

CENTER FOR GLOBAL HEALTH ENGAGEMENT

CGHE



Uniformed
Services
University

2017 ANNUAL REPORT



The opinions and assertions expressed herein are those of the author(s) and do not necessarily reflect the official policy or positions of the Uniformed Services University or the Department of Defense

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As the Center for Global Health Engagement (CGHE) celebrates its second anniversary and I settle into my new role as director, I would like to highlight the great work our CGHE team members have completed over the last year in support of the Combatant Commands (CCMDs) as they undertake the critical mission that is global health engagement (GHE). In the coming years, I see CGHE taking on an even greater supporting role in ensuring CCMD and Service GHE priorities are upheld along the Uniformed Services University of the Health Sciences' (USU's) three main pillars:

- Education & Training,
- Research & Scholarship, and
- Leadership & Service (Operational Support).

Keeping these three pillars in mind, and spurred by increased communication and well-balanced partnerships, I look forward to bolstering our training and education courses, and offering our programmatic support and assessment, monitoring & evaluation (AME) analytical tools to a wide variety of stakeholders from across the CCMDs and their components.

I would be remiss not to acknowledge the great work of my predecessors in creating a strong foundation for CGHE, fostering a sense of pride in the Center's work. CAPT Glendon Diehl and CAPT Paul Reed have developed CGHE into a key facilitating agent of global health activities, translating GHE doctrine and policy, all the while disseminating best practices and lessons learned. We look forward to building on their work by strengthening the operational support we provide to CCMDs as they prioritize, plan, execute, and evaluate GHE activities within their respective Areas of Responsibility.



OUR MISSION:

Provide operational support to the Department of Defense Global Health Engagement enterprise to meet national security objectives.

A handwritten signature in black ink that reads "Danny Shiau".

Danny Shiau, MD, MPH, CAPT, MC, USN
Director, USU CGHE (December 2017 - Present)



STAFF

LEADERSHIP

Danny Shiau, MD, MPH, CAPT, MC, USN, Director (Dec. 2017 - Present)
Paul Reed, MD, CAPT, USPHS, Interim Director (May - December 2017)
Glendon Diehl, PhD, CAPT, MSC, USN, Director (February 2016 - May 2017)
Kevin F. Riley, PhD, Lt Col (Ret.), Chief of Staff
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Charles W. Beadling, MD, Col (ret.), USAF, Principal Investigator, APRRP
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Donald Whitley, Manager, Research and AME
Jeff Zimmerman, Program Manager, Support
Scott Zuerlein, PhD, MHA, FACHE, Lt Col (Ret.), Deputy Director, TPD



TRAINING & PROFESSIONAL DEVELOPMENT

FUNDAMENTALS OF GLOBAL HEALTH ENGAGEMENT

In 2017, CGHE successfully delivered **13** Fundamentals of Global Health Engagement (FOGHE) courses to over **450** students. FOGHE is an awareness-level course designed to prepare military health system (MHS) professionals to better conduct GHE activities. FOGHE represents a core line of effort for the Center and touches the largest number of MHS professionals of any CGHE program to date.

GLOBAL HEALTH STRATEGIES FOR SECURITY COURSE



The Global Health Strategies for Security (GHSS) course, held in Bethesda, MD, in May 2017, provided the tools for **31** global health professionals to better execute the DoD GHE mission set. Participants hailed from the US military, US Government (USG) Interagency, academia, and partner nations. GHSS represents the single strategic level GHE training course available to MHS GHE practitioners. In April, CGHE partnered with United States Pacific Command (USPACOM) to conduct a five-day shortened GHSS course.

HEALTH CONTEXT ANALYSIS COURSE

As a part of CGHE's ongoing collaboration with the USU School of Medicine (SOM)'s Department of Preventive Medicine and Biostatistics (PMB), CGHE executed another successful iteration of the USU graduate course in Health Context Analysis (PMO 1017). Students gained competence in analyzing health context to enable more effective military GHE activities.



**United States Africa Command
(USAFRICOM)
GHE Forum 2017**

Stuttgart, Germany
April 2017

- 20 members of the USAFRICOM GHE community engaged.
- Interactive activity designed to share & develop standards of practice for GHE activities within the USAFRICOM Area of Responsibility (AOR).
- Allowed CGHE to directly support the CCMD's GHE Mission per their request.
- Facilitated GHE understanding as a means to enable better collaboration and execution of GHE activities.

OPERATION BUSHMASTER

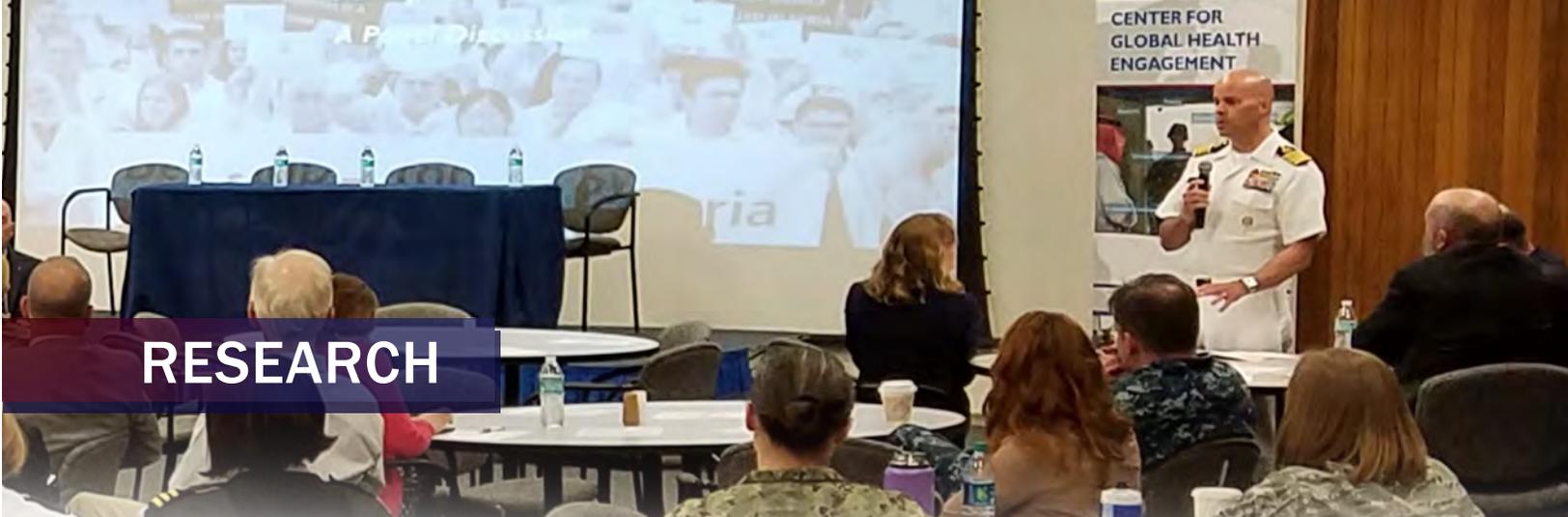
CGHE provided direct support to the USU SOM's Department of Military Emergency Medicine (MEM) by conducting the GHE component of the Medical Contingency Medicine Course, enabling **200** fourth year medical students to conduct GHE activities within the context of the Operation Bushmaster field training exercise.

INTERNATIONAL DIPLOMA IN HUMANITARIAN ASSISTANCE



CGHE, along with MEM, provided support to the annual Civil-Military Coordination Exercise, which is a component of Fordham University's International Diploma in Humanitarian Assistance (IDHA) program. **30** students and interns from the US Military, UN Agencies, the International Committee of the Red Cross (ICRC), and relief organizations attended the one-day exercise, which highlighted training exchanges between international, governmental, and non-governmental agencies.





RESEARCH

GHE RESEARCH INITIATIVE

CGHE successfully administered the first iteration of the GHE Research Initiative (GHERI), which awarded \$6 million in Research Development Test & Evaluation (RDT&E) funds to **8** Principal Investigators (PIs) across the MHS.

Throughout the year, CGHE continually engaged with stakeholders from the GHE Community of Interest (GHECOI), Defense Health Agency (DHA), and CCMDs to identify gaps and priority areas for GHE research. This led to successfully funding eight research projects that directly support CCMDs and advance overall GHE research.

CGHE will continue to build upon and improve the processes established for the FY16/17 GHERI to create an enduring program that will provide great benefit to the Department of Defense.

MILITARY HEALTH SYSTEM RESEARCH SYMPOSIUM

CGHE led the GHERI breakout session and the GHE International Partners poster session at the 2017 Military Health System Research Symposium (MHSRS), which was held in Kissimmee, FL, 27-30 August 2017. The session featured participation of the Joint Staff Surgeon, RADM Colin Chinn, who provided an overview of the importance of GHE research, and seven of the FY16/17 GHERI-awarded PIs introduced their research projects to MHSRS attendees.

The poster event showcased GHE research activities with partners across the globe. CGHE is slated to lead the third GHE breakout session at the 2018 MHSRS, highlighting newly funded research along with status updates on FY16 GHERI-funded projects.



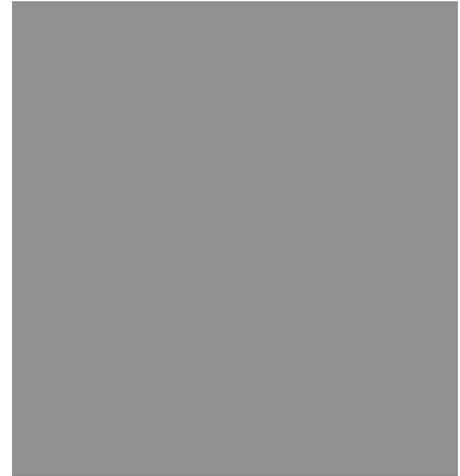
JOINT GHE CAPABILITIES BASED ASSESSMENT

The Joint GHE Capabilities Based Assessment (CBA), which began in 2016, has since comprehensively defined the requirements, capability shortfalls, and potential capability solutions for the Joint Force related to GHE. The effort leveraged robust and sustained input from the larger GHECOI, composed of actors from the Joint Force, Services, Service Components, other DoD entities, the USG Interagency, academia, and private industry.

The CBA has produced a pre-decisional DOTMLPF-P Change Request (DCR)—a document detailing how and when solutions should be further developed and implemented—which is in final coordination with the Services before it enters formal staffing at the Joint level.

GHE RESEARCH PROCESS MANAGEMENT CBA

Sponsored by the Office of the Assistant Secretary of Defense Health Affairs (OASD (HA)) with guidance from DHA Research & Acquisitions (J-9), the CGHE Research Process Management CBA will be kicking off in 2018. The effort will bring together Department of Defense (DoD) organizations with responsibilities across the spectrum of GHE Research & Development for the Joint Force in order to define current processes. Ultimately, this study aims to facilitate the development of improved and streamlined processes tailored to produce better and more coordinated Joint GHE Research & Development.





PROGRAMS & JOINT FORCE SUPPORT

AFRICAN PEACEKEEPING RAPID RESPONSE PARTNERSHIP

With an overarching goal of increasing partner nation capacity to maintain, deploy, and sustain a UN level 2 medical facility, the African Peacekeeping Rapid Response Partnership (APRRP) is uniquely tailored to the needs of partner nations. Courses are designed with a train-the-trainer mindset and heavily rely on adapting course content to needs as well as constantly refining learning objectives based on students' feedback.

In 2017, APRRP's efforts gained momentum, training **33** new students and **12** instructor candidates, with the execution of **4** two-week courses in Uganda and Rwanda. CGHE brought together a dedicated and diverse cadre of instructors from across the services to conduct the courses. In 2018, CGHE looks to deliver upwards of **7** courses in Rwanda and Uganda, including new courses such as Trauma Nursing, Tactical Combat Casualty Care Instructor, Ultrasound Operator & Maintenance, and a medical logistics workshop.

COOPERATIVE BIOLOGICAL ENGAGEMENT PROGRAM

CGHE has played an integral role in the establishment, development, and implementation of the Defense Threat Reduction Agency's (DTRA's) Cooperative Biological Engagement Program (CBEP) engagement activities since 2010. CGHE currently provides support to DTRA in Pakistan and Jordan and is slated to launch new activities in 2018.

PAKISTAN

In 2017, CGHE continued to participate in the planning and facilitation of DTRA CBEP's fourth year of capacity building engagements with the Pakistan Armed Forces (PAF). This year's engagements addressed previously identified capacity needs of the PAF with regard to biosafety and security, biosurveillance, and biorisk management.

JORDAN

CGHE also supported DTRA CBEP and its implementing partners in planning and facilitating 12 health engagements in the Hashemite Kingdom of Jordan. Regular topical engagements with Jordanian stakeholders continue to strengthen U.S. relations with health and medical leadership in-country.

FUTURE CBEP ENGAGEMENTS

CGHE has expanded its CBEP portfolio beyond support to country-level engagements. In 2018, DTRA-CBEP will initiate regional efforts in U.S. Central Command (USCENTCOM), USPACOM, and USAFRICOM AORs to promote biological nonproliferation and health security objectives with like-minded partners in each region.

2017 Pakistan Highlights

Clinical, Veterinary, and Health Systems Exchange Stage III, Bethesda, MD; 3 April 2017

Epidemiology, Laboratory, and Public Health Exchange Stage III, Bethesda, MD; 15 May 2017

2017 Jordan Highlights

12 Engagements in One Year, including: One Health Workshop and Culminating Table Top Exercise (TTX), Amman, Jordan; 13 March 2017

PACIFIC ASIA INDIA RESILIENCE PROGRAM

In 2017, USPACOM continued its partnership with CGHE to implement the Pacific Asia India Resilience (PAIR) Program. PAIR is a multi-step, multi-year engagement program designed to support partner nations in meeting their current disaster resilience commitments. Throughout the year, PAIR supported USPACOM by developing technical resources for USPACOM J9 on climate change, disasters and health, serving as the J9's representative for interagency climate change meetings, and assisting with regional engagements such as bilateral defense discussions and Humanitarian Assistance/Disaster Response (HA/DR) engagements.

OTHER OPERATIONAL SUPPORT

2017 ASIA PACIFIC MILITARY HEALTH EXCHANGE

At the request of USPACOM, CGHE provided continuing education, monitoring and evaluation, and strategic communications support to the 2017 Asia Pacific Military Health Exchange (APMHE) Conference held in Singapore. CGHE has been asked to provide similar as well as added logistical support for the 2018 conference, slated to take place in Xi'an, China.



CGHE facilitated and provided operational support for the USAFRICOM-sponsored Africa Malaria Task Force (AMTF) Key Leader event held in Accra, Ghana from 30-31 August 2017. The primary mission of the AMTF is to strengthen and expand effective malaria programs and provide support for military personnel, their families, and their communities. Over 40 attendees from 11 African partner nations, the African Union, and other US government agencies engaged in discussions about promoting effective military-civilian partnerships and increasing awareness of the military's role in malaria prevention.

ASSESSMENT, MONITORING & EVALUATION

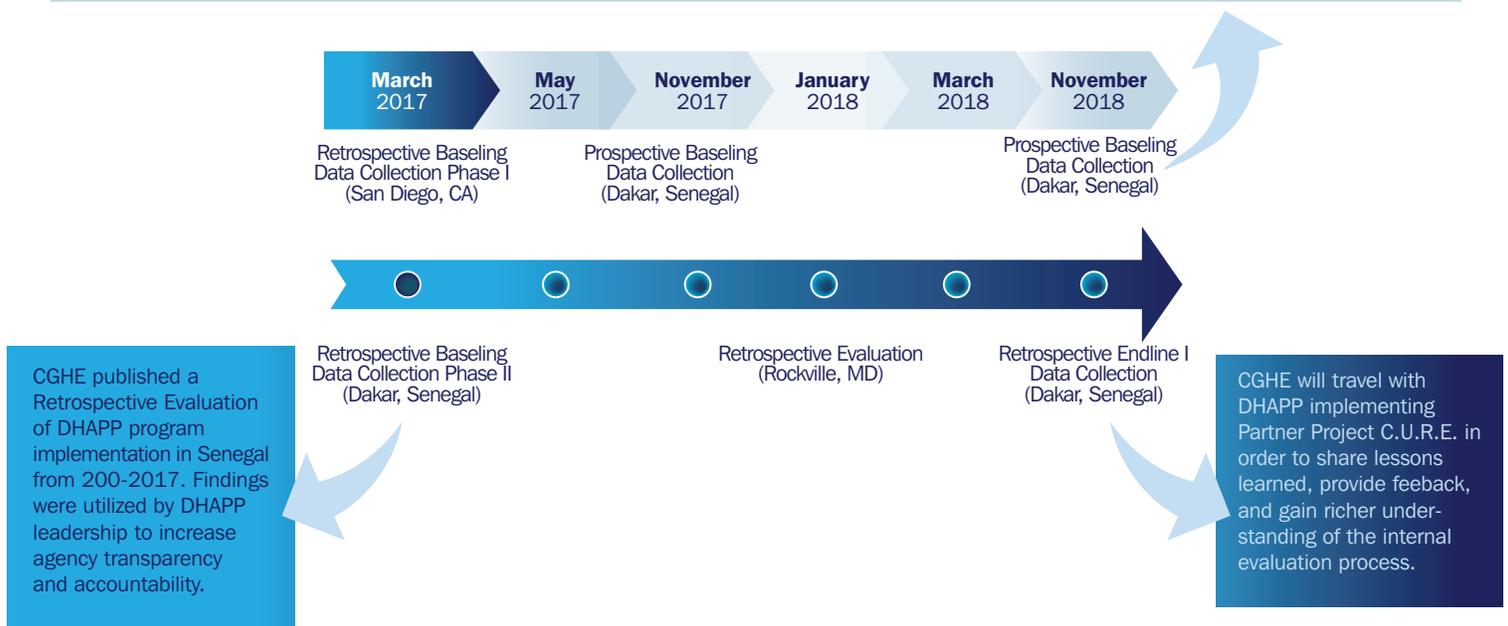
CGHE offers Assessment, Monitoring & Evaluation (AME) support to the CCMDs and other GHE stakeholders at the strategic, operational, and tactical levels. This includes delivering assessments to determine GHE effectiveness and return on investment based on stakeholders' goals and objectives, as well as developing AME curricula and learning tools for use at USU, War Colleges, and CCMDs.

In 2017, CGHE completed the first component of a multi-year effort to evaluate the Defense HIV/AIDS Prevention Program's (DHAPP) project in Senegal. CGHE engaged with DHAPP and DHAPP's non-governmental organization (NGO) and Senegalese Armed Forces (SAF) implementers of the SAF HIV/AIDS program.

CGHE also continued its partnership with the Defense Security Cooperation Agency (DSCA) throughout 2017 by laying the groundwork for future collaboration on developing the tools and modalities to evaluate future security cooperation engagements.

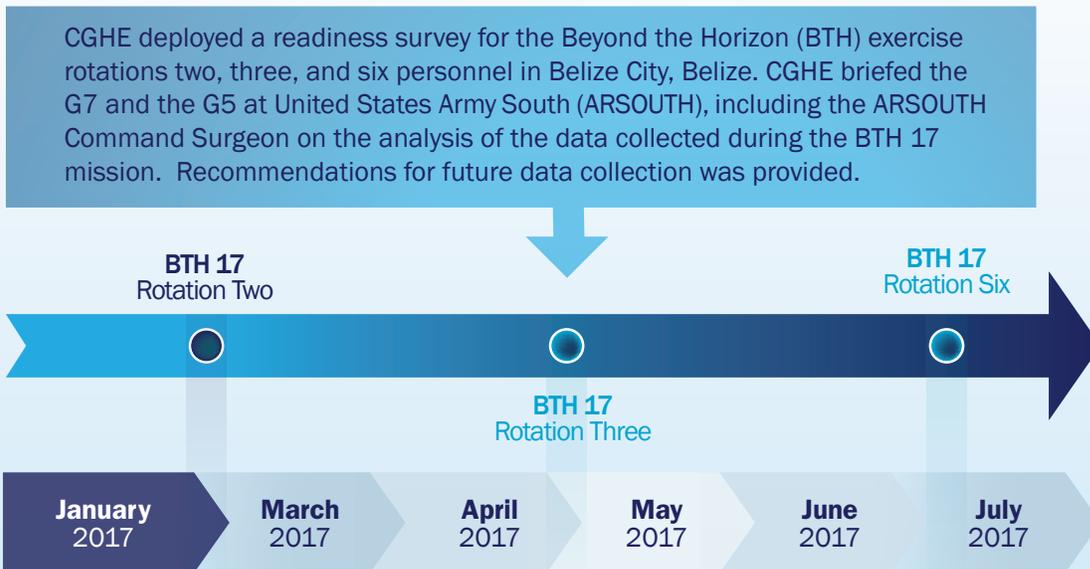
CGHE AME DHAPP engagement process:

CGHE will travel with DHAPP implementing Partner Project C.U.R.E. in order to share lessons learned, provide feedback, and gain richer understanding of the internal evaluation process.

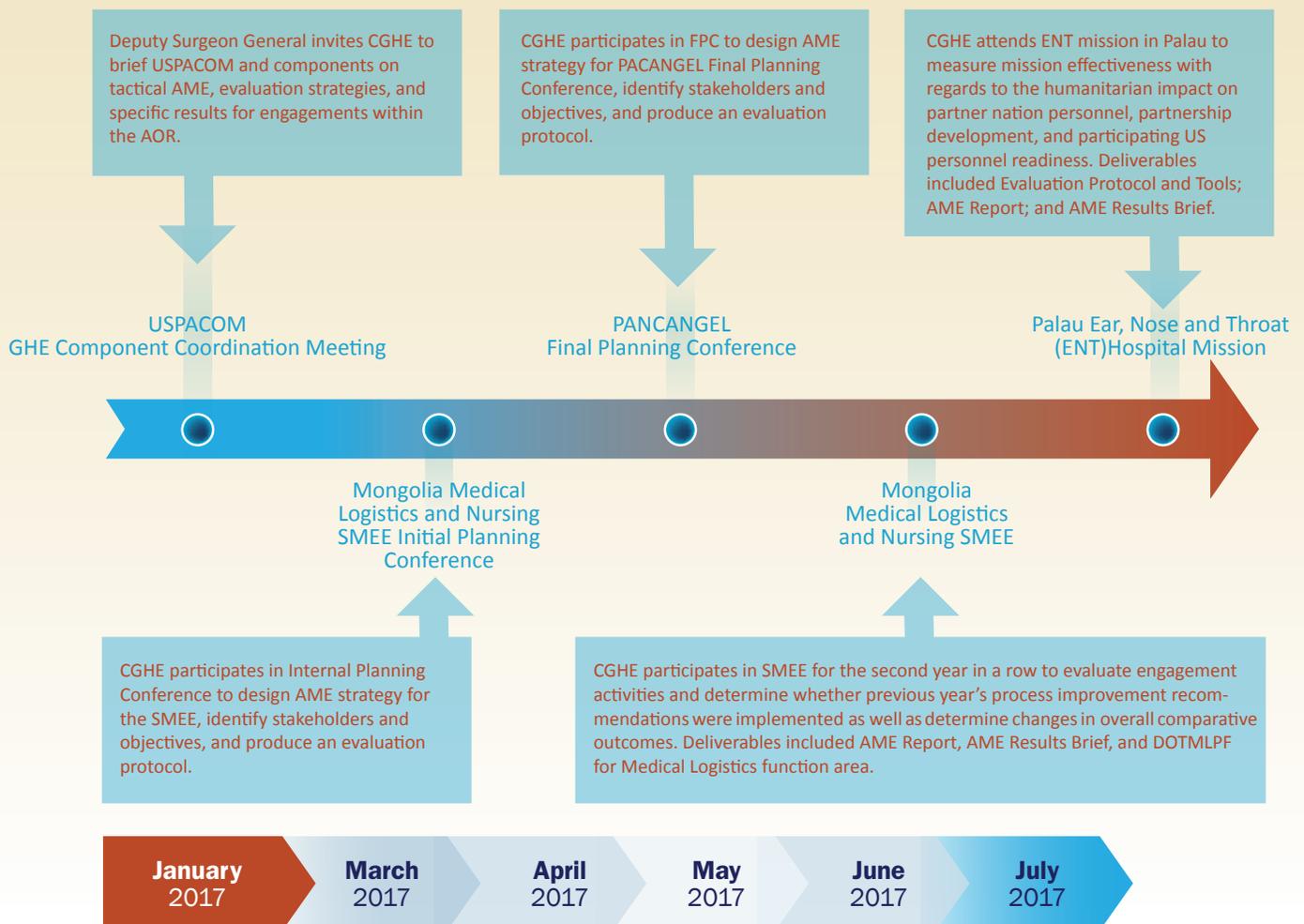


CGHE AME Tactical Engagements:

SOUTHCOM



USPACOM



STRATEGIC PARTNERSHIP



JOINT GHE SUMMIT

CGHE participated in and provided logistics and strategic communications support to the 2017 Joint GHE Summit. Held at National Defense University, under the auspices of the Navy's Office of GHE, the summit convened stakeholders from across the DoD GHE community, the USG interagency, and NGOs to tackle several topics including Security Cooperation, Global Health Security, and Readiness.



The meeting concluded with several recommendations, including a call to standardize GHE activities within the DoD and adopt a Whole-of-Government approach to GHE within the USG interagency. CGHE and USU featured prominently as a resource for these action items, especially related to training and education, the GHE CBA, and increased AME support.

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES

CGHE worked with OASD(HA) to host the GHE track at the Association of Military Surgeons of the United States (AMSUS) meeting on 28 November 2017. The track brought together senior leaders from the Office of the Secretary of Defense, Joint Staff, and the CCMDs to discuss the new Department of Defense Instruction on GHE 2000.30 and GHE's role as part of national security and theater security planning and strategy.

STRATEGIC COMMUNICATIONS

CGHE took an active part in organizing and promoting GHE activities via its social media platforms and website throughout the MHS GHE awareness month in December. In conjunction with DHA strategic communications, CGHE streamlined the story submission process and developed a GHE spotlight page on health.mil. The page aims to highlight stories of GHE successes to better engage internal and external stakeholders on GHE activities. Additionally, December featured a webinar that highlighted GHE activities undertaken by the Services as well as CGHE, and informed viewers on opportunities to better incorporate GHE activities into their work.



CGHE also has and will continue to co-chair the monthly DoD GHE Communications Working Group meeting along with DHA strategic communications. The purpose is to share communications-specific updates across Services and DoD entities about key GHE events, trips, issues; serve as a centralized resource for communications info sharing, communications products, and messaging; and ensure we are building a strong, consistent narrative for GHE across all respective channels.

PUBLICATIONS

Reed, Paul L., et al. "Evidence-Based Guidelines for Supportive Care of Patients with Ebola Virus Disease." *The Lancet*, [www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)31795-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)31795-6/fulltext).

Hollier, Paul J, et al. "Challenges in Preparing Veterinarians for Global Animal Health: Understanding the Public Sector." *Journal of Veterinary Medical Education*, www.ncbi.nlm.nih.gov/pubmed/28795905

Reed, Paul L, Greulich, Jane D, Beadling, Charles W, et al. "Liberia National Disaster Preparedness Coordination Exercise: Implementing Lessons Learned from the West African Disaster Preparedness Initiative." *American Journal of Disaster Medicine*, <https://www.ncbi.nlm.nih.gov/pubmed/28822213>

WAY AHEAD

We have many milestones to look forward to in 2018, including but not limited to our flagship GHSS course, at least nine upcoming FOGHE courses worldwide in support of the Services and the CCMDs, our MHSRS and AMSUS GHE breakout sessions, an expanded role in APMHE 2018 in Xi'an, China, and our ongoing activities under the DHAPP, APRRP, and CBEP programs.

We will continue to foster our relationship with OASD(HA), the Joint Staff, DHA, the services, and the CCMDs as we look to support streamlined GHE activities around the world, realigning priorities per command request, and minimizing duplication of effort.

We look forward to a successful 2018 in support of the DoD GHE Enterprise!

the fact that the \mathbb{Z}_2 -action is not free, the quotient space is not a manifold. However, the quotient space is a orbifold, which is a generalization of a manifold that allows for singular points. In this case, the singular points are the fixed points of the \mathbb{Z}_2 -action, which are the points where $x = 0$ and $y = 0$.

The orbifold structure is important because it allows us to study the topology of the quotient space. In particular, the orbifold has a fundamental group that is isomorphic to \mathbb{Z}_2 , which is the group of integers modulo 2. This means that the orbifold is not simply connected, and there are non-trivial loops that cannot be contracted to a point.

The orbifold structure also has implications for the geometry of the quotient space. In particular, the orbifold has a metric that is inherited from the metric on the original space. This metric is singular at the fixed points, where the distance between points is zero. This singularity is a characteristic feature of orbifolds and is important for understanding their geometry.

In summary, the quotient space $\mathbb{R}^2/\mathbb{Z}_2$ is a orbifold with a fundamental group isomorphic to \mathbb{Z}_2 . The orbifold structure is important because it allows us to study the topology and geometry of the quotient space. The orbifold has a metric that is singular at the fixed points, which is a characteristic feature of orbifolds.

The orbifold structure also has implications for the physics of the quotient space. In particular, the orbifold has a non-trivial topology that can affect the behavior of particles and fields. For example, the orbifold can act as a source of topological anomalies, which are important for understanding the quantum theory of the system.

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