's specific priorities soon emerged as the pandemic progressed. For example, early in the pandemic the readiness-driven need for pooled-sample testing – in order to provide large scale rapid screening – was not initially apparent. However, the DOD's development of this diagnostic approach has facilitated the efforts of Service Members to continue training and overseas operations in a safe manner. Other priorities include investments in predictive technologies to identify future epidemics, as well as codifying future epidemic plans to streamline the ensuing response. Finally, we continue to recognize the importance of core DOD research and development competencies that can be leveraged and then pivoted rapidly to address future emerging infectious disease events.

C&CC: From an ongoing Force protection standpoint, how is the Command helping to facilitate the development and/or distribution of extended-use Personal Protective Equipment (PPE) and other assets for future health initiative and overall care?

Ms. Alexander: As part of USAMRDC's Additive Manufacturing Working Group, our team has been working with service partners across the DOD enterprise to develop and test N95 respirator prototypes that do not rely on the traditional PPE supply chains. Thus far, we have worked with the Defense Logistics Agency, three industry partners and the U.S. Army Combat Capabilities Development Command's Chemical Biological Center to conduct developmental testing of three novel N95 respirators. These three manufacturers will submit to the National Institute of Occupational Safety and Health for certification, expanding the industrial base for these critical PPE supplies. Additionally, USAMRDC and CBC's efforts with the DOD organic industrial base has been prototyping a three-dimensional-printed N95 respirator; assessing the feasibility of this novel manufacturing method with the potential to transition novel designs to injection molding for scaled-up manufacturing. These combined efforts in response to the COVID-19 public health emergency have shown the importance of innovation within the DOD to supplement constrained supply chains.

C&CC: Can you name some of the latest (or ongoing) medical and health-related initiatives – either related to the pandemic or otherwise – that either MIDRP or the larger Command are promoting in 2021?

Dr. Dertzbaugh: The major initiatives that we are eager to see USAMRDC gain traction on in 2021 are mostly related to supporting the pandemic response. This includes several efforts that USAMRDC has been actively involved in; including completion of a Phase 1 Clinical Trial for our COVID-19 Spike Protein Ferritin Nanoparticle-based vaccine candidate; operational use of nasal swabs (which were produced using additive manufacturing capabilities organic to the DOD in order to collect clinical specimens from Soldiers to test for COVID-19 infection) and the operationalization of Next-Generation Sequencing capabilities for testing samples collected from thousands of Soldiers simultaneously to test for the presence of COVID-19.

DRIVING PATIENT-CENTERED CARE

Ms. Holly Joers serves as the acting program executive officer for the Program Executive Office, Defense Healthcare Management Systems (PEO DHMS). The mission of PEO DHMS is to transform the delivery of healthcare and advance data sharing through a modernized electronic health record for service members, veterans and their families. The electronic health record (EHR) is a foundational activity. PEO DHMS' priority is to continue delivering effective tools to our customers—providers and patients—and to continue adding value by connecting data and getting it where it needs to be, understanding the needs of the Military Health System (MHS) as well as providing solutions. Ms. Joers oversees and provides guidance to multiple program offices, including the DoD Healthcare Management System Modernization's delivery of a single, common, federal record; the Joint Operational Medicine Information Systems' delivery of operational medicine capabilities; and Enterprise Intelligence and Data Solutions targeting data innovation. Ms. Joers also oversees acquisition lifecycle management framework implementation, program management, tracking requirements, personnel and resource management, metrics and contract management.

Ms. Joers most recently served as the interim deputy director for the Federal Electronic Health Record Modernization (FEHRM) program office. She led program office activities, including efforts to establish an organizational structure, staffing and priorities to ensure that FEHRM responsibilities, mandated by both the National Defense Authorization Act 2020 and the FEHRM Charter, are carried out effectively. Before joining PEO DHMS and FERHM, she served as the Chief of Strategic Sourcing for the Office of the Deputy Under Secretary of the Air Force for Management and Deputy Chief Management Officer. She was responsible for initiation and governance of the Air Force's Category Management Program aimed at proactively and strategically managing costs. She also had oversight of the Headquarters Air Force contracted support services portfolio, ensuring disciplined governance, performance management, identification of efficiencies and implementation of continuous process improvement activities.



Ms. Holly Joers

Acting Program Executive Officer
Defense Healthcare Management Systems

September 2020, Wave PENDLETON in October 2020 and Wave SAN DIEGO at the end of February 2021!

Despite all the COVID disruptions, we're still on target to deliver everything we promised by the end of calendar year 2023. We also helped our partners at the U.S. Coast Guard launch their pilot in August 2020, and supported our partners at the Department of Veterans Affairs (VA) through their first "Go-Live" in October 2020.

We all worked diligently to ensure success across the departments throughout 2020. We released our first major upgrade in August, which required close collaboration between DoD and VA, and it proved a huge success. It really is inspiring to see everyone pull together as the single, common record takes shape!

C&CC: Can you discuss any new medical IT developments to support deployed personnel and promote data-centric operations, and can you specifically describe the new Medical Common Operating Picture (MedCOP) capability?

Ms. Joers: Over the last 12 months, our Joint Operational Medicine Information Systems (JOMIS) team evolved into an agile organization

C&CC: As DoD continues its rollout of the new electronic health record, which DoD refers to as MHS GENESIS, give us an update to present with any challenges, even any relating directly or indirectly to the ongoing pandemic.

Ms. Joers: When the pandemic began, we continued pressing forward. We refocused our activities, suspending those that directly affected health care providers, while continuing to support existing MHS GENESIS sites, assess opportunities to advance capabilities, and pursue greater efficiencies in health IT delivery. Since then, our team successfully deployed MHS GENESIS to sites in Wave NELLIS in



Through maps and dashboard views, the Medical Common Operating Picture (MedCOP) provides a range of operational information to decision makers. (Note: test data only in this image.) PEO DHMS

in order to provide new capabilities to the warfighter at the speed of relevance. This has always been our goal, but 2020 gave it new meaning. We capitalized on feedback from our user community and leveraged secure continuous product delivery pipelines to rapidly add new and emerging capabilities to existing products.

Just two months after most of us ‘went home’ due to COVID, JOMIS deployed MedCOP – a joint, interactive decision-support platform that provides command surgeons and medical commanders with real-time health surveillance and medical operations visibility. The web-based capability facilitates real-time operational medicine information sharing and collaboration inside and outside of the medical community in a secure environment.

MedCOP enables commanders to make informed decisions about personnel and assets. We deployed the initial version “in no time” according to traditional acquisition standards—less than two months after beginning development. We iteratively released new versions since then to enhance the capability. MedCOP already deployed to U.S. Central Command, U.S. Africa Command and U.S. European Command with installs planned to the remaining combatant commands.

It’s important to note that MedCOP supports DoD’s COVID-19 response by providing increased visibility of unit-level health, equipment and supplies. Additionally, we integrated a COVID-19 vaccine distribution and administrative management tracking tool into MedCOP for U.S. Central Command.

The JOMIS team is also developing a blood management prototype application for use in low- and no-communications environment. We’re working with the functional community to develop strategies and timelines for new capabilities for EHR documentation, virtual health and medical logistics. A new operational medicine data service is also in development as a foundational backbone to host solutions and better enable data movement both between systems and from systems to end users.

As your readers know, operational medicine is never dull. We continue to strengthen our partnerships with the functional community to drive solutions that address capability needs in current and future

operations. We’re thrilled about the present and future state – moving to a more data centric approach to get information in the hands of those who need it when they need it!

C&C: Since the employment of Joint Trauma System (JTS) standards across the services, how has the introduction of a new registry further enhanced already proven operability?

Ms. Joers: First, I want to note that the Joint Trauma System (JTS) leverages the DoD Trauma Registry (DoDTR) to collect trauma data on all active-duty beneficiaries. The JTS mission is operational and is improving how we transition and take care of patients downrange to include transferring, caring for, and improving surgical procedures within the DoD population. The trauma data registry digitally captures and documents information about the demographics, injury-producing incident, diagnosis and treatment, and outcome(s) of injuries sustained by U.S./non-U.S. military and U.S./non-U.S. civilian personnel in wartime and peacetime from the point of injury to final disposition. Our Enterprise Intelligence & Data Solutions (EIDS) team partnered with JTS to leverage and modernize the DoDTR.

At the start of the pandemic, the EIDS team developed and stood-up the Pandemic Response Registry with Joint Health Affairs, J9 and Deputy Assistant Director of Medical Affairs to serve as the collection point of all COVID related patient data needed to track and manage patients throughout the continuum of care. The registry also allows for the cross-linking of all disparate data from across disparate domains (e.g. trauma, hearing, COVID, etc.) which, in turn, enables better fidelity and visibility of traumatic impacts across the life of the patient.

The DoDTR and Pandemic Response Registry integration directly improves patient care by breaking down data silos in the current environment and joining disparate clinical data to provide better visibility for patient care. We’re currently working towards modernizing and re-platforming the DoDTR which the team leverages the clinical and operational data from the Military Health System Information Platform (MIP).



The United States Coast Guard launched the single, common record at pilot sites across northern California in August 2020. (USCG)

Prior to the existence of the MIP, JTS personnel manually input data into DODTR. Our work to migrate data to the MIP has and will continue to save significant man hours. Another advantage of DoDTR using the data in the MIP is we ensure the same data (i.e., official source data) is federated across multiple platforms. We expect full integration with DoDTR by the end of the second quarter of (FY) 2022.

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C&CC: We hear that your data connectivity efforts extend to connecting the Individual Longitudinal Exposure Record (ILER) to the electronic health record. Can you tell us more?

Ms. Joers: Patient-centered care is our primary focus. The Individual Longitudinal Exposure Record (ILER), a web-based application, provides a record of deployment-related exposure information. Making this information available to healthcare teams will improve efficiency and quality of exposure-related health care for service members, bolstering the tenet of patient-centered care. Linking individuals to known exposure events and incidents helps compile a more complete patient history. The availability of this information informs epidemiology and research as well as disability/benefits determinations with VA.

This data will be displayed in the Joint Longitudinal Viewer’s (JLV) “Questionnaire, Deployment, Exposure” widget starting in early March. Through this widget, an interface will transmit a read-only PDF “Individual Exposure Summary” report from ILER to display to JLV end-users, and we will continue to work on integration with the single, common record.

C&CC: As the nation continues to battle effects from the continuing COVID-19 pandemic, how is PEO DHMS working with the greater DoD to mitigate any negative impact on force protection?

Ms. Joers: In order to maintain readiness, and not unnecessarily limit the movement of military personnel in support of mission requirements, our military community needs to identify and effectively manage the movement of service members infected or potentially infected with COVID-19. To that end, we worked with the Army, Navy, and Air Force to pilot wearable devices with the intent to determine an enterprise-wide solution to effectively track and trace outbreaks.

The current pilot is limited to an application and associated hardware that can trace a relevant proximity distance over a given period of time (i.e., too close, too long). The current exposure metrics, set by the Centers for Disease Control and Prevention (CDC) guidelines, equal a distance of six feet for more than 15 minutes. The devices undergoing evaluation adhere to DoD’s robust cyber security requirements.

The wearable devices neither capture nor maintain personally identifiable information or protected health information. Device data will enable healthcare personnel to quickly and effectively identify and manage localized outbreaks of COVID-19. If localized outbreaks occur, the services will use the device IDs to identify exposed individuals. Clinicians can then use that information to contact service members regarding possible exposure and advise next steps.

The services will determine whether the tested devices reliably provide Commanders with real-time, actionable data regarding COVID-19 response. Our team will assess pilot findings, integrate the data with the broader spectrum of health information tools, and launch an enterprise acquisition in FY21. This will not only support any ongoing COVID response, but provide tools to mitigate impacts of future infectious disease outbreaks on the military force.

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X-Ranger Wireless is a battery-powered portable digital radiography system specially designed for military use.

MinXray, a military-approved supplier of portable digital imaging equipment, has introduced a battery-powered portable digital radiography system specifically engineered for military applications. The X-Ranger Portable DR System is a single, compact system designed to provide radiographic imaging capabilities in three different scenarios – medical, veterinary, and NDT/security screening – regardless of available power. The X-Ranger conforms to the strict cybersecurity requirements of the U.S. Armed Forces.

The X-Ranger provides superior diagnostic imaging capabilities for use by military medical responders in the field, at trauma scenes and natural disasters, or during transport to a military hospital.

The X-Ranger system is designed for radiographic imaging of military service animals, both in-clinic or in the field, and can be used for non-destructive testing (NDT) imaging/security screening for threat detection.

“The addition of the X-Ranger system can increase diagnostic capabilities, expedite treatment by military personnel, and improve safety with security/NDT imaging applications,” said Michael Cairnie, MinXray’s Director of Global and Military Sales. “Insights gained from x-raying patients before they arrive at a military hospital saves time and better prepares doctors receiving those patients.”

The portable DR system guarantees superior digital radiographic imaging, even under demanding field conditions. The battery-powered x-ray unit is certified to meet Food and Drug Administration (FDA) requirements for full-body imaging. Designed for care in forward deployed military outposts, it is a complete system, combining MinXray’s powerful TR90BH x-ray generator with a Csl x-ray flat panel detector. The combat-ready X-Ranger comes with a ruggedized laptop or tablet, and is housed in a compact, military-grade transport case.

For more information on how X-Ranger Battery Powered Portable DR System can improve medical and security support for your troops, visit www.MinXray.com or call 1-847-564-0323 or 1-800-221-2245.



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The **X-Ranger** is a compact, portable battery-powered x-ray system from MinXray

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REMAIN O.P.E.N. TO ALL FEEDBACK

Staff at Brooke Army Medical Center, Joint Base San Antonio, TX, are finding ways to mitigate pandemic stress using a new framework for individuals and organizations to address negative input to produce positive results.

By Anthony D. Gray, Colonel, Medical Service Corps, Chief, Logistics, Brooke Army Medical Center

No one enjoys negative feedback. Nevertheless, it is inevitable. Negative feedback is necessary for improvement and can produce positive results. Therefore, how you handle it matters. You can react with defensiveness, contempt, and closed mindedness, which are of no value and perpetuate conflict. Alternatively, you can choose to remain open to it. Individuals and organizations can use negative feedback to improve. They can choose to remain open to feedback by seeing past the emotions to the intended message, analyze its truth, develop potential solutions, and then work to resolve the problem. How we receive, process, and respond to criticism makes all the difference; and ultimately determines a positive or negative outcome. Therefore, one should remain open to receiving it.

The word “open” is an acronym, O.P.E.N meaning: Observe; Pinpoint; Exercise and Eliminate; Navigate and Negotiate, which serves as a framework individuals and organizations can use to address negative feedback to achieve positive results. To remain O.P.E.N, individuals and organizations must first observe and understand the situation, and or, environment. They answer the questions, “What do we see?” and “What do we hear?” Second, open individuals and organizations pinpoint problems, root causes, and visualize potential solutions. Third, to remain open one must exercise emotional intelligence, empathy and eliminate barriers. The fourth and final aspect of remaining open is the ability to navigate, and or, negotiate your way to the desired effect or end state.

MITIGATING PANDEMIC PSYCHOLOGICAL STRESS

MAJ Raymond Beckman, Director of Training and Research Programs for the Department of Behavioral Health at Brooke Army Medical Center (BAMC), San Antonio, TX, spoke recently with Combat & Casualty Care regarding pandemic-driven effects to mental health across the Army and how the O.P.E.N. philosophy is helping to mitigate those effects.

C&CC: Looking back at the past year, what are a few examples of real-world BAMC pandemic mitigation?

MAJ Beckman: From the start of the BAMC response to the COVID-19 pandemic, it has been clear that the leadership culture at BAMC values the tenets within the Observe; Pinpoint; Exercise and Eliminate; Navigate and Negotiate (O.P.E.N.) framework. The first example that comes to mind is the way that several of my immediate leaders, in concert with their leader at the Deputy Commander level, went out of their way to communicate the challenges they were facing in leading our organization. Most importantly, these communications almost always came with a caveat, and it often sounded like this; “I need your help seeing our organization. I need your eyes and ears. Most importantly, I need you to share constructive feedback.” This leadership posture helped prime me to take a similar stance with my students and faculty, and to communicate in a similar way.

C&CC: From an “observe” perspective, how has changing awareness of the pandemic been the cause of stressors among BAMC personnel?

MAJ Beckman: Being able to deliver patient care safely in a pandemic environment has been a challenge to BAMC personnel in ways few if any could have imagined. For staff, providers, and leaders alike, the struggle to balance needs of patients against the needs to protect health and welfare of providers and staff has been very stressful. At the outset of the pandemic, there were days (and nights) where



MAJ Raymond Beckman

Director of Training and Research Programs
for the Department of Behavioral Health

guidance from higher seemed to change (or more accurately, be updated) almost every hour. This was especially true as it relates to how leaders were instructed to modify operations in response to changing health protection conditions. As a result, it was often very challenging to communicate guidance to subordinates with adequate levels of confidence, which often led to significant uncertainty (stress) in the minds of leaders and subordinates alike.

C&CC: From a “pinpoint” perspective, what are some targeted issues BAMC has been facing and managing concerning COVID-19 mitigation?

MAJ Beckman: In conversations with fellow leaders in Behavioral Health, there have been a few constant targeted issues related to COVID-19 mitigation, but one broad category stands out: novel supply and logistics challenges. The need to prioritize safety and mitigation of risk related to COVID-19 transmission has been in the forefront as an issue to be better understood. Early on, many leaders, acting on the best available guidance from DHA, CDC, and other elements within the MHS, were forced to assume that face-to-face care was too risky in general. There was a lot we didn't know. This led to prohibition nearly across the board of face-to-face care except while using all approved infection control procedures and only for patient care circumstances explicitly mandated within HPCON guidance (e.g., during HPCON Delta, face-to-face BH care could only be given to patients in need of acute or emergent care). However, ongoing awareness of real non-COVID patient needs motivated leaders to continue pursuing more reliable and resourced ways of mitigating risk of COVID transmission while increasing access to necessary patient care. As we sought to determine ways to maintain access to care, this led to the identification of two issues to target: (1) the need to manage a new supply chain never before required in outpatient behavioral health settings (PPE), and (2) the need to better resource our technology capabilities regarding the delivery of virtual behavioral health care.

Within the BAMC Outpatient Behavioral Health community, there has been a concerted effort to pinpoint relevant root causes and potential solutions, as outlined below.

Root Causes & Problems:

- COVID-19 exposure risk has made it unsafe to maintain typical clinical practices
- Both patients and providers risk exposure during face-to-face encounters, especially without proper use of PPE.
- Information about the COVID-19 threat is constantly evolving
- What do we know?
- What don't we know?
- Technological limitations effecting reliability and availability of virtual behavioral healthcare.

Potential solutions:

- Transition patient care to a virtual environment
- Enhance safety precautions to mitigate exposure risk in a face-to-face environment
- Work with patients to determine care needs and employ a dynamic approach
- Employ a flexible approach to clinical practice that involves monitoring new information as it comes in and adjusting our practices to align with guidance
- Have policies in place to address possible exposure

C&CC: From an “exercise” perspective, in what ways has BAMC implemented action during the Pandemic to reduce the negative impacts on its patients and beneficiaries?

MAJ Beckman: There are a number of ways that BAMC leaders and employees have acted to mitigate the negative effects of the COVID-19 pandemic

- Collaboration – countless providers have worked overtime with patients to better understand their treatment needs in the context of the pandemic (empathy)
- Increasing our telehealth capabilities – expanding the use of platforms to deliver services (e.g., MS Teams) even when face-to-face care is impossible or impractical.
- Leaders have worked hard to clarify and communicate best practices and current policies for mitigating risk for in-person care – limiting face to face contact where able (e.g., virtual/telehealth appointments), implementing safety precautions (i.e., social distancing, providing facemasks, plexiglass barriers, hand sanitizer stations)
- Senior leaders prioritized vaccinations to front line and at risk providers
- Leaders at all levels have worked to continuously solicit feedback from personnel

C&CC: From a “navigate” perspective, what is an example where would you say BAMC has successfully found the desired end-state regarding meeting the organization's mission while also mitigating risks related to the pandemic?

MAJ Beckman: A major “negotiation” (or you might say, “concession”) that stands out to me is that I've observed what appears to be an appropriate narrowing in of focus on core missions, as opposed to maintaining unnecessary attention on lower priority missions. For example, leaders recognized early on that the pandemic was likely to result in significant mental health crises. This was no time to shutter our mental health care services. If anything, the needs and concerns were seen as likely to rise. With that understanding, leaders and staff in the department of behavioral health needed to innovate new ways to provide support to the installation in the context of pandemic precautions, but this meant asking Soldiers and Civilians to take on novel tasks and roles. Metaphorically, this often required that staff, who themselves were exhausted from the constant change, were asked to “pave the roads they drove on.” To that end, I saw a significant increase in the intentional attention paid to professional relationships. I also saw an increased flexibility on the part of leadership to allow staff to be creative in their efforts to achieve desired end-states. Hence my use of the term, “concession.”

C&CC: Feel free to speak to challenges/goals moving forward.

MAJ Beckman: I think there remain a lot of unknowns that could impact the challenges we are likely to face as a hospital and healthcare system. When will the COVID-19 pandemic be declared to be “over”? Even after the pandemic is seen as having passed, how will our culture have changed in ways that affect how we are expected to deliver healthcare. Moreover, how will the political landscape within our nation impact the way we run our organization as a whole. These, and many other related unknowns, have the potential to force changes beyond our control.

In spite of these unknowns, I believe leaders (and staff) at the direct and organizational levels of leadership must resist the urge to fret about these unknowns, and focus instead on fostering an adaptive and learning organization. In other words, the most important challenge will be to remain focused on implementing the principles put forth in the O.P.E.N. structure.

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APRIL 11
Medical Disaster Response (HYBRID OPTIONS)
APRIL 12 – 14
Trauma Critical Care and Acute Care Surgery
Las Vegas, NV
Trauma-criticalcare.com

MAY 17 – 21
SOFIC 2021
VIRTUAL
SOFIC.org

JUNE 24 – 25
Navy Contracting Summit
Norfolk, VA
Usdlf.org

JULY 27- 28
Border Security Expo
San Antonio, TX
Bordersecurityexpo.com

JUNE 28 – JULY 2
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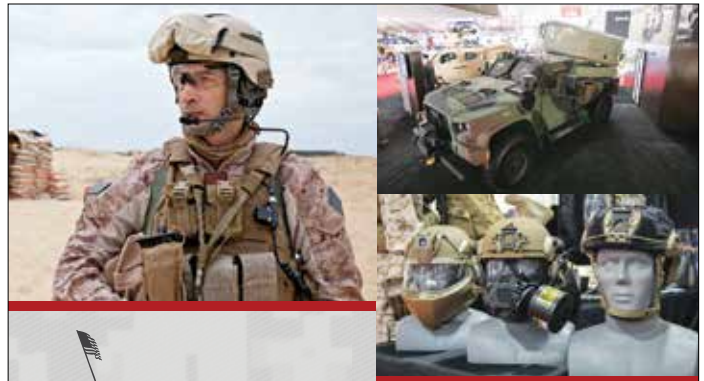
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