

# YEAR IN REVIEW

CELEBRATING A YEAR OF SUCCESS

WRAIR



# LETTER FROM COL CLINTON MURRAY

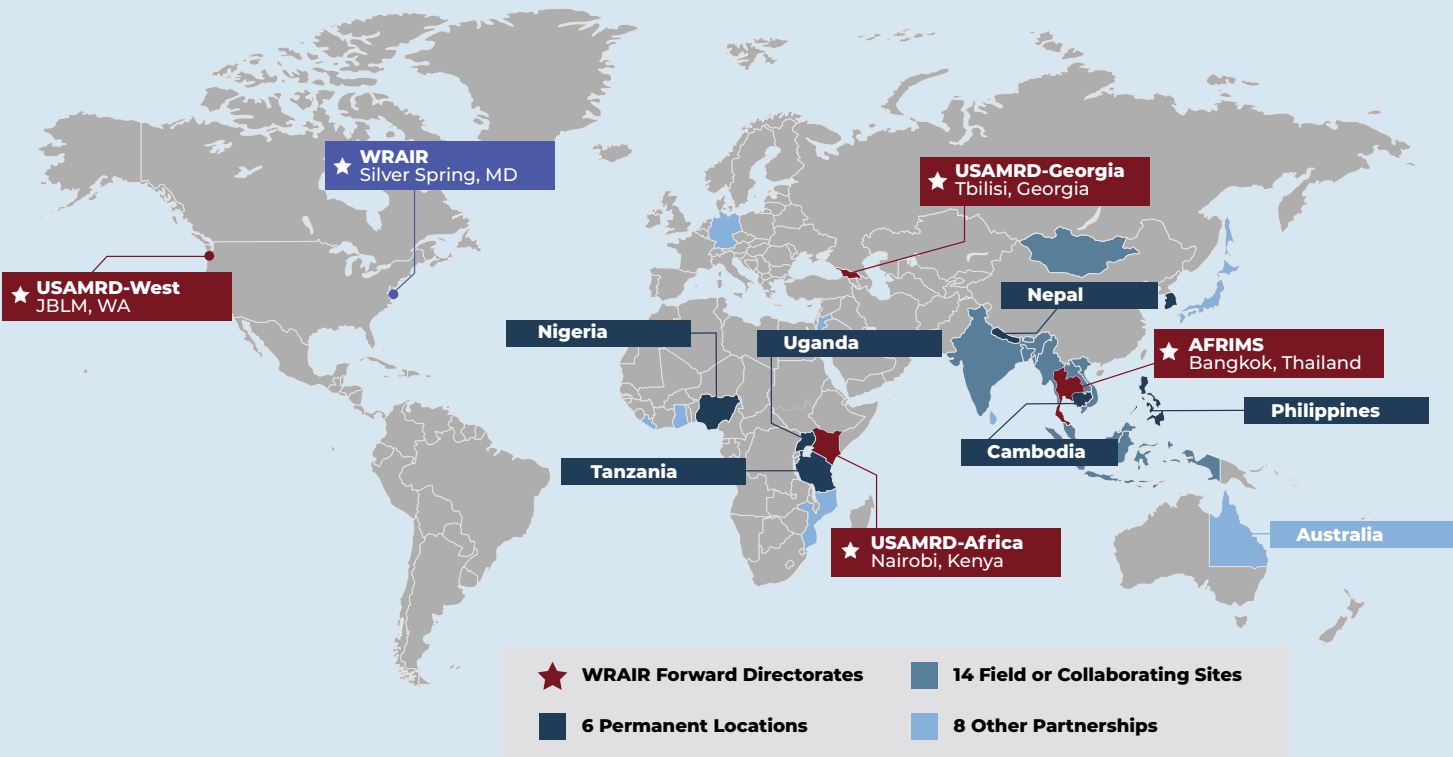
COMMANDER OF THE WALTER REED ARMY INSTITUTE OF RESEARCH



As the Department of Defense continues to reorganize and modernize to conduct Multi-Domain Operations, the Walter Reed Army Institute of Research continued to evolve its research focus to develop medical products that safeguard the Warfighter at homestation and during deployment. 2020 brought the added danger of COVID-19, a stark reminder of the continuing threat posed by infectious disease as well as the need for strategies that build resilient, cognitively dominant Warfighters.

WRAIR’s global research network, including the Center for Infectious Disease Research, the Center for Military Psychiatry and Neuroscience and four expeditionary medical research directorates in Africa, Southeast Asia, the Republic of Georgia and Washington State, worked hard to meet this threat, developing strategies to prevent, detect and treat COVID-19 as well as provide commanders and leaders actionable guidance to mitigate the pandemic’s behavioral health impact—while also maintaining the organization’s broader research mission to overcome infectious disease and protect brain health.

Thank you for joining us as we highlight the accomplishments of WRAIR’s approximately 2,700 Soldiers, civilians and contractors, operating across five continents, over 20 countries and eight time zones.



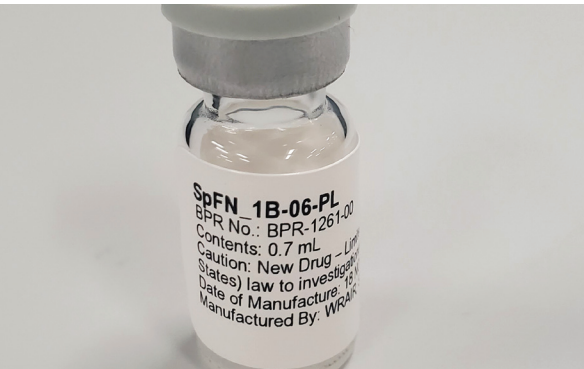
## COVID-19 RESPONSE

Supported by: WRAIR, AFRIMS, USAMRD-A, USAMRD-W, USAMRD-G

Building upon its ability to rapidly respond to outbreaks and develop diagnostics, vaccines and treatments, WRAIR is playing a key role in the ongoing COVID-19 response.

1





WRAIR is advancing a novel vaccine platform, to begin clinical trials in 2021, that aims to address the COVID-19 pandemic and counter future coronavirus threats; this trial also utilizes ALF-Q, a WRAIR-developed adjuvant used to boost the body’s immune response. ALF-Q was shown to be safe and well-tolerated in clinical trials for two malaria vaccines as well as safe and effective in animal model challenge studies.

**Funded by: Military Infectious Disease Research Program**

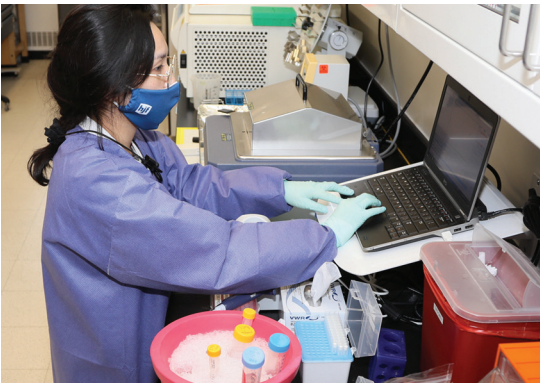


WRAIR scientists developed and evaluated diagnostic technologies to determine when individuals are no longer infectious, track those who are infected without symptoms and support epidemiological and vaccine studies. Researchers are leading a health surveillance study of Army recruits at Fort Jackson to inform policy around training and develop evidence-based release criteria from quarantine and have conducted over 50,000 COVID-19 tests around the world.

**Funded by: Military Infectious Disease Research Program, Defense Health Program, Global Emerging Infections Surveillance, President's Emergency Plan for AIDS Relief**



**Behavioral Health Resources for COVID-19 are available here:**  
<https://www.wrair.army.mil/node/348>

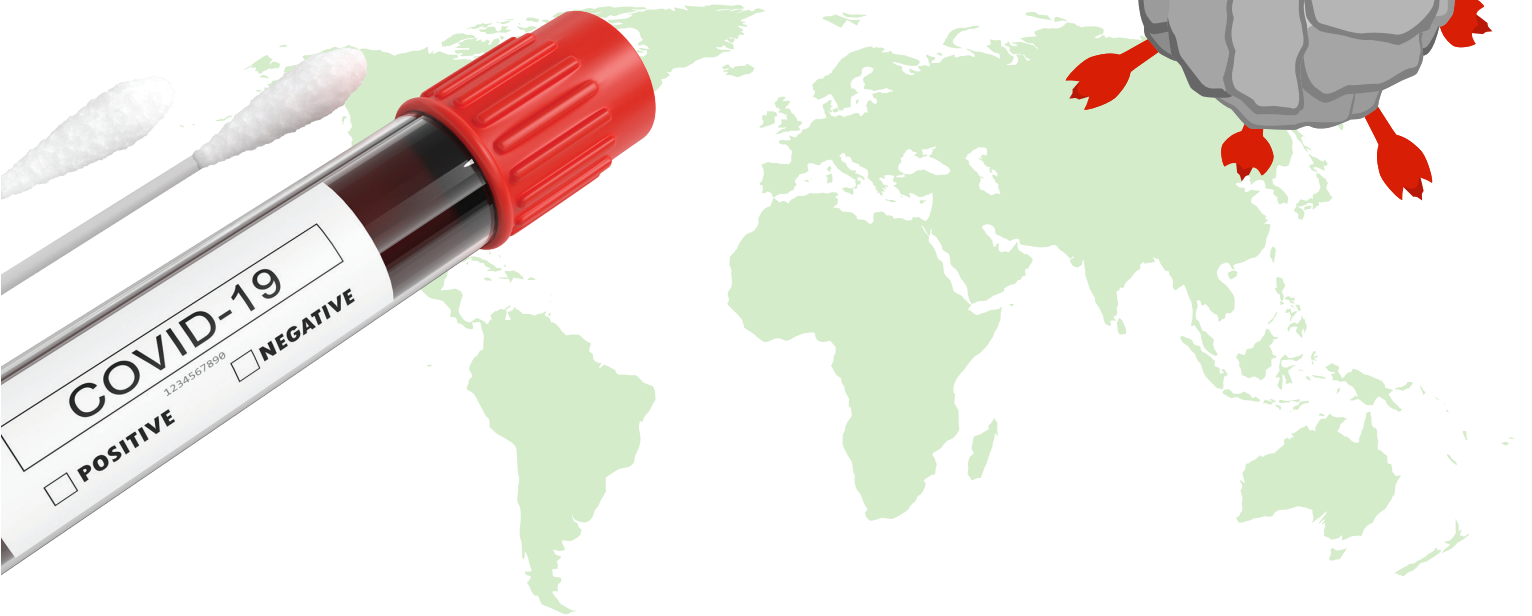


WRAIR researchers have screened over 40 million compounds using artificial intelligence and high-throughput screening to identify and evaluate therapies for COVID-19, identifying several dozen for further development and testing. These techniques have dramatically decreased the time and cost required to evaluate new drugs and can be used for any disease.

**Funded by: Military Infectious Diseases Research Program, Defense Health Programs**



WRAIR brought over a century of infectious disease experience to bear, supporting the COVID-19 response around the world with logistics, technical expertise and clinical research sites. WRAIR sites are testing an industry-developed COVID-19 vaccine and are part of a consortium testing therapeutics for COVID-19-positive patients.



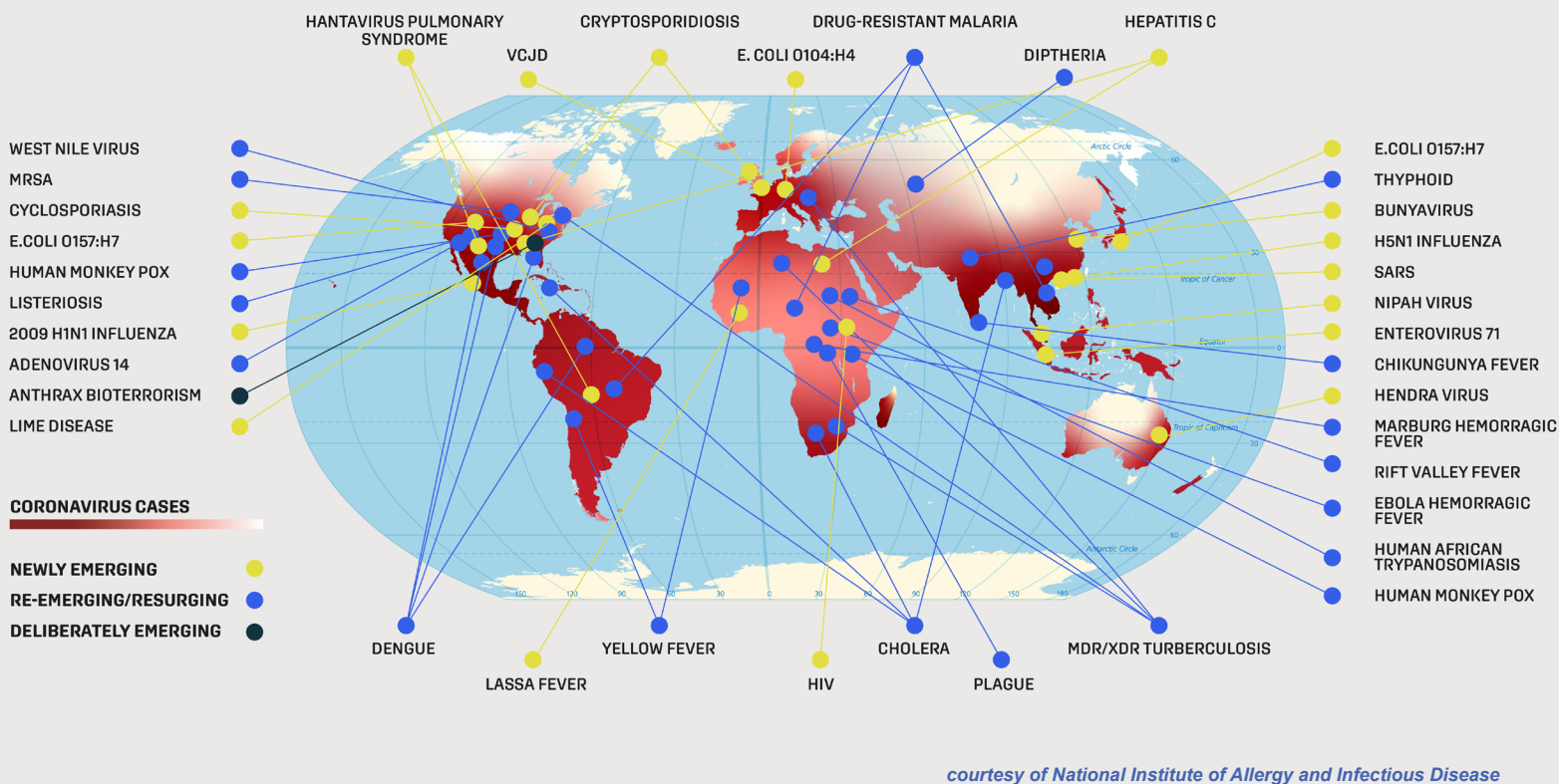


# 2

## PATHOGEN SURVEILLANCE FOR OCONUS EXERCISES

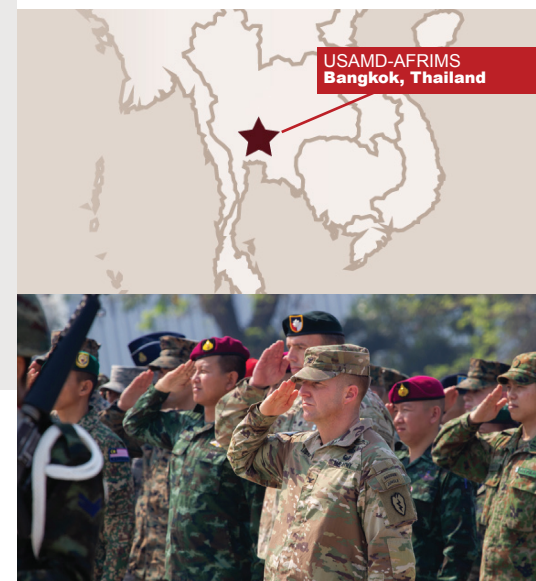
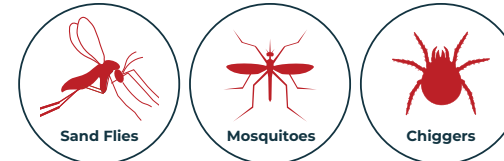
Supported by: *AFRIMS, USAMRD-G*

Building off robust surveillance capabilities to track endemic and emerging infectious diseases, WRAIR overseas directorates provide direct support for international training exercises.



## PATHOGEN SURVEILLANCE FOR OCONUS EXERCISES

### AFRIMS



*Cobra Gold 2020*

WRAIR's U.S. Army Medical Directorate-Armed Forces Research Institute of the Medical Sciences (USAMD-AFRIMS), headquartered in Thailand, conducted an entomological risk assessment in anticipation of the 2020 Cobra Gold exercises, an annual exercise co-hosted between the United States and Thailand and the largest of its kind in the Indo-Pacific region; furthermore, as the novel coronavirus pandemic emerged, AFRIMS rapidly pivoted its resource to surveil COVID-19 among exercise participants. WRAIR's U.S. Army Medical Research Directorate-Georgia (USAMRD-G), headquartered in the country of Georgia, supported the 2020 Noble Partner exercise, a joint U.S.-Georgian exercise, by identifying disease-carrying vectors and the prevalence of acute diarrhea and respiratory illness in U.S. forces. These data provided exercise surgeons timely threat assessments for infectious disease, resulting in improved mitigation strategies for participants.

*Funded by: Global Emerging Infections Surveillance*

### USAMRD-G



*Noble Partners 2020*



# 3

## MEDICAL DIPLOMACY AND PARTNER CAPACITY BUILDING

Supported by: AFRIMS, USAMRD-A, USAMRD-G

WRAIR’s network of expeditionary laboratories are models of medical diplomacy, working to foster product development, outbreak response and disease surveillance to support Soldier health and global health.



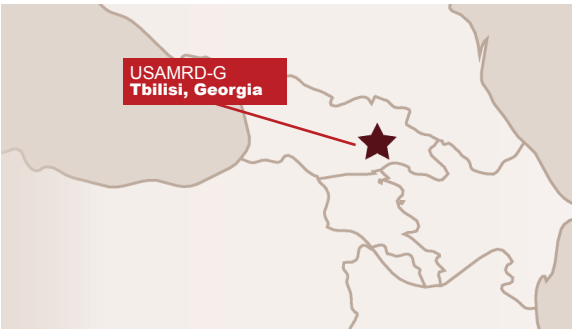
### USAMRD-A



### AFRIMS



### USAMRD-G



## MEDICAL DIPLOMACY

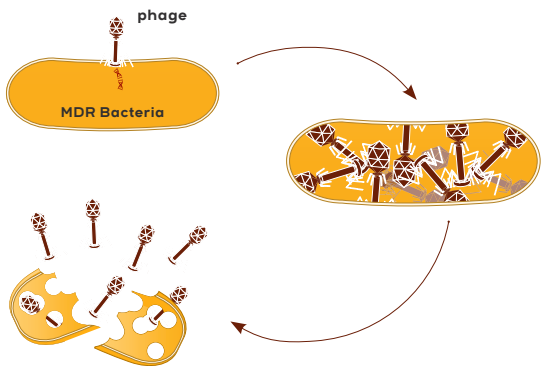
In response to the COVID-19 pandemic, WRAIR’s overseas laboratories bolstered host nation capacities to test for COVID-19; additionally, WRAIR’s network of OCONUS laboratories provided personal protective equipment like masks, surgical gowns, gloves and face shields to host nation partners. WRAIR’s U.S. Army Medical Research Directorate-Africa (USAMRD-A) celebrated several milestones including 15 years of partnership with the Nigerian military and 20 years of partnership in Tanzania as well as the transfer of two newly-renovated HIV laboratories to the Tanzanian government. WRAIR continued to support the U.S. President’s Emergency Plan for AIDS Relief and in 2020 provided life-saving anti-retroviral therapy to nearly 350,000 people. These partnerships enhance healthcare infrastructure and clinical research capabilities, and provide training and resources for host-nation militaries, scientists and health-professionals. A new pilot program with the Uniformed Services University’s Center for Global Health Engagement aims to optimize and quantify the impact of WRAIR’s overseas relationships to combatant commands.







BACTERIOPHAGE THERAPEUTICS



1. Phage invades target cell
2. Phage reproduces within target cell
3. Phage bursts from target cell, destroying it and begins search for new target cell

MDR bacteria remain a significant threat to the public as well as Service Members, on and off the battlefield. WRAIR's Multidrug-resistant organism Repository and Surveillance Network serves as the primary surveillance organization to track antibiotic-resistant bacteria across the military healthcare system and works closely with WRAIR's international laboratories to study MDR in partner countries. WRAIR is also leading efforts to transition an antibiotic drug candidate from discovery to advanced development—as well as other efforts like bacteriophages, or viruses that inactivate specific strains of bacteria. WRAIR-developed bacteriophage cocktails were used in three emergency cases to clear infections not responding to antibiotics and work continues around the world to identify and characterize new bacteriophages in support of these efforts.

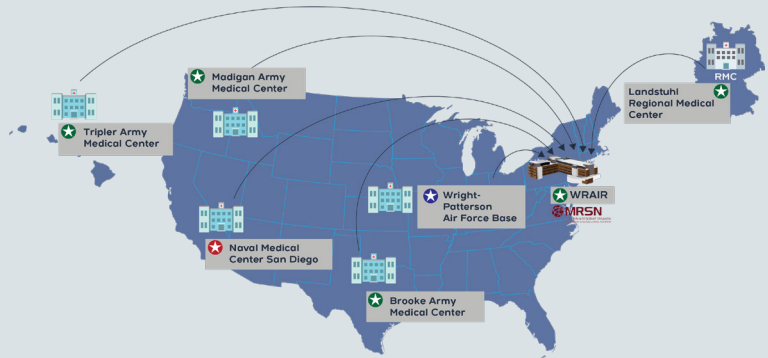
Funded by: Defense Health Programs, Global Emerging Infections Surveillance

# 4 DRUG-RESISTANT BACTERIA AND WOUND INFECTIONS

Supported by: WRAIR, AFRIMS, USAMRD-A, USAMRD-G

WRAIR continues its support for the Combatting Antibiotic Resistant Bacteria national action plan, a whole-of-government approach to overcome multidrug-resistant (MDR) bacteria.

DISEASE OUTBREAKS IN THE MILITARY HEALTHCARE SSTEM



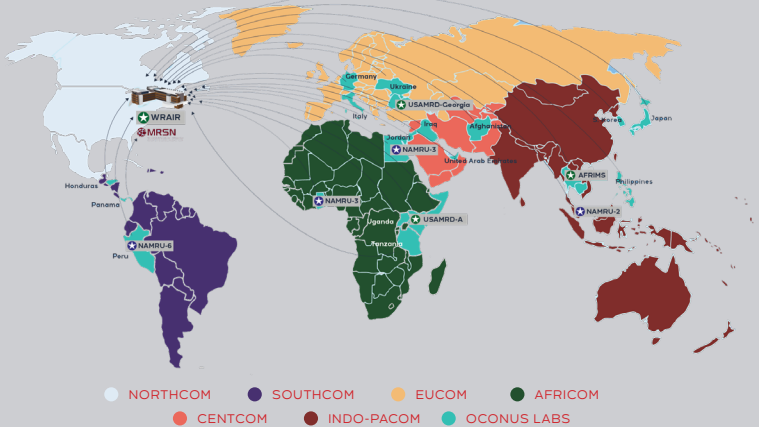
DISEASE OUTBREAK INVESTIGATIONS IN THE MHS

- Response assistance requested by healthcare professionals
- 6-8 outbreak investigations per month
- Turnaround time as short as 48-72 hours

MTF MDR ORGANISMS SURVEILLANCE

- All MTFs send MDR bacteria to MRSN in accordance with DOD/DHA policy
- 500-800 bacterial samples per month received from around the world
- MRSN performs real-time molecular epidemiology

GLOBAL ANTIBIOTIC RESISTANCE SURVEILLANCE



GLOBAL ANTIBIOTIC RESISTANCE SURVEILLANCE

- OCONUS and Global Emerging Infections Surveillance (GEIS) funded labs in 22 countries
- Thousands of bacteria collected per year
- Track superbugs worldwide
- Provide actionable infectious disease surveillance data to geographic combatant commands





Testing products developed within the WRAIR enterprise and by external partners, these sites are strategically located in geographic areas of interest to overcome diseases of interest to the Warfighter. 2020 marked the beginning of a range of vaccine clinical trials against highly relevant infectious diseases like Ebola, Marburg, dengue and chikungunya viruses, and the conclusion of a clinical trial for a separate Marburg vaccine and a therapeutic HIV vaccine. These trials included multisite studies, conducted in partnership with institutions like the U.S. Army Medical Research Institute of Infectious Disease and National Institutes of Health's Vaccine Research Center. Continuing its leadership in the field of diarrheal diseases, WRAIR completed a clinical trial for a vaccine against the diarrheal disease-causing bacterium *Shigella* and began a separate trial at the U.S. Army Medical Research Directorate-Africa (USAMRD-A); diarrheal diseases are currently listed as the most consequential infectious disease threat to the deployed Soldier. In 2021, WRAIR's clinical trials enterprise plans to be part of multiple vaccine and drug treatment trials against SARS-CoV-2, as well as initiating trials against other highly relevant diseases such as Lassa virus, malaria and yellow fever.

5

VACCINE CLINICAL TRIALS

Supported by: WRAIR, AFRIMS, USAMRD-A

WRAIR's Clinical Trials Center, international research directorates, and network of nearly 20 independent yet affiliated sites serve as the proving ground for new medical countermeasures.



WRAIR works hard to build close, trust-based relationships with partners in communities where we conduct clinical research around the world. Expanding this work to meet the COVID-19 pandemic, WRAIR began outreach efforts in its Silver Spring, Md., headquarters to improve understanding of COVID-19-related research and ultimately its outcomes.





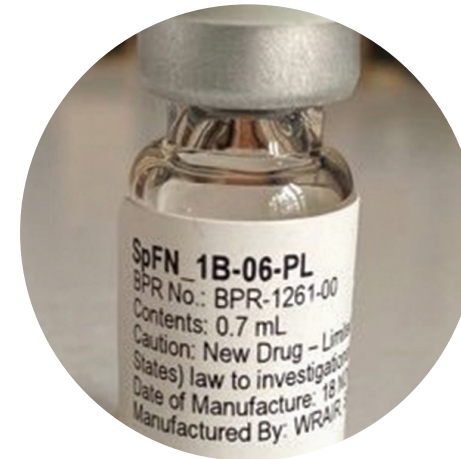
6

## LAUNCH OF NEW AND IMPROVED PBF

Supported by: WRAIR

The Pilot Bioproduction Facility (PBF) is a cGMP-compliant pharmaceutical manufacturing facility at the Walter Reed Army Institute of Research specializing in the rapid development of vaccines and biologics for military-relevant infectious disease threats.

## LAUNCH OF NEW AND IMPROVED PBF



Since 2016, the PBF has undergone extensive renovations to expand and improve its state-of-the-art capabilities including the ability to manufacture vaccines to meet a DOD-wide need. During the SARS-CoV-2 pandemic, the PBF has worked to complete its post-overhaul regulatory certification and rapidly pivoted to work with researchers and contract manufacturing organizations to produce WRAIR's coronavirus vaccine candidates in support of clinical trials beginning in 2021; additionally, it manufactured WRAIR-developed cocktails bacteriophages, or viruses that inactivate specific strains of bacteria, for emergency use in patients with infections not responding to antibiotics.

Funded by: *Military Infectious Disease Research Program, Defense Health Programs*



*Founded in 1953, WRAIR's Pilot Bioproduction Facility has manufactured vaccines against hepatitis A, meningitis, dengue fever, malaria, adenovirus, Japanese encephalitis, shigellosis and, most recently Zika. Many of these experimental vaccines have progressed to advanced clinical testing and licensure.*



# 7

## 2B-ALERT APPLICATION LICENSED TO AN INTERNATIONAL FATIGUE MANAGEMENT COMPANY

Supported by: **MOMRP**

The 2B-Alert mobile application is a technology that facilitates fatigue management in operational environments using established sleep/wake patterns to predict caffeine effectiveness, tactical nap effectiveness and performance.



WRAIR has partnered with the Biotechnology High Performance Computing Software Applications Institute (BHSI) and the U.S. Army Medical Materiel Development Activity (USAMMDA) to develop the currently used internal version of 2B-Alert into a forward facing mobile application for wider use by military operational units.

### 2B-Alert Application Licensed to an International Fatigue Management Company



The application is the result of a multi-year collaborative effort between scientists at BHSI and WRAIR. Because it provides individualized predictions and guidance for optimal caffeine dosing during any activity involving sleep loss or biological clock disruption (eg. nighttime operations), it can be used by units as a mission planning tool. Currently, 2B-Alert is available as a web-tool. Future fielding of the application to Soldiers will provide an individualized tool that monitors a Soldier's current level of alertness, predicts future alertness and provides guidance (to both the individual Soldier and leadership) on optimal timing and dosing of fatigue countermeasures to enhance Warfighter alertness, readiness and lethality during continuous and sustained operations when there is little or no opportunity to sleep.

Funded by: **Military Operational Medicine Research Program**



Tactical Operations Centers (TOCs) serve as main hubs for command and control operations at theater level.

2B-Alert's performance prediction and fatigue management capabilities may help commanders and their staff plan, monitor and direct the tactical operations of assigned forces in military operations.



When on mission, Soldiers are expected to be ready and lethal at all times. This requires them to perform at their highest level and under the less than ideal conditions of the harsh operational environment.

Use of 2B-Alert will serve as a tool that provides individualized recommendations for fatigue management to Soldiers and leaders to enhance performance during the times where it is most critical.





As part of the Secretary of the Army-directed pilot investigation of the R4 tool, researchers conducted one of the largest in-field data collections and trainings conducted by WRAIR. Thousands of leaders were trained in the use of the R4 and over 40,000 Soldier surveys were collected, documenting use of the R4 tool, behavioral health and other outcomes. The R4 study is the first to deploy a rigorous, empiric design to evaluate Army leadership’s practical methods for identifying and caring for the health and welfare of Soldiers at risk for suicide; the results from this study will determine whether the R4 tool should be tested or deployed throughout the Army.

Funded by: *Military Operational Medicine Research Program, Office of the Deputy Undersecretary of the Army*

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WRAIR BEHAVIORAL HEALTH RESEARCHERS EVALUATE R4 TOOL

Supported by: WRAIR, USAMRD-W

WRAIR brain health researchers helped to develop and implement an evaluation of the Behavioral Health Readiness and Suicide Risk Reduction Review (R4) tool, a means of enhancing Army leader engagement and decision-making, decreasing suicidal behavior and improving behavioral health readiness.



Company Commander & 1SG's Behavioral Health Readiness and Suicide Risk Reduction Review (R4)

Instructions: Check any applicable section criteria before advancing to the next section; if none checked, select Standard Concern.

|                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1 Does the Soldier have a behavioral health (BH) profile or known condition with any high risk factors? Check all that apply.</b>                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> a. Suicidal or homicidal behavior <sup>1</sup>                                                                                                                                                                                                                                | <input type="checkbox"/> d. Schizophrenia, bipolar, or psychotic disorder diagnosis                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/> b. Recent BH-related hospital admission or intensive outpatient care (i.e., place of duty is medical setting)                                                                                                                                                                 | <input type="checkbox"/> e. Active drug or alcohol abuse necessitating medical treatment or occupational restriction                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> c. 4 or more psychiatric and/or opiate medications simultaneously used for medical treatment                                                                                                                                                                                  | <input type="checkbox"/> f. Insomnia requiring continuous need for sleeping medication most nights for 3 or more months                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Select <b>Major Concern</b> if any criteria 1a-1f are met unless there are significant mitigating circumstances.                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>2 Does the Soldier have a BH profile or known condition without any of the above high risk factors (1a-1f)?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes<br>If yes, determine if further BH input is needed, impact to pending mission(s), and concern for suicidal behavior below. |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>3 Has the Soldier recently sustained or will likely sustain a loss? Check all that apply.</b>                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> a. Death of a close family member (e.g., spouse) or friend                                                                                                                                                                                                                    | <input type="checkbox"/> f. Work responsibilities curtailed or restriction placed                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/> b. Divorce, severe marital conflict, or loss of child custody                                                                                                                                                                                                                 | <input type="checkbox"/> g. Significant financial loss or hardship                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> c. Breakup (e.g., loss of significant relationship)                                                                                                                                                                                                                           | <input type="checkbox"/> h. Legal jeopardy, UCMJ action, or criminal conviction                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> d. Major physical injury, illness, chronic pain, or disability                                                                                                                                                                                                                | <input type="checkbox"/> i. Significant career transition (e.g., separation)                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> e. Perceived loss of honor, dignity, or self-respect (e.g., public/private embarrassment; shame-inducing event)                                                                                                                                                               | <input type="checkbox"/> j. Spiritual despair or distressing loss of faith-based belief(s)                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> k. Other, please specify:                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| If any criteria 3a-3k are checked, assess how loss(es) uniquely impacts Soldier using face-to-face conversation(s) and collateral information. Based on this assessment, indicate the level of your concern for suicidal behavior below.                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>4 Is there any known indication the Soldier is socially and/or psychologically isolated? Check all that apply.</b>                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> a. Extremely reclusive or dramatic change in interactions                                                                                                                                                                                                                     | <input type="checkbox"/> c. Difficulty forming or maintaining relationships                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/> b. Estrangement from family of origin and/or close friends                                                                                                                                                                                                                    | <input type="checkbox"/> d. Excessive social media dependence for social interactions                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| If any criteria 4a-4d are checked, assess how isolating factor(s) uniquely impacts Soldier using face-to-face conversation(s) and collateral information. Based on this assessment, indicate the level of your concern for suicidal behavior below.                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>5 Has the Soldier given any written or verbal indication that suicide may be personally acceptable? Check all that apply.</b>                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> a. Soldier comments that suicide is an acceptable way to avoid physical or psychological pain or suffering                                                                                                                                                                    | <input type="checkbox"/> c. Soldier states that personal cultural beliefs permit suicide                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/> b. Soldier mentions that suicide is an acceptable way to avoid negative outcomes (e.g., confinement, bankruptcy) or making philosophical or political statements                                                                                                              | <input type="checkbox"/> d. Soldier endorses suicide as an acceptable tactic in waging war, exacting revenge, administering justice, or making philosophical or political statements                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| If any criteria 5a-5d are checked, assess how ideological factor(s) uniquely impacts Soldier using face-to-face conversation(s) and collateral information. Based on this assessment, indicate the level of your concern for suicidal behavior below.                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> Standard Concern <input type="checkbox"/> Minor Concern <input type="checkbox"/> Major Concern                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>6 Determine overall suicide risk based on highest level of concern (Standard, Minor, or Major) marked in Sections 1-5.</b>                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> Standard Overall                                                                                                                                                                                                                                                              | <input type="checkbox"/> Minor Concern Overall                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> Major Concern Overall                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Low Risk</b><br>If Section 2 checked "Yes" Soldier may require waiver to deploy; consult AOR guidance. Coach, mentor, teach, and build Soldier strength. Leverage relevant support resources as needed.                                                                                             | <b>Intermediate Risk</b><br>If Section 2 checked "Yes" Soldier may require waiver to deploy; consult AOR guidance. Soldier may be removed from intermediate risk status at Commander's discretion after minimum 30-day observation period. Execute safety, duty, weapons precautions, and notify Battalion Commander. Leverage relevant medical, BH, billeting, financial, legal, chaplain, and health promotion supports. | <b>High Risk</b><br>Soldier is non-deployable. Minimum 90 days of stability must be exhibited prior to reducing high risk status. Consult BH professional or Command-direct BH evaluation to obtain a DA Form 3822. Execute safety, duty, weapons precautions, and notify Battalion Commander immediately. Leverage relevant medical, BH, billeting, financial, legal, chaplain, and health promotion supports immediately. |

<sup>1</sup>Behavior includes intent, plans, preparatory actions, attempts, self-harm acts (e.g., cutting or mutilating one's body), or animal torture/cruelty.  
Walter Reed Army Institute of Research (WRAIR) under the auspices of the Deputy Under Secretary of the Army (DUSA), v1\_12Feb2019\_R2623





During high operational tempo missions in far-forward environments, Soldiers are often unable to get the recommended 7-9 hours of sleep. To overcome this, WRAIR has developed a range of operationally-relevant resources to help Soldiers get better sleep when they can and manage the impacts of sleep loss when they cannot, including portable field cards (see below) for use in deployed settings or field training exercises. WRAIR provided direct support to the 7th Infantry Division, dramatically increasing awareness of and access to fatigue management strategies amongst leaders and the unit at-large; the 75th Ranger Regiment, providing guidance for nocturnal operations as well as individual and unit sleep reports and the Uniformed Services University, delivering shiftwork guidance for medical providers and leaders.

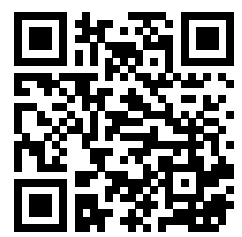
Funded by: Military Operational Medicine Research Program

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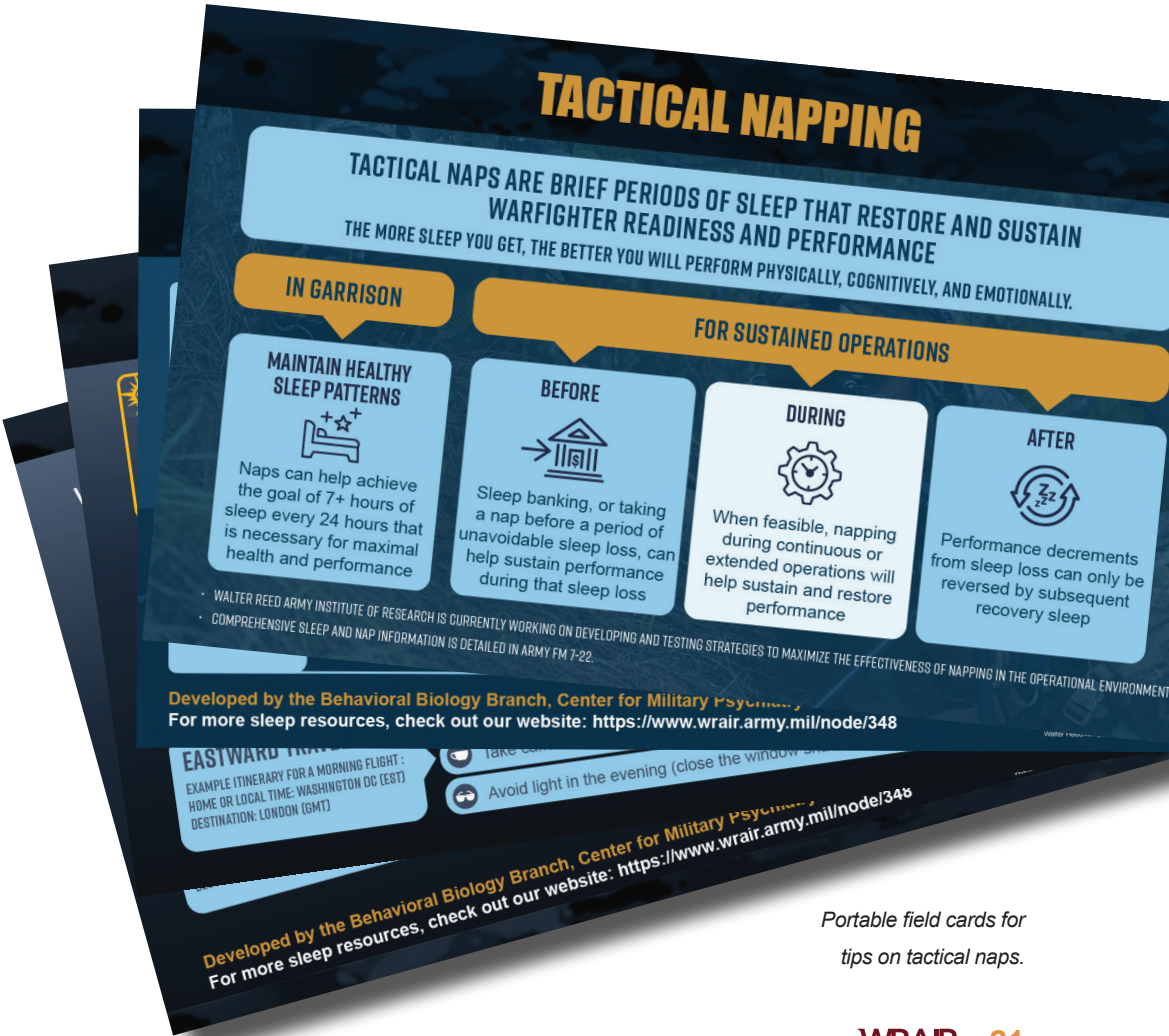
WARFIGHTER FATIGUE MANAGEMENT STRATEGIES MAINTAIN UNIT READINESS

Supported by: WRAIR, USAMRD-W

Sleep is ammunition for your brain and is critical for Soldier performance, cognitive dominance, immune function and other components that will be critical in future Multi-Domain Operations



Fatigue management resources are available here: <https://www.wrair.army.mil/node/349>



Portable field cards for tips on tactical naps.



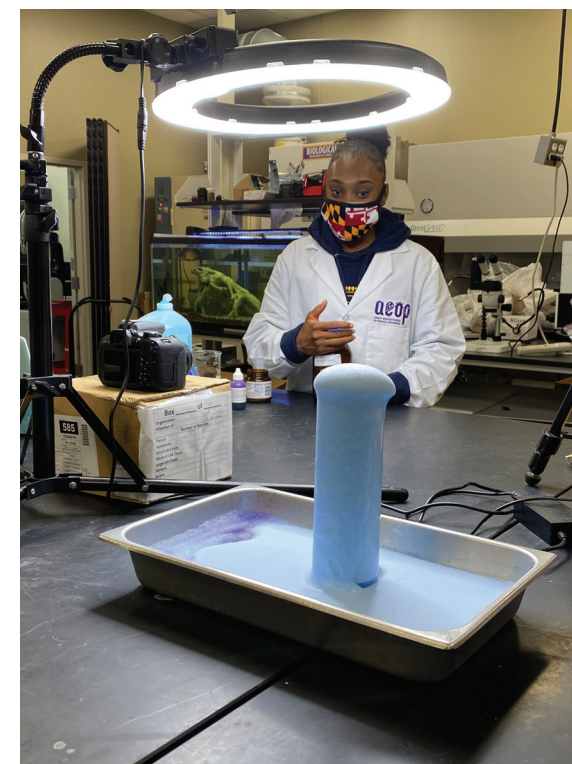


WRAIR virtually hosted 679 middle and high school students for one-week summer programs and partnered with area schools in 2020 to engage 450 students in STEM programs. WRAIR laboratories also supported research fellowships for 27 high-school and college students as well as 117 post-baccalaureate post-doctoral scientists. Overseas, the U.S. Army Medical Research Directorate-Georgia (USAMRD-G) hosted two undergraduate interns from local universities. USAMRD-G and the U.S. Army Medical Directorate-Armed Forces Research Institute of Medical Sciences (AFRIMS) both conducted outreach programs area local high schools as well. These programs develop the next generation of researchers and improve relationships with surrounding communities.

# 10 EDUCATIONAL AND OUTREACH PROGRAMS

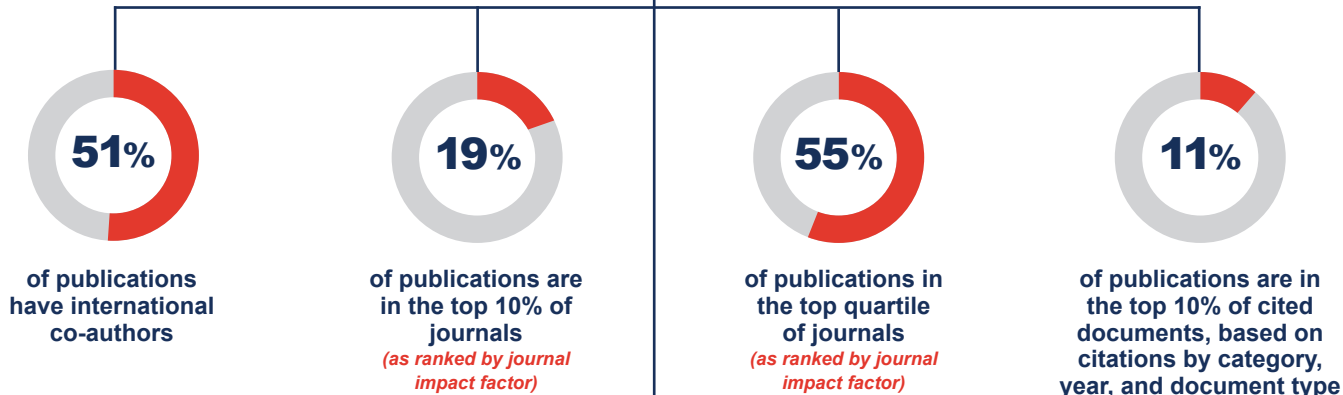
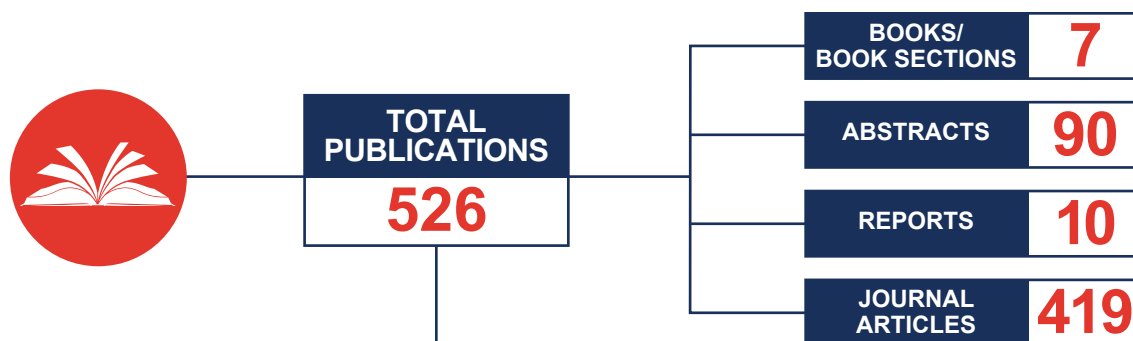
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# WRAIR'S 2020 PUBLICATIONS



- 1** Infectious Diseases
- 2** Immunology
- 3** Neurosciences
- 4** Microbiology
- 5** Clinical Neurology



- 1** University of Oxford
- 2** Uniformed Services University of the Health Sciences
- 3** London School of Hygiene and Tropical Medicine
- 4** University of Melbourne
- 5** University of Sao Paulo
- 6** Monash University\*
- 7** University of North Carolina\*

\*6-7 are tied